

PUBLICATIONS OF THE UNIVERSITY OF BRITISH COLUMBIA



THE UNIVERSITY OF BRITISH COLUMBIA

CALENDAR

FORTY-THIRD SESSION

1957-1958

VANCOUVER



BRITISH COLUMBIA



1957

VOL. 43

GENERAL SERIES

No. 1

PROGRAMME FOR NEW STUDENTS

Monday, September 16th: Arts 100, 9.00 a.m.—Meeting for new students from other countries.

Monday, September 16th: Auditorium, 10.00 a.m.—Address by the Dean of Administrative and Inter-Faculty Affairs, who will describe the courses of study in the various faculties.

Monday, September 16th: Auditorium, 12.30 noon and 3.30 p.m.—Counselling tests for new students, mainly those from out-of-town.

Tuesday, September 17th: Registration begins. (See page 5.)

Thursday, September 19th: Auditorium, 9.00 a.m.—Orientation programme for new students.

Friday, September 20th: Auditorium, 9.00 a.m.—Students' Council programme.

Saturday, September 21st: Continuation of orientation programme.

PRESIDENT'S ADDRESS

Wednesday, October 2nd: 11.30 a.m.—Address to Faculty and Student Body by President N. A. M. MacKenzie in Armoury. All lectures and laboratories cancelled.

CHILDREN OF WAR DEAD (Education Assistance) ACT

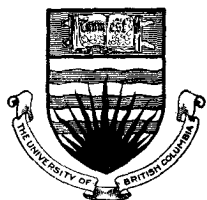
This Act provides fees and monthly allowances for children of veterans whose death was attributable to military service. Enquiries should be directed to the nearest district office of the Department of Veterans' Affairs.

DEPARTMENT OF EDUCATION ASSISTANCE

In order to assist students of academic merit who, without financial assistance, cannot proceed with their education beyond the level of the secondary school, the Provincial Government, with Dominion Government participation, has set aside a fund to provide loans (and a limited number of bursaries). Loans are to be repaid within three years of completion of training. Applications, on forms available from the Department of Education, Victoria, B.C., must be received not later than August 1st.

A similar fund, known as Department of Education Assistance for Teacher Training, has been provided by the Provincial Government for those who are preparing for the profession of teaching and agree to teach in the public school system of British Columbia for three years after graduation from teacher training. Applications must be received by the Department of Education, Victoria, B.C., not later than August 1st.

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VANCOUVER ● BRITISH COLUMBIA ● 1957

1957-58

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* ACADEMIC YEAR

1957

August

Thursday 1st	Last day for submission of applications for bursaries.
Thursday 15th	Last day for submission of applications for admission to First Year Nursing.
Monday 19th } Tuesday 27th }	Supplemental examinations.

September

Sunday 1st	ACADEMIC YEAR begins.
Monday 2nd	Labour Day. University closed.
Tuesday 3rd	Registration begins, Faculty of Graduate Studies and Faculty of Medicine. Lectures begin First Year Medicine.
Wednesday 4th	Faculty of Medicine, registration ends; lectures begin Second, Third and Fourth Years.
Monday 16th	Faculty of Law, lectures begin all years. Registration will be arranged and must be completed by 12.00 noon, Saturday, September 21st. Meeting for new students from other countries, 9.00 a.m., Arts 100. Address describing the courses in the various faculties by Dean of Administrative and Inter-Faculty Affairs at 10.00 a.m. in Auditorium. Counselling tests, 12.30 noon, Auditorium.
Tuesday 17th } Saturday 21st }	†Registration in person for Winter Session as follows: First Year only in Arts and Science, Home Economics, Physical Education, Education and Agriculture, Tuesday, September 17th, 9.00 a.m. to Saturday, September 21st, 12.00 noon. First Year Nursing, Tuesday, September 17th, only. All Years , Arts and Science, Commerce, Home Economics, Physical Education, Social Work, Education and Agriculture, Wednesday, September 18th, 9.00 a.m. to Saturday, September 21st, 12.00 noon. Faculties of Forestry, Pharmacy, Applied Science, and Schools of Architecture, Nursing (Fourth Year and Diploma Courses), Thursday, September 19th, 9.00 a.m. to Saturday, September 21st, 12.00 noon. †Registration closes weekdays at 3.30 p.m. and Saturday at 11.00 a.m. First term fees are due and payable. Assigned dormitory accommodation available Friday evening, September 20th. For special rate for earlier registrants see page 60.

*During 1957 the University is closed Saturdays from May 25th to September 7th inclusive.

Thursday 19th } Saturday 21st }	Programme in Auditorium for new students as follows: Orientation lectures, Thursday, September 19th, 9.00 a.m. Continuation of orientation programme, and Students' Council programme for new students, Friday, September 20th, 9.00 a.m., and Saturday, September 21st, 9.00 a.m.
Saturday 21st	Last day for registration of all students, both undergraduate and graduate, except those in Extra-Sessional Classes and Correspondence Courses.
Monday 23rd	Lectures begin at 8.30 a.m.
October	
Tuesday 1st	Last day for handing in graduation essays and theses (Autumn Congregation).
Wednesday 2nd	Address to Faculty and Student Body by the President of the University, 11.30 a.m., Armoury; all 11.30 a.m. and noon-hour lectures and laboratories cancelled.
Thursday 3rd	Alma Mater Society, semi-annual meeting.
Friday 4th	Last day for changes in students' courses. Meeting of the Faculty Council. (Subsequent meetings to be held at the call of the President).
	Last day for handing in memoranda of courses leading to Master's degrees.
Tuesday 8th	Meeting of the Faculty of Education.
Wednesday 9th	Meeting of the Faculty of Arts and Science. Meeting of the Faculty of Medicine (evening).
Thursday 10th	Meeting of the Faculty of Applied Science.
Friday 11th	Meeting of the Faculty of Agriculture.
Monday 14th	Thanksgiving Day. University closed Saturday to Monday, inclusive.
Wednesday 16th	Meeting of the Senate.
Friday 25th	Congregation, 2.30 p.m.
November	
Monday 11th	Remembrance Day. University closed. Service in Memorial Gymnasium, 10.45 a.m.
December	
Tuesday 3rd	Meeting of the Faculty of Education.
Wednesday 4th	Meeting of the Faculty of Arts and Science.
Thursday 5th	Meeting of the Faculty of Applied Science.
Friday 6th	Meeting of the Faculty of Agriculture.
Wednesday 11th	Meeting of the Senate.
Saturday 21st	First term ends, except for Faculty of Medicine.
Wednesday 25th	CHRISTMAS DAY.
Thursday 26th	University closed.

1958

January

Wednesday 1st	New Year's Day. University closed.
Monday 6th	Second term begins. Second term fees due and payable. Students are advised to mail second term fees to Accountant by this date.

Saturday 11th	Faculty of Medicine, first term ends.
Monday 13th	Faculty of Medicine, second term begins.
Tuesday 28th	Meeting of the Faculty of Education.
Wednesday 29th	Meeting of the Faculty of Arts and Science.
	Meeting of the Faculty of Medicine (evening).
Thursday 30th	Meeting of the Faculty of Applied Science.
Friday 31st	Meeting of the Faculty of Agriculture.
February	
Wednesday 12th	Meeting of the Senate.
March	
Saturday 1st	Last day for handing in theses, Fourth Year, Faculty of Medicine.
Thursday 13th	Alma Mater Society, annual meeting.
Saturday 15th	Last day for handing in applications for graduate scholarships.
April	
Friday 4th	Good Friday. University closed April 4th and 5th.
Monday 7th	Easter Monday. University closed.
Wednesday 16th	Last day of lectures, except for Faculty of Medicine.
	Last day for handing in graduation essays and theses.
Friday 18th	Sessional examinations begin.
Saturday 26th	Faculty of Medicine, last day of lectures Third Year.
Monday 28th	Faculty of Medicine, sessional examinations begin for Third Year.
May	
Thursday 1st	Last day for handing in applications for undergraduate scholarships.
Friday 2nd	Sessional examinations end.
Saturday 3rd	Faculty of Medicine, last day of lectures, First and Second Years.
Monday 5th	Field work in Applied Science begins.
	Faculty of Medicine, sessional examinations begin for First and Second Year.
Friday 9th	Meeting of the Faculty of Medicine.
Saturday 10th	Meeting of the Faculty of Agriculture.
	Faculty of Medicine, sessional examinations end.
Monday 12th	Meetings of the Faculties of Arts and Science, Applied Science, Law, and Education.
Wednesday 14th	Meeting of the Senate.
Sunday 18th	Baccalaureate Service, Brock Hall, 11.00 a.m.
Monday 19th	Victoria Day. University closed.
Tuesday 20th	Congregation.
Wednesday 21st	Congregation.
Saturday 24th	University closed.
Friday 30th }	Counselling tests, 1:00 p.m.
Saturday 31st }	

July

Tuesday 1st

Monday 7th

Tuesday 8th

Tuesday 15th

Dominion Day. University closed.

Summer Session begins. Last day of registration for the Summer Session.

Summer Session supplemental examinations.

Last day for submission of applications for supplemental examinations.

August

Monday 18th

Friday 22nd

Tuesday 26th

Friday 29th

Sunday 31st

Supplemental examinations begin.

Summer Session ends.

Supplemental examinations end.

Meeting of the Faculty of Arts and Science.

Meeting of the Faculty of Education.

Meeting of the Senate.

ACADEMIC YEAR ends.

SEPTEMBER, 1957							OCTOBER, 1957							NOVEMBER, 1957							DECEMBER, 1957						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	.....	1	2	3	4	5	.....	.....	.....	.....	1	2	.....	.....	1	2	3	4	5	6	7
8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14
15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21
22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28
29	30	.....	.....	.....	.....	.....	27	28	29	30	31	.....	.....	24	25	26	27	28	29	30	29	30	31	.....	.....	.....	.....
.....
JANUARY, 1958							FEBRUARY, 1958							MARCH, 1958							APRIL, 1958						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
.....	.....	1	2	3	4	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	1	.....	.....	1	2	3	4	5
5	6	7	8	9	10	11	2	3	4	5	6	7	8	2	3	4	5	6	7	8	6	7	8	9	10	11	12
12	13	14	15	16	17	18	9	10	11	12	13	14	15	9	10	11	12	13	14	15	13	14	15	16	17	18	19
19	20	21	22	23	24	25	16	17	18	19	20	21	22	16	17	18	19	20	21	22	20	21	22	23	24	25	26
26	27	28	29	30	31	.....	23	24	25	26	27	28	.....	23	24	25	26	27	28	29	27	28	29	30	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
MAY, 1958							JUNE, 1958							JULY, 1958							AUGUST, 1958						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
.....	.....	.....	1	2	3	.....	1	2	3	4	5	6	7	.....	.....	1	2	3	4	5	.....	.....	.....	.....	.....	1	2
4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9
11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16
18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23
25	26	27	28	29	30	31	29	30	27	28	29	30	31	24	25	26	27	28	29	30
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The University of British Columbia

VISITOR

THE HONOURABLE FRANK MACKENZIE ROSS, C.M.G., M.C.,
Lieutenant-Governor of the Province of British Columbia

CHANCELLOR

THE HON. CHIEF JUSTICE SHERWOOD LETT, C.B.E., D.S.O., M.C., C.D., E.D.,
B.A., LL.D. (Term expires 1957.)
A. E. GRAUER, B.A., Ph.D. (Chancellor Elect).

PRESIDENT

NORMAN A. M. MACKENZIE, C.M.G., M.M. and Bar, Q.C., B.A., LL.B., LL.M.,
LL.D., D.C.L., D.Sc.Soc., F.R.S.C.

BOARD OF GOVERNORS

Ex-Officio:

THE HON. CHIEF JUSTICE SHERWOOD LETT, C.B.E., D.S.O., M.C., C.D.,
E.D., B.A., LL.D. (retiring 1957); A. E. GRAUER, B.A., Ph.D.
(in succession), Chairman.

NORMAN A. M. MACKENZIE, C.M.G., M.M. and Bar, Q.C., B.A., LL.B.,
LL.M., LL.D., D.C.L., D.Sc.Soc., F.R.S.C.

Elected by Senate:

THE HON. MR. JUSTICE ARTHUR E. LORD, B.A., Vancouver.
Term expires 1957.

JOHN M. BUCHANAN, B.A., Vancouver.
Term expires 1957.

KENNETH P. CAPLE, M.S.A., Vancouver.
Term expires 1957.

Appointed by the Lieutenant-Governor in Council:

THE HON. MR. JUSTICE JAMES M. COADY, B.A., Vancouver.
Term expires 1957.

HIS HONOUR JUDGE JOSEPH BADENOCH CLEARIHUE, M.C., E.D., B.A.,
B.C.L., M.A., Victoria. Term expires 1957.

PERCY R. BENGOUGH, LL.D., Vancouver. Term expires 1959.

GEORGE T. CUNNINGHAM, Vancouver. Term expires 1959.

A. E. GRAUER, B.A., Ph.D., Vancouver. Term expires 1961.

D'ARCY J. BALDWIN, M.B.E., Victoria. Term expires 1961.

SENATE

The Chancellor, THE HON. CHIEF JUSTICE SHERWOOD LETT, C.B.E.,
D.S.O., M.C., C.D., E.D., B.A., LL.D. (retiring 1957); A. E. GRAUER,
B.A., Ph.D. (in succession).

The President, NORMAN A. M. MACKENZIE, C.M.G., M.M. and Bar, Q.C.,
B.A., LL.B., LL.M., LL.D., D.C.L., D.Sc.Soc., F.R.S.C., Chairman.

The Registrar, CHARLES B. WOOD, B.A., A.M. (until June 30th, 1957);
JOHN E. A. PARNALL, B.A., B.Ed., M.A. (from July 1st, 1957), Secretary.

Dean of the Faculty of Agriculture, BLYTHE EAGLES, B.A., M.A., Ph.D., F.R.S.C.

Dean of the Faculty of Applied Science, HENRY C. GUNNING, B.A.Sc., S.M., Ph.D., F.G.S.A., F.R.S.C.

Dean of the Faculty of Arts and Science, S. N. F. CHANT, O.B.E., M.A.

Dean of the Faculty of Law, GEORGE FREDERICK CURTIS, Q.C., LL.B., B.A., B.C.L., LL.D., D.C.L.

Dean of the Faculty of Graduate Studies, GORDON M. SHRUM, O.B.E., M.M., E.D., M.A., Ph.D., F.R.S.C.

Associate Dean of the Faculty of Graduate Studies, F. H. SOWARD, B.A., B.Litt., F.R.S.C.

Dean of the Faculty of Pharmacy, A. W. MATTHEWS, B.Sc. (Pharm.), M.Sc., Ph.D.

Dean of the Faculty of Medicine, JOHN W. PATTERSON, A.B., M.S., Ph.D., M.D.

Dean of the Faculty of Forestry, GEORGE S. ALLEN, M.A.Sc., Ph.D.

Dean of the Faculty of Commerce and Business Administration, E. D. MACPHEE, M.M., M.A., B.Ed.

Dean of the Faculty of Education, NEVILLE V. SCARFE, M.A.

Dean and Deputy to the President, GEOFFREY C. ANDREW, B.A., M.A.

Dean of Administrative and Inter-Faculty Affairs, WALTER H. GAGE, M.A.

Dean of Women, MISS M. DOROTHY MAWDSLEY, B.A., M.A., Ph.D.

Representatives of the Faculties:

Agriculture:

WALTON J. ANDERSON, B.S.A., M.Sc., Ph.D.; J. J. R. CAMPBELL, B.S.A., Ph.D.

Applied Science:

L. G. R. CROUCH, B.Sc., M.Sc., M.C.I.M.; W. O. RICHMOND, B.A.Sc., M.S., Mem. A.S.M.E., M.E.I.C.

Arts and Science:

A. EARLE BIRNEY, M.A., Ph.D., F.R.S.C.; MISS CHARLOTTE S. BLACK, B.Sc. (H.Ec.), M.S.

Law:

CHARLES B. BOURNE, B.A., LL.B.; MALCOLM M. MACINTYRE, B.A., LL.B., LL.M., S.J.D.

Pharmacy:

FINLAY A. MORRISON, M.B.E., B.S.P., M.Sc.; JOHN ALLARDYCE, M.A., Ph.D.

Medicine:

D. HAROLD COPP, B.A., M.D., Ph.D.; H. ROCKE ROBERTSON, B.Sc., M.D., F.R.C.S. (Edin.), F.R.C.S.(C), F.A.C.S.

Forestry:

F. MALCOLM KNAPP, B.S.F., M.S.F.; ROBERT W. WELLWOOD, B.A.Sc., M.F., Ph.D.

Commerce and Business Administration:

COLIN C. GOURLAY, B.Com., M.Com.; LESLIE J. G. WONG, B.Com., M.B.A.

Education:

J. RANTON McINTOSH, B.A., M.Ed., Ph.D.; F. HENRY JOHNSON, M.A., D.Paed.

Graduate Studies:

R. D. JAMES, M.A., Ph.D., F.R.S.C.; FRIEDRICH A. KAEMPFFER, Dipl. Ing., Dr. Rer. Nat.

Terms expire 1957.

Appointed by the Lieutenant-Governor in Council:

R. F. SHARP, B.A., D.Paed., Vancouver.

LEON J. LADNER, Q.C., B.A., LL.B., Vancouver.

H. C. HOLMES, M.A., Victoria.

Terms expire 1958.

Representative of the High School Principals and Assistants, B. C. GILLIE, B.A., B.Ed., Victoria.

Term expires 1957.

Representatives of Affiliated Colleges:

Victoria College, Victoria, W. HARRY HICKMAN, M.A., Docteur de l'Université de Paris.

Union College of British Columbia (Theological), Vancouver, REV. W. S. TAYLOR, M.A., B.D., Ph.D.

The Anglican Theological College of British Columbia, Vancouver, REV. H. F. WOODHOUSE, B.A., H. Dip. Ed., D.D.

St. Mark's College (Theological), REV. H. CARR, C.S.B., B.A., LL.D.
Terms expire 1957.

Elected by Convocation:

MISS MARJORIE AGNEW, B.A., Vancouver.

W. G. BLACK, B.A., A.M., Ph.D., Vancouver.

JOHN M. BUCHANAN, B.A., Vancouver.

KENNETH P. CAPLE, B.S.A., M.S.A., Vancouver.

THE HON. MR. JUSTICE J. V. CLYNE, B.A., Vancouver.

MISS MARY M. FALLIS, B.A., M.A., Vancouver.

E. DAVIE FULTON, B.A., M.P., Kamloops.

A. E. GRAUER, B.A., Ph.D., Vancouver.

J. STUART KEATE, B.A., Victoria.

H. T. LOGAN, M.C., B.A., M.A., Vancouver.

THE HON. MR. JUSTICE ARTHUR E. LORD, B.A., Vancouver.

IAN McTAGGART-COWAN, B.A., Ph.D., F.R.S.C., Vancouver.

WALTER N. SAGE, M.A., Ph.D., F.R.Hist.S., F.R.S.C., Vancouver.

H. V. WARREN, B.A., B.A.Sc., B.Sc., D.Phil., Assoc.Inst.M.M., F.G.S.A., F.R.S.C., Vancouver.

C. A. H. WRIGHT, M.Sc., Ph.D., Trail.

Terms expire 1957.

Representative of the British Columbia Teachers' Federation:

MISS MOLLIE E. COTTINGHAM, M.A., Vancouver. Term expires 1958.

CONVOCACTION

THE HON. CHIEF JUSTICE SHERWOOD LETT, C.B.E., D.S.O., M.C., C.D., E.D., B.A., LL.D., Chancellor of the University of British Columbia, Chairman (retiring, 1957).

A. E. GRAUER, B.A., Ph.D., Chancellor of the University of British Columbia, Chairman (in succession).

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 J. V. ROSS, B.Sc., A.R.C.S., Ph.D., D.I.C. (Imperial College), Research Associate.
 CLARENCE OTTO SWANSON, M.A.Sc. (Brit. Col.), Ph.D. (Wisconsin), F.G.S.A., F.R.S.C., Honorary Professor.
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 DONALD P. KERR, B.A. (Brit. Col.), M.A. (Toronto), Ph.D. (Toronto), Instructor (Session 1956-57).
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 EUGENE MATHER, A.B., M.S. (Illinois), Ph.D. (Wisconsin), Visiting Lecturer (Session 1956-57).

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 PING-TI HO, B.A. (National Tsing Hua Univ., Peiping, China), Ph.D. (Columbia), Associate Professor.
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A. M. CROOKER, B.A. (McMaster), M.A., Ph.D. (Toronto), Professor.

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OTTO BLUH, Dr. Rer. Nat., D.Phys. (Prague), F.Inst.P., Associate Professor.

ROBERT W. STEWART, M.Sc. (Queen's), Ph.D. (Cantab.), Associate Professor.

J. M. DANIELS, M.A., D.Phil. (Oxon.), Associate Professor.

J. B. BROWN, B.A. (Brit. Col.), D.Phil. (Oxon.), Assistant Professor.

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- L. L. BONGIE, B.A. (Brit. Col.), Docteur de l'Université de Paris, Assistant Professor of French.
- GEOFFREY L. BURSILL-HALL, M.A. (Cantab.), Assistant Professor of French (on leave of absence, Session 1957-58).
- ROBERT JOHN GREGG, B.A. (Q.U.B.), Assistant Professor of French.
- RONALD RALPH JEFFELS, B.A., B.Ed. (Alta.), M.A. (Cantab.), Assistant Professor of French.
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 MRS. P. R. (FRANCE) ROBERT, L. ès L. (Aix-Marseille), Lecturer in French
 (Session 1956-57).
 CLAUDE TREIL, B.A. (Brit. Col.), Instructor in French.

Department of Slavonic Studies

JAMES O. ST. CLAIR-SOBELL, M.A. (Melbourne), Ph.D. (Graz), Professor and
 Head of the Department.
 H. E. RONIMOIS, M.Sc. (Econ.) (Tartu), Ph.D. (London), Associate Professor.
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 Assistant Professor.
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 Institute (Columbia), Lecturer.
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Department of Zoology

IAN McTAGGART-COWAN, B.A. (Brit. Col.), Ph.D. (Calif.), F.R.S.C., Professor
 and Head of the Department.
 W. S. HOAR, B.A. (New Brunswick), M.A. (Western Ontario), Ph.D. (Bos-
 ton), F.R.S.C., Professor of Zoology and Fisheries.
 KENNETH GRAHAM, B.A. (Brit. Col.), M.Sc. (McGill), Ph.D. (Toronto),
 Professor of Forest Entomology.
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 PETER FORD, B.Sc., Ph.D. (London), F.Z.S., F.L.S., Associate Professor.
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 N.Z.), Lecturer (Session 1956-57).
 JOAN HOLLINGS, B.A. (Toronto), Lecturer (Session 1956-57).
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 PAUL BURKHARDT, Lecturer.
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 MISS KATHLEEN L. MEREDITH, B.A. (Western Ont.), Lecturer.

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 MISS CECIL HAY-SHAW, Diploma (McGill), Mental Health Certificate (London);
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(As for Agricultural Mechanics, page 29.)

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- ALLAN H. FINLAY, M.C., B.A.Sc. (Brit. Col.), M.S. in C.E. (Illinois), Assoc. M.Am.Soc.C.E., Professor.
- ALEXANDER HRENNIKOFF, Grad., Inst. of Communication Engineering, Moscow, Russia, M.A.Sc. (Brit. Col.), Sc.D. (Mass. Inst. of Technology), M.Am.Soc.C.E., M.E.I.C., M.I.A.B.S.E., Professor.
- EDWARD S. PRETIUS, B.A.Sc. (Brit. Col.), M.Sc. (Iowa), Assoc.M.Am.Soc.C.E., Professor.
- ARCHIE PEEBLES, B.A.Sc., B.A. (Brit. Col.), M.Sc. (Iowa State College), M.E.I.C., Assoc.M.Am.Soc.C.E., Professor.
- SAMUEL L. LIPSON, B.A.Sc. (Brit. Col.), M.S. (Cal. Inst. Tech.), Assoc. M.Am.Soc.C.E., Mem.Am.C.I., Professor.
- S. H. DE JONG, M.Sc. (Man.), D.L.S., B.C.L.S., M.E.I.C., Associate Professor.
- W. G. HESLOP, B.A.Sc. (Toronto), M.E.I.C., Assoc.C.I.M., Associate Professor.
- H. R. BELL, B.A.Sc. (Brit. Col.), Dipl. Survey (London), M.Sc. (Eng.), (London), Assistant Professor.
- R. F. HOOLEY, B.A.Sc. (Brit. Col.), M.Sc., Ph.D. (Stanford), M.I.A.B.S.E., Assistant Professor.
- A. W. MARRIS, M.Sc. (London), Ph.D. (New Zealand), Assoc. M.Am.Soc., C.E., Assistant Professor.
- S. CHERRY, B.Sc. (C.E.) (Man.), M.S. (Illinois), Ph.D. (Bristol), Assistant Professor.
- R. A. SPENCE, B.Sc. (Alta.), M.S. (Harvard), Part-time Lecturer.
- JOSEPH E. A. KANIA, M.A.Sc. (Brit. Col.), Ph.D. (Mass. Inst. of Technology), Part-time Lecturer.

Department of Electrical Engineering

- FRANK NOAKES, B.Sc. (Alta.), M.S., Ph.D. (Iowa State College), M.E.I.C., Mem. A.I.E.E., Mem. I.R.E., Professor and Head of the Department.
- W. B. COULTHARD, B.Sc. (London), Mem. A.I.E.E., A.M.I.E.E., Professor.
- A. DONALD MOORE, M.Sc. (Queen's), Ph.D. (Stanford), Sen.Mem. I.R.E., Associate Professor.
- LORNE R. KERSEY, B.A.Sc. (Brit. Col.), Mem. I.R.E., Assoc. Mem. A.I.E.E., Assistant Professor.
- E. V. BOHN, Dipl. Math., Dr. Rer. Nat. (Göttingen), Assoc. Mem. I.R.E., Assistant Professor.

- M. P. BEDDOES, B.Sc. (Glasgow), D.I.C., A.M.I.E.E., Assistant Professor.
 S. C. MORGAN, B.Sc. (Queen's), M.Sc. (Alta.), M.S. (Calif. Inst. of Technology), Mem. A.I.E.E., M.I.E.S., Professor Emeritus; Special Lecturer.
 HUGH A. WOODS, M.Sc. (Q.U.B.), A.M.I.E.E., Lecturer.
 BRUCE D. CLEMENT, B.A.Sc. (Brit. Col.), Instructor.
 W. F. BENNETT, B.A.Sc. (Brit. Col.), Demonstrator.
 S. T. FALL, B.A.Sc. (Brit. Col.), Part-Time Demonstrator.
 B. A. AULD, B.A.Sc. (Brit. Col.), M.S., Ph.D. (Stanford), Assoc. Mem. I.R.E., National Research Council Research Associate.
 W. A. GAMBLING, B.Sc. (Bristol), Ph.D. (Liverpool), A.M.I.E.E., National Research Council Post-doctorate Fellow.

Forest Engineering

(As for Faculty of Forestry, page 41.)

Department of Mechanical Engineering

- W. O. RICHMOND, B.A.Sc. (Brit. Col.), M.S. (Pittsburgh), Mem. A.S.M.E., M.E.I.C., Professor and Head of the Department.
 H. M. McILROY, M.Sc. (Queen's), Professor.
 WILLIAM WOLFE, B.A., B.A.Sc. (Brit. Col.), M.Sc. (Case School of Ap. Sc.), Mem. A.S.M.E., Associate Professor.
 G. V. PARKINSON, B.A.Sc. (Brit. Col.), M.S., Ph.D. (Calif. Inst. of Technology), Associate Professor.
 G. H. GREEN, B.Sc. (Sask.), M.S. (Illinois), M.E.I.C., Mem. A.S.R.E., Assistant Professor.
 RALPH E. BOSTON, B.A.Sc., M.Com. (Toronto), Assistant Professor.
 WM. E. J. STEEL, B.A.Sc. (Brit. Col.), Demonstrator.

Department of Mining and Metallurgy

- F. A. FORWARD, B.A.Sc. (Toronto), F.I.M., M.C.I.M., M.Inst.M.M., Professor and Head of the Department.
 L. G. R. CROUCH, B.Sc. (Victoria, Australia), M.Sc. (Utah), M.C.I.M., Professor of Mining Engineering.
 H. M. HOWARD, B.A.Sc. (Toronto), M.C.I.M., Professor of Mineral Dressing.
 W. M. ARMSTRONG, B.A.Sc. (Toronto), M.C.I.M., Professor of Metallurgy.
 C. S. SAMIS, M.Sc. (Man.), Ph.D. (London), M.C.I.M., Professor of Metallurgy.
 J. A. H. LUND, B.A.Sc. (Brit. Col.), Ph.D. (Birmingham), Assistant Professor.
 H. G. BRANDSTATTER, Dipl. Chem., Dr.-Ing. (Aachen), Instructor.
 D. R. WILES, B.Sc., B.Ed. (Mt. Allison), M.Sc. (McMaster), Ph.D. (M.I.T.), Research Associate.
 V. GRIFFITHS, M.Sc. (Wales), Sc.D. (M.I.T.), Lecturer.
 J. HALPERN, B.Sc., Ph.D. (McGill), Honorary Lecturer.
 W. C. LIN, B.Sc. (Nanking), Ph.D. (McGill), Honorary Lecturer.
 E. TEGHTSOONIAN, B.A.Sc., M.A., Ph.D. (Toronto), Research Associate.
 R. G. BUTTERS, M.A.Sc. (Brit. Col.), Research Assistant.

School of Nursing

- MISS H. EVELYN MALLORY, B.Sc., A.M. (Columbia), R.N., Professor and Director of the School.
 MISS RUTH M. MORRISON, B.S. (Minnesota), A.M. (Columbia), R.N., Associate Professor.

MISS PAULINE CAPELLE, B.A., B.A.Sc., (Brit. Col.), A.M. (Chicago), R.N., Assistant Professor.

MISS LORNA M. HORWOOD, B.A. (Queen's), A.M. (Columbia), R.N., Assistant Professor.

MISS ELIZABETH K. McCANN, B.A., B.A.Sc. (Brit. Col.), R.N., Assistant Professor.

MISS MARGARET W. DUNCAN, B.A., B.A.Sc. (Brit. Col.), M.S. (Chicago), R.N., Assistant Professor.

MISS MARGARET A. CAMPBELL, B.A., B.A.Sc. (Brit. Col.), M.S. (Western Reserve), R.N. Instructor.

Part-time Lecturers:

Mrs. Barbara Gibson, B.A., B.S.N. (Brit. Col.), R.N.; Elda Lindenfeld, M.D.; J. M. Mather, M.D., D.P.H. (Toronto); Miss Helen K. Mussallem, B.N. (McGill), M.A. (Columbia), R.N.; Kaspar D. Naegle, B.A. (McGill), A.M. (Columbia), Ph.D. (Harvard); A. John Nelson, M.B., Ch.B. (Glas.), D.P.H., R.C.P.S. (Eng.); Mrs. Mary Tadych, B.A. (Manchester), M.S.W. (Brit. Col.); and others to be appointed.

School of Architecture

FREDERIC LASSERRE, B.Arch. (Toronto), M.R.A.I.C., Professor and Director of the School.

B. PAUL WISNICKI, Dipl. Ing. (Lwow, Poland), M.E.I.C., Associate Professor.

H. PETER OBERLANDER, B.Arch. (McGill), M.C.P. (Harvard), Ph.D. (Harvard), M.R.A.I.C., A.R.I.B.A., A.M.T.P.I., Associate Professor of Planning and Design.

J. CALDER PEEPS, B.Arch. (Hon.) (Dunelm), F.R.S.A., A.R.I.B.A., M.R.A.I.C., M.Inst. R.A., Associate Professor.

WOLFGANG GERSON, A.A. Dipl., M.R.A.I.C., A.R.I.B.A., Associate Professor.

IRA M. ROBINSON, A.B. (Wesleyan), M.A. (Chicago), Assistant Professor of Planning.

VLAD F. LYMAN, Ing.Arch. (Prague), Assistant Professor.

LIONEL A. J. THOMAS, Instructor.

ARTHUR C. ERICKSON, B.Arch. (McGill), M.R.A.I.C., Instructor.

B. C. BINNING, A.R.C.A., Honorary Lecturer.

KEITH B. DAVISON, B.Arch. (Man.), M.R.A.I.C., Special Lecturer.

LEONARD C. MARSH, B.Sc. (Econ.) (London), M.A., Ph.D. (McGill), Special Lecturer.

E. C. E. TODD, LL.B., LL.M. (Manchester), Special Lecturer.

RALPH E. BOSTON, B.A.Sc., M.Com. (Toronto), Special Lecturer.

FACULTY OF AGRICULTURE

Department of Agricultural Economics

WALTON J. ANDERSON, B.S.A., M.Sc. (Sask.), Ph.D. (Chicago), Professor and Chairman.

ELMER L. MENZIE, M.S.A. (Brit. Col.), Instructor.

Department of Agricultural Mechanics

T. L. COULTHARD, B.E. (Sask.), M.Sc. (Calif.), Professor and Chairman of the Department.

J. J. THOMAS, B.Eng. (Liverpool), M.Sc. in Ag.Eng. (Durham), Assistant Professor.

E. L. WATSON, B.A.Sc. (Brit. Col.), M.Sc. (Calif.), Instructor.

Division of Animal Science

- BLYTHE EAGLES, B.A. (Brit. Col.), M.A., Ph.D. (Toronto), F.R.S.C., Professor of Dairying and Chairman of the Division.
- J. C. BERRY, M.S.A. (Brit. Col.), Ph.D. (Iowa State College), Professor of Animal Husbandry.
- J. J. R. CAMPBELL, B.S.A. (Brit. Col.), Ph.D. (Cornell), Professor of Dairying.
- A. J. WOOD, M.S.A. (Brit. Col.), Ph.D. (Cornell), Professor of Animal Husbandry and Director of Central Animals Depot.
- C. D. MACKENZIE, M.S.A. (Brit. Col.), Ph.D. (Aberdeen), Professor of Animal Husbandry and Assistant to the Dean.
- MISS NORA E. NEILSON, M.S.A. (Brit. Col.), Ph.D. (Calif.), Assistant Professor of Dairying.
- W. D. KITTS, M.S.A. (Brit. Col.), Ph.D. (Iowa State College), Assistant Professor of Animal Husbandry and Associate Director of Central Animals Depot.

Division of Plant Science

- V. C. BRINK, M.S.A. (Brit. Col.), Ph.D. (Wisconsin), Professor of Agronomy and Chairman of the Division.
- G. H. HARRIS, B.S.A. (Brit. Col.), M.S. (Oregon State College), Ph.D. (Calif.), F.C.I.C., Professor of Horticulture.
- C. A. HORNBY, M.S.A. (Brit. Col.), Ph.D. (Cornell), Associate Professor of Horticulture.
- A. J. RENNEY, B.S.A. (Brit. Col.), M.S. (Calif.), Ph.D. (Oregon State Coll.), Assistant Professor of Agronomy.
- J. W. NEILL, M.C., B.S.A. (Ont. Agric. Coll.), Ph.D. (Oregon State Coll.), Assistant Professor of Horticulture and Supervisor of Landscaping.
- NEIL A. MACLEAN, B.S., Ph.D. (Washington St. Coll.), Assistant Professor.
- J. SAWYER, B.Sc. (Agric.), Ph.D. (Reading), Lecturer.
- J. B. TIER, M.S.A. (Brit. Col.), Honorary Lecturer.
- R. E. FITZPATRICK, B.S.A. (McGill), Ph.D. (Toronto), Honorary Lecturer.
- T. H. ANSTAY, M.S.A. (Brit. Col.), Ph.D. (Minn.), Honorary Lecturer.
- W. T. BURNS, B.S.A. (Sask.), M.Sc. (Sask.), Honorary Lecturer.
- M. F. CLARKE, M.S.A. (Brit. Col.), Ph.D. (Penn.), Honorary Lecturer.
- T. G. WILLIS, M.S.A. (Brit. Col.), Honorary Lecturer.
- J. J. WOODS, M.S.A. (Brit. Col.), Honorary Lecturer.

Department of Poultry Science

- JACOB BIELY, M.S.A. (Brit. Col.), M.S. (Kansas State College), Professor and Chairman of the Department.
- AMP F. HICKS, JR., B.S. (Kentucky), Ph.D. (Calif.), Assistant Professor.
- MRS. BERYL E. MARCH, B.A. (Brit. Col.), Instructor.
- H. W. ELLIS, B.S.A. (Brit. Col.), Special Assistant.
- H. L. A. TARR, M.S.A. (Brit. Col.), Ph.D. (McGill and Cantab.), Honorary Lecturer.

Department of Soil Science

- C. A. ROWLES, M.Sc. (Sask.), Ph.D. (Minnesota), Professor and Chairman of the Department.
- J. S. CLARK, M.S.A. (Brit. Col.), Ph.D. (Cornell), Assistant Professor.
- D. G. LAIRD, B.S.A. (Toronto), M.S., Ph.D. (Wisconsin), Professor Emeritus and Special Lecturer.

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- MALCOLM M. MACINTYRE, B.A. (Mount Allison), LL.B., LL.M., S.J.D. (Harvard), Professor.
- GILBERT D. KENNEDY, M.A., LL.B. (Toronto), S. J. D. (Harvard), Professor (to June 30, 1957).
- CHARLES B. BOURNE, B.A. (Toronto), LL.B. (Cantab.), Associate Professor.
- ALFRED W. R. CARROTHERS, B.A., LL.B. (Brit. Col.), LL.M. (Harvard), Associate Professor.
- E. C. E. TODD, LL.B., LL.M. (Manchester), Assistant Professor.
- RAYMOND G. HERBERT, D.F.C., B.A., LL.B. (Brit. Col.), Assistant Professor.
- MISS D. M. PRIESTLY, B.A., LL.B. (Brit. Col.), M.L.L. (Wash.), Law Librarian and Lecturer.
- K. M. BECKETT, B.A. (Brit. Col.), Lecturer on Procedure II.
- ANGELO BRANCA, Q.C., Lecturer on Procedure II.
- D. MCK. BROWN, B.Com. (Brit. Col.), Lecturer on Insurance.
- W. M. CARLYLE, B.A. (Queen's), LL.B. (Brit. Col.), Lecturer on Taxation.
- V. L. DRYER, Q.C., B.A. (Brit. Col.), Lecturer on Evidence.
- LEON J. LADNER, Q.C., B.A., LL.B. (Toronto), Lecturer on Taxation.
- IVAN FELTHAM, B.A., LL.B. (Brit. Col.), B.A. (Oxon.), Lecturer (Session 1956-57).
- N. A. M. MACKENZIE, C.M.G., M.M. and Bar, Q.C., B.A., LL.B. (Dalhousie), LL.M. (Harvard), LL.D. (Mount Allison, New Brunswick, Toronto, Ottawa, Bristol, Alberta, Glasgow, St. Francis Xavier, McGill, Sidney Rochester), D.C.L. (Whitman), D.Sc.Soc. (Laval), F.R.S.C., Lecturer on Public International Law.
- M. M. MCFARLANE, Q.C., B.A. (Brit. Col.), Lecturer on Company Law.
- S. J. REMNANT, Q.C., Lecturer on Criminal Law.
- G. R. SCHMITT, B.A., LL.B. (Sask), LL.M. (Harvard).
- THE HONOURABLE MR. JUSTICE SHEPPARD, B.A. (Toronto), LL.B. (Sask.), Lecturer on Equity.
- W. KIRKE SMITH, B.A. (Man.), LL.B. (Brit. Col.), Lecturer on Procedure I.
- W. D. C. TUCK, LL.B. (Brit. Col.), Lecturer on Shipping.
- D. L. VAUGHN, B.A., LL.B. (Brit. Col.).
- A. WATTS, B.Com. (Brit. Col.), Honorary Liaison Secretary.

FACULTY OF PHARMACY

- A. W. MATTHEWS, B.Sc. (Pharm.), M.Sc. (Alta.), Ph.D. (Florida), Professor and Dean of the Faculty.
- FINLAY A. MORRISON, M.B.E., B.S.P. (Sask.), M.Sc. (Maryland), Associate Professor of Pharmacy.
- JOHN E. HALLIDAY, B.S.P. (Sask.), M.S. (Purdue), Assistant Professor of Materia Medica and Pharmacology.
- GORDON A. GROVES, B.Sc. (Pharm.), M.Sc. (Alta.), Assistant Professor of Pharmacy.
- TERENCE H. BROWN, B.S.P. (Brit. Col.), M.S. (Wash.), Assistant Professor of Pharmaceutical Chemistry.

STEPHEN K. SIM, B.Sc. (Pharm.), M.S., Ph.D. (Wash.), Instructor in Pharmacognosy.

J. G. MOIR, B.S.P. (Brit. Col.), M.S. (Michigan), Instructor in Pharmacy.

Members of Faculty representing other Departments:

John Allardyce, M.A., Ph.D.; J. J. Stock, B.S.A., M.Sc., Ph.D.; S. H. Zbarsky, B.A., M.A., Ph.D.; L. D. Hayward, B.A., Ph.D.; J. DeBruyn, B.A., M.A.; Neil Harlow, Ed.B., M.A.; W. O. Perkett, B.S.; John K. Friesen, D.F.C., B.A., A.M., Ed.D.

FACULTY OF MEDICINE

JOHN W. PATTERSON, A.B. (Ohio Wesleyan), M.S., Ph.D. (Ohio State), M.D. (Western Reserve), Professor and Dean of the Faculty of Medicine.

CHARLES G. CAMPBELL, M.D., C.M., M.Sc. (McGill), F.R.C.P. (C), Assistant Professor and Assistant Dean.

Department of Anatomy

SYDNEY M. FRIEDMAN, B.A., M.D., C.M., M.Sc., Ph.D. (McGill), Professor and Head of the Department.

JOHN W. PATTERSON, A.B. (Ohio Wesleyan), M.S., Ph.D. (Ohio State), M.D. (Western Reserve), Professor.

PARIS CONSTANTINIDES, M.D. (Vienna), Ph.D. (Montreal), Professor.

CONSTANCE L. FRIEDMAN, M.Sc., Ph.D. (McGill), Research Associate Professor.

HARALD F. SCHERRER, M.D. (Graz), Assistant Professor.

G. EDWARD SINGER, M.Sc. (Brit. Col.), M.D., C.M. (McGill), Assistant Professor.

SAUL MILLER, M.Sc., M.D., C.M. (McGill), Clinical Assistant Professor in Radiological Anatomy.

F. R. C. JOHNSTONE, M.B., Ch.B. (Edinburgh), F.R.C.S. (Edinburgh), Lecturer (Part-time).

LESLIE H. BARTLETT, M.D., C.M. (McGill), Teaching Fellow.

LUDMILA ZELDOWICZ, M.D. (Warsaw), Demonstrator.

Department of Biochemistry

MARVIN DARRACH, M.A. (Brit. Col.), Ph.D. (Toronto), Professor and Head of the Department.

WILLIAM J. POLGLASE, M.A. (Brit. Col.), Ph.D. (Ohio State), Associate Professor.

SIDNEY H. ZBARSKY, B.A. (Sask.), M.A., Ph.D. (Toronto), Associate Professor.

SHIRLEY E. NEWSOM, B.A. (Brit. Col.), Instructor.

JACOB BIELY, M.S.A. (Brit. Col.), M.S. (Kansas State), Honorary Lecturer.

J. J. R. CAMPBELL, B.S.A. (Brit. Col.), Ph.D. (Cornell), Honorary Lecturer.

BLYTHE EAGLES, B.A. (Brit. Col.), M.A., Ph.D. (Toronto), F.R.S.C., Honorary Lecturer.

EWALD S. GORANSON, M.A. (Brit. Col.), Ph.D. (Toronto), Honorary Lecturer.

ALAN R. P. PATERSON, M.A. (Brit. Col.), Ph.D. (Brit. Col.), Woodward Fellow.

JOHN C. NIXON, M.D., C.M. (Queen's), Fellow.

Department of Medicine

ROBERT B. KERR, O.B.E., B.A., M.D., M.A. (Toronto), F.R.C.P. (London), F.R.C.P. (C), F.A.C.P., Professor and Head of the Department.

- KENNETH A. EVELYN, B.Sc. (McGill), M.D.,C.M. (McGill), F.R.C.P.(C), Research Professor (Part-time).
- DONALD M. WHITELAW, B.A. (Brit. Col.), M.D.,C.M. (McGill), F.R.C.P.(C), Associate Professor.
- CHARLES G. CAMPBELL, M.D., C.M., M.Sc. (McGill), F.R.C.P. (C), Assistant Professor.
- WILLIAM H. PERRY, M.D. (Toronto), M.R.C.P. (Edin.), F.R.C.P.(C), Assistant Professor (Part-time) (Clinical Microscopy).
- ARTHUR W. BAGNALL, B.A. (Brit. Col.), M.D. (Toronto), F.R.C.P.(C), M.R.C.P. (London), Clinical Associate Professor.
- MURRAY M. BAIRD, B.A. (New Bruns.), B.A., B.M., B.Ch. (Oxon.), F.R.C.P. (London), F.R.C.P. (C), Clinical Associate Professor.
- R. WALLACE BOYD, B.Sc. (Alta.), M.D.,C.M. (McGill), F.A.C.R., Clinical Associate Professor (Radiology).
- CHARLES E. G. GOULD, B.A. (Brit. Col.), M.D. (S. Cal.), Clinical Associate Professor (Neurology).
- WILLIAM H. HATFIELD, M.D. (Toronto), F.A.C.C.P., Clinical Associate Professor.
- GORDON F. KINCADE, M.D.,C.M. (McGill), Clinical Associate Professor.
- DONALD S. MUNROE, B.Sc. (Sask.), M.D. (Man.), M.R.C.P. (London), F.R.C.P.(C), Clinical Associate Professor.
- DONALD H. WILLIAMS, B.Sc., M.D. (Man.), M.Sc. (Minn.), Clinical Associate Professor (Dermatology).
- ALAN Y. MCNAIR, M.C., M.B. (Toronto), Clinical Assistant Professor.
- RUSSELL A. PALMER, B.A. (Brit. Col.), M.D.,C.M. (McGill), M.R.C.P. (Edin.), F.R.C.P.(C), F.A.C.P., Clinical Assistant Professor.
- JOHN E. WALKER, M.B. (Toronto), Clinical Assistant Professor.
- ETHLYN TRAPP, B.A., M.D.,C.M. (McGill), D.Sc. (Brit. Col.), Honorary Lecturer in Therapeutic Radiology.
- NORMAN L. D. AUCLAND, B.A. (Sask.), M.D. (Man.), Clinical Instructor (Neurology).
- RICHARD E. BECK, M.D.,C.M. (Queen's), F.R.C.P.(C), Clinical Instructor.
- ABRAHAM BOGOCH, M.D. (Toronto), D.Sc. (Penn.), B.Sc. (Med.) (Toronto), F.R.C.P.(C), Clinical Instructor.
- ERNEST A. BOXALL, M.D.,C.M. (Queen's), F.R.C.P.(C), Clinical Instructor.
- KENNETH C. BOYCE, B.A. (Brit. Col.), M.D.,C.M. (Queen's), Clinical Instructor.
- JOHN W. G. CALDWELL, M.D. (Alta.), F.A.C.P., Clinical Instructor.
- ELMER F. CHRISTOPHERSON, B.Sc. (Sask.), M.D. (Man.), F.R.C.P.(C), F.A.C.P., Clinical Instructor.
- CARLETON C. COVERNTON, B.A. (Brit. Col.), M.D.,C.M. (McGill), Clinical Instructor.
- BROCK M. FAHRNI, M.D. (Man.), F.R.C.P.(C), Clinical Instructor.
- VICTOR O. HERTZMAN, M.D. (Toronto), F.R.C.P.(C), Clinical Instructor.
- F. WILLIAM B. HURLBURT, B.Sc. (Sask.), M.D. (Toronto), F.R.C.P.(C), M.R.C.P. (London), Clinical Instructor.
- ARCHIBALD M. JOHNSON, M.D. (Western Ont.), F.R.C.P.(C), Clinical Instructor.
- BEN KANEE, M.D. (Man.), Clinical Instructor (Dermatology).
- HAMISH W. MCINTOSH, M.B. (Cantab.), M.D.,C.M., M.Sc. (McGill), F.R.C.P.(C), Clinical Instructor.

- HUGH A. MACKECHNIE, M.D. (Toronto), Clinical Instructor (Dermatology).
 T. KEITH MACLEAN, M.D. (Alta.), F.R.C.P.(C), F.A.C.P., Clinical Instructor.
 ARNE K. MATHISEN, B.A. (Brit. Col.), M.D., C.M., (McGill), F.R.C.P.(C), F.A.C.C.P., Clinical Instructor.
 PHILIP WARREN MORSE, B.A. (Sask.), B.A. (Oxon.), B.M., B.Ch. (Oxon.), M.R.C.P. (London), Clinical Instructor.
 JAMES WILLIAM MORTON, B.A. (Brit. Col.), M.D., C.M. (McGill), Clinical Instructor.
 BERNARD B. MOSCOVICH, M.D. (Alta.), Clinical Instructor.
 JACOB C. MOSCOVICH, M.D., C.M. (McGill), F.A.C.P., Clinical Instructor.
 DAVID MOWAT, M.D. (Man.), F.R.C.P.(C), Clinical Instructor.
 BRUCE PAIGE, M.B.B.S. (Sydney), Clinical Instructor.
 JOHN L. PARNELL, B.A. (Brit. Col.), M.B., Ch.B. (Edin.), F.R.C.P.(C), Clinical Instructor.
 JOHN A. G. REID, M.D. (Toronto), F.R.C.P.(C), Clinical Instructor.
 CHARLES S. RENNIE, M.D. (Man.), M.R.C.P. (London), Clinical Instructor.
 CECIL E. G. ROBINSON, M.D., C.M. (Queen's), F.R.C.P.(C), Clinical Instructor.
 HENRY SCOTT, B.Sc. (Alta.), M.D., C.M. (McGill), Clinical Instructor.
 BRUCE T. SHALLARD, M.B., Ch.M. (Sydney), M.D. (Melbourne), M.R.A.C.P., Clinical Instructor.
 W. WESLEY SIMPSON, B.A. (Brit. Col.), M.A., Ph.D., M.D. (Toronto), F.A.C.P., Clinical Instructor.
 HARRY C. SLADE, M.D., C.M. (Dalhousie), F.R.C.P.(C), Clinical Instructor.
 H. STEWART STALKER, M.D. (Man.), F.A.C.C.P., Clinical Instructor.
 HUGH STANSFIELD, M.Sc., M.D. (Alta.), Clinical Instructor.
 J. P. WALLACE THOMAS, M.D., C.M. (Dalhousie), Clinical Instructor (Clinical Microscopy).
 J. ALAN TRAYNOR, B.A. (Sask.), M.D. (Toronto), F.R.C.P.(C), Clinical Instructor.
 GORDON E. TRUEMAN, B.A., M.D. (Man.), Clinical Instructor (Radiology).
 GEORGE EDWARD WAKEFIELD, L.M.C.C. (Man.), M.D. (Man.), F.A.C.C.P., Clinical Instructor.
 GEORGE C. WALSH, B.A. (Brit. Col.), M.D., C.M. (McGill), M.Sc. (McGill), F.R.C.P.(C), Clinical Instructor.
 MAX B. WALTERS, M.D. (Man.), F.R.C.P.(C), Clinical Instructor.
 LUDMILA ZELDOWICZ, M.D. (Warsaw), Clinical Instructor (Neurology).
 ALBERT W. WALLACE, B.Sc. (Sask.), M.D. (Man.), Demonstrator (Clinical Microscopy).
 DENYS K. FORD, B.A., M.D. (Cantab.), F.R.C.P.(C), Fellow.
 HAROLD ORMOND MURPHY, M.D., C.M. (Queen's), Fellow.
 KENNETH R. WEAVER, B.A. (Brit. Col.), B.S.W. (Brit. Col.), Lecturer in Social Service.

Department of Obstetrics and Gynaecology

- ALEC M. AGNEW, M.B., M.D. (Toronto), F.R.C.S. (C), Professor and Head of the Department.
 JACK E. HARRISON, M.D., C.M. (McGill), Clinical Associate Professor.
 FRED E. BRYANS, B.Sc., M.D. (Toronto), F.R.C.S. (C), Assistant Professor.
 ALBERT E. TRITES, M.D., C.M. (McGill), Clinical Associate Professor.
 A. LEIGH HUNT, M.D., C.M. (McGill), Clinical Assistant Professor.

FERGUS JOHNSTON, M.D. (Alta.), F.R.C.S., F.A.C.S., Clinical Assistant Professor.

W. F. BIE, B.Sc. (Sask.), M.D., C.M. (McGill), Clinical Instructor.

A. DAVID CLAMAN, M.D. (Queen's), F.R.C.S. (C), Clinical Instructor.

DAVID B. COLLISON, M.D., C.M. (McGill), Clinical Instructor.

HUGH A. HENDERSON, M.D. (Toronto), M.R.C.O.G., Clinical Instructor.

ARCHIE HERSTEIN, M.D. (Man.), M.R.C.O.G., Clinical Instructor.

JOHN E. McDONAGH, M.D. (Man.), Clinical Instructor.

JOHN W. MILLAR, M.D. (Man.), Clinical Instructor.

GLEN G. SMITH, M.D. (Toronto), F.R.C.S. (C), Clinical Instructor.

MICHAEL TURKO, M.D. (Toronto), Clinical Instructor.

F. WILLIAM TYSOE, B.Sc., M.D. (Alta.), Clinical Instructor.

J. BERNARD COSTELLO, B.A. (Seattle), M.D., C.M. (McGill), Clinical Instructor.

LESLIE S. GLASS, M.B., Ch.B., M.D. (Edin), M.R.C.O.G. (Eng.), F.R.C.S. (C), Clinical Instructor.

WM. R. MACEWAN, M.D. (Alta.), Clinical Instructor.

JOHN E. ROSS, B.A. (Brit. Col.), M.D. (Queen's), Clinical Instructor.

Department of Paediatrics

JOHN F. MCCREARY, M.D. (Toronto), Professor and Head of the Department.

MAURICE D. YOUNG, M.A., M.B., B.Ch. (Cantab.), M.R.C.S. (England), M.R.C.P. (London), F.R.C.P. (C), Assistant Professor.

GEOFFREY C. F. ROBINSON, M.D., C.M. (Queen's), F.R.C.P. (C), Assistant Professor.

HENRY G. DUNN, M.B., B.Ch. (Cantab.), M.R.C.S. (Eng.), Assistant Professor.

SYDNEY SEGAL, B.Sc. (McGill), M.D., C.M. (Queens), M.A. (Brit. Col.), Instructor II.

REGINALD A. WILSON, B.A. (Brit. Col.), M.D., C.M. (McGill), M.R.C.P. (London), F.R.C.P. (C), Clinical Associate Professor.

HARRY BAKER, M.D. (Toronto), Clinical Assistant Professor.

JOSEPH H. B. GRANT, M.D., C.M. (McGill), Clinical Assistant Professor.

ARCHIBALD F. HARDYMENT, M.D. (Man.), Clinical Assistant Professor.

E. STEWART JAMES, M.D. (Toronto), Clinical Assistant Professor.

JOHN W. WHITELAW, B.A. (Brit. Col.), M.D., C.M. (McGill), Clinical Assistant Professor.

GORDON O. MATTHEWS, M.D., C.M. (McGill), M.D. (Man.), Clinical Assistant Professor.

PETER H. SPOHN, M.D. (Toronto), F.R.C.P. (C), Clinical Assistant Professor.

KENNETH A. CAMPBELL, M.D., C.M. (McGill), Clinical Instructor.

GEORGE R. GAYMAN, B.A., M.D. (Toronto), Clinical Instructor.

HAROLD KRIVEL, M.D. (Alta.), Clinical Instructor.

JOHN PITERS, B.A. (Brit. Col.), M.D. (Toronto), Clinical Instructor.

BEN SHUMAN, M.D. (Toronto), Clinical Instructor.

W. HAROLD S. STOCKTON, M.D. (Toronto), Clinical Instructor.

CHARLES J. TREFFRY, M.D. (Toronto), Clinical Instructor.

JEAN M. MACLENNAN, M.B., Ch.B., M.D. (Edin.), Clinical Instructor.

JAMES HINGSTON, M.D., M.R.C.P. (Edin.), D.C.H., Demonstrator.

JAMIL MASHAL, B.A., M.D., C.M. (Beirut), Demonstrator.

MARGARET MULLINGER, M.D. (Toronto), Demonstrator.
 J. ROBERT MACLEAN, M.D. (Toronto), Demonstrator.
 ERNEST EDWARD MCCOY, B.Sc., M.D. (Alberta), Demonstrator.
 J. MAVIS TEASDALE, M.B., Ch.B. (London), D.C.H., Demonstrator.
 ALAN MOORE INGLIS, M.D. (Manitoba), F.R.C.S.(C), Research Fellow.
 JOHN DEAN, M.B., B.Ch. (Cantab.), M.R.C.S. (England), Teaching Fellow.
 FEREDOUN MIRHADY, M.D. (Vienna), Teaching Fellow.
 CATRIONA D. MACLEAN, B.Sc., M.D., C.M. (McGill), Research Fellow.
 HOSSEIN MOGHADAM, B.Sc. (Teheran), M.D. (Zurich), Research Fellow.
 PETER H. PADWICK, M.B., B.S. (London), M.R.C.S. (England), Research Fellow.
 M. H. WONG, M.B., Ch.B. (Edin.), Research Fellow

Department of Pathology

HAROLD E. TAYLOR, M.D., C.M. (Dalhousie), M.R.C.P. (Edin.) F.R.C.P.(C),
 Professor and Head of the Department.
 R. FOSTER SCOTT, B.Sc., M.D. (Alta.), Assistant Professor.
 HERBERT K. FIDLER, M.D., B.Sc. (Man.), Clinical Professor.
 JOHN EDEN, M.B., B.S. (Durham), Clinical Associate Professor.
 WM. LEACH, M.D. (Man.), M.Sc. (McGill), Clinical Assistant Professor.
 HARRY H. PITTS, M.D., C.M. (McGill), Clinical Assistant Professor.
 HELEN E. H. JOHNSTON, M.D. (Toronto), B.A. (Sask.), Clinical Instructor.
 CLARISSE L. ASZKANAZY-DOLMAN, B.A. (Brit. Col.), M.D. (Toronto), Clinical Instructor.
 H. A. CHISHOLM, M.D., C.M. (Dalhousie), Clinical Instructor.
 CAMPBELL J. COADY, B.A. (Brit. Col.), M.D., C.M. (McGill), Clinical Instructor.
 IAN D. MAXWELL, B.Sc. (Bristol), M.B., Ch.B. (Edin.), Clinical Instructor.
 EARL ENGLISH, M.A. (Brit. Col.), Ph.D. (West. Ontario), Clinical Instructor.
 JOHN I. PHINNEY, B.A., B.Sc. (Acadia), M.Sc. (Dalhousie), Clinical Instructor.
 JOHN H. STURDY, M.D. (Alta.), Clinical Instructor.
 PHILIP S. VASSAR, M.B., B.S. (London), Clinical Instructor.
 M. VIOLA RAE, M.D. (Alta.), B.Sc. (Toronto), Museum Curator.

Department of Pharmacology

JAMES G. FOULKS, B.A. (Rice), Ph.D. (Johns Hopkins), M.D. (Columbia),
 Professor and Head of the Department.
 EDWIN E. DANIEL, M.A. (Johns Hopkins), Ph.D. (Utah), Assistant Professor.
 GORDON E. DOWER, M.R.C.S. (England), L.R.C.P. (London), M.B.B.S. (London), Instructor.
 DAVID ALLAN, M.B. (St. Andrews), Teaching Fellow.
 THOMAS R. HARMON, M.D. (Alta.), Lecturer in Medical Jurisprudence.

Department of Physiology

D. HAROLD COPP, B.A., M.D. (Toronto), Ph.D. (Calif.), Professor and Head of the Department.
 EDGAR C. BLACK, M.B.E., B.A. (McMaster), M.A. (Brit. Col.), Ph.D. (Pennsylvania), Associate Professor.

CARL F. CRAMER, B.S., M.S. (New Mexico), Ph.D. (Calif.), Assistant Professor.

DAVID ALLAN, M.D. (St. Andrews), Teaching Fellow.

GEORGE S. FUKUYAMA, Ph.D. (Ohio State), Demonstrator.

Department of Psychiatry

GEORGE A. DAVIDSON, M.D. (Man.), M.R.C.P. (London), F.R.C.P.(C), F.A.C.P. Professor (Part-time) and Chairman of the Department.

A. M. GEE, M.D.,C.M. (Queen's), Clinical Associate Professor.

A. J. WARREN, M.D. (Man.), D.P.M. (London), Clinical Assistant Professor.

C. H. GUNDRY, M.D. (Toronto), Lecturer.

A. M. MENZIES, M.D., C.M. (Queen's), Lecturer.

J. C. THOMAS, M.A., M.B. (Toronto), Lecturer.

R. L. WHITMAN, B.Sc. (Sask.), M.D.,C.M. (McGill), D.P.M. (London), Lecturer.

J. R. WILSON, M.D. (Queen's), Lecturer.

A. E. DAVIDSON, B.A. (Brit. Col.), M.D. (Alta.), Clinical Instructor.

ROBERT HALLIDAY, M.B., B. Ch., B.A.O. (Queen's Univ., Belfast), D.P.M. (Manchester), Clinical Instructor.

G. H. HUTTON, M.D., D.P.H. (Toronto), Clinical Instructor.

ELDA LINDENFELD, M.D. (Vienna), Clinical Instructor.

F. E. McNAIR, B.A. (Brit. Col.), M.D.,C.M. (McGill), Clinical Instructor.

W. E. POWLES, B.A., M.D.,C.M. (McGill), Clinical Instructor.

NOEL LYNN RICHARDSON, M.D.,C.M. (McGill), Clinical Instructor.

GORDON H. STEPHENSON, M.D. (Toronto), Clinical Instructor.

H. ZELDOWICZ, M.D. (Rome), Clinical Instructor.

F. J. EDWARDS, M.D., C.M. (McGill), Clinical Instructor.

W. M. FISTER, M.D., M.R.C.P. (Edin.), F.R.C.P. (C), Clinical Instructor.

I. S. KENNING, B.Sc., M.D., C.M. (McGill), Clinical Instructor.

E. E. LEYLAND, B.S., M.B. (London), Clinical Instructor.

I. TISCHLER, M.D. (Munich), Clinical Instructor.

D. J. WATTERSON, M.B., B.Ch., M.D. (Cantab), D.P.M. (London), Clinical Instructor.

Department of Public Health

JAMES M. MATHER, M.D., D.P.H., (Toronto), F.A.C.P.M., Professor and Head of the Department.

GEORGE R. F. ELLIOT, M.D.,C.M. (Queens), D.P.H., (Toronto), Clinical Assistant Professor.

S. STEWART MURRAY, M.B., M.D., D.P.H. (Toronto), Clinical Assistant Professor.

G. F. AMYOT, M.B., D.P.H. (Toronto), Honorary Lecturer in Public Health Administration.

JAMES R. ADAMS, M.Sc., Ph.D., (McGill), Lecturer in Parasitology.

G. J. SPENCER, B.S.A. (Toronto), M.S. (Illinois), Lecturer in Entomology.

H. K. KENNEDY, M.D., (Manitoba), D.P.H. (Toronto), Research and Teaching Fellow.

W. EARL SHEPHERD, M.D.,B.Sc. (Manitoba), Research and Teaching Fellow.

Department of Surgery

- H. ROCKE ROBERTSON, B.Sc., M.D. (McGill), F.R.C.S. (Edin.), F.R.C.S.(C), F.A.C.S., Professor and Head of the Department.
- ALLAN D. MCKENZIE, M.D. (Alta.), F.R.C.S.(C), F.A.C.S., Associate Professor.
- F. R. C. JOHNSTONE, M.B. (Edin.), M.Sc. (Brit. Col.), F.R.C.S. (Edin.), Assistant Professor.
- THOMAS R. SARJEANT, B.A., M.D. (Toronto), F.R.C.S. (England), F.R.C.S.(C), Clinical Professor.
- LYON H. APPLEBY, M.D. (Queen's), F.R.C.S. (England), F.R.C.S.(C), F.A.C.S., F.I.C.S., Clinical Associate Professor.
- JOHN A. BALFOUR, M.D. (Alta.), F.R.C.S.(C), Clinical Associate Professor (Urology).
- GORDON H. FRANCIS, B.A., M.D. (Western Ontario), Clinical Associate Professor (Otolaryngology).
- HORACE B. GRAVES, B.A., M.D., C.M. (McGill), Clinical Associate Professor (Anaesthesia).
- JOHN A. MCLEAN, M.D. (Toronto), Clinical Associate Professor (Ophthalmology).
- J. RUSSELL NEILSON, M.B. (Toronto), F.A.C.S., Clinical Associate Professor.
- FRANK P. PATTERSON, M.D., C.M. (McGill), F.R.C.S.(C), F.A.C.S., Clinical Associate Professor (Orthopaedics).
- FRANK A. TURNBULL, B.A. (Brit. Col.), M.D. (Toronto), Clinical Associate Professor (Neurosurgery).
- CHARLES E. BATTLE, M.D., C.M. (McGill), Clinical Assistant Professor.
- H. HAMLYN BOUCHER, M.D., C.M. (McGill), M.Sc. (Iowa), Clinical Assistant Professor (Orthopaedics).
- J. C. COLBECK, M.B., B.S. (London), M.R.C.S. (Eng.), L.R.C.P. (London), Clinical Assistant Professor (Bacteriology).
- JOHN A. ELLIOT, M.D. (Toronto), F.R.C.S. (Edin.), F.A.C.S., Clinical Assistant Professor.
- A. MAXWELL EVANS, M.D., C.M. (McGill), D.M.R.E. (Cantab.), Clinical Assistant Professor (Therapeutic Radiology).
- W. ELLIOTT HARRISON, M.D. (Man.), F.A.C.S., Clinical Assistant Professor.
- A. TAYLOR HENRY, M.D. (Toronto), F.R.C.S.(Edin.), Clinical Assistant Professor.
- L. H. A. ROY HUGGARD, M.D. (Toronto), F.A.C.S., Clinical Assistant Professor.
- ROBERT G. LANGSTON, M.D. (Alta.), F.A.C.S., Clinical Assistant Professor.
- ARTHUR S. MCCONKEY, M.D. (Alta.), Clinical Assistant Professor (Orthopaedics).
- ROSS ROBERTSON, M.D. (Toronto), F.R.C.S. (C), F.A.C.S., Clinical Assistant Professor.
- DEREK G. SIMPSON, M.B., Ch.B. (New Zealand), F.R.C.S. (Eng.), F.R.C.S. (Edin.), D.O.M.S. (London), Clinical Assistant Professor (Ophthalmology).
- BENJAMIN W. TANTON, M.D. (McGill), Clinical Assistant Professor (Otolaryngology).
- ROGER WILSON, M.D., C.M. (McGill), F.R.C.S. (C), F.R.C.S. (Eng.), Clinical Assistant Professor.
- EDWARD H. ALEXANDER, M.D. (Man.), Clinical Instructor (Otolaryngology).
- JOHN D. F. ALEXANDER, M.D., C.M. (McGill), F.R.C.S.(C), Clinical Instructor.

- CAMERON S. ALLEN, M.D., Ch.M. (Man.), M.S. (Minn.), F.R.C.S.(C), F.A.C.S., Clinical Instructor (Orthopaedics).
- JOHN W. ARBUCKLE, JR., M.D., C.M. (McGill), F.R.C.S.(C), Clinical Instructor (Urology).
- P. G. ASHMORE, M.D. (Toronto), F.R.C.S.(C), Clinical Instructor.
- FRANK ROY ATTRIDGE, M.D. (Man.), Clinical Instructor (Otolaryngology).
- W. ERIC AUSTIN, M.D. (Man.), F.R.C.S. (Edin.), F.A.C.S., F.R.C.S.(C), Clinical Instructor.
- GARNET A. BADGER, M.D. (Alta.), Clinical Instructor (Otolaryngology).
- NATHANIEL J. BLAIR, B.Sc., M.D. (Man.), Clinical Instructor (Otolaryngology).
- JOHN JAMES CARROLL, B.A. (Bishop's), M.D., C.M. (McGill), Clinical Instructor (Anaesthesiology).
- HAROLD LEO CHAMBERS, B.A. (Sask.), M.D. (Toronto), Clinical Instructor (Urology).
- JONE CHANG, M.D. (Toronto), F.R.C.P.(C), Clinical Instructor (Anaesthesiology).
- WILLIAM J. CHARLTON, M.D. (Man.), F.R.C.S.(C), Clinical Instructor.
- JOSEPH W. CLUFF, B.Sc. (Sask.), M.D. (Man.), F.R.C.S.(C), Clinical Instructor (Neurosurgery).
- ALVIN COHEN, M.D. (Man.), Clinical Instructor (Ophthalmology).
- C. E. COOK, M.D. (Alta.), F.R.C.S.(C), Clinical Instructor in Orthopaedics.
- HARRY G. COOPER, B.A., M.D. (Alta.), Clinical Instructor (Urology).
- ROBERT J. COWAN, M.D. (Toronto), F.R.C.S. (C), Clinical Instructor.
- LOIS D. CRAWFORD, M.D. (Toronto), Clinical Instructor (Anaesthesiology).
- CHARLES E. DAVIES, M.D. (Alta.), Clinical Instructor (Ophthalmology).
- LOIS DAVIES, M.D. (Toronto), Clinical Instructor (Anaesthesiology).
- G. F. DAY, B.Sc. (Mt. Allison), M.D. (Dalhousie) Clinical Instructor (Anaesthesiology).
- WILLIAM A. DODDS, M.D. (Toronto), Clinical Instructor (Anaesthesiology).
- LUCILLE ELLISON, M.D. (Man.), Clinical Instructor (Therapeutic Radiology).
- W. HARRY FAHRNT, M.D. (Man.), F.R.C.S. (Edin.), F.R.C.S.(C), Clinical Instructor (Orthopaedics).
- J. R. FARISH, B.A. (Brit. Col.), M.D. (McGill), F.R.C.S.(C), Clinical Instructor.
- KELVIN ORR FLEMING, B.A. (Brit. Col.), M.D., C.M. (McGill), Clinical Instructor (Ophthalmology).
- LEONARD B. FRATKIN, B.Sc., M.D. (Alta.), F.R.C.S. (C), Clinical Instructor.
- JOHN W. FROST, B.A. (Brit. Col.), M.D., C.M. (McGill), Clinical Instructor.
- JOHN A. GANSHORN, M.D. (Man.), M.S. (Minn.), Clinical Instructor.
- HECTOR S. GILLESPIE, M.D. (Toronto), F.R.C.S.(C), Clinical Instructor (Orthopaedics).
- ROBERT H. GOURLAY, M.D., C.M. (McGill), F.R.C.S.(C), Clinical Instructor.
- FREDERICK W. GRAUER, B.S.A. (Brit. Col.), M.D., C.M. (McGill), F.R.C.S. (Edin.), F.A.C.S., F.I.C.S., F.R.C.S.(C), Clinical Instructor.
- EDWIN ROBERT HALL, B.Sc., M.D. (Alta.), Clinical Instructor (Anaesthesiology).
- WILLIAM M. HALL, M.D. (Alta.), Clinical Instructor (Anaesthesiology).
- MARGARET F. B. HARDIE, M.B. (Toronto), Clinical Instructor (Therapeutic Radiology).
- JEAN T. HUGILL, B.Sc., M.D. (Alta.), Clinical Instructor (Anaesthesiology).
- A. M. INGLIS, M.D. (Man.), F.R.C.S. (C), Clinical Instructor (Orthopaedics).

- JOHN A. IRVING, M.D. (Queen's), Clinical Instructor (Ophthalmology).
PAUL P. JACKSON, B.S. (E. Central State Coll.), M.D. (Oklahoma), Clinical Instructor.
GORDON C. JOHNSTON, B.A., M.D. (Alta.), F.R.C.S.(C), Clinical Instructor.
HAROLD ANDERSON KESTER, B.A., M.D. (Western Ont.), Clinical Instructor (Anaesthesiology).
GORDON C. LARGE, M.D. (Toronto), F.A.C.S., Clinical Instructor (Otolaryngology).
ERIC C. H. LEHMANN, M.D. (Toronto), Clinical Instructor (Orthopaedics).
PETER O. LEHMANN, M.D. (Man.), Clinical Instructor (Neurosurgery).
HENRY B. LOCKHART, B.Sc., (N.B.), M.D. (Toronto), F.R.C.S.(C), Clinical Instructor (Otolaryngology).
ARTHUR B. MANSON, M.D.,C.M. (McGill), Clinical Instructor.
JAMES F. MINNES, M.D. (McGill), Clinical Instructor (Ophthalmology).
J. R. MOORE, B.A., M.D.,C.M. (McGill), F.R.C.S.(C), D.A.B.S., Teaching Fellow.
K. S. MORTON, B.A., M.Sc. (Brit. Col.), M.D. (McGill), F.R.C.S.(C), Teaching Fellow (Orthopaedics).
W. ARTHUR MORTON, M.B., Ch.B., F.R.C.S. (Edin.), Clinical Instructor.
D. FRASER MURRAY, B.A., M.D.,C.M. (McGill), Clinical Instructor.
J. E. MUSGROVE, M.D. (Man.), Clinical Instructor.
JOHN A. McCaffrey, M.D. (Toronto), Clinical Instructor (Urology).
JOHN A. MacDOUGALL, M.D. (Man.), F.R.C.S. (Eng.), F.R.C.S.(C), Clinical Instructor.
SAMUEL A. McFETRIDGE, M.D. (Man.), F.R.C.S. (Edin.), Clinical Instructor.
ROBERT E. McKECHNIE, M.D.,C.M. (McGill), Clinical Instructor.
W. D. MCKINLAY, B.A. (Brit. Col.), M.D., C.M. (McGill), Clinical Instructor (Ophthalmology).
ANGUS ALEXANDER MACMILLAN, M.D.,C.M. (Queen's), Clinical Instructor (Anaesthesiology).
RONALD D. NASH, M.D. (Toronto), D.M.R.T. (London), Clinical Instructor (Therapeutic Radiology).
THOMAS R. OSLER, M.D.,C.M. (McGill), F.R.C.S.(C), Clinical Instructor.
ROY J. PAINE, B.A. (Brit. Col.), M.D.,C.M. (McGill), Clinical Instructor (Ophthalmology).
PETER B. PERCHESON, M.D.,C.M. (Queen's), F.R.C.P.(C), Clinical Instructor (Anaesthesiology).
THOMAS S. PERRETT, B.A., M.D. (Toronto), F.R.C.S.(C), Clinical Instructor.
JOHN CRANSTOUN POOLE, M.D. (Man.), Clinical Instructor (Anaesthesiology).
FREDERICK C. PRESTON, M.D., B.Sc. (Toronto), F.R.C.S.(C), Clinical Instructor (Orthopaedics).
HERBERT SAMUEL RANDALL, B.A. (N.B.), M.D.,C.M. (McGill), Clinical Instructor (Anaesthesiology).
EVERETT F. RAYNOR, M.D.,C.M. (Queen's), Clinical Instructor (Ophthalmology).
PETER REES-DAVIES, M.R.C.S. (Eng.), L.R.C.P. (London), F.R.C.S. (Eng.), F.R.C.S.(C), F.I.C.S., F.A.C.S., Clinical Instructor.
RICHARD E. ROBINS, M.D. (Western Ontario), Clinical Instructor.
COLIN A. SANDS, B.A. (Sask.), M.D. (Toronto), Clinical Instructor (Anaesthesiology).
GEORGE D. SAXTON, M.D. (Man.), F.R.C.S. (Edin.), Clinical Instructor.
M. H. SHULTZ, M.D. (Queen's), Clinical Instructor (Anaesthesiology).

- R. E. SIMPSON, B.A., M.A. (Brit. Col.), M.D. (Queen's), Clinical Instructor (Anaesthesiology).
- G. E. SLEATH, B.A. (Brit. Col.), M.D. (Alta.), Clinical Instructor (Anaesthesiology).
- E. L. SMITH, B.A.Sc., B.A. (Brit. Col.), M.D., C.M. (McGill), Clinical Instructor (Ophthalmology).
- J. W. SPARKES, M.D. (Toronto), Clinical Instructor (Orthopaedics).
- DONALD E. STARR, M.D. (Toronto), F.A.C.S., F.I.C.S., Clinical Instructor (Orthopaedics).
- A. JAMES STEWART, B.A. (Brit. Col.) M.D. (McGill), Clinical Instructor (Ophthalmology).
- W. RONALD TAYLOR, B.Sc. (N.B.), M.D., C.M. (McGill), Clinical Instructor (Otolaryngology).
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GENERAL INFORMATION

Historical Sketch

The creation of a university in British Columbia was first advocated by Superintendent Jessop in 1877, but it was not until 1890 that the Provincial Legislature passed an act establishing a body politic and corporate named "The University of British Columbia." In 1891 this act was amended to require that a meeting of the Senate be held within one month after the election of the Senators by Convocation. The Senators were elected, but a quorum did not assemble on the date fixed by the Chancellor, Dr. I. W. Powell, of Victoria. Thus the first attempt to establish a university in British Columbia failed.

However, some of the work normally done in a university was begun in 1894, when an act was passed which permitted the affiliation of high schools in the Province with recognized Canadian universities. In 1899 Vancouver High School was affiliated with McGill University in order to provide First Year work in Arts, and took the name of Vancouver College. First Year work in Arts was offered by Victoria High School when it became Victoria College by affiliation with McGill University in 1902. In the same year Vancouver College undertook the Second Year in Arts.

In 1906 an act was passed incorporating the Royal Institution for the Advancement of Learning of British Columbia, which, in the same year, established at Vancouver the McGill University College of British Columbia. The scope of the work undertaken by this college was gradually increased until, at the time it was taken over by the University of British Columbia, it was giving three years in Arts and Science and two years in Applied Science. When the University of British Columbia opened in the autumn of 1915, both the McGill University College of Vancouver and Victoria College, which since 1907 had been a part of it, ceased to exist.

Definite steps to establish the University were taken by Dr. H. E. Young, Minister of Education, in 1907, when he introduced a "University Endowment Act." This act was followed in 1908 by an act establishing and incorporating the University of British Columbia and repealing the old act of 1890-1. This act, with its subsequent amendments, determines the present constitution of the University.

As authorized by an act passed by the Provincial Legislature in 1910, the Lieutenant-Governor in Council appointed a Site Commission to decide upon a site for the proposed University. The Commission held its first meeting on May 25th, 1910, in Victoria, and after a thorough examination of the Province recommended the vicinity of Vancouver. In the autumn the Executive Council decided to place the University at Point Grey—the site which the Commission had named as its first choice. In 1911 the Legislature passed an act authorizing the Lieutenant-Governor in Council to grant this site to the University. The grant was increased in 1915 and again in 1955, so that it now consists of approximately 1,000 acres at the extremity of Point Grey. The waters of the Gulf of Georgia form more than half the boundary of the University campus. A tract of some 3,000 acres of Government land immediately adjoining the site, and lying between it and the City of Vancouver, has been set aside by the Government in order that University revenue may be provided by its sale or lease.

In February, 1912, the Hon. H. E. Young, Minister of Education, called for competitive plans which should include plans in detail for four buildings to be erected immediately, and a block plan showing all the proposed buildings on the campus. Messrs. Sharp and Thompson, of Vancouver,

B. C., were the successful competitors, and were appointed University Architects.

The first Convocation, held on August 21st, 1912, chose Mr. F. L. Carter-Cotton as first Chancellor of the University. When he retired at the end of two terms in 1918, Dr. R. E. McKechnie was elected Chancellor, and served continuously until his death, May 24th, 1944. On September 18th of that year the Hon. Eric W. Hamber was elected by acclamation to fill out Dr. McKechnie's unexpired term, and in 1945 and 1948, again by acclamation, for the ensuing regular terms. Upon his retirement on May 28th, 1951, Chancellor Hamber was succeeded by Brigadier Sherwood Lett, one of the first graduates of this University, and became the University's first Chancellor Emeritus.

In March, 1913, the Lieutenant-Governor in Council appointed as first President of the University F. F. Wesbrook, M.A., M.D., C.M., LL.D. On his death, October 20th, 1918, L. S. Klinck, Dean of the Faculty of Agriculture, was appointed by the Board of Governors as Acting President, and on June 1st, 1919, as President. When he retired, June 30th, 1944, he was succeeded by Dr. Norman A. M. MacKenzie.

From its opening in 1915 till the summer of 1925, the University carried on its work in temporary quarters on part of the site of the General Hospital in Fairview.

Construction work was commenced on the Science Building (the present Chemistry Building) at the permanent site in Point Grey in 1914, but was interrupted because of war conditions. Work on this building was resumed in 1923, and in the autumn of the same year the contract was let for the Library. These two buildings, which are of stone and are fireproof, conform closely to the original plans as prepared by the architects in 1914. The initial units of these structures, as well as nine other buildings which are of a less permanent character, were completed in 1925, and at the beginning of the session 1925-26 the University commenced work in its new quarters.

The inauguration of the new buildings was held on October 15th and 16th, 1925, on which occasion honorary degrees were granted by the University for the first time.

In the period before the Second World War the following notable additions were made to the University buildings: what is now the Women's Gymnasium, in 1929; the Brock Memorial Building, in 1936; and the first section of the Grandstand for the Stadium, in 1937. During the war the University Armoury was built, the main section in 1941 and an extension to complete the structure in 1943.

Following the war a great many temporary buildings, chiefly converted army huts, were provided to accommodate the greatly increased enrolment caused by the return of veterans to the University.

In 1945, the Provincial Government authorized the construction of further permanent buildings. Under this programme, the Physics Building was completed in 1947; a wing was built on the Library in 1948, and, in the same year, the Power House was enlarged. The Home Economics Building was finished in 1949. In 1950 the Engineering Building and the Biological Sciences and Pharmacy Building were opened. In 1951 the first three units of the Women's Residences were occupied, the War Memorial Gymnasium was officially opened, a building for bacteriology and medical services was completed, and the new Law Building was brought into use.

The Constitution of the University

The Constitution of the University is governed by the British Columbia University Act, B.C.R.S. 1936, c. 299, and Amending Acts, which provide:

That the University shall consist of a Chancellor, Convocation, Board of Governors, Senate, Faculty Council, and the Faculties; that the Convocation shall be composed of the Chancellor, the Senate, all persons who became members of the Convocation prior to the first day of January, 1919, all persons holding academic appointments with the University and whose names are added to the roll of Convocation by the Registrar of the University from time to time upon instruction from the President, and all persons who have become graduates of the University; that the Chancellor shall be elected by the members of the Convocation; that the Board of Governors shall consist of eleven members—the Chancellor, who shall be the Chairman thereof, the President, three persons elected by the Senate from among its members, and six members appointed by the Lieutenant-Governor in Council; that the Senate shall consist of: (a) The Chancellor, and the President of the University, who shall be chairman thereof; (b) the deans and two professors of each of the Faculties elected by members of the Faculty; (c) three members to be appointed by the Lieutenant-Governor in council; (d) the principals of the normal schools; (e) one member elected by the high school principals and assistants who are actually engaged in teaching; (f) one member to be elected by the governing body of every affiliated college or school in this Province; (g) fifteen members to be elected by Convocation from the members thereof; (h) one member elected by the British Columbia Teachers' Federation.

It is further provided that the University shall be non-sectarian.

The University Act gives the University full powers to grant such degrees in the several faculties and different branches of knowledge as the Senate may from time to time determine. It reserves for the University the sole right in this Province to confer degrees, except in theology, and it expressly enacts that "No other university having corporate powers capable of being exercised within the Province shall be known by the same name, nor shall any such university have power to grant degrees."

Library

The Library collections number approximately 325,000 volumes, including representative works in all fields in which the University gives instruction and several noteworthy groups of materials. The collection is strong in serial publications, including scholarly periodicals and transactions of learned and scientific societies; and in certain fields, notably Canadiana (including French-Canadiana), forestry, fisheries, and Slavonic studies, the Library has rich holdings. The Howay-Reid Collection, which is maintained in a separate room, comprises the combined libraries of the late Judge F. W. Howay and the late Dr. Robie L. Reid, both of whom had assembled fine collections of Canadian history, the Pound Collection of Canadian literature, and the A. J. T. Taylor Collection of material pertaining to the Arctic. Extensive acquisitions of publications on forestry have been made possible by the fund provided by Dr. H. R. MacMillan; and the Koerner funds, the B.C. Packers Fund, and grants from the Rockefeller and Carnegie foundations have greatly enriched the collections in other subject fields.

The University Library is housed in a spacious building, the first part of which was occupied in 1925. The North Wing, which was completed in 1948, more than doubled the space which had been available for readers, books, and staff. A general reading room, a Fine Arts Room, the Howay-Reid Collection, and the Sedgewick Memorial Reading Room are maintained in the older part of the building; and a reserve book reading room, a periodicals reading room, seminar rooms, and the Ridington Reference

Room are provided in the new. The last, named in honor of the late John Ridington, first Librarian of the University, contains a large number of encyclopedias, dictionaries, indexes, and other works for consultation which are available on open shelves for convenient use.

The Library is organized in five divisions, Acquisitions, Cataloguing, Serials, Circulation, and Reference, each of which is administered by experienced, professional librarians. It also operates the Extension Library, which serves the book needs of the Department of Extension and supplements existing library facilities throughout the Province. A Bio-Medical Library provides service to the Faculty of Medicine through a reading and reference room in the main Library building and a branch at the Vancouver General Hospital. A pamphlet, "Know Your Library", giving information about Library use, is always available in the Library building.

While classes are in progress, the University Library is open regularly from 8:00 a.m. until 10:00 p.m., Mondays through Fridays, and from 8:00 a.m. until 5:00 p.m. on Saturdays. Between terms, and at certain other times, the Library usually is open from 9:00 a.m. until 5:00 p.m., Mondays through Fridays, and from 9:00 a.m. until 12 noon on Saturdays. Access to the book stacks, assignment to study carrels, and other facilities for special study are made available to students whenever possible. Microfilm, microcard, and microprint reading machines are available for use in the Library, and photographic copies of materials in the collections can be obtained.

The collections and services of the Library, though maintained primarily for the students and staff of the University, may be utilized by persons outside of the University who are engaged in studies which cannot be advantageously pursued in other libraries in the Province. Persons who wish to qualify as "extra-mural readers" must make application to the Librarian and are required to pay a fee of \$1.00 per calendar year.

Museums

These consist of (1) the Anthropological Museum, housed on the first floor of the Library; (2) the Geological Museum, in Room 116, the adjoining hall and in Room 119, Forestry and Geology Building; (3) the Zoological Museum, housed in various rooms of the Biological Sciences Building; (4) the Botanical Collections and Herbarium.

The Anthropological Museum containing about 15,000 catalogued items includes the Burnett and Raley collections as well as others; the Buttmer and other collections of Indian baskets; the Michell Pierce collection of Eskimo clothing and utensils. The Burnett Collection was made by the late Frank Burnett who donated it. It contains groups of artifacts representative of the ethnology and archaeology of various parts of the Pacific Basin. The largest unit is from the Melanesian Islands of the South Pacific, but Indonesia and North and South America are also strongly represented.

The collection made by Dr. G. H. Raley and donated by Dr. H. R. MacMillan is especially full in artifacts from Kitimat. An unusually rich collection of ceremonial material from the Southern Kwakiutl has been donated by Dr. MacMillan.

The Geological Museum is designed for the visual instruction of students and visitors and is closely coordinated with the teaching of the Division of Geology.

There are on exhibit ten table cases of minerals in systematic arrangement; a fine case of fluorescent minerals; a case of meteorites; three table cases of ore specimens from well-known mines; eight table cases of fossils representing the geological periods; three standing cases of prehistoric fishes, reptiles, birds and mammals. A table case represents the primates and early man. Other exhibits include pleistocene mammal remains from

the placer gravels of Yukon and Alaska, the skull and antlers of an Irish Elk and fine modern game heads.

In the study material, the Sutton collection includes 728 mineral species from 4036 localities. Its thousands of specimens are systematically arranged in readily accessible trays. Many trays of rock represent various parts of Canada, Hong Kong, and elsewhere. Upwards of 500 trays of fossils represent work done by students and staff over the past 35 years in Canada, Hong Kong and other places.

Of special interest are a geological model of the Assynt Mountains of Scotland by Peach and Home, and a fine mounted hooded dinosaur, *Lambeosaurus* sp. from Steveston, Alberta, on permanent loan from the National Museum, Ottawa.

The Zoological Museum, containing material representative of both the vertebrate and the invertebrate fields, is housed in the Biological Sciences Building. The collection of marine invertebrates of the north-eastern Pacific Ocean is one of the largest extant. The Kenneth Racey collection of birds and mammals was acquired in 1954. The collections of vertebrates exclusive of fish now number about 8,200 birds, 7,000 mammals, 1,000 amphibians and reptiles. A collection of 12 beautifully mounted heads of B.C. game, donated by Messrs. G. L. and R. J. Pop, hangs on the walls of Room 100, Forestry and Geology Building, and a fine set of African game horns, donated by Mr. W. F. Byers, hangs in Room 120 of the same building.

The ichthyological collection has been re-organized. Dr. H. R. MacMillan made possible the collecting of shore fishes from the Revillagigedo Islands, the coast of Peru, the Galapagos and Cocos islands. The museum now contains 20,000 collections of about 1,500 species. These are housed in the new fire-proof fisheries museum, a gift to the University by Dr. H. R. MacMillan.

The insect collection now numbers about 350,000. The collection of animal parasites has been supplemented during the year with the cooperation of the Game Commission.

The Herbarium consists of dried plant specimens housed in cases in the Biological Sciences Building. All groups from the Algae to the Flowering Plants are represented. The total number of flowering plants and ferns is about 46,000 sheets. An effort is being made to preserve in this collection all species known to occur in the province. Its value in this regard has been greatly augmented through the donation by Mr. J. W. Eastham of several thousand B.C. specimens. In addition it contains a number of smaller collections by other botanists working in the province.

The collections are freely available to students and research institutions.

Women's Gymnasium

This building was completed in 1929 and presented to the University by the Alma Mater Society.

War Memorial Gymnasium

The Memorial Gymnasium was officially dedicated on October 26th, 1951. This building, which cost almost \$800,000, was the result of a student-alumni campaign to honour the men and women of British Columbia who served in World War I and World War II. It was financed by public subscriptions, a Provincial Government grant, and in major degree by a special student levy. Future plans call for the finishing of certain portions of the building and its integration with the Swimming Pool.

Swimming Pool

During 1954 an open-air swimming pool was built adjoining the Memorial Gymnasium to provide for the swimming and diving events of the British Empire and Commonwealth Games held during the first week of August. A gift from the British Empire and Commonwealth Games Canada (1954) Society, the pool is 50 feet wide and 165 feet long. Under the 10 metre diving tower the water is 16'6" deep. During the Games the pool was surrounded by 6,000 seats.

Stadium and Playing Fields

The main playing field area, about 16 acres, is situated east of the East Mall and north of the University Boulevard. Development work was started early in January, 1931, and was made possible through funds provided chiefly by subscriptions from the faculty, students, and friends of the University.

The William Eugene MacInnes Field is situated in an area northeast of the War Memorial Gymnasium. This field was made possible by contributions from Mr. and Mrs. W. H. MacInnes in memory of their son, a graduate of this University in the combined course of Arts and Mining Engineering.

In addition to these areas, three other full-sized fields and a number of smaller areas have been set aside for outdoor games.

The first section of the grandstand for the stadium, a covered reinforced concrete structure, erected in the summer of 1937 on the west side of the main playing field, seats 1,600 spectators. On either side are two wooden bleacher sections of 500 seats each. In 1946 a wooden grandstand section providing 1,000 covered seats was added to the east side. During the fall of 1954 this stand was divided to permit the installation of 2,700 semi-permanent seats which were moved from the Swimming Pool. Underneath the present main stand there are locker rooms, dressing rooms, showers, etc. Funds for the construction of the grandstand were provided through a \$40,000 bond issue sponsored by the Alma Mater Society. A television gondola, suspended from the roof supports, was added in November, 1954.

The School of Physical Education also uses certain temporary accommodation for dance classes and recreational activities. An airforce hangar brought to the campus in the fall of 1946, and reconstructed as an athletic Field House in January, 1948, is used for archery, badminton, golf, tennis, as well as track and field and various team practices.

The Brock Memorial Building

In connection with the celebration of the twenty-first anniversary of the opening of the University in 1936, it was decided that a memorial be established by general appeal to students, graduates, and friends of the University throughout Canada. A committee representing all branches of the University decided that the memorial should take the form of a student union building, dedicated to the memory of the late Dean of Applied Science, Reginald W. Brock, and Mrs. Brock, by whose tragic deaths as a result of an aeroplane accident the University suffered a great loss.

The original fund for the construction of the building was subscribed by relatives of Dean and Mrs. Brock, friends of the University throughout Canada and the United States, alumni and students of the University, and former colleagues of Dean Brock. The balance of the amount required to complete construction was provided by the students and the Board of Governors in cash and through a bond issue of the Alma Mater Society.

Furnishings for the building were provided from a fund raised over a period of years by the Women's Union Building Committee of the University. The Brock Memorial Building was dedicated in January, 1940.

The building is situated adjacent to the playing fields and the Women's Gymnasium. Located in the main building are the offices of the Alma Mater Society, the University Radio and Television Society, and the Publications Board. The building also contains a women's common room, a television and recreation room, lunch and tea rooms, and, of course, the main Brock Lounge.

The north wing, known as the Brock Extension, will be completed this year by funds from a student levy. This modern extension will contain a recreational area with billiard and ping-pong tables, a dance floor, barber shop, art gallery, and lounge. It will also house the offices of the Alumni Association, the College Shop, and various club offices and meeting rooms.

The Art Centre (Gallery and Workshop)

The University Art Centre was opened in December, 1948. It is included among the activities of the Fine Arts Committee and now plays an important part in campus life. The Centre was equipped through the generosity of the University Chapter of the I.O.D.E., and others, as a memorial to the late Dean Mary L. Bollert, and continues to be substantially financed by the University Chapter of the I.O.D.E.

The Centre includes an Art Gallery and a Workshop. The Workshop is equipped for the teaching of ceramics, painting, sculpture and weaving and other applied arts and is run mainly by the Extension Department which gives non-credit courses in these fields.

The Art Gallery has no permanent collection but maintains a continuous display of loan exhibitions. These are rented or borrowed from the National Gallery, the Museum of Modern Art, the Western Canada Art Circuit, the Western (American) Association of Art Museum Directors and other galleries and circuits. Other shows are exhibited, on the invitation of the Art Gallery, by local and other artists, art organizations and institutions. Because it has these numerous sources of material, the Gallery is able to bring to the University a wide variety of exhibitions which are representative of the principal trends in art. Many of the exhibitions are accompanied by explanatory talks, given by the artists concerned, the Curator and other members of Faculty, and by discussions.

The Gallery is under the supervision of the Curator and is open from 10.30 a.m. to 5.00 p.m., Tuesday through Saturday, and from 7.00 to 9.00 on Tuesday evenings.

The British Columbia Research Council

The British Columbia Research Council was established in 1944. It has its headquarters and laboratories on the campus of the University. The Council works in the closest cooperation with the various science departments of the University of British Columbia. Its programme includes both fundamental and applied research. The latter is directed particularly toward those fields which are of greatest interest to British Columbia industry. The Council undertakes contract research work for industry on a confidential basis. It has a total staff of fifty-five, of which twenty-nine are professional scientists, engineers, statisticians and economists.

Connaught Medical Research Laboratories Western Division

In 1935, under a cooperative arrangement involving the University, the Provincial Department of Health of British Columbia, and the Connaught Medical Research Laboratories of the University of Toronto, the latter institution established a Western Division on the campus. At that time, the

University's research programme was limited, and hence this gesture of faith from a sister university in the validity and necessity of research was timely and stimulating. For sixteen years, the Western Division of the Connaught Medical Research Laboratories shared a portion of the very crowded quarters occupied by the Department of Bacteriology and Preventive Medicine in the Science Building. In 1951, it transferred to part of the top floor of Wing A in the new Wesbrook Building. Research projects in microbiology as applied to public health and preventive medicine are pursued here in conjunction with students and staff of the Department of Bacteriology and Immunology.

Forest Products Laboratory

The Vancouver Laboratory is a unit of the Forest Products Laboratories Division of the Forestry Branch, Department of Northern Affairs and National Resources, Canada, and is maintained by the Federal Government for the conduct of research in wood products. The Laboratory is housed in seven buildings on the University campus. Four of these buildings have been provided and are maintained through a cooperative agreement between the University and the Federal Government. A new permanent building is under construction on Marine Drive and is expected to be completed by 1958.

Plan of Campus

The plan at the back of the Calendar shows the buildings which have been erected and indicates the nature of their construction.

The University Health Service

The University Health Service is located in Wing B of the Wesbrook Building and comprises an up-to-date and well staffed Out-Patient Department on the main floor together with a twenty-six bed hospital on the third floor. The Health Service is not a teaching department, being maintained solely for the benefit of students who may require medical care and advice, especially those whose homes are not in Vancouver or vicinity, or who have no regular family doctor.

In addition to providing medical and nursing care and investigation of any health problems arising in students, the Health Service also carries out the compulsory routine medical examinations required by the University.

Requirements of the University Health Service

Medical Examinations

1. Each new University student is required to have a medical examination. Information regarding this will be given to each student on his application for enrollment.
2. Students registered in the Second Year (ex-service excepted) must report for a re-check medical examination to determine their capacity for physical exercise. They are advised to make their appointment at the time of registration.
3. Students registering for the Physical Education degree course must have a yearly medical examination completed within the first two weeks of the session. They are advised to make their appointment at the time of registration.
4. In order to complete registration in the Faculty of Medicine, successful applicants who are taking a pre-medical course at the University of British Columbia are required to pass a physical examination at the University Health Service in the month of April preceding admission. Successful

applicants from other institutions must pass this examination at the earliest practicable date in their first term of residence. Registration is not considered to be completed until the examination has been taken and passed. Immunization against certain diseases is required. Students registering in Second, Third, and Fourth Year of Medicine must have a medical examination in the first week of each session. The appointment for this should be made through the office of the Faculty of Medicine.

Applicants having physical handicaps which require periodic medical attention, or which interfere with normal activities, must submit a medical certificate with their application. In this certificate, the examining physician should describe the extent of the deformity or lesion and estimate its effect upon the applicant's future ability to practice medicine.

5. Postgraduate students attending this University for the first time are to have a medical examination completed by their family physician. The medical form is to be obtained from the Registrar and submitted to the Health Service office.

6. Students who are members of athletic teams must have a yearly medical examination preceding active participation. The team manager will make the appointment and will check each student's physical capacity card before the first game.

7. Students who have been away from the University for a year or more are also required to report.

At the time of the examination the student is informed of any physical defect, given advice, and urged to have remediable conditions corrected.

Evidence, satisfactory to the Medical Officers, of successful immunization against smallpox is required.

The Medical Officers are available by appointment for consultation with students on health problems.

Control of Communicable Diseases

Preventive tests and inoculations are given by the Health Service.

1. Tuberculosis.

A Chest X-ray examination is provided by the University Health Service, in cooperation with the Provincial Board of Health, Tuberculosis Division. It is part of the medical examination and all other students are urged to have a yearly X-ray. There is no charge for this service. In addition certain groups of students are offered tuberculin testing and BCG vaccination where indicated.

2. Other Communicable Diseases.

The development of any communicable disease in a University student or any person living in the same house must be reported by the student to the University Health Service without delay. Students exposed to communicable disease may be permitted, by special order of the Medical Officer, to attend the University for a prescribed period, despite the exposure.

Routine Regarding Sickness and Injury

1. Students developing any illness are required to report to:

(a) The Health Service on the first day of illness. (Phone ALma 1191—Health Service.) Absence from Physical Education classes should be mentioned at the time of reporting.

(b) The dean of the faculty if absent one week or more.

2. Students absent three days or more on account of illness must report for re-admission before attending lectures.

3. (a) Students having a physician in attendance are advised to report with a medical certificate.

(b) Students absent from a *December or April examination must submit a certificate obtained from a doctor during their illness. This certificate must be in the Health Service office within 48 hours of the examinations.*

4. Students are reminded that those suffering any injury while on the campus should report for First Aid at the Health Service.

5. The development of any communicable disease in a University student or any person living in the same house *must be reported to the University Health Service without delay.*

6. If a student is ill and a communicable disease is suspected, he should stay at home and telephone the Health Service. If on the campus when symptoms develop, the student should report immediately to the office.

Summer Session

The University Health Service provides a health service for students attending the Summer Sessions. Details of this service may be found in the *Announcement of the Summer Session.*

Dean of Women

During the session the Dean of Women may be consulted by parents and students about academic courses, living conditions, vocational plans, or any other matters relating to the happiness or success of the women students.

University Accommodation for Women Students

Accommodation in the Women's Residences is intended, primarily, for First and Second Year students new to the campus. Senior women students (chiefly undergraduates) may apply to live at Acadia Camp. Students needing special diets cannot be housed in University accommodation.

Application forms, either for the Women's Residences or for Acadia Camp, can be obtained by applying to the Dean of Women's office. At the end of August rooms will be assigned to those students who have returned their completed forms, have been granted University admission by the Registrar's office, and have sent in \$25.00 deposit which will serve as caution money for those who come into residence. Of this, \$15.00 is forfeited if the student decides not to come and fails to notify the Dean of Women's office before September 6th or if the student leaves during the first term, and \$10.00 if she leaves at Christmas.

Students who manifestly neglect their studies or whose conduct is unsatisfactory will not be permitted to continue to occupy University accommodation.

In 1957-58 the charge for board and room in the Women's Residences will be \$468 (single) and \$447 (double), payable in two instalments — September and January. At Acadia Camp, rates will be \$437 (single) and \$409 (double).

Private Accommodation for Women Students

Since there is insufficient University accommodation to house all women students, women taking graduate or professional courses are not housed in the Residences nor, usually, in Acadia Camp. To provide for the needs of these students and for others who may prefer private accommodation, the Dean of Women's office lists private homes where students may obtain full board and room, room and breakfast only, or light housekeeping accommodation. Students wishing to work for their room and board should also apply to the Dean of Women's office. A preliminary list indicating vacancies at the close of term is prepared in the spring. After that, it is not usually possible to bring out any further lists until the autumn when infor-

mation is sent out in the order in which requests have been received during the summer. A file of available accommodation may be consulted by students in the Dean of Women's office during the University term.

The cost of board and room varies from \$55 to \$65 a month. Students should make sure whether they are being offered two or three meals a day at the price quoted. Room and breakfast can be obtained at from \$30 to \$35. Light housekeeping accommodation is available at from \$25 to \$35 a month. Meals and light refreshments can be obtained at several places on the campus.

Students who make individual arrangements for accommodation without using the help of the Dean of Women's office should note that the accommodation they have selected must meet with the approval of the Dean of Women and should be reported to her. Men and women students may not lodge in the same house unless they are members of the same family or receive special permission from the Dean of Women. Women students under twenty-five years of age will be permitted to occupy suites in apartment blocks only if they file in the Dean of Women's office a letter from their parents agreeing to this mode of living and accepting all responsibility for it.

Board and Lodging for Men Students

Information concerning board and lodging for men students may be obtained from the office of the Housing Administrator, Room 205A Physics Building.

In private homes, in areas within a reasonable distance from the University, the charges for board and room vary from \$60 to \$70 per month, for room and breakfast from \$30 to \$40, and for room only \$25 to \$35 per month. Meals may be obtained in the University Cafeteria, in the Brock Building, and the Coffee Bar at the bus depot.

The University has accommodation for 772 men students in temporary dormitories located on or adjacent to the campus. These dormitories are grouped in two units known as Fort Camp and Acadia Camp. Each has its own dining and recreational facilities and in general offers many of the advantages usually found in more permanent residences.

During 1957-58 the rates for board and lodging in Acadia and Fort Camps will be as follows:

Double Room—	\$176.00—First Term
	\$233.00—Second Term
Single Room—	\$188.00—First Term
	\$249.00—Second Term

Students are *required* to pay for the first term charges in *full* on or before September 3rd and the second term charges on or before January 2nd.

A caution money deposit of \$25 is payable with the application. Any student moving out of a dormitory during either term must give two weeks' notice. Students who leave a dormitory during either term will forfeit \$15 of their deposit. Those who leave at the end of the first term will forfeit \$10.

Students wishing accommodation in one of the Camp dormitories should apply to the Housing Administrator for application forms. Since the amount of accommodation is limited and not sufficient for all who apply, students are advised to make application early. Only those students carrying a full programme of studies at the University will be eligible to receive, and to remain in, dormitory accommodation.

Students who fail to pay at least the first instalment of their board and lodging by September 3rd, will have their application cancelled and \$10 of

their deposit will be forfeited. Those who withdraw their applications after September 3rd, will forfeit \$15 of their deposit.

Students who have been assigned dormitory accommodation may occupy their rooms on Friday evening, September 20th. Meals will be available commencing September 21st.

Any new students and others who arrive for registration between September 16th and 20th may obtain temporary accommodation in the dormitories at a nominal charge of 50c per night. Meals may be obtained either at the Camp dining rooms or on the campus.

Students in Medicine and in other fields whose courses commence before September 21st, will be given a flat rate for the additional period.

Personnel Office

The University Personnel office, situated in M7 on the West Mall, has five main functions: (a) Counselling, (b) Placement, (c) Testing, (d) Veterans' Affairs and (e) Staff Personnel.

Enquiries should be addressed to the Director of Personnel and Student Services, University of British Columbia, Vancouver 8, B. C.

(a) *Counselling*: Full-time counsellors are available to confer with students regarding academic, vocational and personal problems. The office is open during the summer months and it is particularly desirable that students planning to enter the University secure an interview during June, July, and August. In assisting students the office maintains an up-to-date library of calendars or bulletins of all the major Canadian and American universities, together with a file on professional and vocational opportunities. Copies of the booklet *Career Planning for Students at the University* are available on request.

(b) *Testing*: The office administers special test batteries to new undergraduates on the following dates (batteries take approximately four hours):

Friday, May 31st: Auditorium, 1:00 p.m. This group of tests is arranged primarily for students on the Lower Mainland. Interviews will take place during the summer months.

Monday, September 16th: Auditorium, 10:00 a.m. The Dean of Administrative and Inter-Faculty Affairs will describe courses in the various faculties. All new students are invited to attend.

Monday, September 16th: Auditorium, 12:30 noon and 3:30 p.m. This group of tests is made available particularly for out-of-town students and all other First Year students not previously tested.

Testing and consultation for students in senior years is by appointment at any time throughout the year.

Testing of special groups will be announced during the term.

(c) *Placement*: The placement section endeavours, in cooperation with the various faculties concerned, to assist in securing part-time, vacation, and permanent employment for undergraduates and graduates. Close liaison with the National Employment Office is maintained. Registration for part-time employment should be made early in September. Registration for employment after graduation is made in December and for summer employment in March.

Self-help Programme: Employment opportunities on the campus are available for a limited number of students. In order that there may be as little interference with studies as possible and in order to take care of the maximum number of applicants, jobs will normally be limited to ten hours per week. Applicants for bursaries may be offered employment either in place of a bursary or as a supplement to a bursary. Applications for employment should be submitted early in September.

(d) *Veterans' Affairs and Educational Assistance Act*: All the facilities of the Personnel office are available to ex-service students. All ex-service students

on allowance and all students under the Educational Assistance Act must be interviewed by a counsellor on or before registration.

Information Office

This office provides the public with accurate, readily available information about the University. News releases to newspapers, radio and television stations, and publication of "UBC Reports", a bi-monthly paper with a mailing list of 20,000 friends and alumni, ensure that the people of the Province are informed about the University in all its fields of activities.

General Conduct

The University authorities do not assume responsibilities which naturally rest with parents. This being so, it is the policy of the University to rely on the good sense and on the home training of students for the preservation of good moral standards.

The Session

The academic year begins on the first of September and ends on the last day of August. The Winter Session is divided into two terms—the first, September to December; the second, January to May. The Summer Session consists of seven weeks' instruction in July and August. For *Admission Requirements*, see page 62, and for *Registration and Attendance*, see pages 64 to 66.

Courses of Study

The University offers instruction in each of the ten faculties, Arts and Science, Applied Science, Agriculture, Commerce and Business Administration, Law, Pharmacy, Medicine, Forestry, Education, and Graduate Studies. The Faculty of Arts and Science also includes the Schools of Home Economics, Physical Education, and Social Work; the Faculty of Applied Science, the Schools of Architecture and Nursing; and the Faculty of Graduate Studies, the Institutes of Oceanography and Fisheries.

The degrees offered are as follows:

FACULTY OF ARTS AND SCIENCE: Bachelor of Arts (B.A.); Bachelor of Science (B.Sc.); Bachelor of Home Economics (B.H.E.); Bachelor of Physical Education (B.P.E.); Bachelor of Social Work (B.S.W.); Master of Social Work (M.S.W.).

FACULTY OF APPLIED SCIENCE: Bachelor of Applied Science (B.A.Sc.); Bachelor of Science in Nursing (B.S.N.); Bachelor of Architecture (B.Arch.).

FACULTY OF AGRICULTURE: Bachelor of Science in Agriculture (B.S.A.).

FACULTY OF LAW: Bachelor of Laws (LL.B.).

FACULTY OF PHARMACY: Bachelor of Science in Pharmacy (B.S.P.).

FACULTY OF MEDICINE: Doctor of Medicine (M.D.).

FACULTY OF FORESTRY: Bachelor of Science in Forestry (B.S.F.).

FACULTY AND COLLEGE OF EDUCATION: Bachelor of Education (B.Ed.).

FACULTY OF COMMERCE AND BUSINESS ADMINISTRATION: Bachelor of Commerce (B.Com.).

FACULTY OF GRADUATE STUDIES: Master of Arts (M.A.); Master of Applied Science (M.A.Sc.); Master of Business Administration (M.B.A.); Master of Education (M.Ed.); Master of Forestry (M.F.); Master of Science (M.Sc.); Master of Science in Agriculture (M.S.A.); Doctor of Philosophy (Ph.D.).

In addition to the above, courses are offered in the Faculty of Commerce and Business Administration leading to a Diploma in Hospital Administration, in the Faculty of Applied Science to Diplomas in Public Health Nursing and in Clinical Supervision, in the Faculty of Agriculture to a Diploma in Agriculture (Occupational Course) and a Diploma in Horticulture respectively, and in the Faculty of Graduate Studies to a Diploma in Criminology.

HONORARY DEGREES

The degrees of Doctor of Laws (*Honoris Causa*), Doctor of Science (*Honoris Causa*) and Doctor of Letters (*Honoris Causa*) are the honorary degrees conferred from time to time by the Senate of the University upon persons who have achieved distinction in scholarship or public service.

Academic Dress

The undergraduate's gown is black in colour and of the ordinary stuff material, of ankle length, and with long sleeves and the yoke edged with khaki cord. The graduate's gown is the same, without cord.

The colours for the various degrees are:

B.A.	University blue,
B.Com.	same with white cord,
B.Ed.	white with cord of University blue,
B.H.E.	turquoise,
B.P.E.	malachite green,
B.S.N.	scarlet with twisted cord of University blue and white,
B.S.P.	dark green with cord of scarlet,
B.S.W.	magenta,
B.A.Sc.	scarlet,
B.Arch.	same with white cord,
B.S.F.	brown with green cord,
B.S.A.	maize,
B.Sc.	to be decided,
L.L.B.	amethyst violet,
M.D.	scarlet and royal blue,
M.Sc.	light blue,
Ph.D.	blue and gold.

The Master's hood (except M.Sc.) is the same as the Bachelor's, lined with the distinctive colour. The M.B.A. hood conforms similarly to that of the B.Com. The hood for the honorary degree of LL.D. is of scarlet broadcloth lined with dark blue velvet; that for the D.Sc. is the same with dark purple lining; and for the D.Litt., the same with cream lining.

ADMISSION REQUIREMENTS

All enquiries relating to admission to the University should be addressed to: The Registrar, The University of British Columbia, Vancouver 8, B. C., Canada.

1. **Qualification for Admission:** The minimum academic qualification for admission to the University is High School Graduation (University Programme) of the Province of British Columbia or its equivalent. This programme is approved by the Senate of the University for the purpose. A brief outline of the content of the programme is given later under *Matriculation Requirements*. Further information may be obtained from the Department of Education, Victoria, B. C. *No student will be admitted with incomplete or conditioned standing.*

2. **Admission Requirements of the Various Faculties and Schools:** For details students are referred to the appropriate sections in this Calendar.

3. **Qualification for Admission by other than British Columbia Certificate:** A candidate who wishes to enter by certificate other than that issued by the Department of Education, British Columbia, should submit the original documents to the Registrar. He should not come to the University without having first obtained from the Registrar a statement of the value of the certificates he holds.

Unless the applicant's diploma or certificate shows the gradings obtained in the several subjects of the work taken, he must arrange to have a state-

ment of his grades sent to the Registrar by the educational body issuing the diploma or certificate.

Original certificates will be permanently retained by the University unless accompanied by copies or unless the candidate pays the prescribed fee for making copies.

4. Admission with Advanced Standing:

- (a) *Senior Matriculation*: A student, qualified for admission, who has passed Grade XIII (Senior Matriculation) Examinations of British Columbia or their equivalent, may be given credit in the subjects passed, but only in the First Year in the Faculty of Arts and Science, the Faculty and College of Education, or the Faculty of Agriculture, and only insofar as these subjects meet the requirements of the First Year. No credit will be given for Senior Matriculation subjects passed subsequent to completion of First Year, nor will subjects of the First Year completed prior to subjects of Senior Matriculation be transferred to a higher year.
- (b) *Other Universities*: A student of another university applying for admission or for exemption in any subject or subjects is required to submit to the Registrar an official transcript of his record at the other university showing the subjects taken with the standing obtained in each. He may also be required to submit a detailed outline of each subject in the programme of courses he has followed, together with a copy of the calendar or catalogue of the university concerned.

5. Students from Other Countries: A student from a country where English is not the common language must satisfy the Registrar that his knowledge of English is adequate to permit the successful pursuit of his studies.

Should a student who is admitted, however, prove to be inadequately prepared in English and therefore not fully able to benefit by instruction, he will be required to attend non-credit classes in *Preparatory English* (English 90). He will be admitted to the credit courses in English and certain other subjects only after he has achieved reasonable competence in the work of the preparatory classes.

Advanced standing granted to a student on the basis of work completed in other countries will be tentative only, and is subject to review after the student has completed one or more sessions at this University.

A student coming directly from another country must give satisfactory evidence of his ability to meet the costs of tuition, board and room, books, and incidentals.

6. Limitation of Attendance:

- (a) The University reserves the right to limit attendance, and to limit the registration in, or to cancel or revise, any of the courses listed. The curricula described in the following pages may also be changed from time to time, as deemed advisable by Senate.
- (b) The University reserves the right of selection and admission of students entering the First and subsequent years of the course in Medicine, the First Year of the course in Pharmacy, all years in Nursing, and the courses in Social Work and Education.
- (c) Except in special circumstances, no student under the age of sixteen is admitted to the University. A student applying for admission to the course in Social Work is usually advised to wait until he is twenty-one years of age.

7. Matriculation Requirements:

The High School Graduation (University Programme) and Grade XIII (Senior Matriculation) Examinations of the Province of British Columbia are arranged by the High School and University Matriculation Board of the Province. This Board consists of members appointed by the Department of Education and by the University.

All inquiries relating to these examinations should be addressed to the Executive Secretary of the High School and University Matriculation Board, Division of Examinations, Department of Education, Victoria, B.C., Canada.

In order to graduate from High School in the University Programme a student must obtain credit in certain *constants* as follows: English (one course each year for four years), Social Studies (one course each year for three years), Mathematics (one course each year for three years), Science (one course each year for two years), foreign language (one course each year for two years in the same language). A course normally consists of one instructional period each day throughout the school year. The student must also obtain training in library techniques over a four-year period, and receive instruction in *Health and Personal Development* over a three-year period. In addition a minimum prescribed total of *electives* is required. These constants and/or electives must include three *major* subjects of the student's choice. The required majors must be chosen from among the following: English, Social Studies, Mathematics, Science, French, German, Latin, Spanish, Industrial Arts, Home Economics, Commerce, Vocational Commerce, Vocational Industrial, Vocational Agriculture, Agriculture, Technical Science, Technical-Vocational Correspondence, and Art. In certain instances a given major must be accompanied by a related major or majors. A major, in any subject indicated as a constant, includes at least one course, extending over a period of one school year, in addition to the requirements of the constant. A major in a subject not a constant includes certain courses in that subject chosen from among the electives. Further details may be obtained from the Office of the Registrar, Department of Education, Victoria.

REGISTRATION

Every student is required to state the names of all educational institutions of secondary or higher level attended and to submit evidence of the standing obtained at each.

The Registrar is empowered to register all duly qualified students. The faculty concerned will deal with the doubtful cases.

1. **Registration for New Students:** As a preliminary step, a student applying for registration for the first time in the University must obtain from the Registrar's office an *Application for Admission* form. The completed form, together with necessary certificates and a recent passport-type photograph of the applicant, should be submitted by September 1st in the case of a student proposing to attend the Winter Session and by June 1st for the Summer Session. (For application dates, Faculties of Medicine and Pharmacy and School of Social Work, students are referred to appropriate sections of the Calendar.)

Following receipt of this form the applicant will, in due course, be advised with respect to his admission and standing, and, if eligible, given instructions on procedure for completing registration (see 3, below).

2. **Re-registration:** A student in the regular Winter Session will be sent, along with a statement of his marks, a *Notice of Eligibility for Re-registration* if he has qualified for admission to the next higher year of his course, or an *Application for Re-registration*, as soon as possible after the sessional examinations.

Change of Programme: A student who wishes to transfer to another faculty or school within the University should notify the Registrar of his intentions well in advance of the opening of the next session.

Supplemental Examinations: If the results of supplemental examinations affect the eligibility of a student, he should obtain the results of the supplementals prior to application for re-registration.

3. **Completion of Registration:** *Registration must be completed in person* on the dates indicated in the *Academic Year*, page 5. Assessed fees are due and payable at the time of registration. No student will be permitted to complete registration until such fees have been paid. (See page 67.)

Each student is required as part of his first application to furnish the information necessary for the University record, and to sign the following declaration:

"I hereby accept and submit myself to the statutes, rules and regulations, and ordinances of The University of British Columbia, and of the faculty or faculties in which I am registered, and to any amendments thereto which may be made while I am a student of the University, and I promise to observe the same."

In the first and each subsequent registration the student is required to enroll for the particular classes which he proposes to attend.

In the information furnished for the University records, the student is requested to indicate his religious denomination. This information is available upon request to the representatives of the denominations.

4. **Change of Registration:** A student desiring to make a change in the programme of courses for which he has registered must apply to the Registrar's office. Except in special circumstances, no change will be permitted after October 4th.

All other pertinent changes, including those in address and telephone number, must be reported promptly to the Registrar's office.

5. **Student Responsibility:** Each student is responsible for the completeness and accuracy of his registration. He must ensure that there is no discrepancy between the programme he is following and that entered on his *course card* in the Registrar's office.

A student may not take courses for which he has not registered, and may not drop courses without permission.

CLASSIFICATION OF UNDERGRADUATE STUDENTS

1. **Full Undergraduate:** a student proceeding to a degree in any faculty, who has passed all the examinations precedent to the year in which he is registered.

2. **Conditioned Undergraduate:** a student proceeding to a degree with defects in his standing which do not prevent his entering a higher year under the regulations governing *Examinations and Advancement* of the faculty in which he is registered.

3. **Occasional Student:** a student who, although he may not have fully satisfied the admission requirements of the University, has been granted permission to enroll in certain courses and attend classes on the understanding that he will not be entitled to credit towards a degree for any work taken.

This category includes the student who, because of maturity, has been permitted to enroll in spite of deficiencies in his formal academic record. In the event that he obtains sufficiently high standing and indicates his desire to proceed to a degree, he may later be given credit by the faculty concerned for all or part of the work taken.

GRADUATION

Every candidate for a degree must make formal application for graduation at least one month prior to the Congregation at which he expects to be admitted to the degree. Special forms for this purpose are provided by the Registrar's office.

ATTENDANCE

1. **Attendance at Lectures:** A student is required to attend at least seven-eighths of the lectures in each course for which he is enrolled. Admission to a lecture or laboratory and credit for attendance may be refused by the instructor for lateness, misconduct, inattention, or neglect of duty.

2. **Deficient Attendance:** In case of deficient attendance a student may (with the sanction of the dean and the head of the department concerned) be excluded from the Christmas or the final examination in a course; but, in the case of a final examination, unless the unexcused absences exceed one-fourth of the total number of lectures in a course, the student may be permitted to sit for the supplemental examination. (See regulation in each faculty in reference to *Examinations and Advancement*.)

3. **Absence Consequent on Illness or Domestic Affliction:** Absences may be excused only by the dean of the faculty concerned, and medical certificates or other evidence must be presented for absence of three days or more. For procedure with respect to illness, or absence through illness, see page 57.

WITHDRAWAL

Any student who after registration decides to withdraw from the University must report to the Registrar's office. He will be required to obtain clearance from the University, to the satisfaction of the Registrar, before being granted *Honourable Dismissal* or recommended, where applicable, for refund of fees. (See page 67.)

SUPPLEMENTAL EXAMINATION CENTRES

Supplemental examinations may be written in August at the following centres: Cranbrook, Dawson Creek, Kamloops, Kitimat, Ocean Falls, Penticton, Powell River, Prince George, Prince Rupert, Trail, Victoria; and at Whitehorse, Y.T. Other centres outside of British Columbia are restricted to universities or their affiliated colleges.

Supplemental examinations for Summer Session students are held on the second day of the Summer Session at the University. Arrangements may be made for these examinations to be held at Victoria College.

Supplemental examinations for students enrolled in the Faculty of Medicine must be written at the University.

The fee for each supplemental examination written at the University is \$5.00, at any other centre, \$7.50.

Applications for supplemental examinations in respect of the Winter Session examinations, accompanied by the necessary fees, must be in the hands of the Registrar by July 15th.

RE-READING OF EXAMINATION PAPERS

Re-readings, where permitted by the faculty concerned, are governed by the following regulations:

1. Any request for the re-reading of an answer paper other than for a supplemental examination (in which a request for a re-reading will not be granted), must reach the Registrar within four weeks after the announcement of examination results and must be accompanied by a fee for each paper of \$5.00, which will be refunded only if the mark is raised.

2. Each applicant for a re-reading must state clearly why he believes the content of his paper to deserve a mark higher than it received; pleas on compassionate grounds should not form part of this statement and prospective applicants should remember that a paper with less than a passing mark has been read at least a second time before results are announced.

3. Re-readings will not be permitted in more than two papers (6 units) in the work of one academic year, and in one paper (3 units) in a partial course of 9 units or less or in the work of one Summer Session.

FEES

1. The University reserves the right to make changes without notice in its published schedule of fees.

2. All cheques must be certified and made payable to "The University of British Columbia".

3. In the Winter Session, undergraduate students taking not less than 12 units, and graduate students taking not less than 12 units excluding prerequisites, are subject to the same fees as full-time students (see section 10 (b) on page 69.)

4. The schedules below for full-time and partial students give fees payable by students in each Winter Session, including the "Alma Mater" fee but not the "Graduating Class" or "Hospital" fee.

5. The Alma Mater fee, authorized by the Board of Governors, is exacted from all students in the Winter Session for the support of the Alma Mater Society. This fee is \$18.00 for students taking more than 6 units of work, and \$10.00 for others. Inquiries with respect to this fee should be directed to the Alma Mater Society (Brock Memorial Building).

6. The Graduating Class fee, authorized by the Board of Governors, is exacted from all students in the Winter Session who are registered in the Final Year of a course leading to a Bachelor's or the M.D. degree. This fee of \$7.00 is for the support of the graduating class activities. Inquiries with respect to this fee should be directed to the Alma Mater Society (Brock Memorial Building).

7. In the Winter Session, no refund will be made for first term fees after November 1st, and for the second term fees after January 31st. In the computation of refunds prior to these dates an amount of \$10.00 will be charged for each week, or part of a week, prior to the date on which the student notifies the Registrar officially of his cancellation of registration, or his withdrawal from the University. Application for a refund must be made to the Accountant within a two-week period after the student has discontinued his work.

8. The first term fees must be fully paid before registration is accepted. Students are not entitled to admission to classes until they have registered. The second term fees become due and payable in full on the first day of lectures of the second term.

9. Fees are not transferable from one session to another.

10. The holder of a scholarship or bursary issued by or through the University must pay the balance of the first term fees on registration, if the first instalment of the scholarship or bursary is less than the first term fees; if the second instalment is less than the second term fees, he must pay the difference on or before the first day of lectures in the second term. If the first instalment of a scholarship or bursary exceeds the first term fees, the balance will be applied to the second term fees.

11. A student whose second term fees are not fully paid by January 18th will be excluded from classes and his registration cancelled.

12. If a student, whose registration has been cancelled because of non-payment of fees, applies for reinstatement and his reinstatement has been

approved by the dean of the faculty, he will be required to pay a reinstatement fee of \$10.00 together with all other outstanding fees before he is permitted to resume classes.

13. When permission to register late is granted a late fee of \$10.00, additional to all other fees, will be charged. This fee must be paid at the time of registration together with the first term fees.

14. All students in attendance at the Winter Session not eligible for benefits under the British Columbia Hospital Insurance Service, are required to pay, at the time of registration, a fee of \$10.00 which entitles them to the hospitalization services of the University Health Service Hospital, for admission from September 3rd, 1957 to May 10th, 1958. Students who are not eligible for coverage under the British Columbia Hospital Insurance Service and who have other types of insurance coverage may, however, be exempted from this fee provided at the time of registration they sign a declaration stating (a) that they hold such alternative insurance; and (b) that they will be personally responsible for any charges arising out of hospitalization. The University will not undertake to collect from agencies other than the British Columbia Hospital Insurance Service.

Full-time Students

First Term Fees—Payable in full at the time of registration.

Second Term Fees—Payable in full on or before the first day of lectures in the second term.

Note: The first term fees stated in the following schedule include the Alma Mater fee (paragraph 5, above), but not the Graduating Class fee (paragraph 6, above) or the Hospital fee (paragraph 14, above). Students registered in the graduating classes will be charged \$7.00 in addition to the amounts shown for first term fees.

Faculty and Course:	1st Term	2nd Term	Total
1. Arts and Science—			
Arts and Science (B.A. or B.Sc.)	\$130.00	\$110.00	\$240.00
Home Economics (B.H.E.)	130.00	110.00	240.00
Physical Education (B.P.E.)	130.00	110.00	240.00
Social Work (B.S.W.)	155.00	135.00	290.00
Social Work (M.S.W.)	130.00	110.00	240.00
2. Applied Science—			
Architecture (B.Arch.)	\$155.00	\$135.00	\$290.00
Engineering (B.A.Sc.)	155.00	135.00	290.00
Nursing (B.S.N. or Diploma)	130.00	110.00	240.00

(a) For Second and Third Year students in Nursing (i.e., students in the affiliated hospital) the total fees are \$5.00, payable on registration, which include a sessional fee of \$1.00 and an Alma Mater fee of \$4.00.

(b) Students admitted to a course for graduate nurses and proceeding to a diploma or a degree on the basis of part-time attendance will register as partial students.

3. Agriculture—	1st Term	2nd Term	Total
Agriculture (B.S.A.)	\$130.00	\$110.00	\$240.00
Occupational	85.00	65.00	150.00

Students transferring credit from the Occupational Course must pay the difference in fees at the time of transfer.

	1st Term	2nd Term	Total
4. Law (LL.B.)	\$155.00	\$135.00	\$290.00
5. Medicine (M.D.)	232.00	213.00	445.00
6. Pharmacy (B.S.P.)	155.00	135.00	290.00
7. Forestry (B.S.F.)	155.00	135.00	290.00
8. Education (B.Ed.)	130.00	110.00	240.00
9. Commerce and Business Administration (B.Com.)	155.00	135.00	290.00
10. Graduate Studies:			
(a) Graduate students not pursuing a course of study leading to a Master's or Doctor's degree will pay for 12 to 18 units inclusive, if taken in the course of a single Winter Session, a sessional fee of \$222.00 plus the Alma Mater Society fee of \$18.00. For a course of fewer than 12 units they will pay a sessional fee per unit of \$15.00 plus the Alma Mater fee. The Alma Mater fee for those taking 6 or fewer units is \$10.00; for all others it is \$18.00. Fees are payable in advance.			
(b) Graduate students proceeding to a Master's degree who are required to make up prerequisites, are subject to sessional fees of \$15.00 per unit for such prerequisite courses. A candidate who is given permission to write supplemental examinations in order to improve his standing, will be subject only to the supplemental examination fee in the course or courses concerned.			
(c) Candidates for a Master's degree who are pursuing a course requiring 30 units which can normally be completed in the space of two years are subject in each year to a sessional fee of \$222.00, payable in advance, plus the Alma Mater fee of \$18.00. No additional course fee will be required if not more than 6 additional units are taken, but if the course of study is prolonged beyond two calendar years the Alma Mater fee must be paid in respect of each subsequent Winter Session.			
(d) Candidates for a Master's degree pursuing a course of study normally requiring 18 units are subject to a sessional fee, payable in advance, of \$222.00 plus the Alma Mater fee of \$18.00. No additional course fee will be required if not more than 6 additional units are taken, but if the course is prolonged beyond a single calendar year the Alma Mater fee must be paid in respect of each subsequent Winter Session.			
(e) Candidates for the Ph.D. degree are subject to graduate fees for a full course (\$240.00), as set forth above, in respect of the first session in which they register as Ph.D. candidates. If a candidate is required to make up prerequisites to the Ph.D. course he is subject to sessional fees at the rate of \$15.00 per unit for the courses concerned in addition to the graduate fee for a full year, as above. In subsequent sessions during candidacy he is subject to an annual fee of \$10.00 only, payable on registration.			

†Partial Students (Undergraduates)

- For a course of 12 units or more:
The same as for full-time students.
- For a course of above 6 but below 12 units:
First Term—Fully payable at the time of registration:

Alma Mater fee	\$18.00
Sessional fee per unit	8.00

† Students in faculties whose courses are not on a unit basis should consult the Registrar.

Second Term—Fully payable on the first day of lectures of the second term:	
Sessional fee per unit	7.00
3. For a course of not more than 6 units:	
First Term—Fully payable at the time of registration:	
Alma Mater fee	\$10.00
Sessional fee per unit	8.00
Second Term—Fully payable on the first day of lectures of the second term:	
Sessional fee per unit	7.00

Extra-Sessional Courses

Fully payable at the time of registration:	
Sessional fee per unit	\$15.00

Summer Session

Fees payable on registration:	
Minimum Class Fee	\$22.50
Per Unit	15.00
Summer Session Association	2.00

Correspondence Courses

Correspondence fee at \$15.00 per unit, payable in three equal instalments as follows:

- First Instalment: at time of registration;
- Second Instalment: in advance of receiving ninth paper;
- Third Instalment: in advance of receiving eighteenth paper.

Correspondence courses must be completed within two years of the initial registration.

Special Fees

For late registration, Winter Session	\$10.00
For late registration, Extra-Sessional or Summer Session	2.00
For reinstatement after cancellation of registration	10.00
*Regular supplemental examination, per paper	5.00
*Supplemental examination at other centres, per paper	7.50
*Special examination (Applied Science, Agriculture, Forestry), per paper	7.50
*Re-readings, per paper	5.00
Library (mailing deposit)	2.00

*Supplemental examination fees in respect to Winter Session supplementals must be paid when application for examination is made and not later than July 15th. Special examination fees and fees for re-reading are payable with application.

Students borrowing books from the Library for preparatory reading will be required to make this deposit to cover mailing costs.

Laboratory coupons, per book.....	\$3.00
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These coupons may be used to pay for breakages in laboratory equipment, or for such other purposes as may be determined by the Board of Governors.

Fees for transcripts of academic record: first three free of charge; additional transcripts, \$1.00 each, except that when two or more additional copies are ordered at one time, the fee shall be \$1.00 for the first and 25 cents for each remaining copy.

THE UNIVERSITY BOOK STORE

The book store is prepared to supply all text-books, note-books, instruments and general stationery required by students. Hours are 9 a.m. to 5 p.m., Monday through Friday, and, except in the summer months, 9 a.m. to 12 noon on Saturday.

During the month of September, supplies and books will be available as follows:

1. new and used books for all years of all faculties will be sold in the Field House;
2. general supplies and stationery for all years of all faculties will be sold in the Bookstore.

At the end of each regular and summer session, the book store will repurchase from students used books in good condition up to the estimated requirements for the next regular session. These books will be accepted from students until June 15th for the regular session and to August 25th for summer session.

1957-58

**THE
FACULTY
OF
ARTS and SCIENCE**

1957 - 1958

1957-58

FACULTY OF ARTS AND SCIENCE

The degrees offered in this Faculty are Bachelor of Arts (B.A.), Bachelor of Science (B.Sc.), Bachelor of Home Economics (B.H.E.), Bachelor of Physical Education (B.P.E.), Bachelor of Social Work (B.S.W.), and Master of Social Work (M.S.W.). For regulations concerning the degrees of Master of Arts (M.A.), and Master of Science (M.Sc.) see *Faculty of Graduate Studies*.

COURSES LEADING TO THE DEGREE OF B.A.

A student may proceed to the B.A. degree either in a General Course or in an Honours Course. The requirements for a General Course B.A. enable a student to obtain a broad general education in several fields without specialization in any one of them. The course of study for an Honours degree, on the other hand, requires that a student study one or two subjects intensively during the last two or three years of his course. In some cases students may postpone the decision as to whether to proceed in a General Course or in an Honours Course until the end of the Second Year, but as requirements usually involve certain prerequisite courses which must be taken in the first two years, students should consult pages 84-147.

A General Course degree will be granted on completion of courses amounting to a minimum of 60 units chosen in conformity with Calendar regulations; a Single or a Combined Honours Course degree will, similarly conforming, require 66 units, and a Double Honours Course will require 81 units.

Course credits are described in terms of units. The unit values are given in the various course descriptions (page 84).

Registration and Admission

1. Registration must be completed during the period September 17th-21st, as described on page 5 and pages 64-65 inclusive.
2. After October 4th, except in very special circumstances and with the permission of Faculty, no student may change the programme for which he has registered.
3. All changes in registration must be made by the student at the Registrar's office. A student may not take courses for which he has not registered, and will be considered as having failed in all courses dropped without permission.

Summer Session and Other Credits

1. Although the degree of B.A. is normally granted on completion of the required units in the Winter Session, credits obtained in Summer Session may be combined with those obtained in Winter Session to complete the required number of units for the B.A. degree. The degree of B.A. will not be granted, however, in less than four years from High School Graduation (University Programme) or three years from Senior Matriculation.
2. The maximum credit for Summer Session work in any one calendar year is 6 units.
3. The maximum credit for work other than that of the Winter and Summer Sessions is 3 units in each academic year, not exceeding a total of 15 units subsequent to Senior Matriculation or First Year.
4. No credit will be granted for work done at other universities in the same academic year in which work has been attempted in this University, whether in the Summer Session, the Winter Session, or otherwise. Extra-mural work done at other universities prior to registration at this University may be accepted, if

approved by Faculty, but may not exceed 3 units in respect of any one academic year or a maximum of 15 units subsequent to Senior Matriculation.

5. Students in attendance at the University of British Columbia may not register for extra-mural work to be taken concurrently.

6. Candidates for the B.A. degree are advised to attend at least one Winter Session, preferably that of the Final Year.

Senior Matriculation Credits

See page 63.

Religious Knowledge Options

Students in any of the affiliated Theological Colleges who file with the Registrar a written statement expressing their intentions of graduating in Theology will be allowed to offer in each year of their Arts course, in place of the optional subjects set down in the Calendar for the year and the course in which they are registered, Religious Knowledge Options, to the extent of three units taken from the following list: Hebrew, Biblical Literature, New Testament Greek, Church History, Christian Ethics, and Apologetics. Before registering for these courses, students should consult the Registrar of the University.

General Regulations

1. Students who are accepted from other institutions may not receive the B.A. degree unless they complete at least 15 units of the Final Year in attendance at the University of British Columbia.

2. Students who take more than 15 units in the First or Second Year may not receive credit in a higher year for these extra units unless they have previously completed at least 3 units in the year for which they are registered.

3. Subjects credited to one year may not be transferred later to a higher year.

4. No student may take more than 18 units and, without the special permission of the Faculty, fewer than 15 units, in each Winter Session.

5. Students may not receive University credit for courses passed for High School Graduation whether taken among the required credits or as extra subjects.

6. Students may not continue with work in a higher year, unless they take concurrently all courses required to clear conditions or deficiencies in the lower years. The total of all work taken must not exceed 18 units. They may continue only in subjects for which they have successfully completed the prerequisites.

7. Students are responsible for ensuring that their courses have been chosen in conformity with Calendar regulations.

8. Attention is drawn to regulations concerning Examinations and Advancement, pages 82-83.

FIRST AND SECOND YEARS

In the First Year a minimum of 15 units is required. In the Second Year of a General Course and of all Honours Courses, at least 15 units are required. In certain Honours Courses, however, 18 units must be taken.

Courses in each of the First and Second Years must be chosen to conform not only with the rules and regulations in the preceding pages, but also with requirements of the First Year and the Second Year, as set forth in the following tables and notes.

Requirement Designation	First Year	Units	Refer to Notes:
A	English 100 and 101.....	3	.....
B	Language (other than English).....	3	1, 2, 3, 4
C	Elective	3	1, 2, 4, 5, 6
D	Elective	3	1, 2, 4, 5, 6
E	Elective	3	1, 2, 4, 5, 6
F	Compulsory Physical Education.....	.....	8

Requirement Designation	Second Year	Units	Refer to Notes:
G	English 200.....	3	.....
H	Language (other than English).....	3	1, 3, 4
I	Elective	3	1, 3, 4, 5, 6
J	Elective	3	1, 3, 5, 6
K	Elective	3	1, 3, 5, 6
L	Special Honours Elective.....	3	1, 3, 6, 7
M	Compulsory Physical Education.....	.....	8

Reference Notes

1. Not more than one course numbered below 100, taken at University or Senior Matriculation, may be counted for credit for the B.A. or B.Sc. degree.

2. All courses for First Year credit must be selected from the following list. For prerequisites and other details consult pages 84-147.

†Asian Studies 100, 101	Geography 101	Philosophy 100
Bacteriology 100	German 90, 110 or 120	Physics 100 or 101 or 103
Biology 105	or 130	Polish 110
Botany 105	Greek 90, 101	Psychology 100
Chemistry 101	History 101, 102	Russian 100
Economics 100	Italian 100	Spanish 90, 110 or 120
English 100 and 101	Latin 90, 110 or 120	Zoology 105
Fine Arts 100	Mathematics 100 or 101	
French 110 or 120	Music 105	

3. All courses for Second Year credit must be selected from the list in Note 2 or from the following additional subjects. For prerequisites and other details consult pages 84-147.

Anthropology 200	Fine Arts 200, 210	Philosophy 202
†Asian Studies 200, 205	French 210 or 220, 223	Physics 200 or 203 or 220
Bacteriology 200	Geography 201, 207	Polish 210
Botany 201, 202, 205	Geology 200	Political Science 200
†Chemistry 200, 205	German 200	Psychology 201, 202, 203, 205
210, 300	Greek 202	Russian 200, 203
*Classical Studies 315, 316, 331	History 201, 210, 304	Slavonic Studies 205
†Commerce 151	Home Economics 210	Sociology 200
†Economics 200, 201, 304	Latin 210 or 220	Spanish 201
†English 200, 202	†Mathematics 201, 202, 205, 310	Zoology 202, 301, 302
	Music 205	

†Commerce 151 is open only to those students who are permitted to register in the Second Year. Asian Studies 100, 101, 200, Chemistry 300, Economics 304 and English 202 are open only by special permission. Mathematics 310 is open to prospective Honours students only.

*For Classical Studies courses a knowledge of Greek and Latin is not required.

4. Courses under B and H must be chosen from French, German, Greek, Italian, Latin, Polish, Russian, and Spanish. Students must meet these requirements in accordance with *one* of the following plans:

(i) they may take a language course of the 100 level under B; and a course in the same language of the 200 level under H;

(ii) they may take a language course numbered 90 under B, a course in the same language of the 100 level under H, and, in the same language, a course of the 200 level in the Third or Fourth Year.

(iii) if their courses include at least 12 units of laboratory science, or at least 9 units of laboratory science and 6 units of Mathematics, they may take, under B and H respectively, any two of French 110 or 120, 210 or 220, German 90, 110 or 120 or 130, 200, Greek 90, 101, 202, Italian 100, Latin 90, 110 or 120, 210 or 220, Polish 110, 210, Russian 100, 200 or 203, Spanish 90, 110 or 120, 201. Only one course numbered 90, however, may be selected. Students whose courses in the combined First and Second Years include 18 units of laboratory science may defer the language of the Second Year to their Third or Fourth Year.

5. The electives C, D, E, I, J, K must be chosen to include *each* of the following:

(i) at least one laboratory science course chosen from Bacteriology 100, Biology 105, Botany 105, Chemistry 101, Geography 101, Physics 100 or 101 or 103, Zoology 105. A student who takes at least 18 units of languages (other than English) in the combined First and Second Years may, however, defer this science course to the Third or Fourth Year;

(ii) at least one course chosen from Anthropology 200, Economics 100, 200, Geography 201, 207, History 101, 102, 201, 304, Philosophy 100, Political Science 200, Psychology 100, Slavonic Studies 205, or Sociology 200. A student who takes 12 units of laboratory science courses in the combined First and Second Years may defer this course to the Third or Fourth Year;

(iii) at least one course—not already chosen—from Mathematics 100, 101, French 110 or 120, 210 or 220, German 90, 110 or 120 or 130, 200; Greek 90, 101, 202, Italian 100, Latin 90, 110 or 120, 210 or 220, Polish 110, 210, Russian 100, 200, Spanish 90, 110 or 120, 201, or Music 105. If a language is chosen it must be additional to the courses required under B and H and in a different language. Before the choice is made, the student should read Note 6 carefully.

6. (i) Mathematics 100 is open only to students who have completed Mathematics 30, but not Mathematics 91, of the high school programme; Mathematics 101 is open only to those who have completed Mathematics 91 of the high school programme or Mathematics 100. Credit will not be given for both Mathematics 100 and 101 and the courses cannot be taken concurrently.

(ii) Mathematics 101 is required for admission to Applied Science (Architecture and Engineering), Forestry, Medicine and Pharmacy.

(iii) In courses leading to the B.A. degree, Mathematics 101 is required for Bacteriology (all courses except 100), Biology (all courses except 105), Botany (all courses except 105), Chemistry (all courses except 101, 210), Geology, Mathematics (all courses except 100, 201, 205, 303), Physics (all courses except 103, 203), and Zoology (all courses except 105). It is also a prerequisite for majors or Honours in the above subjects and also for Honours in Economics, Geography, Philosophy, and Psychology. Mathematics 101 must precede all these courses except Bacteriology 200, Chemistry 200, 205, and Physics 100, 101, with which it may be taken concurrently.

(iv) In courses leading to the degree of B.A., *either* Mathematics 100 or 101 must be taken by students registering for Bacteriology 100, Chemistry 101, Geography (all courses except 101, 201, 207), and Honours in Political Science. Unless Mathematics 91 has been completed for High School Graduation, Mathematics 100 must precede or be taken concurrently with Economics 200, Geography 101, Physics 103, 203.

(v) The requirements in Mathematics for students proceeding to Commerce, Nursing, or Social Work, or entering Home Economics or Physical Education, are given in the sections of this Calendar dealing with the curricula of these faculties or schools.

7. The special Honours elective, which must be chosen from the subjects listed in Notes 2 and 3, need be taken only by students who are proceeding to these Honours Courses which require 18 units in the Second Year. The individual departments should be consulted. See also pages 84-147.

8. The compulsory courses in Physical Education are described on pages 151-152 inclusive. No units of credit are given for these courses.

THIRD AND FOURTH YEARS

The requirements for a B.A. in a General Course and in an Honours Course, single or combined or double, are described in the following sections.

Except in an approved Honours Course, credit will not be given toward the B.A. degree for courses in Commerce (except 151 and 371), Education (except as indicated on page 91), Home Economics (except 210), Physical Education, and Social Work (except 499). Similarly credit for courses in other faculties will not be granted unless the courses are listed among those offered in the Faculty of Arts and Science or special permission has been obtained from the Committee on Admissions, Standing, and Courses.

Graduation standing in either a General or an Honours Course is determined on the results in all courses taken for the degree beyond the Second Year.

General Course Curriculum

In the combined Third and Fourth Years a minimum of 30 units, of which at least 15 units must be taken in the Third Year, are required. The following regulations apply:

1. Courses must be selected so as to include two majors in different subjects. In general a major in a subject consists of a 9-unit combination of courses, numbered 300 or higher, in that subject. Each major has a prerequisite course or courses, numbered less than 300, which should be taken in the first two years. Details of majors and prerequisites are given under each subject in which a major is offered. (See pages 84-147.)

2. The two majors may not both be selected from different branches of the same subject.

3. In certain cases the prerequisite courses for majors may be taken in the Third Year, but courses thus taken may not be counted as part of the 9 units required for a major.

4. At least 6 units must be taken in a subject or subjects other than those from which the majors are selected.

5. The remaining units required for the combined Third and Fourth Year programme may be selected from courses, not already chosen, which are in the same subjects as the majors or otherwise.

6. Not more than 9 units in courses numbered less than 300 may be counted for credit in the 30 units required in the combined Third and Fourth Years.

Honours Curriculum

A student may proceed to the B.A. degree in an Honours Course in a single subject (Single Honours) or in an Honours Course in two subjects. An Honours Course in two subjects may be a four-year course from High School Graduation (Combined Honours) or a five-year course from High School Graduation (Double Honours).

The B.A. in any Honours Course requires the completion of the First and Second Years in conformity with the regulations on pages 76-79. For single or

Combined Honours 51 units are required in the combined Second, Third, and Fourth Years; for Double Honours 66 units are required in the combined Second, Third, Fourth, and Fifth Years. For Single Honours at least 18 of the requisite units in the combined Third and Fourth Years must be taken in the subject concerned and at least 6 units in another subject or subjects.

Prerequisites and requirements for Single and Combined Honours Courses are listed under those subjects in which such courses are offered. Combined Honours, however, may be taken only if the combination proposed is approved by the departments concerned.

Five-Year Double Honours Courses are open only to students well qualified to do intensive study in two fields. As requirements and prerequisites are not listed in the case of most subjects, the heads of departments concerned should be consulted as early as possible.

The following regulations govern Honours Courses:

1. A student proposing to take an Honours Course must obtain the consent of each department concerned. This consent will normally be given only if (a) the department or departments concerned are prepared to offer the Honours Course proposed; (b) the student has a clear academic record in the work of the first two years, and has at least Second Class standing in the work of the Second Year and in the subject or subjects of specialization; and (c) the student has completed all prerequisite courses. He may not continue in an Honours Course after the Third Year without the consent of the departments concerned. Cards of application for admission to Honours Courses must be completed and approved during the first week of the first term in each year of the Course.

2. A candidate for Honours may be required to present a graduating essay, which will count from 3 to 6 units. A candidate for Honours in two subjects will not be required to present more than one graduating essay. The latest date for receiving graduating essays in the second term is the last day of lectures; the corresponding date for the Autumn Congregation is October 1st.

3. A candidate for Honours may be required at the end of his Final Year to take a general examination, oral or written or both, as the department or departments concerned shall decide.

4. Honours are of two grades, First and Second Class. A student who passes all his courses but fails to attain sufficiently high standing for an Honours degree may be granted pass standing in a General Course.

COURSES LEADING TO THE DEGREE OF B.Sc.

At the discretion of the departments concerned, a student may proceed to the B.Sc. degree in the fields of Bacteriology, Biochemistry, Biology, Botany, Chemistry, Geology, Mathematics, Physics, Physiology, and Zoology. Subject to the exceptions noted in the next paragraph, the degree may be taken in a Single, Combined, or Double Honours Course in one or more of these fields, or in a General Course in which two of these subjects are majors.

In Biochemistry and Physiology, however, only Honours Courses are offered, and in the Honours Course in Mathematics only the Applied Mathematics option is permitted, for the B.Sc. degree.

The number of units required for graduation, the regulations governing registration and admission, summer session, senior matriculation, and other credits, religious knowledge options, and the general regulations pertaining to the B.A. degree, as stated on pages 75-76, also apply to the B.Sc. degree.

FIRST AND SECOND YEARS

In the First Year a minimum of 15 units is required. In the Second Year of a General Course and of all Honours Courses, at least 15 units

are required. In certain Honours Courses, however, 18 units must be taken.

Courses in each of the First and Second Years must be chosen to conform to the requirements in the following tables and notes:

Requirement Designation	First Year	Units	Refer to notes:
A	English 100 and 101	3	.....
B	Language (other than English)	3	1, 2, 5
C	Mathematics 101	3	4
D	Science Course	3	2, 6
E	Science Course	3	2, 6
F	Compulsory Physical Education .....	.....	8

Requirement Designation	Second Year	Units	Refer to notes:
G	Non-Science Elective	3	1, 9
H	General Elective	3	1, 3, 10
I	Science Course	3	3, 6
J	Science Course	3	3, 6
K	Science Course	3	3, 6
L	Special Honours Elective	3	1, 3, 7
M	Compulsory Physical Education .....	.....	8

Reference Notes

- 1, 2, 3. As on page 77.
4. See note 6, page 78.
5. Requirement C must be met by the selection of one course chosen from French, German, Greek, Italian, Latin, Polish, Russian, and Spanish. Students who may transfer to Engineering should note that the course must be selected from French, German, Latin (110 or 120 only), Russian.
6. The science courses D and E must be selected from Bacteriology 100, Botany 105, Chemistry 101, Physics 100 or 101, Zoology 105. The science courses I, J, K, must be selected from those in the foregoing list, not already taken, or from Bacteriology 200, Botany 201, 202, 205; Chemistry 200 or 205, 300; Geology 200; Mathematics 202; Mathematics 310 (for prospective Honours students only); Physics 200, 220; Zoology 202, 301, 302. No two of the sciences I, J, K, however, may be selected from the same department.
- 7, 8. As on page 79.
9. Requirement G must be a course without laboratory, not already taken, selected from English, Languages, Anthropology, Asian Studies, Classical Studies, Economics, Fine Arts, History, Music, Philosophy, Political Science, Psychology, and Sociology, and chosen from the courses in notes 2, 3, page 77.
10. The general elective may be a science or non-science course.

THIRD AND FOURTH YEARS

The requirements for the B.Sc. degree in the Third and Fourth Years are the same as those stated on pages 79-80 for the B.A. degree. The following special regulations, however, should be noted:

General Course. The courses selected must include two 9-unit majors in two different departments chosen from Bacteriology and Immunology; Biology and Botany; Chemistry; Geology; Mathematics; Physics; Zoology.

In the combined Third and Fourth Years a student must also take at least two courses (6 units) chosen from English, languages, Anthropology, Architecture (260 or 360 only), Asian Studies, Classical Studies, Criminology, Economics (except courses in statistics), Fine Arts, History, International Studies, Linguistics, Music, Philosophy, Political Science, Psychology (non-laboratory courses), Slavonic Studies, Sociology.

Honours Courses. See page 79 and departmental requirements.

EXAMINATIONS AND ADVANCEMENT

Examinations

1. Examinations in the Winter Session are held in December and April. In December they are held in First and Second Year courses, and except where special exemption has been granted by Faculty, in all upper year courses. In April they are held in all courses except those final at Christmas. These examinations are obligatory for all students.

2. Applications for special consideration on account of illness or domestic affliction must be submitted in writing to the Dean not later than two days after the close of the examination period. See page 58.

3. In any course which involves both laboratory work and written examinations, students will be required to make satisfactory standing in both parts. Results in laboratory work will be announced prior to the final examination, and students who have not obtained a mark of at least 50% will neither be permitted to write the examination nor to receive any credit for the course. If the course is repeated no exemption will be granted from the work in either part.

Standing and Credit

1. Candidates taking at least 15 units of work, and obtaining at least 50% in each subject, will be graded as follows: First Class, an average of 80% or over; Second Class, 65 to 80%; Passed 50 to 64%.

2. (a) A student taking 9 or more units in the Winter Session will receive credit for a course only if, as a result of the final examinations of that Session, he passes in courses totalling at least 9 units, including the course in question. The passing grade for a course is 50%.

(b) A student taking less than 9 units in the Winter Session will receive credit for a course only if, as a result of the final examinations of that Session, he passes in all his courses. The passing grade for a course is 50%.

(c) A student in the Summer Session or in Extra-Sessional or Correspondence courses will receive credit for each course in which he obtains a grade of at least 50%.

3. Courses for which credit has not been obtained must be repeated, or permissible substitutes taken, in the next regular session attended. In the Winter Session the total of all courses taken may not exceed 18 units.

4. Term essays and examination papers will be refused a passing mark if they are deficient in English; and, in this event, students will be required to pass a special examination in English to be set by the Department of English.

Supplementals

1. (a) In the Winter Session, a candidate will be granted a supplemental in a subject which he has taken during the Session provided (i) he has written the final examination and has obtained a final mark of not less than 35%, and (ii) he has obtained at least 9 units of credit in that Session. In any one session, no candidate will be granted supplementals in more than 6 units.

(b) In the Summer Session, a candidate will be granted a supplemental in a subject which he has taken during that Session provided (i) he has written the final examination and has obtained a final mark of not less than 35%, and (ii) he has obtained 3 units of credit in that Session.

(c) In an Extra-Sessional or Correspondence course, a student will be granted a supplemental in a subject in which he has obtained a final mark of not less than 35%.

2. If a supplemental granted in a course is passed with a grade of at least 50%, credit will be given for the course.

3. In all but the Final Year a candidate who has been granted a supplemental may write it only once. If he fails, he must repeat the course or take a permissible substitute. In the Final Year he may write it twice (subject to the limitation in section 3 under "Standing and Credit").

4. Supplemental examinations, covering the work of both the first and second terms, will be held in August or September in respect of Winter Session examinations. Supplemental examinations for Summer Session students will be held on the second day of the Summer Session at the University or, by special arrangement, at Victoria College.

5. If a student, because of exceptional circumstances, is permitted to postpone a supplemental beyond the first regular supplemental examination period, he will be responsible for the content of the course as currently offered. If the course is discontinued, the supplemental privilege may be cancelled. Attention is also drawn to section 3 under "Standing and Credit".

Re-Readings

See page 66.

Unsatisfactory Standing

1. A student with standing defective in respect of more than 3 units, although he will not be permitted to register in a higher year, may be allowed to continue by registering in the lower year and taking courses in accordance with section 3 under "Standing and Credit".

2. A student who, twice in succession, fails to obtain credit in the Winter Session may, upon the recommendation of Faculty, be required by Senate to withdraw from the Faculty.

3. Any student whose academic record, as determined by the tests and examinations of the first term of the First or Second Year, is found to be unsatisfactory, may upon the recommendation of the Faculty be required by the Senate to discontinue attendance at the University for the remainder of the Session.

Special Requirements

(For Applied Science, Architecture, Commerce, Forestry, Law, Medicine, Nursing, Pharmacy, Social Work, Teacher Training)

Students proposing to enter Social Work or Teacher Training after obtaining the B.A. or B.Sc. degree should refer to later pages of this Calendar, to ensure that they complete the necessary requirements. Students who are taking work in Arts and Science preparatory to entering Applied Science, Architecture, Commerce, Forestry, Law, Medicine, Nursing, or Pharmacy, should refer to the sections in the Calendar in which the admission requirements are set forth. Students planning to apply for entrance to other medical schools or to schools of dentistry should obtain the specific requirements from those schools. Because of the limited number of applicants who can be accepted at this or other medical schools, they are advised to consult the deans, heads of departments, and counselling services, with respect to alternative careers.

COURSES IN ARTS AND SCIENCE

The number of units assigned to a course is given in round brackets immediately following the course number. Thus 200 (3) under Anthropology indicates that Anthropology 200 is a three-unit course.

The hours assigned for laboratory, lectures, and tutorials in a course are indicated as follows:

2 lectures and 3 hours laboratory per week, both terms.	[2-3; 2-3]
1 lecture and 2 hours laboratory per week, first term.	[1-2; 0-0]
1 lecture and 2 hours laboratory per week, second term.	[0-0; 1-2]
2 lectures, 3 hours laboratory and 2 hours tutorial or discussion per week, both terms.	[2-3-2; 2-3-2]
2 lectures, 3 hours laboratory, and 2 hours tutorial or discussion per week, either term.	[2-3-2]

Anthropology

Requirements for:

(a) Major—Second Year: Anthropology 200 and Sociology 200, one of which may be taken concurrently with advanced work; Third and Fourth Years: total of 9 units in Anthropology courses numbered 300 or above.

(b) Single Honours—First and Second Years: any two of Anthropology 200, Economics 200, Geography 207, Psychology 201, Sociology 200, Biology 105, Fine Arts 100, Philosophy 100. For admission to Third Year, First or high Second Class standing in these subjects is required, plus a reading knowledge of French, German, Russian, or Spanish. Third and Fourth Years: 18 units comprising an Anthropology major, a thesis of 3 units, a seminar, and one further course or seminar in Anthropology. This additional course may be chosen, with the consent of the Department, from Psychology, Sociology, Linguistics 319, or Zoology 202.

(c) Combined Honours—First and Second Years: prerequisites and admission requirements as for Single Honours; Third and Fourth Years: an Anthropology major plus one additional course in Anthropology. If the thesis is to be written in Anthropology, one course will be replaced by the thesis, and in this case a seminar must be taken in addition.

(d) Five-Year Double Honours — If the thesis is to be written in Anthropology, the requirements for the Anthropology portion of the course will be the same as in (b) above; otherwise the requirements will be as in (b) above with the thesis requirement omitted.

Note: Anthropology 200 is given for the general student as well as for those intending to major in Anthropology. Anthropology 200 is prerequisite for all other courses, unless otherwise stated, but may be taken concurrently.

200. (3) Introduction to Anthropology. — A comparative study of cultural institutions in the primitive world; of family and other social structures; of economics, government, language, art, religion; of the origins of man and culture, the races of mankind and the nature of race. [3-0; 3-0]

301. (3) Indians of British Columbia.—Native cultures of British Columbia and anthropological problems presented by this area; a survey of the native peoples of the New World; racial, linguistic and cultural relationships; intensive study of a few representative tribes. [3-0; 3-0]

303. (3) Cultures of the Arctic.—The material, social and intellectual culture of the various branches of the Eskimo-Aleut stock inhabiting Arctic North America, with discussion of special features of Arctic environmental conditions. A comparative examination of Arctic Asian peoples. (Not given 1957-58.) [3-0; 3-0]

310. (3) **Cultures of China and Japan.**—Racial, linguistic and cultural relationships of the peoples of Eastern Asia. The rural economies, patterns of family life, government and social organization. Folk religions of China, Korea and Japan. [3-0; 3-0]

311. (3) **Cultures of India.**—Racial, linguistic and cultural relationships of the peoples of India. Social patterns and intellectual achievements of the Hindus, Moslems, Sikhs and of a few representative tribal groups. (Not given 1957-58.) [3-0; 3-0]

320. (3) **Prehistory of the Old World.**—A review of early man and cultural beginnings; the Mesolithic; the subsistence revolution of the Neolithic; the rise of urban societies; late prehistoric civilizations of the Mediterranean and the Near East. (Not given 1957-58.) [3-0; 3-0]

331. (3) **Primitive Arts and Crafts.**—A comparative study of the arts (including mythology) and technology of Africa, Asia, Oceania and the Americas. [3-0; 3-0]

400. (3) **Theory of Culture.**—Principles underlying social science; history of anthropological thought; the development of method; analysis of concepts such as culture, value and pattern; social evolution and social change; theories of cultural analysis, with detailed study of selected cultures. [3-0; 3-0]

415. (3) **Primitive Religion.**—Concepts of the supernatural and its relation to man; the rituals of worship, magic and healing; the relationship of primitive religion to society, ethics, art and science. [3-0; 3-0]

420. (3) **Archaeology of British Columbia.**—Facts and problems related to the prehistory of the Pacific Northwest, combined with archaeological field work in this area. Students will participate in excavations at prehistoric sites near Vancouver and will receive instruction in research techniques and in the interpretation of archaeological data. (Not given 1957-58.) [2-3; 2-3]

430. (3) **Social Change.**—General theory of cultural and social change. The impact of Western cultures upon the native peoples of Africa, Asia, the Pacific and the Americas; government and international programmes. Options may be arranged to accommodate the special requirements of students in applied fields, such as technical assistance, agricultural extension, administration, and missionary work in dependent or underdeveloped areas. Prerequisites and admission by arrangement with the Department. [3-0; 3-0]

431. (3) **Juridical and Political Systems of Non-Literate Peoples.**—An introduction to the principles of social control. Concepts of law and principles of dispute settlement. The comparative study of political institutions; the structure and function of such institutions. References: Fortes and Evans-Pritchard, *African Political Systems*; Hoebel, *The Law of Primitive Man*. Students in Political Science, or Pre-Law students may be admitted without prerequisite after consultation with the Department. [3-0; 3-0]

432. (3) **Applied Linguistics.**—Methods of transcription for unwritten languages, analysis of texts, the use of linguistic data in cultural anthropology. Special prerequisite: Linguistics 319 or permission of the Department. [3-0; 3-0]

440. (3) **Honours Seminar.**—Third Year Honours credit. Credit requisite: Honours or graduate standing.

441. (3) **Honours Seminar.**—Fourth Year Honours credit. Credit requisite: Honours or graduate standing.

449. (3) **Honours Essay.**

540. (3) **Master's Seminar.**

549. (3) **Master's Thesis.**

Architecture

The following courses are open to Third, Fourth, and Graduate students only. For prerequisites, consult the School of Architecture.

260. (3) **Architectural History I**—Origins to Industrial Revolution. As in Architecture (Applied Science).

360. (3) **Architectural History II** — Industrial Revolution to Today. As in Architecture (Applied Science).

Asian Studies

Requirements for a major: First and Second Years: Asian Studies 205. Third and Fourth Years: total of 9 units in Asian Studies courses numbered above 300, of which 6 must be from regular Departmental offerings, chosen in consultation with the Department.

Note: Anthropology 410, 411, Geography 406, and History 320 are also accepted for credit as courses in Asian Studies.

100. (3) **Basic Japanese**.—An outline of the grammar and syntax of the spoken language together with an introduction to the Japanese script. Open to First or Second Year students. Text-book: B. Bloch and E. H. Jordan, *Spoken Japanese*. Mr. Dore. [4-0; 4-0]

101. (3) **Basic Chinese**.—An introduction to the grammar and syntax of spoken and written Chinese. Mr. Wang. [4-0; 4-0]

200. (3) **Intermediate Japanese**.—A second course in the Japanese language. [3-0; 3-0]

205. (3) **Introduction to the Far East**.—Geographical, anthropological and historical backgrounds of China, Japan and Korea. Survey of the international relations of the Far East during the 20th Century. No prerequisites. Mr. Ho, Mr. MacKay, and Mr. Suttles. [3-0; 3-0]

301. (3) **Introduction to Chinese Literature**.—An introduction to Chinese literature from ancient times to the present, based on translations. Mr. Wang. [3-0; 3-0]

310. (3) **Far Eastern International Politics**.—A survey of the diplomatic relations of China and Japan in the 19th and 20th centuries. Text-book: Paul H. Clyde, *The Far East*. Mr. Ping-Ti Ho. [3-0; 3-0]

400. (3) **The Modernization of Japan**.—A survey of the changes in Japanese institutions and social structure under the impact of Western influence and industrialization. Open to Third and Fourth Year students. Text-book: H. Borton, *Japan's Modern Century*. Mr. Dore. [3-0; 3-0]

Bacteriology and Immunology

Requirements for:

(a) Major—First and Second Years: Bacteriology 100 and, if possible, Bacteriology 200; Third and Fourth Years: Bacteriology 300 (in the Third Year) plus 6 additional units in Bacteriology courses numbered above 300. Students planning to work in public health or hospital laboratories after graduation are advised to take Bacteriology 403; those interested in the fundamentals of bacterial metabolism should take Bacteriology 400.

(b) Single Honours—First and Second Years: Bacteriology 100, Zoology 105, Chemistry 101, Mathematics 101, Bacteriology 200; Third and Fourth Years: Bacteriology 300, 400 and at least 12 units selected in consultation with the Department.

(c) Combined Honours—First and Second Years: as for Single Honours; Third and Fourth Years: consult the Department.

Note: Students taking majors or Honours in Bacteriology and Immunology will be given full credit for Dairying 304, 305 and 407, and for Soil Science 312, provided they have enrolled in either Bacteriology 400 or 403. These courses also count as electives for the B.A. degree.

100. (3) Introductory Bacteriology.—History of bacteriology; bacteria in nature; classification of bacterial forms; methods of culture and isolation; relation of bacteria to agriculture, industry, veterinary science, public health and sanitation. Prerequisite: Chemistry 101, which may be taken concurrently. Bacteriology 100 is prerequisite to all other courses in the Department. [2-3; 2-3]

200. (3) Bacteriological Techniques.—Theoretical principles underlying different methods of sterilization; preparation of differential media and stains; use of the microscope, centrifuge and other bacteriological apparatus; inoculation procedures; microbiological assays. Practical experience in the glassware-cleaning and sterilizing, and media-making departments. Prerequisite: Bacteriology 100. This course must be taken by all students seeking a major or an Honours degree in the Department. [1-4; 1-4]

300. (3) Immunology.—Protective reactions of the animal body against pathogenic micro-organisms and their products; cellular and humoral immunity; anaphylaxis and allergies. This course must be taken by all students seeking a major or Honours degree in the Department. [1-4; 1-4]

302. (3) Methodology of Bacteriological Research.—Seminars and tutorials on literature of microbiology and immunology; execution of limited research problem; design of protocols with general presentation of results. Prerequisites: Bacteriology 200 and 300, with at least Second Class standing in each. Bacteriology 300 may be taken concurrently. Restricted to students enrolled for an Honours degree in the Department.

303. (1½) The Microbiology and Sanitation of Foodstuffs.—The normal and abnormal microbiology of common foods, including milk and water. The significance of micro-organisms as indices of sanitation, and their role in food-borne infections and toxæmias. Prerequisite: Bacteriology 100. (May not be given in 1957-58.) [0-0; 2-2]

400 (3) Microbiological Physiology. — Physiology of bacteria, yeasts and molds, including growth, nutrition, respiration and other aspects of metabolism; relation of microbiological physiology to medicine, sanitation and industry. Prerequisites: Bacteriology 100 and Chemistry 300, with Second Class standing in each. [2-2; 2-2]

402. (1½) Immunochemistry.—Chemical nature of antigens and haptens; antigenic composition of micro-organisms and certain of their products; source and nature of antibodies; quantitative considerations of the antigen-antibody reactions. Prerequisites: Bacteriology 300 and Chemistry 300, with Second Class standing in each. [2-2; 0-0]

403. (3) Pathogenic Microbiology.—Sources, modes of transmission and public health laboratory methods of detecting and isolating the commoner human and animal pathogens. The host-parasite relationship; inflammation; gross and microscopic manifestations of certain infections in man and animals. Prerequisites: Bacteriology 300 with at least Second Class standing. [2-2; 2-2]

404. (1-3) Seminar in Bacteriological Literature.—Reviews and critical discussions of selected topics. Compulsory for Honours students.

409. (1½) Introduction to Viruses.—Properties of the simpler viruses. Techniques used for their growth, identification and assay. Prerequisites: Bacteriology 300 with at least Second Class standing. [0-0; 2-2]

411. (1½) Pathogenic Fungi.—Morphology and physiology of fungi with special emphasis on pathogenic forms. Prerequisites: Bacteriology 100 with at least Second Class standing. [2-2; 0-0]

412. (1½) Haematology.—Introduction to haematological techniques. The blood cell responses of the host to infectious, toxic and degenerative

processes. Prerequisites: Bacteriology 300, with at least Second Class standing. [0-0; 2-2]

449. (3) Research Problem.—In the Final Year of Honours, an investigation approved by Head of Department. The results form the graduating essay, to be reviewed by oral examination.

501. (1) History of Bacteriology and Epidemiology.—Reviews of classical reports in the field of microbiological discovery and their significance in the evolution of immunology and epidemiology. [1-0; 1-0]

502. (3) Quantitative Virology.—The detailed study of virus-host cell relationships; quantitative study of bacteriophage, animal virus and tissue culture systems, with emphasis on virus physiology, assay and research techniques. Prerequisites: Bacteriology 409, with at least Second Class standing. In special circumstances, the Department may waive certain prerequisites.

503. (2-3) Bacterial Genetics.—Genetic manifestations in bacterial populations: mutation, transformation, transduction, genetic transfer. Bacteriological methods in the study of genetics. Prerequisites: Biology 332, Bacteriology 100 and 6 additional units in Bacteriology or related subjects.

548. (3) Directed Studies in Bacteriological Literature for Graduates.

549. (3-5) Master's Thesis.

649. Ph.D. Thesis.

Biochemistry

For descriptions of courses, see Faculty of Medicine.

Requirements for:

(a) Single Honours—First and Second Years: Chemistry 101, 205 (or 200), 300, English 200, Mathematics 101, 202, Physics 100 or 101, Zoology 105; Third and Fourth Years: Biochemistry 420, 421, 449, Chemistry 409, 410, and 6 additional units chosen in consultation with the Department from Bacteriology 300, 400, Biology 400, Botany 430, 431, Chemistry 304, 407, Dairying 304, 305, 501, Physiology 410, 411, Zoology 202.

(b) Combined Honours—First and Second Years: as for Single Honours; Third and Fourth Years: Biochemistry 420, 421, and 9 additional units chosen in consultation with the Department.

Biology

Requirements for:

(a) Major—First and Second Years: Botany 105, Zoology 105. Third and Fourth Years: total of 9 units in biological courses selected in consultation with the Department.

(b) Single Honours—Students may take Honours in Biology through specialization in one of cytology, genetics, or animal physiology. Both Botany 105 and Zoology 105 are required for cytology and genetics, but only Zoology 105 in the case of animal physiology. It is recommended that 18 units be taken in the Second Year; it is required that 18 units be taken in each of the Third and Fourth Years. The desirable sequence of essential courses is as follows: First Year: Botany 105 or Zoology 105, Chemistry 101, Mathematics 101; Second Year: Botany 105 or Zoology 105, Physics 100 or 101, Chemistry 200 or 205, Mathematics 202; Third Year: Chemistry 300, Physics 220; for animal physiology, Biology 304 or Zoology 404, and 9 additional units chosen in consultation with the Department; and for cytology and genetics, Biology 332, 333, 340, and 8 additional units chosen in consultation with the Department; Fourth Year: Biology 449, Zoology 408, Biochemistry 410 (except for genetics); for animal physiology, Biology 400, Zoology 303, 412, and 416; and for cytology and genetics, Biology 430, and Agronomy 421 or Mathematics

205, the necessary additional units being chosen in consultation with the Department.

(c) Combined Honours — First Year: Botany 105 or Zoology 105, Chemistry 101, Mathematics 101; Second Year: Botany 105 or Zoology 105, Physics 100 or 101, Chemistry 200 or 205, Mathematics 202; Third and Fourth Years: 12 units of biological courses numbered 300 or above, selected in consultation with the Department.

Biology 105 is planned for students who intend taking no other courses in Biology, Botany, or Zoology. It is not prerequisite to Botany 105, Zoology 105, or any course in Biology.

105. (3) Fundamentals of Biology. — The principles of biology with emphasis upon its relation to man. Characteristics of living things; life processes; plants and animals; heredity and evolution; environmental relationships. Text-book: Villee, *Biology* (1954 ed.). Members of the Department. Credit will not be given both for this course and Biology 100 (Senior Matriculation). [2-2; 2-2]

304. (3) Elementary Human Physiology. — Designed primarily for students in Nursing, Home Economics, Honours Psychology, Physical Education and Education. Text-book: Best and Taylor, *The Living Body*. Prerequisites: Zoology 105 or Biology 100 (Senior Matriculation), Chemistry 101. Mr. Goranson. [2-2; 2-2]

320. (3) General Ecology. — Methods and principles of ecology; plant and animal communities; bioecology. Laboratory and field work. Text-book: Odum, *Fundamentals of Ecology*. Prerequisites: Botany 105, Zoology 105. Mr. Pillsbury. [2-3; 2-3]

331. (2) Principles of Forest Genetics. — As Biology 332, adapted for Forestry. Department to be consulted. Prerequisite: Botany 105. [0-0; 2-4]

332. (2) Introduction to Genetics. — A course of lectures serving as an introduction to the principles, methods, and applications of genetics. Time will be devoted to some consideration of heredity in man. Prerequisite: Botany 105, or Zoology 105. Miss Cole. [2-0; 2-0]

333. (1) Laboratory in Introductory Genetics. — Designed for students who wish laboratory work in the principles, methods and applications of genetics. Planned to supplement Biology 332 which must be taken either concurrently or previously. Text-book: Gardner, *Genetics Laboratory Exercises*, 1956 edition. Prerequisites: Botany 105 or Zoology 105. Miss Cole. [0-2; 0-2]

340. (2) Cytology. — General descriptive study of the structure of the cell and its components in relation to cellular physiology. Mitosis, meiosis and reproduction. Introduction to cytogenetics. Text-book: De Robertis, Nowinski and Saez, *General Cytology*. Prerequisites: Botany 105 and Zoology 105. Miss Beamish. [2-4; 0-0]

400. (3) General Physiology. — Nature of animal life processes. Text-book: Zoethout and Tuttle, *Physiology*. Laboratory Manual: Zoethout, *Laboratory Experiments in Physiology*. Prerequisites: Biology 100 (Senior Matriculation) or Zoology 105, Chemistry 210 or 300, Physics 100 or 101. Mr. Allardyce. [2-3; 2-3]

420. (3) Biogeography. — Distribution of terrestrial and marine biotas in space and time; similarities and differences; theories of origins of biotas; descriptive biogeography of land and sea. Text-books: Hesse, Allee and Schmidt, *Ecological Animal Geography*, 2nd ed.; Cain, *Foundations of Plant Geography*. Prerequisite: Biology 320 or equivalent. Mr. Pillsbury. [2-3; 2-3]

430. (3) Fundamental Genetical Concepts. — History of the development of basic concepts in genetics. More detailed consideration of the genetics of certain organisms. Laboratory in genetical methods. Prerequisites: Botany 105, Zoology 105, Biology 332, 333. Miss Cole. [2-3; 2-3]

435. (3) Cytogenetics.—A detailed consideration of the nucleus and chromosomes as the physical basis for heredity. Laboratory Manual: Darlington and LaCour, *Handling of Chromosomes*. Prerequisites: Biology 332 or 340, and preferably Botany 341 or Zoology 416. Miss Cole. (To be given in 1958-59 and alternate years.) [2-3; 2-3]

448. (1-3) Directed Studies.—In special cases and with the approval of the Department a student in attendance may carry on directed studies to supplement another course in the Department.

449. (3) Graduating Essay.—Students should consult the Department during the Third Year.

500. (3) Biological Functions of Vitamins and Hormones.—Physiological controls with particular reference to vitamins and hormones. Prerequisite: Biology 400. Mr. Allardyce. (Offered in 1957-58 and alternate years.) [2-2; 2-2]

501. (3) Intermediary Metabolism and Biological Oxidations.—Phosphorylations, energy transformations; electrophoresis. Prerequisite: Biology 400 or Zoology 412. Mr. Goranson. (Offered in 1958-59 and alternate years.) [1-4; 1-4]

502. (1) Experimental Biology: Recent Advances.—Seminar. Prerequisite: Biology 400. Mr. Allardyce. [1-0; 1-0]

513. (2) Marine Benthic Organisms and their Environment.—Oceanographic factors as related to the distribution of populations of marine benthic organisms. Prerequisites: Botany 105, Zoology 105, Zoology 511. (Offered in 1958-59 and alternate years.) Mr. Scagel. [2-4; 0-0]

530. (2) Genetical Mechanisms.—Consideration of the facts and theories of modern genetics; role of mutation, inbreeding, cross-breeding and selection in organic evolution. Prerequisites: Biology 430, Plant Science 421. Miss Cole. (Offered in 1958-59 and alternate years.) [2-0; 2-0]

535. (1) Seminar in Genetics and Cytology.—Recent advances and selected topics. Prerequisites: Biology 430, 435 or equivalent. Miss Cole. [2-0; 2-0]

549. Master's Thesis.

649. Ph.D. Thesis.

Botany

Requirements for:

(a) Major—First and Second Years: Botany 105, 205; Third and Fourth Years: a total of 9 units in Botany courses numbered 300 or above, approved by Department.

(b) Single Honours—Students may take Honours in any one of the options offered, namely ecology, forest pathology, mycology, phycology, plant physiology or taxonomy. It is recommended that 18 units be taken in the Second Year; it is required that 18 units be taken in each of the Third and Fourth years. The desirable sequence of essential courses is as follows: First Year: Botany 105, Chemistry 101, Mathematics 101. Second Year: Botany 205, Zoology 105, Physics 100 or 101, Chemistry 200 or 205 (replaced by Geology 200 for taxonomy option). Third Year: Botany 330, 341, Biology 332, 333, 340, Chemistry 210 or 300 (except for taxonomy option), the necessary additional units being selected in consultation with the Department. Fourth Year: Botany 340, 404, 425, 449, Zoology 408, the necessary additional units being chosen in consultation with the Department.

(c) Combined Honours—First Year: Botany 105, Chemistry 101, Mathematics 101; Second Year: Botany 205, Zoology 105, Physics 100 or 101, Chemistry 200 or 205; Third and Fourth Years: 12 units of Botany courses numbered 300 or above, chosen in consultation with the Department.

105. (3) Introduction to Botany.—General perspective of the plant kingdom, physiological anatomy, ecological relations, and developmental trends. Text-book: Sinnott & Wilson, *Botany*. Mr. Taylor, Mr. Wort.

[3-2; 3-2]

205. (3) Morphology of Plants.—A survey of the plant kingdom with emphasis on comparative and evolutionary features. Text-book: Gibbs, *Botany, an Evolutionary Approach*. Prerequisite: Botany 105. Members of the staff in Botany.

[2-3; 2-3]

303. (2) Dendrology.—Identification and distribution of North American trees, designed particularly for Forestry students. Text-book: Harlow and Harrar, *Textbook of Dendrology*. Prerequisite: Botany 105. Mr. Krajina.

[2-2; 2-2]

315. (3) Mycology.—Taxonomy of fungi. Prerequisite: Botany 105. Mr. Dickson.

[1-4; 1-4]

318. (3) Forest Pathology.—Life histories, control, and economics of diseases in relation to forest trees and forest products in Western North America. Text-book: Boyce, *Forest Pathology*. Prerequisite: Botany 105, 205. Mr. Bier.

[2-2; 2-2]

330. (2) Introductory Plant Physiology.—Introduction to physiological processes of plants. Photosynthesis, transpiration, absorption, enzymes, respiration, plant hormones, and growth. Text-book: Meyer and Anderson, *Plant Physiology*. Prerequisite: Botany 105. Mr. Wort.

[2-4; 0-0]

340. (2) Plant Histology.—Study of the development and organization of plant tissues and organs. Text-book: Esau, *Plant Anatomy*. Prerequisite: Botany 105. Mr. Rouse.

[0-0; 2-4]

341. (1½) Botanical Microtechnique.—Methods of preparing plant tissues for histological and cytological study. Fixing, embedding, sectioning, staining, smearing and squashing techniques; microscopy, photomicrography. Prerequisites: Botany 105. Mr. Rouse.

[0-0; 0-4]

404. (3) Taxonomy of Higher Plants I.—Text-book: Lawrence, *An Introduction to Plant Taxonomy*. Prerequisite: Botany 205 (or 202). Mr. Taylor.

[1-4; 1-4]

411. (3) Phycology.—Introduction to the systematics of the algae. Text-books: Smith, *Cryptogamic Botany*, Vol. 1, 2nd. ed.; Smith, *Freshwater Algae of the United States*, 2nd ed. Prerequisite: Botany 205 (or 201). Mr. Scagel.

[1-4; 1-4]

418. (2) Methods in Forest Pathology.—Laboratory and field techniques in handling forest pathological problems. Prerequisite: Botany 318 or 315. Mr. Bier.

[0-0; 2-4]

425. (3) Principles of Plant Ecology.—An introductory course dealing with the inter-relationships between plants and their environment. Prerequisites: Botany 205 (or 202) and 330. Mr. Krajina.

[2-3; 2-3]

430. (2) Plant Physiology I.—A study of photosynthesis; synthesis of carbohydrates, fats, proteins; storage; growth and development. Prerequisites: Botany 330, Chemistry 300. Mr. Wort. (Given in 1957-58 and alternate years.)

[0-0; 2-4]

431. (2) Plant Physiology II.—A study of absorption; water relations; translocation; enzymes; digestion; respiration. Prerequisites: Botany 330, Chemistry 300. Mr. Wort. (Given in 1958-59 and alternate years.)

[0-0; 2-4]

448. (1-3) Directed Studies.—In special cases and with the approval of the Department a student in attendance may carry on directed studies to supplement another course in the Department.

449. (3) Graduating Essay.—Students should consult the Department during the Third Year.

500. (3) Phylogenetics.—The origin, development and relationship of plant groups. Prerequisites: Botany 205 (or 201 and 202). Mr. Rouse. [2-3; 2-3]

504. (3) Taxonomy of Vascular Plants II.—Before registration in this course students are required to collect at least 150 species of flowering plants. Part of the laboratory mark for the course is assigned to this collection. Prerequisite: Botany 404. Mr. Taylor. [1-4; 1-4]

510. (3) Advanced Phycology.—Collection, identification and life histories of algae; emphasis on marine benthonic forms. Prerequisite: Botany 411. Mr. Scagel. (Given in 1957-58 and alternate years.) [1-4; 1-4]

512. (2) Marine Phytoplankton.—Collection, identification and quantitative analysis of marine phytoplankton in relation to oceanographic factors. Prerequisites: Botany 411 and Zoology 511. Mr. Scagel. (Given in 1958-59 and alternate years.) [0-0; 2-4]

514. (1) History of Plant Pathology.—The history of the science from ancient times to the present. Text-book: Whetzel, *An Outline of the History of phytopathology*. (To be taken only with the consent of the instructor.) Mr. Dickson. [1-0; 1-0]

515. (3) Advanced Mycology.—Identification of fungi, use of keys and literature. A collection of at least 50 mycological specimens must be made prior to the course. For Honours or graduate students. Prerequisite: Botany 315. Mr. Dickson. [1-4; 1-4]

518. (2) Advanced Forest Pathology.—Detailed study of life histories and economics of forest tree diseases; pathology of forest products. Prerequisite: Botany 318 or equivalent. Mr. Bier. [3-2; 0-0]

519. (1) Seminar on Plant Virus Diseases.—Required of all Honours and graduate students in plant and forest pathology. [1-0; 1-0]

525. (2) Forest Autecology.—Ecology of forest trees and plant indicators. Prerequisite: Botany 425. Mr. Krajina. (Given in 1957-58 and alternate years.) [1-2; 1-2]

526. (2) Forest Synecology.—Forest communities in the Pacific Northwest. Prerequisite: Botany 425. Mr. Krajina. (Given in 1958-59 and alternate years.) [1-2; 1-2]

535. (2-3) Problems in Plant Physiology.—Recent advances in biophysical and biochemical aspects of plant life. Original investigation of a problem is expected. Prerequisites: Botany 330, Chemistry 300, Physics 100 or 101. Mr. Wort. (Given in 1957-58 and alternate years.) [0-0; 2-4]

548. (1-3) Directed Studies.—In special cases and with the approval of the Department a student in attendance may carry on directed studies to supplement another course in the Department.

549. Master's Thesis.

649. Ph.D. Thesis.

Chemistry

Requirements for:

(a) Major—First Year: Chemistry 101, Mathematics 101; Second Year: Chemistry 200 or 205, Mathematics 202; Third and Fourth Years: total of 9 units in Chemistry courses numbered 300 or above.

(b) Single Honours—First Year: Chemistry 101, Mathematics 101, Physics 100 or 101; Second Year: Chemistry 200, Mathematics 202, Physics 200, and 9 additional units; Third Year: Chemistry 300, 304, 310, Mathematics 300, and 6 additional units; Fourth Year: Chemistry 407, 409, 410, 412, 417, 449, and 3 additional units chosen in consultation with the Department. A reading knowledge of French, German or Russian is highly desir-

able and students who have taken French in High School should take German or Russian.

(c) Combined Honours—First and Second Years: as for Single Honours; Third and Fourth Years: 15 additional units chosen in consultation with the Department.

101. (3) General Chemistry.—Fundamental theories, periodic table, inorganic reactions, chemical calculations. Text-books: Pauling, *General Chemistry*; Pauling, *College Chemistry*; Schaum, *Outline of Theory and Problems*. Students will be placed in lecture and laboratory sections according to their chemistry background and general scientific aptitude. Mathematics 100 or 101 must precede or be taken concurrently. [3-3; 3-3]

200. (3) Analytical, Inorganic and Physical Chemistry.—The fundamental principles of analytical, inorganic and physical chemistry. The laboratory course consists of experiments designed to illustrate the principles of modern analytical chemistry. Prerequisites: Chemistry 101 and Mathematics 101. The latter may be taken concurrently. Students will be placed in lecture sections according to their aptitude for and interest in chemistry. [2-6; 2-6]

205. (3) Physical-Inorganic and Analytical Chemistry.—A course with less laboratory work and a greater range of lecture material than in Chemistry 200. Systematic inorganic chemistry, properties of matter from a kinetic standpoint, equilibria in solution, physical chemistry useful in related sciences. Text-book: Welcher and Hahn, *Semimicro Qualitative Analysis*. Prerequisites: Chemistry 101 and Mathematics 101. The latter may be taken concurrently. Credit will not be given for both Chemistry 200 and 205. [2-4; 2-4]

210. (3) Introduction to Organic Chemistry.—A terminal course dealing with fundamental principles of organic chemistry as well as applications and uses of organic substances. Text-book: Brewster, *Organic Chemistry, A Brief Course*. Laboratory text-book: Boord, Brode and Bossert, *Laboratory Outlines and Notebook for Organic Chemistry*. Prerequisites: Chemistry 101 and Mathematics 100 or 101. Credit will not be given for both Chemistry 210 and 300. [2-3; 2-3]

300. (3) Organic Chemistry.—Fundamental principles as illustrated by the main classes of organic compounds in the aliphatic and aromatic series. Text-book: C. R. Noller, *Textbook of Organic Chemistry*, or for specialists: *Chemistry of Organic Compounds*. Prerequisite: Chemistry 200 or 205. Either may be concurrent but only with the consent of the Department. [3-3; 3-3]

304. (3) Physical Chemistry. — Elementary quantum theory; atomic spectra; atomic and molecular structure; states of matter; elementary thermochemistry, thermodynamics, and electrochemistry; chemical equilibria; chemical kinetics; colloid chemistry. Prerequisites: Chemistry 101 and Mathematics 202. Mathematics 300 concurrently is recommended. References: Moore, *Physical Chemistry*; Daniels and Alberty, *Physical Chemistry*; Glasstone, *Introduction to Physical Chemistry*. [3-3; 3-3]

305. (2) Same as Chemistry 304 with the omission of the laboratory. [3-0; 3-0]

310. (3) (a) Descriptive Inorganic Chemistry; (b) Advanced Analysis.

(a) Descriptive chemistry of main periodic groups IV, V, VI, and VII, and of the three transition series, illustrated by preparations and separations of inorganic substances. Text-books: Latimer and Hildebrand, *Reference Book of Inorganic Chemistry*; Emeleus and Anderson, *Modern Aspects of Inorganic Chemistry*. [1-3; 1-3]

(b) Quantitative analysis of complex mixtures, employing gravimetric, volumetric, and instrumental methods. Qualitative analysis of mixtures containing rarer metals. Text-books: Vogel, *Quantitative Analysis*; Belcher and Nutten, *Laboratory Manual of Quantitative Inorganic Analysis*. [1-3; 1-3]

407. (3) Advanced Physical Chemistry.—A continuation of Chemistry 304. Chemical thermodynamics; elementary statistics; electrochemistry; atomic and molecular structure; chemical kinetics; catalysis; surface phenomena; colloids; photochemistry. References: Moore, *Physical Chemistry*; Glasstone, *Text-book of Physical Chemistry*; Prutton and Maron, *Fundamental Principles of Physical Chemistry*; Daniels and Alberty, *Physical Chemistry*. Prerequisites: Chemistry 304; Mathematics 300, which may be taken concurrently. [3-4; 3-4]

409. (1½) Advanced Organic Chemistry I.—Lecture outline: (1) literature of organic chemistry; (2) modern aliphatic chemistry; (3) synthetic methods. Laboratory work: qualitative organic analysis. Text: Shriner, Fuson and Curtin, *Systematic Identification of Organic Compounds*. References: Wild, *Characterization of Organic Compounds*; Openshaw, *Qualitative Organic Analysis*. Prerequisite: Chemistry 300. [2-6; 0-0]

410. (1½) Advanced Organic Chemistry II. — Lecture outline: (1) mechanism of organic reactions; (2) alicyclic compounds—terpenes, steroids; (3) heterocyclic compounds; (4) infrared and ultraviolet spectra and molecular constitution; (5) free radicals. Laboratory work: illustrative modern techniques and procedures. Prerequisites: Chemistry 300 and 409. [0-0; 3-3]

411. (1) History of Chemistry.—Survey of chemical knowledge from the earliest times to the present day, with emphasis on chemical theory. This course will *not* be given in session 1957-58. [1-0; 1-0]

412. (2) Physical Inorganic Chemistry.—Chemical properties of elements and their compounds from the point of view of simple atomic and molecular structure. References: L. Pauling, *Nature of the Chemical Bond*; Wells, *Structural Inorganic Chemistry*; T. Moeller, *Inorganic Chemistry*; Cartmell and Fowles, *Valency and Molecular Structure*. [2-0; 2-0]

417. (1) Isotope Chemistry.—Radioactivity, stable and radioactive isotopes. Nuclear reactions. Separation and preparation of isotopes. Uses of isotopes as tracers. Unstable elements. Elementary radiation chemistry. Text-book: Friedlander and Kennedy, *Nuclear and Radiochemistry*. [1-0; 1-0]

420. (2) Demonstration Techniques.—This course provides an introduction to modern chemical laboratory techniques which are of pedagogical interest. This course is available for credit in the Faculty and College of Education only. This course will *not* be given in session 1957-58.

449. (3) Thesis.—Experimental, under the direction of a staff member.

For Graduate Students

501. (2) Topics in Physical Chemistry.—A discussion of some aspects of modern physical chemistry. The subject matter varies each year and is chosen to be suitable for *all* graduates, not only physical chemical specialists.

504. (1) Seminar in Chemistry.

505. (1) Quantum Chemistry. — Principles of quantum mechanics as applied to chemistry. Simple diatomic molecules. Hybrid orbitals and their relation to structural chemistry. Investigation of molecular structure by the method of molecular orbitals, as applied to polyatomic molecules. Group theory and molecular symmetry. Text: K. S. Pitzer, *Quantum Chemistry*. References: Eyring, Walter and Kimball, *Quantum Chemistry*; Syrkin and Dyakina, *The Structure of Molecules*.

506. (1) Advanced Theoretical Chemistry.—An advanced course in which will be discussed more recent applications of wave mechanics and statistical mechanics in chemistry.

509. (1) Introduction to Chemical Oceanography.—The composition of sea water, factors affecting its variation, methods for its determination. [2-0; 0-0]

510. (1) Advanced Chemical Oceanography.—A more intensive study of the composition and methods of analysis of sea water. [0-0; 2-0]

512. (1) Colloid Chemistry.—Properties of disperse systems, thermodynamics, molecular weight and shape, electrophoresis, viscosity, poly-electrolytes. Prerequisites: Chemistry 300 and 304.

513. (1) Chemical Thermodynamics.—A study of the principles and applications of classical chemical thermodynamics. References: Glasstone, *Thermodynamics for Chemists*.

514. (1) Chemical Thermodynamics.—A discussion of recent advances.

515. (1) Advanced Electrochemistry.—Modern measurements of conductance, transport and electromotive force; thermodynamics of solutions; Debye-Huckel interionic attraction theory; electrode processes and polarography. References: Glasstone, *Introduction to Electrochemistry*; Harnek and Owen, *The Physical Chemistry of Electrolytic Solutions*; Robinson and Stokes, *Electrolytic Solutions*; Gurney, *Ionic Processes in Solution*. Prerequisite: Chemistry 407. [1-0; 1-0]

517. (2) Topics in Inorganic Chemistry.—Selected topics of current interest in inorganic research and in applications of inorganic chemistry. Mainly a descriptive treatment but to some extent from the theoretical standpoint.

518. (1) Advanced Inorganic Chemistry.—Properties of the elements considered in relation to atomic structure and the Periodic Table. The less familiar elements will be treated in detail. Prerequisites: Chemistry 200 and 310. Text-books: Moeller, *Inorganic Chemistry*; Sidgwick, *Chemical Elements and Compounds*.

519. (1) Radiochemistry.—An advanced course. Natural and artificial radioactive nuclides, nuclear reactions, trans-uranic elements, tracer techniques and applications.

520. (1) Molecular Structure.—Physical methods for elucidating molecular structure. Prerequisite: Chemistry 407.

521. (1) Statistical Mechanics.—Fundamentals are developed and applied to the calculation of thermodynamic functions from molecular spectra. References: Gurney, *Statistical Mechanics*; Glasstone, *Theoretical Chemistry*.

522. (1) Surface Chemistry.—Recent advances in adsorption, surface chemistry and catalysis. Prerequisite: Chemistry 407.

523. (1) Chemical Kinetics.—Types of reactions, kinetic theory, energy transfer processes, transition state theory, chain reactions, reactions in solution, heterogeneous processes, photochemistry. References: Frost and Pearson, *Kinetics and Mechanisms*. Text-books: Frost and Pearson, *Kinetics and Mechanisms*. References: Trotman-Dickenson, *Gas Kinetics*, Glasstone, Laidler, and Eyring, *The Theory of Rate Processes*; Hinshelwood, *The Kinetics of Chemical Change*. Prerequisite: Chemistry 407.

526. (1) Physical Chemistry of High Polymers.—Nature and kinetics of vinyl and condensation polymerization; molecular weight determination; distribution of molecular weights; introduction to kinetic theory of rubber elasticity; physical properties of polymers in the solid state and in solution. Prerequisite: Chemistry 407.

530. (2) Topics in Organic Chemistry.—Stereochemistry, heterocyclics, alkaloids and other topics of current interest. The subject matter varies each year and is chosen to be suitable for all graduate students in chemistry.

531-538. Advanced Organic Chemistry.—Individual discussions of selected subjects; courses offered in any year will be announced prior to the session.

533. (1) Carbohydrates.—Introduction to recent work in the field of carbohydrate chemistry.

537. (1) Cellulose, Lignin and Related Compounds.—The structure and distribution of molecular weights of cellulose; behaviour of cellulose in chemical reactions; chemistry of non-cellulose components of wood.

538. (1) Physical Organic Chemistry.—Theoretical organic chemistry and selected organic reaction mechanisms.

540. (1) Organic Analysis.—Macro, semi-micro and micro methods of analysis. [0-3; 0-3]

541. (1) Molecular Rearrangement.—Rearrangements in saturated and unsaturated compounds. [1-0; 1-0]

542. (1) Structure of Newer Natural Products.—A discussion of recent developments in the chemistry of alkaloids, antibiotics, hormones and other recently discovered natural products. Prerequisite (or concurrent): Chemistry 530.

543. (1) Recent Synthetic Methods in Organic Chemistry.—Synthetic methods with particular reference to the use of modern reagents and techniques. [1-0; 1-0]

548. Research Conference.—Attendance and presentation of a paper is required in each year of registration for the M.Sc. or Ph.D. in chemistry. No unit value.

549. (6) Thesis for M.Sc. degree.

649. Thesis for Ph.D. degree.

Classical Studies

(Given by the Department of Classics)

Any three of the following courses constitute a major in Classical Studies.

For requirements for majors in Greek and in Latin and for Single and Combined Honours in Classics and in Greek and in Latin, in which courses in Classical Studies may be included, see pages 114 and 120.

A knowledge of the Greek and Latin languages is not required for any of the following courses, which are designed to present studies in the life, literature and thought of the Greek and Roman world. Courses 315, 316, and 331 may be taken by Second Year students. Three units of credit in History will be given for each of Courses 331, 333, and 433. (See page 118.)

315. (3) Greek Epic and Tragedy.—Study, in translation, of the *Iliad*, the *Odyssey* and selected plays of Aeschylus, Sophocles, and Euripides. Collateral reading. Texts: *The Iliad*, Lang, Leaf, Myers; *The Odyssey*, Butcher and Lang; *The House of Atreus*, E. D. A. Morshead; *The Theban Plays of Sophocles*, Penguin Series; *The Bacchae of Euripides*, Murray; *The Medea of Euripides*, Murray; *The Hippolytus of Euripides*, Murray; *The Frogs of Aristophanes*, Murray. Mr. Riddehough. [3-0; 3-0]

316. (3) Latin Literature in Translation.—A study, in translation, of some major works by Lucretius, Cicero, Vergil, Horace, Tacitus, and Juvenal. Texts: to be announced. Mr. Grant. [3-0; 3-0]

331. (3) Ancient History.—The rise of the Greek city-states; special emphasis on the political, economic, and cultural achievements of the fifth and fourth centuries B.C.; the growth of Rome and the development of her political institutions during the Republic; the social and economic history of the Empire; the transition from the classical to the mediaeval world. Text-book: Trever, *History of Ancient Civilization*, Vols. I and II. Mr. McGregor, Mr. Guthrie. [3-0; 3-0]

333. (3) The Roman Empire.—This course is a detailed study of Roman imperial history from 30 B.C. to the end of the fourth century. It includes a conspectus of the political theory and practice of the classical Greek world and of the Roman Republic. Attention will be directed to the development of Christianity and to the problem of Church and State. Text-book: to be announced. Mr. Guthrie. [3-0; 3-0]

430. (3) Classical Archaeology.—This is a survey of the art and archaeology of the ancient Near East and Greece; attention will be paid to

archaeological method and to the history of archaeological investigation. Open to advanced undergraduates and to graduate students. [3-0; 3-0]

433. (3) **Greece.**—This course is a detailed study, in discussion, of the Greek city-states, their political and cultural evolution, their decline, and their permanent contribution to western civilization. Historiography and historical method will be important objects of study. Emphasis in reading and discussion will be placed upon the ancient source-materials. Mr. McGregor. (Given in 1958-59.) [0-0-2; 0-0-2]

Comparative Literature

(Given by the Department of Romance Studies)

501. (3) **Renaissance and Baroque.**—Study based on the history of ideas and on stylistic analysis in the literatures of France, Germany, Italy and Spain. Mr. Weinberg. [3-0; 3-0]

502. (3) **Mimesis: Aspects of the Novel in 20th Century Western European Literature.**—The representation of reality, *récit* and Interior Monologue. Time as subjective experience, studied mainly in the works of Proust and Joyce. Mr. Weinberg. [3-0; 3-0]

503. (3) **Epic Poetry.**—The nature and tradition of epic poetry, with particular emphasis on Homer, Vergil, and Milton. Comparative studies will also be made of *Beowulf*, the *Chanson de Roland*, and the *Nibelungen*. Mr. Cragg. [3-0; 3-0]

Criminology

Students wishing to take courses in criminology should discuss prerequisites with members of the department beforehand.

Requirements for:

(a) Major—First and Second Years: Psychology 100 and Sociology 200. One of these may be taken concurrently with courses in the Third Year. Third and Fourth Years: Criminology 300, 436, 437.

(b) Single Honours—Prerequisites: for admission to the Third Year: a First or high Second Class standing in Sociology 200 and either Economics 200 or Psychology 100; Third and Fourth Year Course: 18 units comprising a major in Criminology, a thesis counting 3 units, a seminar, and Social Work 499.

(c) Combined Honours (Criminology combined with some other subject)—Prerequisites for admission to Third Year: as for Single Honours; Third and Fourth Year Course: a major in Criminology and an additional course in Criminology or Sociology. If the thesis is written in Criminology this course may be replaced by the thesis, and in this case a seminar must be taken in addition.

(d) Five-Year Double Honours (Criminology and some other subject)—The requirements for the Criminology portion of the course will, if the thesis is to be written in Criminology, be the same as for Single Honours in Criminology. Otherwise the requirements will be the same as for single honours with the thesis requirement omitted.

300. (3) **Principals of Criminology.**—Analysis of contemporary findings on causation in juvenile delinquency and adult crime; reformist programmes and current treatment. Text-book: Barnes and Teeters, *New Horizons in Criminology*, Second Edition. [3-0; 3-0]

436. (3) **The Correctional Process and the Administration of Criminal Justice.**—The various trends and programmes of modern corrections. Use is made of practical problems in which the student is confronted with a need to consider various points of policy and attitude in determining a course of action. [3-0; 3-0]

437. (3) **Contemporary Corrections in North America and the United Kingdom.**—The status quo of corrections in B. C. considered through an

analysis of the 1950 Report of the B. C. Prison Commission. A similar though less detailed study of services in other provinces (notably Ontario and Saskatchewan) and in the Federal prisons of Canada. Certain American innovations are also discussed, e.g., Youth Authority and Adult Authority systems. Attention is given to the English Borstal system and developments leading out of the Criminal Justice Act of 1948. [3-0; 3-0]

534. (1½) Institutional Programmes in Corrections.—The programmes, physical plants and problems of modern correctional institutions for juveniles and adults of both sexes are discussed. These subjects are presented primarily from the standpoint of the administrative considerations involved.

535. (1½) Non-Institutional Programmes in Corrections.—Many of the most promising movements in contemporary corrections exist within such non-institutional programmes as probation and parole. These topics are discussed in terms of the organization, method and approach employed.

537. (1½) Treatment Programmes in Corrections.—Material concerning the major treatment approaches utilized in modern correctional programmes both inside and outside of institutions. Classification and reception centre procedures will be discussed in detail. The contributions of various professional disciplines (psychiatry, psychology, social work) will be discussed and information will be provided regarding the adaptation of special techniques to correctional settings.

538. (1½) Field Work Required for M.A. in Criminology.

539. (3) Field Work required for Diploma in Criminology.

549. (3) Master's Thesis.

Drama and Speech

Note: The following courses are open to students in the College of Education only. For courses open to students in Arts and Science, see page 104.

205. (1½) Stagecrafts, Principles and Techniques.—Scenery, lighting, costume, make-up.

206. (1½) Creative Dramatics for Children.

321. (3) Speech.—Principles and practice of voice production, articulation, and human communication.

Economics

Students interested in taking a major or Honours in Economics should choose their courses in the Second and succeeding Years in consultation with the Department.

Economic 200 is a prerequisite to all Third and Fourth Year courses except Economics 304, 405 and 406.

Students wishing to take Economics 405 and 406 are advised to take Economics 304 in their Second Year.

(a) Majors-prerequisites: for admission to Third Year, Economics 200 and one of Economics 100, 201 and 304. Third and Fourth Years: 9 units in courses numbered 300 and above allowed for Economics credit.

(b) Single Honours-prerequisites: for admission to Third Year, a reading knowledge of French, German or Russian; Economics 100, a First or Second Class in Economics 200; Economics 201; Mathematics 101. Students are reminded that they may take 18 units in their Second Year. They are encouraged to take their laboratory science course in the First Year, and to choose at least one course from the following in their Second Year: Commerce 151, Geography 201, Mathematics 202, Mathematics 201, Political Science 200, Economics 304, Philosophy 202, any First or Second year course in History, Sociology 200, Anthropology 200, Slavonic Studies 205.

Third and Fourth Years: a minimum of 21 units to include: Economics 304, if not already taken; any three of Economics 300, 301, 302 and 303; Economics 441 and 449. If Economics 100 and 201 have not already been taken, they must be taken in addition to the 21 units. Students normally are expected to take the required Third Year courses in their Third Year.

(c) Combined Honours-prerequisites: for admission to Third Year, a reading knowledge of French, German or Russian; a First or Second Class in Economics 200; Economics 201.

Third and Fourth Years: (1) if the graduating essay is written in Economics a minimum of 15 units to include Economics 441 and 449; any two of Economics 300, 301, 302 and 303; and any other Third or Fourth Year course accepted for Economics credit by the Department. (2) If the graduating essay is not written in Economics a minimum of 12 units to include any two of Economics 300, 301, 302 and 303; and any other Third or Fourth Year lecture course accepted for Economics credit by the Department.

(d) Five year Double Honours: prerequisites and requirements the same as for Single Honours in Economics, except, that (1) Economics 100 is not a compulsory requirement and (2) Economics 449 should not be taken if the graduating essay is written in the other subject in which the student is taking Honours.

100. (3) **Economic History of Europe.**—The development of the European economic environment, beginning with the heritage from early empires, and covering the mediaeval, mercantilist and modern periods. Text-book: Heaton, *Economic History of Europe*, revised edition. [3-0; 3-0]

200. (3) **Principles of Economics.**—The institutions, processes and agencies which provide for our individual and collective well-being; basic determinants of real and money incomes, employment and living standards. Prerequisites: First Year standing; Mathematics 91 of high school or 100 (Mathematics 100 may be taken concurrently). One section will be reserved for Honours students in Economics and for those who wish the equivalent of an Honours Course. Text-books: Samuelson, *Economics*, and one other text to be announced; and directed readings. Staff. [3-0; 3-0]

This course is also offered through correspondence.

201. (3) **Economic History of Canada.**—From the beginnings of settlement to the present day. Text-book: Easterbrook and Aitken, *Canadian Economic History*. Mr. Deutsch. [3-0; 3-0]

300. (3) **Money and Banking.**—Origin and value of money media, the functions of banks; determinants of exchange rates; measures of purchasing power and problems of monetary management. Text-books: Thomas, *Our Modern Banking and Monetary Systems*; Sayers, *Modern Banking*. Mr. Crumb. [3-0; 3-0]

301. (3) **Economic Analysis.** — Theoretical foundations of economics with particular reference to the determinants of value; indifference; the concept of equilibrium; factor compensation. Prerequisites: Second Class standing in Economics 200. Text-book: Boulding, *Economic Analysis*. References: Stigler, *The Theory of Price*; Kierstead, *Essentials of Price Theory*. Mr. Crumb. [3-0; 3-0]

302. (3) **Economics of Income and Employment.**—Keynesian and post-Keynesian macro-economic theories and policies; analysis of aggregate demand and supply; fluctuations in income, employment and prices; dynamic processes of growth. Text-book: to be announced. Reference: Hansen, *Business Cycles and National Income*. Mr. Scott. [3-0; 3-0]

303. (3) **History of Economic Thought.**—The development of economic analysis from ancient to modern times including some description of the changing environment in which economists wrote. Readings include selec-

tions from the classics in the field from Aristotle to Keynes. Reference: Schumpeter, *History of Economic Analysis*. Mr. Clark. [3-0; 3-0]

304. (3) **Economic Statistics I.**—Arrangement and presentation of data. Standard distributions. Chi-square. Large and small samples. Regression—two variables. Index numbers. Elementary treatment of time series. Introduction to analysis of variance. May be taken in the Second Year by those taking certain majors, with the approval of the Department. Text-book: Lewis, *Methods of Statistical Analysis for Economics and Business*. Reference: *Canada Year Book*, 1956. Prerequisite: Mathematics 101. Mr. Matuszewski. [3-2; 3-2]

305. (3) **Economic History of the United States.** — Major economic developments and trends in the United States of America from colonial times to the present. Text-book: to be announced; Reference: Shannon, *America's Economic Growth*. [3-0; 3-0]

306. (3) **Labour Economics and Industrial Relations.**—Labour problems of modern industrial society. Economic impact of trade unionism and collective bargaining. History, structure and functions of trade unions and employer associations. Industrial conflict and labour legislation. Text-book: Reynolds, *Labor Economics and Labor Relations*, 1954 ed. References: Bakke and Kerr, *Unions, Management and the Public*; Selekman, Selekman and Fuller, *Problems in Labor Relations*. Mr. Jamieson. [3-0; 3-0]

This course is also offered through correspondence.

307. (3) **Agricultural and Land Economics.** — Production, prices and income distribution in agriculture. The problem of optimum use of resources with particular reference to agricultural and urban land use; includes consideration of land compensation, acquisition, tenure, financing; also the effect of uncertainty, technological progress, urbanization and population growth. Text-book: Black, *Introduction to Economics for Agriculture*. References: Heady, *Economics of Agricultural Production and Resource Use*; Schultz, *The Economic Organization of Agriculture*; Ratcliffe, *Urban Land Economics*. Mr. Anderson and Mr. Robinson. [3-0; 3-0]

402. (3) **International Trade.**—The mechanism of international trade and finance with particular reference to exchange rate determination and trade policy. Price levels, purchasing power parity; government control of exchange rates; gold versus paper standards; protection and free trade; international cartels and monopolies; trade treaties and international agreements. Text-book: Kindelberger, *International Economics*. Prerequisite: Economics 300. Mr. Deutsch. [3-0; 3-0]

403. (3) **Government Finance.**—Role of government. Theories of justice in taxation. Characteristics of a good tax system. Government expenditures. Government revenues, with emphasis on income and property taxes and succession duties. Dominion-Provincial-Municipal financial relations. Government borrowing and fiscal policy. Text-book: Due, *Government Finance*, or Schultz and Harriss, *American Public Finance* (6th ed). Mr. Clark. [3-0; 3-0]

404. (3) **Transportation.**—Development of railway, highway, water, air and urban transportation agencies in Canada; theory and practice of rate-making; theory of the location of industry; governmental fixation of rates. Mr. Hughes. [3-0; 3-0]

405. (3) **Economic Statistics II.**—Principles of sampling, and sample surveys. Time series. Regression. Index numbers. Element of Demography. Text: F. C. Mills, *Statistical Methods*, third edition. References: Hansen, Hurlwitz and Madou, *Sample Methods and Theory*, Vol. I, *Methods and Applications*. Prerequisite: Economics 304 or Mathematics 205. (Given in alternate years, commencing in 1957-58.)

406. (3) **Industrial Statistics.**—Applications of sampling to industrial problems. Analysis of variance. Introduction to quality control. Statistics

of production processes. Text: to be announced. Reference: Bowker and Lieberman, *Handbook of Industrial Statistics*. Prerequisite: Economics 304 or Mathematics 205. (Given in alternate years commencing 1958-59.)

441. (3) Honours Seminar.—Reports and group discussions under Staff direction of important aspects of economic study. Open only to Honours and graduate students. [2-0; 2-0]

449. (3) Graduating Essay.—Essay on some theoretical or institutional problem, to be selected in consultation with members of the Department. Must be submitted in final form on or before the beginning of the examinations preceding the congregation at which the student expects to receive his degree.

500. (3) Contemporary Economic Theory.—The approach, major content and emphasis of contemporary economic thinking, with special reference to equilibrium, income analysis and employment theory. Prerequisites: Economics 301 or 302 or 303, and graduate standing. [3-0; 3-0]

540. (3) Master's Seminar.—Readings, consultations and reports on such phases of contemporary theory and institutional practices as may be designed to meet the needs of candidates for the Master's degree in Economics. Credit requisite: graduate standing. May be held concurrently with the Honours seminar. [2-0; 2-0]

549. (3) Master's Thesis.—A comprehensive treatment of some theoretical or institutional problem to be selected in consultation with the Department. Must be submitted in final form on or before the beginning of the examinations preceding the congregation at which the student expects to receive the degree.

Other Courses which Qualify for Economics Credit

Commerce 151. (3)—for Third Year Honours students.

Commerce 371. (3)—for Third or Fourth Year Honours students and students taking a major in Economics.

Geography 201. (3)—for Third Year Honours students.

Agricultural Economics 300. (3)—for Third and Fourth Year Honours students and students taking a major in Economics.

Agricultural Economics 401. (3)—for Fourth Year Honours students and students taking a major in Economics.

Slavonic Studies 312 and 314. (3)—for Third and Fourth Year Honours students.

Education

Third and Fourth Year students who have completed their Normal School Training may take up to 6 units in Education courses, chosen from Education 301 to 491 inclusive, for credit toward the B.A. degree. For descriptions of courses see Faculty and College of Education.

English

Requirements for:

(a) Major—First Year: English 100 and 101; Second Year: English 200; Third and Fourth Years: total of 9 units in English courses numbered above 400, chosen in consultation with the Department.

(b) Single Honours—Prerequisites for admission to Third Year include a First or high Second Class mark in English 200, and approval of the Department. In the last three years at least 51 units are required. Second Year: 15 units including English 200; Third and Fourth Years: 15 units consisting of English 439, 440, 444, 445, 446, 449 (graduating essay), 15 units in courses which may be taken either in or outside the Department, and 6 units in courses which must be taken outside the Department. Candidates will present evidence, by the end of the Fourth Year, of a

reading knowledge of French, German, Latin or Greek. The Honours programme must be approved by the Department.

(c) Combined Honours—Prerequisites for admission to Third Year: as for Single Honours. In the last three years at least 51 units are required. Second Year: at least 15 units including English 200; Third and Fourth Years: English 440, 444, 445, 446, and any other two courses in English numbered above 400. Candidates will present evidence, by the end of the Fourth Year, of a reading knowledge of French, German, Latin or Greek. The Honours programme must be approved by the departments concerned.

General Prerequisites

All students in the First Year are required to take English 100, 101. This course is prerequisite to English 200.

Students who have failed either part of English 100, 101 will be required to repeat both parts. No further courses in English may be taken until both parts have been passed.

English 200 or its equivalent is prerequisite to all English courses above 400.

Every student is required to own a good dictionary; e.g., "The Concise Oxford Dictionary", "The American College Dictionary", "Webster's Collegiate Dictionary", "The Winston Simplified Dictionary".

90. Preparatory English.—A course designed to give basic instruction in English to students from other countries where English is not the principal language of instruction. This course does not carry formal credit but will be required of any such student who, in the judgment of the Department, is not prepared for English 100-1.

First Year

100, 101. (3) **Literature and Composition**.—A study of literature in the nineteenth and twentieth centuries, and of the principles of composition. Themes and exercises are required. The course is not divisible, for purposes of credit, into two parts. Texts: to be announced. [4-0; 4-0]

Second Year

200 (3) **Literature and Composition**.—A study of literature from Chaucer to the nineteenth century, and of the principles of composition. Themes and exercises are required. Texts: to be announced. [3-0; 3-0]

This course is also offered through correspondence.

201. (3) **Children's Literature**.—For credit only in the Faculty and College of Education. [3-0; 3-0]

202. (3) **Writing**. — Practice in imaginative writing, with particular attention to the short story, the familiar essay, and to contemporary verse forms, but with reference also to the one-act stage play and the radio drama. Prerequisite: English 100-101. [3-0; 3-0]

Third and Fourth Years

For courses in drama see page 104.

*400. **Advanced English Composition**. — The course gives practice in writing the personal essay and the research paper. Stress is placed on the development of the student's own style. Competent use of the English language is prerequisite. Texts: Waddell, *Grammar and Style*; *Anthology of English Prose*, Everyman edition. For credit only in the Faculty and College of education. (See footnote on page 105.) [3-0; 3-0]

402. (3) **Classics of European Literature**.—(Not given in 1957-58.)

403. (3) **Wordsworth**.—A study of the life and works of Wordsworth, with special emphasis on *The Prelude*. (Not given in 1957-58.) [3-0; 3-0]

404. (3) Literature of the Bible.—Origins and backgrounds of biblical literature; the principal translations of the Bible into English; an examination of the chief literary forms of the Bible—poetry, drama, biography, short story, etc.; influence of the Bible on English language and literature. Text: *The Bible Designed to be Read as Living Literature* (ed. Bates). [3-0; 3-0]

405. (3) Poetics.—The imagination and the poetic process; the emotional element in poetry and the tests of value; the content of poetry and the nature of poetic truth; poetic form and its varieties, diction, imagery, tone-colour, and metrics. (Not given in 1957-58.) [3-0; 3-0]

406. (3) English Poetry.—Critical studies of representative English poems grouped according to form and content. (Not given in 1957-58.) [3-0; 3-0]

***407. (3) Dramatic Writing and Criticism.**—Practice in the writing of stage, radio, television and cinematic drama, and in the critical evaluation of these forms, with particular emphasis on the stage play. Prerequisite: English 202 or its equivalent. (See footnote on page 105.)

408. (3) Elizabethan Literature.—Literary types studied will include the lyric; sonnet sequence; pastoral; prose romance; realistic prose and verse; literary criticism; essay; Elizabethan translations, especially the King James version of the Bible. The work of Spenser will be read in some detail. Texts: Hebel, Hudson, et al., *Tudor Poetry and Prose*; Spencer. [3-0; 3-0]

***409. (3) Fiction Writing and Criticism.**—Practice in the writing of the short story, and in critical evaluation of the contemporary short story and novel. Prerequisite: English 202 or its equivalent. (See footnote on page 105.) [3-0; 3-0]

411. (3) The Drama to 1642.—See page 104.

413. Shakespeare.—See page 104.

424. (3) Seventeenth-Century Literature. — The century's prose and poetry, exclusive of Milton. Emphasis upon the ideas, forms and styles as an expression of the educational, religious, moral and political controversies of the age. Texts: Coffin and Witherspoon, *Seventeenth Century Prose and Poetry*; Bunyan, *Pilgrim's Progress*. [3-0; 3-0]

425. (3) Milton. — The work of Milton, with special emphasis on *Paradise Lost*. [3-0; 3-0]

426. (3) Eighteenth-Century Literature.—From the Age of Anne to the end of the eighteenth century: the Age of Pope, and the Age of Johnson. The significant authors are related to the broad cultural movements of the period. Texts: Pope, *Selected Poetry and Prose*; Swift, *Gulliver's Travels*, *The Tale of a Tub*, and *The Battle of the Books*; Johnson, *Selected Prose and Poetry*; *Essays on Goldsmith and Selections from his Writings*; Boswell, *Life of Johnson*; *English Verse*, vol. III, "Dryden to Wordsworth." [3-0; 3-0]

427. (3) The English Novel.—From Defoe to Henry James. [3-0; 3-0]

428. (3) American Literature to 1865.—A survey, with emphasis given to Franklin, Poe, Emerson, Thoreau, Hawthorne, and Melville. Text: *The American Tradition in Literature*, ed. by Bradley, Beatty, and Long (New York, Norton, 1956), Vol. I. Individual works by various authors to be assigned. [3-0; 3-0]

429. (3) American Literature Since 1865.—A survey, with emphasis given to Whitman, Clemens, James, Dickinson, Dreiser, Eliot, Hemingway, and Faulkner. Text: *The American Tradition in Literature*, ed. by Bradley, Beatty, and Long (New York, Norton, 1956), Vol. II. Individual works by various authors to be assigned. [3-0; 3-0]

430. (3) The Romantic Period.—Chiefly Wordsworth, Coleridge, Byron, Shelley, and Keats. Text: to be announced. [3-0; 3-0]

431. (3) **Victorian Poetry.**—Chiefly Tennyson, Browning, and Arnold. A few weeks devoted to later poetry. Text: Stephens, Beck, and Snow, *Victorian and Later English Poets*. [3-0; 3-0]

432. (3) **Victorian Prose.**—Macaulay, Carlyle, Mill, Newman, Ruskin, Arnold, Huxley, etc. Text: Harrold and Templeman, *English Prose of the Victorian Era*. [3-0; 3-0]

433. (3) **Modern Period.**—The course is based primarily on the following: Hardy, Hopkins, Butler, Wilde, Wells, Shaw and Conrad. The background of ideas and social forces, especially as revealed through the literature of the period 1870-1914, will receive close attention. [3-0; 3-0]

434. (3) **Contemporary Literature.**—Outstanding writers of the present generation; literary developments in the essay, poetry, and fiction. Texts: an essay anthology, a poetry anthology, and three novels (inexpensive editions) to be announced. [3-0; 3-0]

435. (3) **Canadian Literature.**—A survey of our literature in the English tongue, with some attention to a few major French-Canadian works in translation. Chief emphasis will be placed on achievements within the past 75 years. Some attempt will be made to explore the relationships between literary developments in Canada and influential movements in Britain and the United States. Texts: *Canadian Anthology*, ed. by C. F. Klinck and R. E. Watters (Toronto, Gage, 1955); and various works by individual authors to be assigned. [3-0; 3-0]

436. (3) **Humanist Studies.**—A study of the development of Western Civilization from its beginnings to the end of the Renaissance, with special emphasis on the rise of the Christian Church and its role in the Middle Ages, and the part played by the arts and sciences in establishing the Western tradition. (Not given in 1957-58.) [3-0; 3-0]

437. (3) **Humanist Studies.**—An attempt to clarify the position of modern man against the background of his institutions, scientific, religious, political, and social. [3-0; 3-0]

439. (3) **History of the English Language.**—A study of the description and history of English phonology, grammar, and vocabulary. Text: Robertson and Cassidy, *The Development of Modern English*, (2nd ed.). [3-0; 3-0]

440. (3) **Chaucer.**—Chaucer, his contemporaries and his followers, including a detailed study of Chaucer's major works. [3-0; 3-0]

444. (1) **Bibliography.**—Sources and methods. [1-0; 1-0]

445. (2) **The Simpler Methods of Criticism and Investigation.** [2-0; 2-0]

446. (3) **Readings in English Literature.**—For Honours students only. [3-0; 3-0]

448. (3) **Criticism.**—The problem of aesthetic value; the function of criticism. (Not given in 1957-58.) [3-0; 3-0]

449. (3) **Graduating Essay.**—(This course involves an oral examination, extending to the general area of the essay.)

Drama

411. (3) **The Drama to 1642.**—Main emphasis upon the major Elizabethan dramatists, including Shakespeare; some attention is given to the influence of Greek and Roman dramatic theory and practice. [3-0; 3-0]

413. (3) **Shakespeare.**—Lectures on various aspects of Shakespeare's art, together with close study of eight of his plays. [3-0; 3-0]

420. (3) **The Drama Since 1660.**—A survey of the chief developments of dramatic art from the Restoration to the present day. (Not given in 1957-58.) [3-0; 3-0]

421. (3) **Theatre Practice.**—(a) Speech: breath control, voice quality and projection, articulation, freedom of expression, interpretation. (b) Acting: principles of acting, mime interpretation of the role, class presentation of short scenes in various dramatic styles. Given in 1957-58. [2-2; 2-2]

422. (3) **History of the Theatre.**—Western theatrical presentation from the Greek era to the present. Representative plays of important periods, with special emphasis upon the theatres, the art of the actors, scenic effects, styles of production, art of playwriting and dramatic theory. (Not given in 1957-58.) [3-0; 3-0]

***Graduate Courses (see footnote)**

Candidates are referred to the Faculty of Graduate Studies section of the Calendar for further information on course requirements for the Master's degree.

500. (3) **History of Criticism.**

504. (3) **Poetic Drama.**

510. (3) **Old English Studies.**

512. (3) **Studies in Medieval English Texts.**—(Prerequisite: English 440 or equivalent.)

515. (3) **Shakespeare.**—Shakespeare Criticism (knowledge of the major plays of the canon is expected).

520. (3) **Milton.**

525. (3) **18th Century Studies.**—Johnson and his circle, or Pope and Swift.

530. (3) **Studies in the Romantic Period (Wordsworth).**

535. (3) **Studies in the Victorian Period (Arnold).**

539. (3) **20th Century Studies (Contemporary Literary Criticism).**

540. (3) **American Authors (Hawthorne and Melville).**

545. (3) **Studies in American Literature.**

548. (3) **Canadian Literature.**

549. (3-6) **Master's Thesis.**

*The Secretary of the English Department will supply upon request a brochure giving a fuller description of all senior division and graduate courses listed above and a statement as to whether course 400 will be open to a selected group of students in Arts and Science; as to which of the writing courses 407 and 409 may be given in the regular session 1957-58; and as to which of the graduate courses listed will be offered.

Fine Arts

(See also courses in Architecture, page 86.)

100. (3) **Introduction to Art.**—An introduction to the theory and philosophy of art. Aesthetic principles will be illustrated by the major works of the great periods of art. This course is intended to provide an understanding and appreciation of painting, sculpture and architecture, and to prepare the student for qualified judgment of traditional and contemporary art forms. Text-book: to be announced. Mr. Binning. [3-0; 3-0]

101. (3) **History of the Fine Arts.**—History of music, art and architecture, with emphasis upon the cultural development of mankind through the ages. Appreciation and understanding will be encouraged through illustration and discussion of major works. Text-book: Gombrich, *The Story of Art*. For credit in the Faculty and College of Education only. [3-0; 3-0]

200. (3) **History of Art.** — A chronological study of Classic, Gothic, Renaissance and Modern painting, sculpture and architecture, prefaced by a survey of other and earlier great periods of art. Special emphasis is placed

forms. Text-book: Upjohn, Wingert & Mahler, *History of World Art*. Mr. Binning. [3-0; 3-0]

210. (3) **Basic Design.**—An intensive and advanced study of creative art forms through experiments closely related to illustrated lectures and demonstrations; the basic visual elements of line, shape, volume, space, colour and texture, using various materials. Prerequisite: F.A. 100 or F.A. 200. Text-book: Moholy-Nagy, *Vision in Motion*. Mr. Thomas. [1-4; 1-4]

300. (3) **Introduction to the Plastic and Graphic Arts.**—Experiment and study of various media of art expression as a basis for advanced work for an art major. For credit in the Faculty and College of Education only.

301. (3) **History and Criticism of Art.**—For credit in the Faculty and College of Education only. [3-0; 3-0]

302. (3) **Drawing and Painting.**—Designed to form the basis for any advanced work towards an art major. The fundamentals of both techniques will be explored using still life, figure and landscape. Students will be expected to submit a sketch book of work done outside of class as part of the final mark. For credit in the Faculty and College of Education only.

303. (3) **Ceramics and Modelling I.**—Introduction to ceramics and modelling with emphasis upon the preparation of clays, testing of glazes and kiln firing techniques. Introduction to wheel techniques. (This course will require extra laboratory time.) Prerequisite: Fine Arts 300 and 301 or equivalent courses. For credit in the Faculty and College of Education only.

305. (3) **Design I.**—This course will include studio experiment in both two and three dimensional design problems with the purpose of developing a fuller understanding of the fundamental design principles. Prerequisite: Fine Arts 300 and 302 or equivalent courses. For credit in the Faculty and College of Education only.

307. (3) **Graphic Arts I.**—This course includes instruction in the basic techniques of relief printing (lino cuts, woodcuts, wood engravings); also experimental techniques in silk screen printing. Some time will be spent in laboratory discipline. Prerequisite: Fine Arts 300 and 302 or equivalent courses. For credit in the Faculty and College of Education only.

401. (3) **Advanced Watercolour.**—The skill and craft of the medium to be developed by experimentation, and appreciation of the various ways of handling watercolour. Outdoor sketching and work in the studio will offer a variety of topics. No text. Prerequisite: Fine Arts 300 and 302 or equivalent courses. For credit in the Faculty and College of Education only.

402. (3) **Advanced Oil Painting.**—An opportunity for the student to develop his ability in oil painting while learning the various techniques and skills used throughout the history of art. Preparation of mediums and glazes and painting supports will be taught but the main emphasis will be upon completing a collection of work at the highest possible level of achievement. Prerequisites: Fine Arts 300 and 302 or equivalent courses. For credit in the Faculty and College of Education only.

403. (3) **Ceramics and Modelling II.**—Advanced Ceramics and Modelling with specialization in the use of the potter's wheel, molds and casting, firing techniques; Investigation of local and imported clay; glazing research. (This course will require extra laboratory time.) Prerequisites: Fine Arts 303 or equivalent course. For credit in the Faculty and College of Education only.

405. (3) **Design II.**—This course will apply experiment and technique to specific design problems with emphasis on such aspects of design as interest decoration, industrial design and fabric design. Prerequisite: Fine

Arts 305 or equivalent course. For credit in the Faculty and College of Education only.

407. (3) Graphic Arts II.—This advanced course will include study in intaglio printing (etching, drypoint) as well as planographic printing (lithography). Emphasis will be placed on creative experimentation in these two graphic art techniques. Prerequisite: Fine Arts 307 or equivalent course. For credit in the Faculty and College of Education only.

French

(Given by the Department of Romance Studies)

Requirements for:

(a) Major—First Year: French 120 or satisfactory standing in French 110; Second Year: French 220 or satisfactory standing in French 210; Third and Fourth Years: 9 units in French courses numbered 300 or higher, including 300 and 302.

(b) Single Honours—First Year: French 120 or satisfactory standing in French 110 and one year of Latin (if Latin 92 has not been passed in high school); Second Year: French 220 and 223; Third and Fourth Years: French 300, 302, and 12 further units in French numbered above 300, a graduating essay (3-6 units) and other courses chosen in consultation with the Department.

(c) Combined Honours—First Year: French 120 or satisfactory standing in French 110; and one year of Latin (if Latin 92 has not been passed in high school); Second Year: French 220 and 223; Third and Fourth Years: French 300, 302 and 6 additional units in French, 12 units in the second subject selected in consultation with the department concerned, and a graduating essay (3-6 units) in one or the other field.

110. (3) First Year University French. (Prerequisite: French 20.)—Study of French texts; grammar; pronunciation. Demorest and Shaw, *French Civilization Through Fiction*; Wordsworth, *Modern French Syntax and Composition*. [4-0; 4-0]

120. (3) First Year University French. (Prerequisite: French 92.)—Study of French texts; grammar; pronunciation. Texts: *Contes modernes* (revised edition); Ferrar, *A French Reference Grammar*. [3-0; 3-0]

210. (3) Second Year University French. (Prerequisite: French 110.)—Reading of assigned texts (to be announced); linguistic study based on Ferrar, *A French Reference Grammar*. [4-0; 4-0]

220. (3) Second Year University French. (Prerequisite: French 120 or First Class standing in French 110.)—A study of the following texts: Molière, *le Malade imaginaire*; Voltaire, *Candide*; Balzac, *le Père Goriot*; Camus, *la Peste*. Composition based on Mesnard, *A Review of French Grammar*. [3-0; 3-0]

223. (3) Training in Speech and Writing.—Conversation, *dictées*, stylistics, advanced translation, literary genres, aspects of French poetry. (Preparatory courses for Honours students; given in French.) Mr. Tougas, Mr. Fleury. [3-0; 3-0]

300. (3) Literature of the Seventeenth Century.—History and social conditions; development of the literature. Texts: Corneille, *le Cid*; Racine, *Andromaque*; Molière, *les Précieuses ridicules*, *le Misanthrope*; selections from the works of Descartes, Pascal, La Fontaine, etc. Miss Dallas, Mr. Anderson. [3-0; 3-0]

301. (3) Literature of the Twentieth Century.—A study of Gide, *les Caves du Vatican*; Malraux, *la Condition humaine*; Mauriac, *Trois Récits*; Camus, *la Peste*; Giraudoux, *la Guerre de Troie n'aura pas lieu*; Sartre, *Huis clos*, and other representative works. Mr. Robert. [3-0; 3-0]

302. (3) **French Practice.**—Composition; syntax; phonetics. Texts: Whitmarsh, *Advanced French Course*; (Salvan) *Images de l'homme*; Sartre, *Théâtre*; Anouilh, *la Sauvage*, *le Bal des voleurs*; Vercors, *le Silence de la mer*. [3-2; 3-2]

303. (3) **The Modern Novel.**—An analysis of literary trends, with reference to parallel developments in the fields of painting and music. Texts: Les Goncourt, *Renée Maupérin*; Zola, *l'Assommoir*; Bourget, *le Disciple*; Barrès, *les Déracinés*; Anatole France, *les Dieux ont soif*; Proust, *Combray*; other representative works. (Not given in 1957-58.) Mr. Tougas. [3-0; 3-0]

400. (3) **Literature of the Nineteenth Century.**—A study of Chateaubriand, *Atala*, *René*; Balzac, *le Père Goriot*; Constant, *Adolphe*; Flaubert, *Madame Bovary*; Hugo, *Hernani*; Beccque, *les Corbeaux*; Baudelaire, *les Fleurs du mal*, and other works of the period. Mr. Andison. [3-0; 3-0]

401. (3) **Literature of the Eighteenth Century.**—A study of Voltaire, *Lettres philosophiques*; Montesquieu, *Lettres persanes*; Diderot, *le Neveu de Rameau*; Rousseau, *la Nouvelle Héloïse*. (Not given in 1957-58.) Mr. Hall. [3-0; 3-0]

402. (3) **Explication de textes.**—Reports on assigned authors. Also, discussion in French of political, economic and cultural aspects of contemporary France. Mr. Robert. [3-0; 3-0]

403. (3) **Course for Teachers of French.**—Advanced composition and syntax; phonetics and diction; oral practice. (This course is given in the Summer Session only.)

404. (3) **The Literature of French Canada.**—A study of characteristic works from the Conquest to the present. (This course is complementary to History 404.) Mr. Tougas. [3-0; 3-0]

405. (3) **The French Enlightenment.**—A study of French thought from Bayle to Chateaubriand. Mr. Bongie. [3-0; 3-0]

406. (3) **The French Novel from 1600 to 1735.**—Literary and social history, with reference to the art and music of the period. A critical evaluation of the works of d'Urfé, Mlle de Scudéry, Sorel, Scarron, Furetière, Mme de Lafayette, Le Sage, Marivaux, Prévost and other significant novelists. Texts to be announced. Miss Dallas. [3-0; 3-0]

420. (3) **French Language and Literature.** Discussion of selected topics. [3-0; 3-0]

449. (3-6) **Graduating Essay.**—For Honours only.

Graduate Courses

501. (3) **The Middle Ages.**—A survey of French literature from the beginnings to the fifteenth century. [3-0; 3-0]

502. (3) **Literature of the Sixteenth Century.**—A study of the French Renaissance based on readings from the works of Rabelais, Marot, Du Bellay, Ronsard and Montaigne. [3-0; 3-0]

503. (3) **Modern French Poetry.**—A study of French poetry from Baudelaire to the *surréalistes*. [3-0; 3-0]

504. (3) **Literary Criticism.**—A study of literary theory and critical methods from 1800 to the present. [3-0; 3-0]

549. (3-6) **Master's Thesis.**

Geography

Requirements for:

(a) Major—First or Second Year: Geography 101; Third and Fourth Years: total of 9 units in Geography including one course of the 300 level, one of the 400 level, and a third from either group.

(b) Single Honours—First two years: Geography 101, Mathematics 101, and two years of a modern language; Geography 201 or 207 recommended in the Second Year for those interested in social sciences; Third and Fourth Years: 15 units of Geography courses numbered above 300 and a graduating essay (3 units). Honours students in the Third and Fourth Years are required to attend the Geography Seminar. An Honours paper will be set at the end of the Fourth Year.

(c) Combined Honours—First or Second Year: Geography 101; Third and Fourth Years: 12 units from any of the Geography courses numbered 300 or above, and other requirements as in (b).

Notes: (1) Geography 101 is one of the elective sciences on page 78, note 5 (i). (2) Geology 412 is accepted as a course in Geography, except for Geology students. (3) Slavonic Studies 404 counts for credit as a course in Geography.

101. (3) **Introduction to Physical Geography.**—The earth as a globe; map projections; topographic maps; origin and distribution of landforms with particular reference to North America; weather and climate; practical laboratory exercises; field trips. Text: Strahler, *Physical Geography*, 1951. Mr. Mackay, Mr. Kerr. [2-2; 2-2]

201. (3) **Economic Geography.**—An introductory course dealing with man and his occupations; the effect of physical environment upon the distribution of world population; the distribution of natural resources and problems of trade. Text: Renner, Durand, White, *World Economic Geography*, 1951. Mr. Robinson. [3-0; 3-0]

207. (3) **Human and Political Geography.**—The geographic effect of man's occupation of the earth's surface through time; population distribution, growth and problems; regional analysis of the cultural landscape; the political geography of selected areas. Text: James, *A Geography of Man*. Mr. Ruggles. [3-0; 3-0]

301. (3) **Cartography.**—Historical cartography, map projections, methods of showing relief, aerial photographs, distribution maps, statistical graphs and cartograms, and sources of maps; practical field mapping and methods of land utilization survey. Mr. Mackay. [2-2; 2-2]

302. (3) **Weather and Climate.**—Introductory study of the elements and controls of weather and climate; the principles of meteorological instruments and practical weather observations; analysis of daily weather maps; principles of climatic classification; regional climatology with particular emphasis upon the climate of British Columbia. Text: Trewartha, *An Introduction to Weather and Climate*, 2nd ed. Mr. Chapman. [2-2; 2-2]

303. (3) **World Geography.**—The major geographic patterns of the world followed by a survey of the physical and human geography of each continent. Recommended for students taking only one course in geography. Text: Wheeler, Kostbade, Thoman, *Regional Geography of the World*. Atlas: Goode's World Atlas 2nd edition, Rand McNally. Mr. Chapman. [3-0; 3-0]

304. (3) **The Geography of Settlement.**—A geographical interpretation of the world pattern of settlement: the grouping, functions and structure of rural and urban settlement; geographical characteristics of regional and city planning. Map and photo interpretation; field study. Mr. Ruggles. [3-0; 3-0]

306. (3) **Natural Resources and World Affairs.**—Deals with selected aspects of economic geography. Topics are: energy; soils; agricultural, mineral and forest raw materials, and their significance in Canadian and world affairs. (Geography majors or Honours may be required to substitute 2 hours laboratory on soils for some lecture periods in the first term.) Mr. Warren, Mr. Griffith, Mr. Rowles. [2-2; 3-0]

310. (3) **Commercial and Industrial Geography.**—Factors influencing the location and development of industrial activity. Includes energy, raw

materials, labour, capital, transportation and markets. Text: Zimmerman, *World Resources and Industries*, revised edition. Atlas: Oxford Economic Atlas, shortened edition. Mr. Chapman. [3-0; 3-0]

406. (3) **Geography of Asia**.—A regional survey of the physical and human geography of the countries of the Far East, Southeast Asia, South Asia (India, Pakistan, Ceylon) and the Middle East. Mr. Mackay. [3-0; 3-0]

408. (3) **Geography of Europe**.—Physical and human geography; physical structure, climatic characteristics; natural resources; population distribution. Mr. Kerr. [3-0; 3-0]

409. (3) **Geography of Canada and the United States**.—Regional geography with emphasis on Canada; physiography, climate, natural resources, population; primary industries. Text: Putnam, *Canadian Regions*, 1952. Mr. Robinson. [3-0; 3-0]

This course is also offered through Correspondence.

445. (3) **Honours Seminar**.—History, philosophy, scope and content of geography; different fields of geography; professional opportunity; field methods in geography. Required for Fourth Year Honours students, and recommended for Third Year Honours. May be attended by senior majors. [3-0; 3-0]

449. (3) **Honours Essay**.—Required of Fourth Year Honours students. Topic to be selected in consultation with the Department.

Primarily for Graduate Students

501. (1½) **Cartography**.—Population, relief and land use mapping. Field methods. Research problems. Prerequisite: Geography 301. Mr. Mackay. [0-0; 2-2]

502. (1½) **Climatology**.—Advanced study in both theoretical and applied climatology. Prerequisite: Geography 302. Mr. Chapman. [0-0; 2-2]

503. (1½) **Problems in Canadian Geography**.—Research problems and discussion on certain geographic regions of Canada. Prerequisite: Geography 409. Mr. Robinson. [2-2; 0-0]

545. (3) **Geography Seminar**.—Advanced study of philosophy of geography and of geographers. Special research problems. [3-0; 3-0]

549. **Master's Thesis**.

Geology

Geology 200 is a prerequisite to all other courses in Geology. Students who intend to make Geology their profession are advised to take Geological Engineering or an Honours Course leading to the B.Sc. degree.

Requirements for:

(a) Major—In the first two years, English 100, 101; one course of foreign language (German or Russian preferably); Mathematics 101 and 202; Chemistry 101; Physics 100 or 101; Zoology 105; Geology 200; one of Chemistry 200, 205 or Physics 200; a non-science elective. In the Third and Fourth years, Geology 301, 302, 303, 304, 305, 307, 317, 406; 6 units chosen from the humanities or social sciences; 9 units of second science major.

(b) Honours—In the first two years, as above, but an additional 3 units are advisable in the Second Year. In the Third and Fourth Years—36 units, including 6 units of outside electives and 3 units for the graduating thesis. The programme must be approved by the Department.

200. (3) **General Geology**. — Introductory course: "Physical Geology", including weathering, ground water, stream, glacier and wind action, the ocean and its work, earth structure, earthquakes, vulcanism, intrusions, metamorphism and mineral deposits; "Historical Geology", including

origin and history of the earth and its life. Text: Longwell and Flint, *Introduction to Physical Geology*, 1955, and Stovall and Brown, *Principles of Historical Geology*, 1954. Prerequisite: Chemistry 101 before or concurrently. [2-2; 2-2]

301. (1½) Morphological Crystallography.—Thirty-two crystal classes with reference to natural and artificial crystals; space lattices, symmetry elements, stereographic and gnomonic projections; optical activity, pyroelectricity and piezoelectricity in crystals. Prerequisite: Physics 100 or 101. [2-2; 0-0]

302. (1½) Mineralogy.—Elementary crystallography, physical, systematic, descriptive (and determinative) mineralogy of approximately one hundred rock-forming and ore minerals. Text: Dana, *Manual of Mineralogy*, revised by Hurlbut, 16th edition. Prerequisites: Physics 100 or 101 and Geology 301. [0-0; 2-2]

303. (1½) Optical Mineralogy.—The theory and use of the polarizing microscope in identifying the non-opaque minerals. Text: Ernest Wahlstrom, *Petrographic Mineralogy*. [2-2; 0-0]

304. (3) Structural Geology.—Primary and secondary structures in rocks; practice in solving structural problems. Text: E. S. Hills, *Outlines of Structural Geology*, 1953. Prerequisite: Geology 302 concurrently. [3-0; 3-0]

305. (1) History of Geology.—A brief study of the development of the geological sciences. Text: Adams, *Birth and Development of Geological Sciences*. [1-0; 1-0]

307. (2) Petroleum, Natural Gas and Ground Water.—Origin and occurrence of ground water, petroleum, natural gas and structural materials. Text: Russell, *Principles of Petroleum Geology*. [2-0; 2-0]

317. (1½) Petrology.—The common rocks and the processes which formed them; determination of hand specimens. Text: Tyrrell, *Principles of Petrology*. [0-0; 2-2]

405. (½) Coal.—Origin and occurrence of coal. [1-0; 0-0]

406. (3) Palaeontology.—Invertebrate and vertebrate fossils, their classification, identification, and geological distribution. Text: Woods, *Palaeontology*, 8th edition. Prerequisite: Zoology 105. For students majoring or taking Honours in Zoology, a reading course in historical geology may be substituted for Geology 200. [2-2; 2-2]

407. (3) Petrology.—The descriptive and interpretive study of igneous, sedimentary, and metamorphic rocks. Text: Tyrrell, *The Principles of Petrology*. Prerequisites: Geology 302, 303, 317. [2-3; 2-3]

408. (3) Mineral Deposits.—Manner of occurrence, genesis, structure, and distribution of the principal metallic and non-metallic mineral deposits, with type illustrations. Text: Bateman, *Economic Mineral Deposits*, 1950. Prerequisite: Geology 304; 317 must precede or accompany. [3-0; 3-0]

409. (2) Mineralography.—Study and recognition of the opaque minerals by the reflecting microscope; practice in the cutting, grinding, and polishing of ore specimens, and micro-chemical methods of determination. Text: U.S. Geological Survey Bulletin 914, *Microscopic Determination of the Ore Minerals*; Edwards, *Textures of the Ore Minerals*. 1947. Prerequisite: Geology 408 must precede or accompany this course. [1-3; 0-4]

410. (1½) Field Geology.—Methods of observing, recording, and correlating geological facts in the field. The cost to each student may approach \$50. Text-book: Lahee, *Field Geology*, 4th edition, 1952. Prerequisites: Geology 302, 304 and 317. Two hours a week in the second term and three weeks in the field at the close of examinations in the spring of the Junior year. Classes will be limited by the accommodation available.

411. (1) **Stratigraphy.**—Stratigraphic nomenclature; rock, time, and time-rock units, correlation, sedimentary environments, facies, tectonic framework of sedimentation, paleogeography. Text: Krumbein and Sloss, *Stratigraphy and Sedimentation*, 1951. [1-0; 1-0]

412. (3) **Geomorphology.**—For advanced students in geography and geology; a study of the processes, principles, and laws of land formation, types of land forms, and their distribution. Text: Thornbury, *Principles of Geomorphology*, 1954. Prerequisite: Geology 304. [2-2; 2-2]

413. (2) **Geology of North America.**—A regional study of Precambrian to Cenozoic formations of North America. Text: *Geology and Economic Minerals of Canada*, Geological Survey of Canada, Economic Geology Series No. 1, 1947, and Eardley, *Structural Geology of North America*. Prerequisites: Geology 304, 406, and 411 must accompany or precede. [2-0; 2-0]

449. (3) **Thesis.**—Honours students must submit a graduating thesis on some subject approved by the Department.

504. (1½) **Advanced Structural Geology.** — A seminar course dealing with major problems of earth structure. [2-0; 2-0]

520. (3) **Sedimentology.** — Principles of sedimentation. Prerequisite: Geology 411 must precede or accompany. [2-2; 2-2]

521. (3) **Problems in Palaeontology.**—Seminar; alternates with 531. Prerequisite: Geology 406. (Given in 1958-59.) [1-6; 1-6]

522. (1½) **Advanced Mineralogy (Gems and Precious Stones).**—Seminar; gem minerals and some of the more popular semi-precious stones. Text: Dana, *Text-book of Mineralogy*, revised by Ford, 4th edition; Smith, *Gemstones*. [1-4; 0-0]

523. (3) **Advanced Mineralogy.**—Seminar; some of the rarer minerals, particularly those of economic importance. Text: Palache, Berman, Frondel, *Dana's System of Mineralogy*, Vols. 1 and 2. Winchell, *Elements of Optical Mineralogy*, 1951. [1-4; 1-4]

524. (3) **Advanced Mineralography and/or Geochemistry.**—Study of approved problems, using advanced techniques. [1-4; 0-6]

525. (3) **Petrology.**—Seminar. Prerequisite: Geology 407. [2-4; 2-4]

526. (3) **Mineral Deposits.** — Seminar; character, origin, and structure of mineral deposits, with emphasis on ore deposits. Text: Lindgren, *Mineral Deposits*, 4th edition, 1933. [2-4; 2-4]

531. (3) **Advanced Invertebrate Palaeontology.**—Given in 1957-58, alternate with Geology 521. Selected groups of fossils, special problems of palaeontology, palaeontological techniques. Prerequisite: Geology 406. [1-6; 1-6]

541. (3) **Paleobotany.**—Origin and history of plants through the geologic time. The floras of Paleozoic, Mesozoic and Cenozoic Eras. Techniques of collecting, preparation and identification of fossil plants and pollen. The use of fossil plants as indicators of geological age and ecology. Prerequisites: Geology 406 and 521 or 531. Given in 1957-58 and alternate years. [3-0; 3-0]

545. (1½) **Research Conference.** — Seminar dealing with problems of geology. Must be attended by all graduate students.

549. **Master's Thesis.**

649. **Ph.D. Thesis.**

German

Attention of Third and Fourth Year students is called to Linguistics 319, page 122.

Requirements for:

(a) Major—First Year: German 110 or 120; Second Year, German 200;

Third and Fourth Years: a total of 9 units in German courses numbered 300 or above.

(b) Single Honours — First Year: German 110, 120, or 200 (with First Class or high Second Class standing); Second Year: German 200 (or 300); Third and Fourth Years: a total of 18 units in German courses numbered 300 and above, History 314, and a graduating essay counting 3 units. Honours students who are not proficient in spoken German must attend a conversation class (one hour a week) in the Third and Fourth Years, for which no credit is given. Candidates will be required to take a comprehensive oral and a written examination in the history of German literature.

(c) Combined Honours — First Year: German 110, 120, or 200 (with First Class or high Second Class standing); Second Year: German 200; Third and Fourth Years: German 300, 302, two additional courses numbered above 300, and a graduating essay in one or the other field. Candidates will be required to take a comprehensive oral examination in the history of German literature.

90. (3) **Beginners' German.** — Texts: Greenfield, *An Outline of German Grammar*; Meyer, *Graded Readers* 1-3, and *Akademische Freiheit* (Alternate Series, Book 2). [4-0; 4-0]

110. (3) **First Year University German.**—Texts: Foltin, *Aus Nah und Fern*; Storm, *Pole Poppenspäler*; Fiedler, *A Book of German Verse*; Russon, *Complete German Course*; Dictionary: Cassell's *Compact German Dictionary*. Prerequisite: German 20 or German 90 (Senior Matriculation) or Pass standing in German 90 (University course). [4-0; 4-0]

120. (3) **First Year University German.**—Texts: Schweitzer, *Leben und Denken*; Kurtz, *Drei Novellen*; Fiedler, *A Book of German Verse*; Russon, *Complete German Course*. Dictionary: Cassell's *Compact German Dictionary*. Prerequisite: German 92 or Second or First Class standing in German 90 (University course). [3-0; 3-0]

130. (3) **First Year University German.**—German for science students. Texts: Wild, *An Introduction to Scientific German*, Revised edition; Wild, *An Anthology of Scientific German*. Prerequisite: German 20 or German 90. This is a terminal course and does not admit to German 200. [4-0; 4-0]

200. (3) **Second Year University German.**—Texts: Schiller, *Wilhelm Tell*; second term reader to be announced; Fiedler, *A book of German Verse*; Russon, *Complete German Course*. Dictionary: Cassell's *Compact German Dictionary*. Extensive reading: Storm, *Immensee*. Prerequisite: German 110, 120, or the equivalent. Students with high First Class standing in German 110, 120 may be permitted by the Department to take German 200 concurrently with a German course numbered 300. [3-0; 3-0]

300. (3) **The Classical Period.**—Literature of the 18th century, with emphasis on Lessing, Goethe and Schiller. Texts: Lessing, *Emilia Galotti*; *Minna von Barnhelm*; *Nathan der Weise*; Goethe, *Faust I*; *Iphigenie*; Schiller, *Die Jungfrau von Orleans*; *Maria Stuart*. [3-0; 3-0]

301. (3) **The Novelle.**—Development of the German Novelle, with emphasis on the 19th century. Texts: Fleissner, *Die Kunst der Prosa*; Röseler, *Deutsche Novellen des 19. Jahrhunderts*; Steinhauer, *Die Deutsche Novelle 1880-1933*; Coenen, *Auf höherer Warte*. Extensive independent reading will be expected. (Given in 1958-59 and alternate years.) [3-0; 3-0]

302. (3) **History of German Civilization.**—Intensive training in oral and written composition. Text: Jordan, *Deutsche Kulturgeschichte*. This course should be taken by all prospective teachers of German. [3-0; 3-0]

303. (3) **Survey of German Literature to 1700.**—Reading from selected texts. (Given in 1957-58 and alternate years.) [3-0; 3-0]

400. (3) Nineteenth Century German Drama.—Text: Campbell, *German Plays of the Nineteenth Century*. (Given in 1957-58 and alternate years.)

[3-0; 3-0]

401. (3) German Poetry. (First term)—A study of the main trends in German poetry from Luther to the poets of Impressionism. (Second term)—Literature of the 20th Century. Discussion of some representative works in the drama and poetry. Texts: *Oxford Book of German Verse*; Eastman, *Goethe's Poems*; Steinhauer, *Das deutsche Drama: 1880-1933*; Bithell, *Anthology of German Poetry, 1880-1940*. (Given in 1956-57 and alternate years.)

[3-0; 3-0]

402. (3) Middle High German. — Text: Bachmann, *Mittelhochdeutsches Lesebuch*.

403. (3) Survey of German Literature from 1700 to the beginnings of Naturalism.—Reading from selected texts.

[3-0; 3-0]

449. (3) Graduating Essay for the B.A. degree.

500. (3) Lessing, Goethe, and Schiller.—Most important works.

[3-0; 3-0]

501. (3) Nineteenth Century German Fiction.—Development of the German novel, with emphasis on 19th century.

[3-0; 3-0]

502. (3) History of the German Language.

[3-0; 3-0]

549. (3) Master's Thesis.

Greek

(Given by the Department of Classics)

For courses in Greek Archaeology, History, and Literature see *Classical Studies*, page 96.

Requirements for:

(a) Major—First and Second Years: two courses in Greek; Third and Fourth Years: 9 units in Greek or 6 units in Greek plus 3 units in Classical Studies (315 or 331 or 430 or 433).

(b) Single Honours in Classics—See page 120.

(c) Single Honours in Greek—First and Second Years: two courses in Greek; Third and Fourth Years: the courses will be arranged by the Department in consultation with the student; they will include Classical Studies 331 and Composition. A reading knowledge of Latin (*i.e.*, satisfactory completion of Latin 120 or its equivalent) will be required.

(d) Combined Honours (Classics)—See page 120.

(e) Combined Honours (Greek)—First and Second Years: two courses in Greek; Third and Fourth Years: appropriate courses will be arranged by the Department in consultation with the student.

Students who wish to read for Honours or to complete majors in Greek but whose prerequisites are deficient should consult with the Head of the Department.

Greek 101 is open to students who have passed in Greek 90 or its equivalent; Greek 202 is open to students who have passed in Greek 101 or its equivalent.

90. (3) Beginners' Greek.—The elements of Attic Greek. Text-book: Crosby and Schaeffer, *An Introduction to Greek*. Mr. McGregor. [4-0; 4-0]

101. (3) Introduction to Greek Prose Authors.—Text-books: Crosby and Schaeffer, *An Introduction to Greek*; C. E. Robinson, *Hellas*. Text: Xenophon, *The First Book of the Anabasis*, Walpole. Miss Bryson. [4-0; 4-0]

202. (3) Greek Literature of the Classical Period.—Plato's introduction to the Republic; a play of Aeschylus; practice in composition; brief survey of Greek literary history. Text-book: C. M. Bowra, *Ancient Greek Literature*.

Texts: Plato, *Republic*, Book I, D. J. Allen; *Aeschylus*, G. Murray. Mr. Guthrie. [3-0; 3-0]

Third and Fourth Years

The following courses are open to students who have completed Greek 202.

303. (3) **Greek Drama**.—Development of Greek tragedy and comedy; scenic antiquities; representative plays. Texts: Sophocles, *Antigone*, Jebb and Schuckburgh; Euripides, *Bacchae*, Dodds; Aeschylus, *Agamemnon*, Sidgwick. (Not given in 1957-58.) [3-0; 3-0]

305. (3) **Epic Poetry**.—Selections from Homer's *Odyssey*. Text: Homer, *Odyssey*, W. B. Stanford, 2 vols. Mr. Riddehough. [3-0; 3-0]

306. (3) **Greek Historians**. — Greek historical writing; selections from Herodotus and Thucydides. Texts: *Herodoti Historiae*, Hude, 2 vols.; *Thucydides*, Jones, 2 vols. Mr. McGregor. (Not given in 1957-58.) [3-0; 3-0]

309. (3) **Greek Oratory**.—The orations of Lysias and Demosthenes in their historical context. Texts: *Lysiae Orationes XVI*, E. S. Shuckburgh; *The First Philippic and the Olynthiacs of Demosthenes*, J. E. Sandys. (Not given in 1957-58.) [3-0; 3-0]

310. (1½) **Composition**.—Obligatory for Honours students in the Third Year. Text-books: *Greek Prose Composition*, North and Hillard; *Greek Prose Composition*, Sidgwick. Mr. Guthrie. [2-0; 2-0]

406. (3) **Greek Comedy**.—The rise and development of Greek comic drama. Text: Aristophanes, *Comoediae*, F. W. Hall and W. M. Geldart. Mr. Guthrie. (Not given in 1957-58.) [3-0; 3-0]

407. (3) **Introduction to Greek Philosophy**.—Beginnings of Greek philosophic inquiry; selections from two of the major works of Plato and Aristotle. Texts: Plato, *Respublica*, Burnet; Aristotle, *Ethica Nicomachea*, Bywater. Mr. Logan. [3-0; 3-0]

410. (1½) **Advanced Composition**.—Obligatory for Honours students in the Fourth Year. Text-book: *Greek Prose Composition*, Sidgwick. Mr. Riddehough. [2-0; 2-0]

Primarily for Graduate Students

521. Aristotle's *Politics*. [3-0; 3-0]

525. Thucydides. [3-0; 3-0]

549. (3-6) Master's Thesis.

History

Requirements for:

(a) Major—First and Second Years: at least one of History 101, 102, 201; Third and Fourth Years: total of 9 units in History courses numbered above 300, of which 6 must be from regular departmental offerings, chosen in consultation with the Department.

(b) Single Honours—Prerequisites for admission to the Third Year include a First or high Second Class standing in at least one of the History courses open to students in the First or Second Year and a reading knowledge of French, German, Russian or Spanish. In the last three years candidates will offer at least 51 units. Second Year: 15 units (recommended courses are English 200, French 210 or 220 or the equivalent in German, Russian, or Spanish, one of History 102 or 201, and two electives. Students who have not taken History 101 in the First Year should take it in the Second Year, in which case they may substitute History 101 for History 102 or 201). Third and Fourth Years: History 304, 333, 433, 449 (graduating essay); 12 further units in History courses; 6 units in courses outside the Department; 6 units which may be taken either in or outside the Department of History.

Students whose standing in Honours History during the Third Year is inadequate may, at the discretion of the Department, be required to discontinue the Honours Course.

An Honours paper will be set at the end of the Fourth Year on the work of the seminars and of the courses studied in the Third and Fourth Years. There will be an oral examination on the field covered in the graduating essay.

(c) Combined Honours—Prerequisites for admission to Third Year: as for Single Honours. Second Year: as for Single Honours; Third and Fourth Years: History 304, 333 and any 6 additional units in History courses numbered above 300. If the graduating essay is written in History, it may replace any of these courses except History 304, but the Department must be consulted regarding the choice of the elective course.

Notes: (1) Students who intend to specialize in History are advised to include in their programme some of the following related courses: International Studies and Asian Studies; Economics 100, 200, 330, 409, 411; Geography 201, 207, 406, 408, 409; Philosophy 100, 300, 315, 320, 410; Political Science 300, 330, 340, 400, 435. (2) A reading knowledge of French, German, Russian, or Spanish is useful. (3) All courses numbered above 300 are open to both Third and Fourth Year students.

First and Second Years

101. (3) Main Currents in Twentieth-Century History.—This course offers a background for contemporary world problems and is prerequisite to History Honours. If the World History course has been taken in Senior Matriculation, History 102 will be required for Honours. Text-books: Chambers, Harris and Bayley, *The Age of Conflict*; Snyder, *Fifty Major Documents of the Twentieth Century*; Holborn, *The Political Collapse of Europe* (for upper year credit). (Extra work will be required from Third and Fourth Year students taking this course.) Mr. Soward. [3-1; 3-1]

102. (3) The History of Canada.—Introductory general course. History 102 is prerequisite for History 404, 420, 426, 433, 533. Text-book: McInnis, *Canada*. (Extra work will be required from Third and Fourth Year students taking this course.) Mr. Neatby, Fr. Hanrahan. [3-0; 3-0]

201. (3) British History.—A survey of British constitutional, economic, political, social and cultural development from Saxon times to the present day. Text-books: Feiling, *A History of England*. Hall and Albion, *A History of England and The British Empire*. Mr. Davies. [3-0; 3-0]

History 210. (3) The History of the Christian Church.—A survey of the history of the Christian Church from its institution to the present day. Text-book: Walker, *A History of the Christian Church*. Messrs. Grant and Peake. (Not given in 1957-58.) [3-0; 3-0]

Third Year

304. (3) Mediaeval Europe, 500-1300.—A general outline of mediaeval history from the fall of the Roman Empire to the 13th century. Text-books: Thorndike, *History of Mediaeval Europe*; Painter, *A History of the Middle Ages*. Second Year students may, with special permission, be admitted to this course. Fr. Hanrahan. [3-0; 3-0]

This course is also offered through Correspondence.

305. (3) The Expansion of Europe.—The history of European colonial expansion, and problems of colonial administration. Text-books: Muir, *Expansion of Europe*; Parry, *Europe and a Wider World, 1415-1715*; Townsend, *European Colonial Expansion since 1871*; Walker, *Colonies*. Mr. Cooke. [3-0; 3-0]

310. (3) The Development of the British Empire to Responsible Government.—Empire history and colonial policy to the middle of the 19th

century. Text-books: Carrington, *The British Overseas*; Williamson, *A Short History of British Expansion*. (Not given in 1957-58.) [3-0; 3-0]

311. (3) **From Empire to Commonwealth.**—Empire and Commonwealth history and problems from responsible government to the present. Text-book: Knaplund, *The British Empire, 1815-1939*. Mr. Cooke. [3-0; 3-0]

312. (3) **History of the United States of America.**—This course begins with a sketch of the American colonies at the outbreak of the Revolution and traces the history of the United States from the commencement of the War of Independence to the outbreak of the Second World War. Text-book: Faulkner, *American Political and Social History*, or Craven and Johnson, *The United States*. Mr. Farr. [3-0; 3-0]

313. (3) **The Rise of Modern Europe, 1300-1648.**—A survey of the economic, political and cultural development of Europe from the later Middle Ages to the Peace of Westphalia. Text-books: Lucas, *The Renaissance and the Reformation*; Grimm, *The Reformation Era, 1500-1650*; Stearns, *Pageant of Europe*. (Not given in 1957-58.) [3-0; 3-0]

314. (3) **Europe from Westphalia to Waterloo, 1648-1815.**—A survey of the economic, political and cultural development of Europe in the 17th and 18th centuries. Text-books: Ergang, *Europe from the Renaissance to Waterloo*; Brunn, *Europe in Evolution*; Gottschalk, *The Era of the French Revolution*; Stearns, *Pageant of Europe*. Mr. Cooke. [3-0; 3-0]

316. (3) **Social and Economic History of the Middle Ages.**—An examination of some mediæval institutions and ideas. Readings will be assigned. Fr. Hanrahan. [3-0; 3-0]

318. (3) **Britain Under the Tudors and Stuarts, 1485-1688.**—An evaluation of the political, economic, social and cultural change of Britain in the period. Textbooks: Elton, *England Under the Tudors*; Trevelyan, *England Under the Stuarts*; Feiling, *A History of England*. Mr. Norris. [3-0; 3-0]

320. (3) **The History of China.**—A survey of Chinese history and culture from ancient times to the present. Text-books: Latourette, *The Chinese, Their History and Culture*, or McNair, *China*. Mr. Ping-Ti Ho. [3-0; 3-0]

333. (3) **Third Year Honours Seminar.**—Historical method and the use of reference books. Text-book: Rowse, *The Use of History*. Members of the Staff. [2-0; 2-0]

Fourth Year

404. (3) **The French in North America.**—A study of a culture, using the historical approach. Reading will be emphasized, and a reading knowledge of French is required. Mr. Neatby. [3-0; 3-0]

415. (3) **Europe, 1815-1914.**—The political, social and economic history of the chief countries of continental Europe, with special attention to international relations. Text-books: Hayes, *A Political and Cultural History of Modern Europe*, Vol. II; Hall and Davis, *The Course of Europe Since Waterloo*; Stearns, *Pageant of Europe*. [3-0; 3-0]

417. (3) **Economic History of Western Europe Since 1500.**—With special reference to Great Britain. Text-book: Heaton, *An Economic History of Europe*. Mr. Ping-Ti Ho. (Not given in 1957-58.) [3-0; 3-0]

419. (3) **Great Britain Since 1688.**—An evaluation of the political, economic, social, and constitutional events in the period. Text-books: Trevelyan, *British History of the Nineteenth Century*, or Woodward, *The Age of Reform*, and Mowat, *Britain Between the Wars*. Mr. Norris. [3-0; 3-0]

420. (3) **The Evolution of the Canadian Constitution.**—Text-book: Kennedy, *The Constitution of Canada*. Mr. Neatby. [3-0; 3-0]

426. (3) **Canada After 1867.**—A survey of the main features of political and economic development of Canada after 1867, with some consideration

of foreign policy. Text-books: Lower, *Colony to Nation*; Creighton, *Dominion of the North*. Mr. Farr. [3-0; 3-0]

428 (3) **Economic and Social History of the United States.**—A study of social and economic development in the United States, from the colonial period to the present day. Text-books: Thistlethwaite, *The Great Experiment*; Parrington, *Main Currents in American Thought*. (Not given in 1957-58.) [3-0; 3-0]

433. (3) **Fourth Year Honours Seminar.**—Development of Canadian external policy since Confederation. Text-book: Glazebrook, *A History of Canadian External Relations*. Mr. Soward. [2-0; 2-0]

449. (3) **Graduating Essay in Honours.**

The following courses will be accepted for credit in History:

Asian Studies 310 (3), 400 (3).

Anthropology 400 (3), 401 (3).

Classical Studies 331 (3).—Open to Second Year students.

Classical Studies 333 (3), 433 (3).—For Third or Fourth Year students.

International Studies 300 (3), 301 (3), 400 (3), 405 (3).

Political Science 300 (3), 400 (3).

Slavonic Studies 308 (3), 311 (3), 330 (3), 448 (3).

For Graduate Students

525. (3) **History of Historical Writing.**—Text-book: Gooch, *History and Historians in the 19th Century*. Members of the staff. [3-0; 3-0]

533. (3) **Master's Seminar.**—The history of British Columbia. Miss Ormsby. (Not given in 1957-58.) [3-0; 3-0]

534. (3) **Master's Seminar.**—Problems in Canadian history. Mr. Neatby. [3-0; 3-0]

549. (3) **Master's Thesis.**

Home Economics

210. (3) **Foods.**—Economics of selection; scientific aspects of preparation. Prerequisite: Chemistry 101. [2-3; 2-3]

International Studies

Requirements for:

(a) **Major**—First and Second Years: at least one of Economics 200 and History 101; courses to give a reading knowledge of French, German, Spanish or Russian are advised; Third and Fourth Years: total of 9 units in International Studies courses numbered 300 or above, and including 400 or 405 and one of 300, 301, Asian Studies 310.

The following courses are accepted for credit towards a major in International Studies: Asian Studies 310, 400; History 311, 312, 320, 415, 417, 419, 426; Economics 303, 306, 402; Geography 207, 306, 406, 408; Political Science 310, 330, 400, 435; Slavonic Studies 308, 311, 312, 330, 404, 412, 448. Asian Studies 205 counts as a Second Year Course in International Studies.

(b) **Single Honours**—Prerequisites for admission to the Third Year include a First or high Second Class standing in History 101 or Economics 200 and a reading knowledge of French, German, Russian or Spanish. In the last three years candidates will offer 51 units. Second Year: English 200, French 210 or 220 or its equivalent in German, Russian or Spanish, Economics 200, History 101 (if not already taken) or History 102, Asian Studies 205, Geography 207, and Slavonic Studies 205 are also recommended. Third Year (18 units) as follows: two of International Studies 300, 301 or Asian Studies 310; one of Political Science 440 or Slavonic Studies 448 or History 333; a language course; and two of history 311, 312.

320, 415, Geography 306, Economics 306, 402, Political Science 310, 330, Slavonic Studies 308, 311, 312; Fourth Year (18 units) as follows: International Studies 401 or 405, 410, 449 and three of History 417, 419, 426, Economics 330, 411, Political Science 400, 435, Geography 406, 408, Slavonic Studies 330, 404, 412.

Third and Fourth Year courses must be chosen in consultation with the Director of International Studies. At the end of the Third Year a student whose work has not been of sufficiently high standard may be required to withdraw from Honours (Single or Combined). An Honours paper will be set at the end of the Fourth Year on the seminars and courses attended in the upper years. There will be an oral examination on the field covered in the graduating essay.

(c) Combined Honours—Prerequisites for admission to Third Year and Course for Second Year: as for Single Honours; Third and Fourth Years; International Studies 400, 410, two of Asian Studies 310, 400, International Studies 300, 301, 405, 449 (if graduating essay is written in International Studies), and two other courses from list of courses accepted as International Studies. See also last paragraph in (b).

300. (3) The British Commonwealth and International Organization.—A survey of the growth of intra-Commonwealth cooperation since 1919, and an evaluation of the Commonwealth contribution to international security. Text-book: Carter, *The British Commonwealth and International Security*. Mr. Davies. (Not given in 1957-58.) [3-0; 3-0]

301. (3) International Organization Since 1919.—The structure, function and problems of international organizations since the appearance of the League of Nations. Text-books: Leonard, *International Organization*; Eagleton, *International Government*. [3-0; 3-0]

400. (3) The Great Powers and World Politics I.—A study of the Great Powers and their international policies between 1870 and 1939. Text-book: Strausz-Hupe and Possony, *International Relations*, or Palmer and Perkins, *International Relations*. Mr. Soward. (Not given in 1957-58.) [3-0; 3-0]

405. (3) The Great Powers and World Politics II.—A study of the Great Powers and major international problems since 1939. Text-book: Palmer and Perkins, *International Relations*. Mr. Soward. [3-0; 3-0]

410. (3) Canadian External Policy Since Confederation.—For credit in the Department of History see History 433. Except by special permission this course is only open to Honours or Graduate students. Text-book: Glazebrook, *A History of Canadian External Relations*. Mr. Soward. [2-0; 2-0]

449. (3) Graduating Essay.

549. (3) Master's Thesis.

Italian

(Given by the Department of Romance Studies)

100. (3) Basic Italian. — Grammar, composition, translation, oral practice. Texts: to be announced. [4-0; 4-0]

Note: Course 300 is designed to provide a reading knowledge of Italian for those students whose main interest is in the field of literature. Those proposing to register for it are requested first to consult the Head of the Department.

300. (3) Readings in Italian. (Prerequisite: completion of a classical or modern language course numbered 200 or above).—Pronunciation; translation into English of passages taken from the principal Italian authors. Text: Bormioli and Pelligrinatti, *Letture italiane per stranieri*. [3-0; 3-0]

310. (3) Italian Civilization.—A survey of Italian art and literature with a brief description of critical moments in Italian history. (Italian not required.) Miss Giese. [3-0; 3-0]

Latin

(Given by the Department of Classics)

For courses in Roman literature and history see *Classical Studies*, page 96.

Requirements for:

(a) Major—First Year: Latin 110 or 120; Second Year: Latin 210 or 220; Third and Fourth Years: total of 9 units in Latin courses numbered above 300 or 6 units in Latin courses numbered above 300 plus 3 units of Classical Studies (316 or 331 or 333).

(b) Single Honours in Classics.—By the end of the Second Year the student should have completed Latin 220 and two courses in Greek; Third and Fourth Years: the courses will be arranged by the Department in consultation with the student and will normally include Greek Composition, Latin Composition, two or three courses in Greek authors, three courses in Latin authors, and Classical Studies 331.

(c) Single Honours in Latin.—By the end of the Second Year the student should have completed Latin 220; Third and Fourth Years: four courses in Latin authors, Latin 310 and 410; Classical Studies 331. The student should also take at least Greek 90, which he is advised to elect as early as possible in his course.

(d) Combined Honours (Classics). — First and Second Years: the student should elect Latin and Greek in each year; Third and Fourth Years: the courses will be arranged by the Department in consultation with the student and will include work in Greek and Latin authors, Composition, and Classical Studies 331.

(e) Combined Honours (Latin).—By the end of the Second Year the student should have completed Latin 220; Third and Fourth Years: the courses will be arranged by the Department in consultation with the student and will include work in Latin authors, Composition, and Classical Studies 331 and Classical Studies 333.

Students who wish to read for Honours or complete majors in Latin or in Classics but whose prerequisites are deficient should consult with the Head of the Department.

90. (3) **Beginners' Latin.**—For students with no previous knowledge of Latin; for credit only to students who have not offered Latin at High School Graduation. Text-books: L. A. Wilding, *Latin Course for Schools*, Parts 1 and 2 (chapters 1-12). [4-0; 4-0]

110. (3) **First Year University Latin.**—Prerequisite: Latin 20 (High School) or Latin 90. Text-books: L. A. Wilding, *Latin Course for Schools*, Parts 2 (chapters 13-34) and 3; C. E. Robinson and P. G. Hunter, *Roma*; R. H. Barrow, *The Romans*. [4-0; 4-0]

120. (3) **Introduction to Latin Literature.**—Prerequisite: Latin 92 or a First or Second Class in Latin 90. This course includes a rapid survey of Latin grammar; study of Latin words, idioms, and translation; practice in composition; reading of selections from Latin authors; history of Rome. Text-books: L. A. Wilding, *Latin Course for Schools*, Part 3; C. E. Robinson, *Romani*; R. H. Barrow, *The Romans*. [3-0; 3-0]

210. (3) **Introduction to Latin Literature.**—Prerequisite: Latin 110. The course includes a rapid survey of Latin grammar; study of Latin words, idiom, and translation; practice in composition; reading of selections from Latin authors; history of Greece. Text-books: L. A. Wilding, *Latin Course for Schools*, Part 3; C. E. Robinson, *Romani*; C. E. Robinson, *Hellas*. [4-0; 4-0]

Note: Students in Latin 220 and in Third and Fourth Year courses are advised to provide themselves with Allen and Greenough, *New Latin Grammar*, and C. T. Lewis, *Elementary Latin Dictionary*.

220. (3) **Prose and Poetry of the Golden Age.**—Prerequisite: Latin 120 or a First Class in Latin 110. Prose of Cicero; Horace's adaptations of the

Greek Lyric; the developed Epic as represented by Vergil; history of Greece. Text-book: C. E. Robinson, *Hellas*. Texts: Cicero, *Catilinarian Orations*, Upcott; Cicero, *Pro Archia*, Nall; Horace, *Selected Odes*, Wickham; Vergil, *Aeneid VI*, Page. Mr. Logan, Miss Bryson. [3-0; 3-0]

Composite Course in Latin. (3)—Intended primarily for students attending the Summer Session. A substantial amount of a major work of Latin literature (in 1957 Livy's *History*) will be read, partly in the original and partly in English translation, the amount of the original varying with the student's preparation. Students desiring credit in Latin 110, 120, 210, 220, or 407 will register for this course under the appropriate number and will receive three units of credit upon the successful completion of the appropriate amount of work. Text-books: *Livy*, Books XXI and XXII, edited by W. W. Capes and J. E. Melhuish; *Livy*, with an English translation by B. O. Foster, Vol. V (Loeb Classical Library). (Given in the summer of 1957.)

Third and Fourth Years

Courses 303, 304, 305, 310, 325, 405, 406, 407, are open to all students who have passed Latin 220 or its equivalent.

303. (3) Vergil.—A study of Vergil's works with selected readings from the *Eclogues*, *Georgics*, *Aeneid* and the minor poems; history of Latin literature. Text-book: J. W. Mackail, *Latin Literature*. Texts: *Aeneid*, Page (ed.), 2 vols.; *Bucolics and Georgics*, Page (ed.). Mr. Logan. (Not given in 1957-58.) [3-0; 3-0]

304. (3) Prose and Poetry of the Silver Age.—Tacitus and Juvenal; history of Latin literature. Text-book: J. W. Mackail, *Latin Literature*. Texts: Tacitus, *Histories*, I and II, edited by A. L. Irvine (Methuen); Juvenal, *Satires*, Duff. (Given in 1957-58.) Mr. Guthrie. [3-0; 3-0]

305. (3) The Works of Horace.—(Given in 1957-58.) Mr. Grant. [3-0; 3-0]

310. (1½) Composition.—Obligatory for Honours students in the Third Year. Text-book: *Bradley's Arnold Latin Prose Composition*, Mountford. Mr. Riddehough. [2-0; 2-0]

325. (3) Mediaeval Latin. (Prerequisite: Latin 220 or the equivalent.)—An introduction to Latin literature of the Middle Ages, including a survey of the leading literary forms that existed between the Classical period and the Renaissance. The course is intended to make it easier for students of literature, philosophy, history, or the sciences to read mediaeval documents in the original; there will also be collateral reading, in English, of Latin and vernacular works. The course will include the elements of mediaeval palaeography. Texts: K. P. Harrington (ed.), *Mediaeval Latin*; C. W. Jones (ed.), *Mediaeval Literature in Translation* (Longmans, Green, and Co.). Mr. Riddehough. (Given in 1957-58.) [3-0; 3-0]

405. (3) Latin Letter Writing.—Two different styles of letters by two masters. Texts: *Cicero in His Letters*, Tyrrell; Seneca, *Select Letters*, Summers. (Not given in 1957-58.) [3-0; 3-0]

406. (3) General View of Latin Poetry.—A survey of Latin poetry from the earliest native verse into late Imperial and early Christian literature. Text: *The Oxford Book of Latin Verse*, Garrod. (Not given in 1957-58.) [3-0; 3-0]

407. (3) Livy, ab urbe condita.—A study of the development of Roman historical writing. Text: *Selections from the Roman Historians* (Allyn and Bacon). (Not given in 1957-58.) [3-0; 3-0]

410. (1½) Advanced Composition.—Obligatory for Honours students in the Fourth Year. Prerequisite: Latin 310. Mr. Grant. [2-0; 2-0]

Primarily for Graduate Students

521. (3) Cicero, Select Letters, 2 vols., How. [3-0; 3-0]

522. (3) **Roman Elegiac Poetry.**—The genesis of the Roman Elegy from its Greek models; a study of the works of Catullus, Tibullus, Propertius, and Ovid. [3-0; 3-0]

523. (3) **Roman Comedy.** [3-0; 3-0]

530. (3) **The Works of Julius Caesar.**—A study of the texts of Caesar's Commentaries on the Gallic War and the Civil War; narrative of Caesar's campaigns in Egypt, Africa and Spain. [3-0; 3-0]

531. (3) **Vergil, Life and Works.** [3-0; 3-0]

549. (3-6) **Master's Thesis.**

Linguistics

The following courses are intended, primarily, for Third and Fourth Year students who have completed Second Year language requirements or the equivalent.

319. (3) **General Introduction to Modern Linguistic Science.**—Origin of language, development of writing (ideograms, syllabaries, etc.), families of languages, classes of languages, linguistic change, semantics, dialects, slang. Text-books: J. Vendryes, *Language*; S. Ullman, *Words and Their Use*. Prerequisite: at least Second Class standing in any of the following courses: Anthropology 300, English 200, French 210 or 220, German 200, Greek 202, Latin 210 or 220, Polish 210, Russian 200 or 223, Spanish 201. [3-0; 3-0]

320. (3) **Romance Linguistics.**—Introduction: origin of the Romance languages; evolution of classical Latin, vulgar Latin, and the Romance languages; phonology, morphology, syntax, vocabulary; reading of vernacular Latin texts (inscriptions, prose, poetry) and some Romance texts, with emphasis on those elements which are important in the development of the Romance languages and from the point of view of general linguistics. Text-books: H. F. Muller and P. Taylor, *A Chrestomathy of Vulgar Latin*; Grandgent, *Introduction to Vulgar Latin*. (Not given in 1957-58.) [3-0; 3-0]

Mathematics

Requirements for:

(a) Major—First and Second Years: Mathematics 101, 202; Third and Fourth Years: total of 9 units chosen from Mathematics 300, 301, 306, 308, 310, 410. (Mathematics 306 and 308 are strongly recommended for prospective High School teachers of Mathematics).

(b) Single Honours—Students may take Honours in (i) Mathematics, (ii) Mathematics (Actuarial Option), (iii) Applied Mathematics. A reading knowledge of French, German, and Russian is highly desirable and students who have taken French in High School should take German or Russian. First Year: Mathematics 101, Physics 100 or 101, Economics 100 or Psychology 100 (Actuarial Option), Chemistry 101 (Applied Mathematics); Second Year: Mathematics 202, 310, Physics 200 (replaced by Mathematics 201 in the Actuarial Option); Third and Fourth Years: Mathematics 320, 321, 322, and 10 units of Mathematics courses, numbered 400 or above, including Mathematics 441; and other courses in Mathematics or related subjects (such as Economics, Electrical Engineering, Philosophy, Physics) to complete Honours requirements chosen in consultation with the Department.

(c) Combined Honours—For Combined Honours in Physics and Mathematics see page 128. For Honours in Mathematics combined with another subject consult the Department.

100. (3) **Algebra.**—Review of elementary algebra, logarithms, ratio and proportion, progressions, interest and annuities, permutations and combinations, probability, elementary statistics. Prerequisite: Mathematics 30. (May not be given in 1957-58.) [4-0; 4-0]

Students who have credit for Mathematics 91 or its equivalent may not take Mathematics 100. (See note 6, page 78.)

101. (3) Algebra, Geometry, and Trigonometry.—Algebra of logic, logarithms, permutations, combinations, binomial theorem, probability; straight line, circle, parabola, ellipse, and hyperbola; elementary trigonometry. Prerequisite: Mathematics 91 or 100. Mathematics 100 may not be taken concurrently with Mathematics 101, and credit will not be given for both courses. (See note 6, page 78.)

Primarily for Second Year Students

Mathematics 101 is prerequisite to Mathematics 202. Either Mathematics 100 or 101 is prerequisite to Mathematics 201 and 205.

201. (3) The Mathematical Theory of Investments.—Theory of interest, annuities, debentures, valuation of bonds, sinking funds, depreciation, probability and its application to life insurance. [3-0; 3-0]

202. (3) Calculus.—Introduction to differential and integral calculus, with applications. One section is reserved for students taking Mathematics 310 concurrently, one for students in Architecture, and one for students in the social sciences, particularly Anthropology, Economics, Geography, Psychology and Sociology. [3-0; 3-0]

205. (3) Elementary Statistics.—Descriptive statistics, introduction to probability and sampling, correlation, index numbers, time series. [3-2; 3-2]

Primarily for Third Year Students

Mathematics 202 is prerequisite to each of the following courses except 303.

300. (3) Calculus II.—Differential and integral calculus with applications. [3-0; 3-0]

301. (2) Introduction to Numerical Analysis.—Finite differences and topics chosen from life contingencies and numerical analysis. [2-0; 2-0]

303. (3) Mathematics for Teachers.—For credit only in the Faculty and College of Education. [3-0; 3-0]

306. (3) Topics in Geometry.—Foundations of geometry, projective, Euclidean, and non-Euclidean geometry. (Given in 1957-58 and in alternate years thereafter.) [3-0; 3-0]

308. (3) Topics in Algebra.—The number system, theory of numbers, theory of polynomials. (Given in 1958-59 and in alternate years thereafter.) [3-0; 3-0]

310. (3) Algebra and Geometry.—Mathematical induction, complex numbers, theory of equations, determinants; conics, polar coordinates, and solid analytic geometry. Students intending to take Honours in Mathematics or in Mathematics combined with another subject are required to take Mathematics 202 and 310 concurrently. [3-0; 3-0]

For Third Year Honours Students Only

At least Second Class standing in each of Mathematics 202 and 310 is prerequisite to the following courses:

320. (2) Differential Calculus.—Sequences, series; derivatives of functions of one and several variables, implicit functions; applications to the differential geometry of curves and surfaces. Problem sets will be assigned periodically throughout the year and marks obtained will be considered in determining final standing. [2-1; 2-1]

321. (3) Integral Calculus and Differential Equations.—Definition and properties of the single and multiple Riemann integral; line and surface integrals; differential equations. [3-0; 3-0]

322. (3) Algebra and Geometry II.— n -dimensional vector spaces; linear systems, matrices, and determinants; quadratic forms, with applications to conics and quadrics. [3-0; 3-0]

Primarily for Fourth Year Students

For Honours students in Mathematics or in Mathematics combined with another subject, at least Second Class standing in each of Mathematics 320, 321, and 322 is prerequisite to each of the following courses except Mathematics 410. Other students may be admitted only with the consent of the Department.

400. (2) Modern Algebra.—The number systems of algebra and analysis. Introduction to groups, fields, linear vector spaces. [2-0; 2-0]

402. (2) Theory and Applications of Differential Equations.—Picard's existence theorem, separation of variables and eigenvalue problems associated with partial differential equations, method of Frobenius, properties of special functions. [2-0; 2-0]

403. (2) Modern Geometry.—Application of analysis and algebra to topics in modern geometry. [2-0; 2-0]

404. (2) Functions of a Complex Variable.—An introduction to the subject with applications. [2-0; 2-0]

405. (2) Mathematical Statistics.—Statistical analysis, with emphasis on sampling theory and the testing of statistical hypotheses. Applications to problems in the sciences. [2-0; 2-0]

410. (3) Differential Equations.—An introductory course with applications to geometry, mechanics, physics and chemistry. Prerequisite: Mathematics 300. [3-0; 3-0]

441. (1) Topics in Analysis.—For Fourth Year Honours students in Mathematics or Mathematics combined with another subject. Standing will be determined by term work and a final comprehensive examination.

Courses for Graduate Students

Students should consult the Department for information. It is planned to offer Mathematics 504, 509, 510, 514, 523 in 1957-58.

501. (2) Theory of Functions of a Real Variable.

503. (2) Differential Geometry.

504. (2) Modern Geometry II.

505. (2) Fluid Dynamics.

506. (2) Differential Equations.

507. (2) Theory of Numbers and Algebraic Numbers.

508. (2) Theory of Rings.

509. (2) Modern Algebra II.

510. (2) Analytical Matrix Theory.

511. (2) Topology.

512. (2) Theory of Groups.

513. (2) Continuous Groups.

514. (2) Non-linear Mechanics.

515. (2) Integral Equations.

516. (2) Fourier Series and Integrals.

517. (2) Theory of Functions.

518. (2) Probability and Statistics.

520. (2) Numerical Analysis.

521. (2) Functional Analysis.

522. (2) Linear Analysis and Group Representations.

523. (2) Computational Methods.

549. (3-6) Thesis for Master's Degree.

649. Thesis for Ph.D. Degree.

Mediaeval Studies

The Departments of Classics, English, French, German, History, Philosophy, Slavonic Studies, Spanish, and the School of Architecture (with Fine Arts) have combined their appropriate courses to offer an Honours B.A. in Mediaeval Studies, as shown below.

These courses are also open to students taking the General B.A. degree who may, if they wish, work under the supervision of the Committee on Mediaeval Studies.

Students intending to enroll in Mediaeval Studies should first consult with Mr. Cragg, Department of English.

Prerequisites for admission to the Third Year: Philosophy 100, History 201 or History 304, Latin 220 or its equivalent (which may be taken in Third Year but will not count for course).

Third and Fourth Years: Bibliography (History 333), first term for Third Year students; Seminar (staff and students), second term (Third Year students attend, Fourth Year students participate); History 304 (may be taken in Second Year) or History 316; Philosophy 210; Philosophy 300; Classical Studies 316; English 436; English 440; one of Latin 325 (Mediaeval Latin), French 420, German 303 or 402, Russian 318 or 319, Spanish 419; 9 units of options (chosen in consultation with the Committee) in Architecture 260, Classical Studies 333, English, French, German, Greek, History, Latin, Linguistics, Philosophy, Polish, Russian, Slavonic Studies, Spanish.

A graduating essay will be set at the discretion of the supervisor, who may instead demand a supervised study.

440. (1½) Mediaeval Seminar.

449. (3) Graduating Essay or Supervised Study.

Music

Requirements for major:

First Year: Music 105; Second Year: Music 205; Third and Fourth Years: Music 300, 305, 405.

105. (3) Materials of Music I.—A study of the beginning of harmony, with ear training and early musical history. Prerequisite: High School Graduation Music or its equivalent. The student should have familiarity with all intervals, triads, dominant 7ths and common rhythms; ability to sing major and minor scales from any degree; and sufficient knowledge of piano to play harmonic progressions. Mrs. Jean Coulthard Adams. [3-0; 3-0]

201. (3) Elementary Harmony. — Experience in written work, sight-singing, ear-training, keyboard harmony. Some knowledge of piano is desirable but not necessary. For credit only in the Faculty and College of Education.

205. (3) Materials of Music II.—A study of 18th and 19th century harmony and advanced aural training. The second term will include a short course in early melodic styles as an introduction to the study of counterpoint. Prerequisite: Music 105. Mrs. Jean Coulthard Adams. [3-0; 3-0]

300. (3) Music Appreciation.—How to listen to music; analysis of structure and form. Mr. Harry Adaskin. [3-0; 3-0]

301. (3) Counterpoint and Advanced Harmony.—A continuation and expansion of the materials studied in Music 201. For credit only in the Faculty and College of Education.

302. (3) Instrumental Music.—A study of instruments with particular emphasis on transposing instruments, their techniques, organizations, materials, conducting, participation in playing of selected instrumental works. For credit only in the Faculty and College of Education.

303. (3) Choral Music.—Some techniques of voice production, organization of choral groups, literature, conducting, participation in the singing of selected choral works. For credit only in the Faculty and College of Education.

305. (3) Materials of Music III.—The study of 16th century counterpoint with emphasis on two-part vocal writing, harmony in relation to 18th century forms, and creative work in contemporary materials. For analysis: Bach, Well-Tempered Clavier, and Beethoven Piano Sonatas; other works assigned. Prerequisite: Music 205 or equivalent. Miss Barbara Pentland. [3-0; 3-0]

401. (3) Orchestration and Arranging for Chorus, Band and Orchestra.—For credit only in the Faculty and College of Education. The techniques of writing and arranging for various groups of performers.

403. (3) Music History and Literature.—For credit only in the Faculty and College of Education. A survey of music history and literature from early to modern times; a detailed study and analysis of representative works of designated composers, periods, styles; assignments in selected areas of study.

405. (3) Materials of Music IV.—Further contrapuntal study in several voices, including fugal writing; development of harmony through 19th century; orchestration, and further creative work in larger forms with emphasis on 20th century materials. Scores assigned for study. Prerequisite: Music 305. Miss Barbara Pentland. [3-0; 3-0]

Philosophy

Requirements for:

(a) Major—First Year: Philosophy 100; Second Year: Philosophy 202; Third and Fourth Years: Philosophy 210 or 310, and six additional units in Philosophy courses numbered 300 or above, chosen in consultation with the Department.

(b) Single Honours—First and Second Years: Mathematics 101, Philosophy 100, Psychology 100 and 3 units of laboratory science; Third and Fourth Years: Philosophy 202 and 15 additional units in Philosophy selected in consultation with the Department.

(c) Combined Honours—First and Second Years: as for Single Honours; Third and Fourth Years: Philosophy 202 and 12 additional units in Philosophy selected in consultation with the Department.

(d) Five-Year Double Honours—Same as for Single Honours.

A. Introductory Courses:

100. (3) Introduction to Philosophy.—A systematic presentation of the problems of philosophy from the early Greeks to the present day. This course is also offered through correspondence. [3-0; 3-0]

202. (3) Logic and Scientific Reasoning.—Introductory deductive logic; the grounds of empirical knowledge; scientific procedures and attitudes; practice in criticising arguments. [3-0; 3-0]

412. (3) Philosophical Problems.—Problems of methodology, knowledge, metaphysics, values, and social philosophy. Primarily for Fourth Year and graduate students who have had no philosophy course. [3-0; 3-0]

B Historical

216. (3) **Ancient Philosophy.**—Western philosophic thought from Thales to St. Augustine, with principal stress on Plato and Aristotle. Prerequisite: Philosophy 100 or equivalent. [3-0; 3-0]

300. (3) **Thomas Aquinas.**—A systematic study of Thomistic philosophy. A study of the historical backgrounds, with special attention to Plato, Aristotle, Plotinus and St. Augustine. An evaluation of Thomism in terms of the prevailing philosophical systems of the 12th and 13th centuries. Prerequisite: Philosophy 100. It is advisable to have taken Ancient Philosophy. [3-0; 3-0]

305. (3) **Mediaeval Philosophy.**—Western philosophic thought from Augustine to Ockham; survey of the main readings in Augustine, Boethius, Anselm, Aquinas, Scotus, Ockham. [3-0; 3-0]

310. (3) **Early Modern Philosophy.**—The Rationalists: Descartes, Spinoza, and Leibniz; the Empiricists: Bacon, Hobbes, Locke, Berkeley, and Hume. [3-0; 3-0]

315. (3) **Rationalism.**—The systematic study of Descartes, Spinoza, and Leibniz. Prerequisites: Philosophy 100 and one additional historical course in philosophy or the equivalent. (Not given in 1957-58.) [3-0; 3-0]

320. (3) **Empiricism.**—The systematic study of Hobbes, Locke, Berkeley, and Hume. Prerequisites: Philosophy 100, and one additional historical course in philosophy or the equivalent. [3-0; 3-0]

410. (3) **Kant and 19th Century Philosophers.**—Intensive study of Kant's *Critique of Pure Reason*; a general critical survey of the philosophy of Kant and major philosophers of the nineteenth century. Prerequisites: Philosophy 310 or its equivalent. [3-0; 3-0]

415. (3) **Contemporary Philosophy.**—Systematic study of some of the major philosophical writings of the present century. Prerequisite: Philosophy 100. It is advisable to have had one historical course in Philosophy. [3-0; 3-0]

C. Fields:

302. (3) **Ethics.**—A study of problems in ethics based on the reading of classic texts. [3-0; 3-0]

304. (3) **Political Philosophy.**—A study of problems in political philosophy based on the reading of classic texts. [3-0; 3-0]

312. (3) **Semantics and Philosophical Analysis.**—The logical analysis of language and its application to the traditional problems of philosophy. Prerequisites: Philosophy 100 or 202, or instructor's permission. [3-0; 3-0]

340. (3) **Philosophy of Religion.**—The nature of religion and the religious experience; an enquiry into the nature of God, man, ethics, science, knowledge and civilization. Prerequisites: Philosophy 100 or the consent of the department. [3-0; 3-0]

400. (3) **Aesthetics.**—An analysis of the aesthetic experience and its relationship to beauty, the fine arts, literature, science and morality. [3-0; 3-0]

402. (3) **Symbolic Logic.**—Introduction to the elements of symbolic logic. Prerequisites: Philosophy 202 or its equivalent. [3-0; 3-0]

440. (3) **Honours Seminar.**

D. Primarily for Graduate Students:

500. (3) **Metaphysics-Epistemology Seminar.** [3-0; 3-0]

510. (3) **Value-Theory Seminar.** (Not given in 1957-58.) [3-0; 3-0]

515. (3) **Seminar in Plato.** [3-0; 3-0]

516. (3) **Seminar in Aristotle.** (Not given in 1957-58.) [3-0; 3-0]

549. **Master's Thesis.**

Physics

Requirements for:

(a) Major—First Year: Mathematics 101, and Physics 100 or 101; Second Year: Mathematics 202 and Physics 200; Third and Fourth Years: total of 9 units in Physics courses numbered 300 or above, chosen in consultation with the Head of the Department.

(b) Single Honours—First Year: Chemistry 101, Mathematics 101, Physics 100 or 101; Second Year: Mathematics 202, 310, Physics 200, and 9 additional units chosen to meet Calendar regulations; Third Year: Mathematics 320, 321, Physics 300, 302, 304, 308, Chemistry 304; Fourth Year: Mathematics 402, Physics 401, 402, 403, 404, 405, 406, 407, 409.

(c) Honours in Physics and Mathematics—First and Second Years: as for Single Honours; Third Year: Mathematics 320, 321, 322, Physics 300, 302, 304, 308; Fourth Year: Mathematics 402, 404, 441, Physics 401, 402, 403, 406, 407, 409.

(d) Combined Honours (Physics with a subject other than Mathematics)—First Year: Mathematics 101, Physics 100 or 101; Second Year: Mathematics 202, Physics 200; Third Year: Mathematics 300, Physics 300, 308; Fourth Year: Physics 402 and 4 additional units in Physics.

Note 1. Students who plan to take only one course in Physics, either to meet the calendar requirements for a science or to acquire some knowledge of the modern physical world, are advised to take Physics 103. All who propose to take an Honours Course in science, or any professional course, must take either Physics 100 or 101.

Note 2. Physics 203 and 303 are suitable courses for those taking a General Course or Education.

100. (3) Elementary Physics.—Principles of mechanics, properties of matter, heat, light, sound, electricity, and some of the more recent developments in physics. Text-book: Stewart, *Physics, a Text-book for Colleges*. Prerequisite: Mathematics 101 must precede or be taken concurrently with this course. [3-2-2; 3-2-2]

101. (3) Elementary Physics.—Principles of mechanics, properties of matter, heat, light, sound, electricity, and some of the more recent developments in physics. Primarily for Honours science and engineering students. Text-book: Stewart, *Physics, A Text-book for Colleges*. Prerequisite: Physics 91. Mathematics 101 must precede or be taken concurrently with this course. [3-2; 3-2]

103. (3) A Survey of Physics.—From Newton's mechanics to nuclear physics, a description of ideas, principles and their applications. Students who have received credit for Physics 100 or 101 may not take this course. It is intended for students who wish to acquire some knowledge of a physical science as part of their cultural background. Text-book: White, *Descriptive College Physics*. No prerequisites. [3-2; 3-2]

200. (3) Mechanics—Heat and Properties of Matter. — Statics, friction, Newton's laws of motion, conservation laws, impact, single harmonic motion, fluid flow and surface tension, calorimetry, expansion, kinetic theory, radiation and conduction, entropy and the second law of thermodynamics. Prerequisites: Physics 100 or 101. Mathematics 202 must be taken concurrently or precede this course which is intended only for students majoring in science. Text-books: Tyler, *Intermediate Heat*; Duncan and Starling, *Mechanics*. [3-3; 3-3]

203. (3) Intermediate General Physics.—A course covering topics in mechanics, heat, sound, light and electricity. Prerequisite: Physics 100 or 101. Mathematics 202 to be taken concurrently. This course is intended for teachers and general course students who are not majoring in a science. No credit for candidates for Honours in Physics. Text-book: Furry, Purcell, Street, *Physics*. [2-3; 2-3]

220. (3) General Physics.—An intermediate treatment with emphasis on the biological and medical applications. For premedical, pre dental, biology, pharmacy, agriculture and biochemistry students. Prerequisite: Physics 100 or 101. [3-2; 3-2]

Primarily for Third Year Students

300. (3) Electricity and Magnetism.—Fundamentals of magnetism and electricity, including basic A.C. circuit theory and electronics. Text-books: Sears, *Electricity and Magnetism*. Prerequisites: Physics 100 or 101, Mathematics 202. [3-3; 3-3]

302. (2) Introduction to Mathematical Physics.—Application of differential equations and vector analysis to topics from free and forced vibrations, wave motion, potential theory, heat conduction. Text-books: Page, *Theoretical Physics* or Joos, *Theoretical Physics*. If credit has not been obtained in Mathematics 300, or 410, or 320 and 321, they should be taken concurrently with this course. [2-0; 2-0]

303. (3) Elementary Modern Physics.—Fundamental ideas underlying modern physics. For general science teachers and others interested in recent developments in physics. The nature of light, spectroscopy, quantum theory, x-rays and electromagnetic radiation. Electricity and electronic circuits will be stressed. Text-book: Oldenberg, *Introduction to Atomic Physics*. Prerequisite: Physics 200 or 203. Mathematics 300 recommended concurrent. [2-3; 2-3]

304. (2) Thermodynamics.—More advanced discussion of the three fundamental laws of thermodynamics, with applications in physics and chemistry. Text-book: to be announced. Prerequisites: Mathematics 202, Physics 200. [2-0; 2-0]

308. (3) Physical Optics.—Geometrical and physical optics; optical instruments, interference, diffraction, polarization, spectroscopy. Text-book: Jenkins and White, *Fundamentals of Optics*. [2-3; 2-3]

310. (1) Light.—For students who have not taken Physics 308. Geometrical optics, optical instruments, photography, spectroscopy, photometry, thermal radiation, refractometers, interference, diffraction, polarized light. Text-book: Noakes, *Text-book of Light*. [1-0; 1-0]

Primarily for Fourth Year Students

400. (3) Atomic and Nuclear Physics.—The major phenomena in the fields of atomic and nuclear physics with special lecture demonstrations. No credit for candidates in Honours Physics, Chemistry or Mathematics. Text-book: Blackwood, Osgood, Ruark, *An Outline of Atomic Physics*. Prerequisite: Physics 300 or 303. [3-0; 3-0]

401. (2) Electricity and Magnetism.—Potential Theory, Maxwell's equations and electromagnetic waves. Prerequisite: Physics 300. Text-book: Peck, *Electricity and Magnetism*. [2-0; 2-0]

402. (2) Atomic Physics.—Electrical discharge through gases, the electron, thermionic and photoelectric emission, Bohr Atom, special relativity, wave and particle concepts and wave mechanics, electron spin and electron distribution in atoms, atomic and molecular spectra, X-rays, molecular properties and chemical bonds. Text-books: Born, *Atomic Physics*; Stranathan, *Particles of Modern Physics*. Prerequisites: Physics 200 and 300, Mathematics 300, or 320 and 321. [2-0; 2-0]

403. (2) Statistical Theory of Matter.—Boltzmann statistics, Bose-Einstein and Fermi-Dirac statistics, various applications. Text-book: D. ter Haar, *Elements of Statistical Mechanics*. [2-0; 2-0]

404. (1) Electronics.—Theory of electronic circuits in their application to physics. Rectification, power supplies, regulation, amplification, detection feed-back oscillators, saw-tooth generators, pulse techniques. [1-0; 1-0]

405. (1) Theory of Elasticity and of Flow.—Introduction to the mathematical theory of heat conduction, neutron diffusion, elasticity, propagation of elastic waves, and laminar flow of ideal and viscous fluids. Text-book: Joos, *Introduction to Theoretical Physics*. Prerequisites: Mathematics 300, 410 or 320, 321; Physics 200. [1-0; 1-0]

406. (2) Theoretical Mechanics.—Analytic mechanics of particles, rigid bodies and fields. From Kepler's problem to the theory of Hamilton and Jacobi. Text-book: Goldstein, *Classical Mechanics*. If credit has not been obtained in Mathematics 300 and 410, or 320 and 321, they should be taken concurrently with this course. [2-0; 2-0]

407. (1) Introduction to Nuclear Physics and Cosmic Rays.—Concept of the nucleus; mass spectroscopy and binding energy; radioactivity; alpha, beta, and gamma rays; acceleration and detection of charged particles; discovery and properties of the neutron; nuclear reactions, fission; cosmic rays, mesons. Text-book: Halliday, *Introductory Nuclear Physics*. Prerequisites: Physics 200 and 300, Mathematics 300 or 320 and 321. [1-0; 1-0]

409. (2) Experimental Physics.—Advanced experiments in electricity, electronics, atomic and nuclear physics, practical work involving high vacuum technique, workshop practice, glass-blowing. Text-books: Hoag, *Electron and Nuclear Physics*; Strong, *Procedures in Experimental Physics*; Yarwood, *High Vacuum Technique*. [0-6; 0-6]

420. (3) Biophysics.—An introduction to the problems and methods of biophysics: physics of living systems, effects of physical agents, radiobiology, and bio-physical instrumentation. Prerequisite: one of Physics 200, 220, 300, 303 or Chemistry 304. [2-3; 2-3]

461. (2) Geophysics.—Geophysical exploration; magnetic, electrical, gravimetric and seismic methods of exploration for oil and minerals. Text-book: Nettleton, *Geophysical Prospecting for Oil*. Prerequisites: Physics 200 and 300. [2-0; 2-0]

Graduate Courses

Courses 501, 502, 503, and 504, or their equivalent, are prerequisite for Ph.D. candidates.

500. (1) Introduction to Quantum Mechanics.—A short survey alternative to 504; suitable for students other than those specifically listed under 504. Text-book: Heitler, *Elementary Wave-Mechanics*. [1-0; 1-0]

501. (1) Electromagnetic Theory.—A deductive presentation of the classical theory of electrons and its relation to the macroscopic electromagnetic theory. Emphasis is laid on those results of the theory which are valid in spite of the advent of quantum theory. Prerequisite: Physics 401. Text-book: Panofsky and Phillips, *Classical Electricity and Magnetism*. [1-0; 1-0]

502. (1) Theory of Measurements.—Frequency distributions, interpolation, least squares. Text-book: Hoel, *Introduction to Mathematical Statistics*. [2-0; 0-0]

503. (2) Nuclear Physics.—Interactions of radiation with matter, radioactivity, nuclear reactions, nuclear properties. Text-book: Evans, *The Atomic Nucleus*. [2-0; 2-0]

504. (2) Elementary Quantum Mechanics.—Quantum mechanics with application to atomic problems. This course, rather than 500, is recommended for those intending to work towards a Ph.D. degree, and particularly for those interested in theoretical physics, spectroscopy, or solid state. Students who have received credit for Physics 500 will be given only one unit credit for this course. Text-book: Schiff, *Quantum Mechanics*. Prerequisite: Physics 402 or 452. [2-0; 2-0]

510. (1) **Noise in Physical Systems.**—Statistical and thermodynamical fluctuations in electrical systems, limiting detectability of signals in noise: Text-books: van der Ziel, *Noise*; Wax, *Noise and Stochastic Processes*.

[1-0; 1-0]

511. (1) **Dielectrics and Magnetism.**—Theory of the dielectric and magnetic properties of gases, liquids, and solids. Text-books: Fröhlich *Theory of Dielectrics*; Stoner, *Magnetism*.

[1-0; 1-0]

512. (1) **Spectroscopy.**—Energy states of atoms and diatomic molecules. Text-books: Herzberg, *Atomic Spectra and Atomic Structure*; Herzberg, *Molecular Spectra and Molecular Structure*. Prerequisite: Physics 504.

[0-0; 2-0]

513. (1) **X-Rays and Crystal Structure.** — White and characteristic X-rays, interaction with free electrons, atoms and molecules, crystal structure and structure analysis by X-rays, typical types of structure and chemical bonds, surface structure by electron diffraction. Text-books: Bragg, *The Crystalline State*; James, *The Optical Principles of the Diffraction of X-Rays*.

[1-0; 1-0]

514. (1) **Special Relativity Theory.** — Relativistic kinematics, dynamics, connection with electromagnetic theory. Prerequisite: Physics 401.

[1-0; 1-0]

515. (1) **Electron Dynamics.**—Electron motion in vacua, gases and solids with particular references to vacuum tubes, gaseous discharges and semiconductor devices. Text-book: Spitzer, *Physics of Fully Ionized Gases*.

[1-0; 1-0]

516. (1) **Chemical Physics.**—For physicists, chemists and metallurgists. The surface properties of solid bodies; physical adsorption, activated adsorption, catalysis, electron emission.

[1-0; 1-0]

517. (1) **Introduction to Low Temperature Physics.**—Description of cryogenic techniques insofar as these differ from normal techniques. Phenomenological aspects of low temperature physics.

[1-0; 1-0]

518. (1) **Low Temperature Physics.** — Theoretical aspects of selected topics of interest in low temperature physics. Students enrolling in this course are expected to have a working knowledge of quantum mechanics.

[1-0; 1-0]

519. (1) **Molecular Spectroscopy.**—Theory of Raman effect and infrared absorption. Vibrational spectra of polyatomic molecules. Chemical applications.

[1-0; 1-0]

520. (2) **Advanced Spectroscopy.** — Selected topics; determination of nuclear properties, microwave spectra. Text-books: Condon and Shortley, *The Theory of Atomic Spectra*; Herzberg, *Infra Red and Raman Spectra*. Prerequisite: Physics 512.

[2-0; 2-0]

521. (1) **Group Theory Methods in Quantum Mechanics.**—Applications to atomic, molecular, crystal structure. Selection rules. Prerequisites: Physics 504 and 512.

[1-0; 1-0]

522. (1) **Physics of Nuclear Reactions.**—A course for those interested in reactions produced by high energy neutron and ion beams. Topics such as energy levels in light nuclei, angular correlation, and the Shell model will be discussed.

[1-0; 1-0]

523. (1) **Advanced Electronics.**—Advanced treatment of specific problems, chosen from noise problems and sensitivity limits and pulse response of circuits. Prerequisites: Physics 404 or E.E. 465. Text-book: Brillouin, *Science and Information Theory*.

[1-0; 1-0]

524. (1) **Waves and Antennas.**—Energy and power flow, wave impedance concept, reflection and refraction; properties of media, dispersion, propagation along the ground and via the ionosphere; antenna radiation, electromagnetic screening; plasma waves.

[1-0; 1-0]

525. (1) **Physics of the Solid State.**—Quantum mechanical treatment of the electronic structure of solids. Prerequisite: Physics 504. [1-0; 1-0]
526. (1) **Quantum Theory of Radiation.**—Calculation of cross-sections for absorption, emission and scattering of photons, creation and annihilation of positrons. Theory of radiation damping. Text-book: Heitler, *Quantum Theory of Radiation*, 2nd Edition. Prerequisites: Physics 501, 504 and 514. [1-0; 1-0]
527. (1) **Theoretical Nuclear Physics.**—Selected topics from current nuclear theory. Prerequisites: Physics 503 and 504. [1-0; 1-0]
528. (1) **Cosmic Rays and High Energy Physics.**—Nuclear and electromagnetic interactions at very high energies. Nature and origin of cosmic rays; their interaction with matter. Mesons, hyperons and anti-particles. [1-0; 1-0]
529. (2) **Advanced Quantum Mechanics.**—Selected topics in relativistic quantum mechanics, second quantization, field theory. Primarily for students interested in theoretical physics. Prerequisites: Physics 504 and 514. [2-0; 2-0]
530. (1) **General Relativity Theory.**—Primarily for students interested in theoretical physics. Prerequisites: Physics 501 and 514. [1-0; 1-0]
531. (1) **Biophysics.**—Discussion of selected topics; partly in seminar form. [1-0; 1-0]
532. (1) **Geophysics.**—A detailed discussion of the constitution of the earth as deduced from geological evidence, earth temperature measurements, seismic and radioactivity studies. Text-book: Gutenberg, *Internal Constitution of the Earth*. [1-0; 1-0]
534. (1) **Radiological Physics I.**—A systematic study of the principles involved in radio-therapy and of the techniques required for the application of these principles. [1-1; 1-1]
535. (1) **Radiological Physics II.**—A continuation of course No. 534, including an extension of the topics discussed in that course. [1-1; 1-1]
536. (1) **Introduction to Dynamic Oceanography.**—A survey of the physical properties of sea water, hydrostatics, continuity, geostrophic and wind driven currents, waves and tides, eddy diffusion. [2-0; 0-0]
537. (1) **Advanced Dynamic Oceanography.**—A more intensive study of the dynamics of ocean currents. Text-book: Proudman, *Dynamical Oceanography*. Prerequisite: Physics 536. [0-0; 2-0]
538. (1) **Fluid Mechanics.**—The flow of real and ideal fluids, emphasizing the influence of turbulence and the application to ocean currents. [1-0; 1-0]
539. (1) **Waves and Tides.**—Surface and internal waves, tides of the oceans, tidal currents. [1-0; 1-0]
540. (2) **Turbulence.**—A discussion of turbulence fluid motion, presenting both the empirical aspects and the development of statistical theories, including the spectrum of turbulence and similarity and equilibrium hypotheses. [2-0; 2-0]
549. Thesis for Master's Degree.
649. Thesis for Ph.D. Degree.

Physiology

For descriptions of courses, see Faculty of Medicine.

Chemistry 101 and Zoology 105 are prerequisite to all courses in Physiology.

Physiology 410, Biochemistry 410, or the equivalent or consent of the Department, are prerequisite to all graduate courses.

Requirements for:

(a) **Single Honours**—First and Second years: Chemistry 101, and 200 or 205, Mathematics 101, Physics 100 or 101, and Zoology 105; Third and Fourth years: Chemistry 300 (may be taken in Second Year), Biochemistry 400 or 410 or 420 and 421, Physiology 410, 411, a graduating essay, and 3-6 units in related fields selected in consultation with the Department from the following: Bacteriology 400, Biology 332, Botany 430, 431, Physics 420, Zoology 309, 408 and 412. Mathematics 202 is recommended for Honors students in Physiology.

(b) **Combined Honours**—First and Second years: as for Single Honours; Third and Fourth Years: Chemistry 300 (may be taken in Second Year), Biochemistry 400 or 410 or 420 and 421, and Physiology 410, 411, and a graduating essay in one or the other subject.

Polish

Requirements for:

(a) **Major**—First Year: Polish 110; Second Year: Polish 210; Third and Fourth Years: Polish 320, 410, and a 3-unit Slavonic Studies course numbered 300 or above chosen in consultation with the Department.

(b) **Single and Combined Honours in Slavonic Studies**—See page 138.

110. (3) Basic Polish.—First introductory course in the Polish language. Text-book: Coleman and Patkaniowska, *Polish Grammar*. Mr. Halpert.

[4-0; 4-0]

210. (3) Polish. — Second course in the Polish language. Text-book: Coleman and Patkaniowska, *Polish Grammar*. Mr. Halpert.

[3-0; 3-0]

320. (3) Polish Literature.—Lectures delivered in Polish. Selected readings of Polish classical literature with main stress on 19th century writers. Text-book: Kridl, *Literatura Polska*; Chlebowski, *Littérature polonaise au XIXe siècle*. Mr. Halpert.

[3-0; 3-0]

410. (3) The Humanism of the Polish Renaissance.—The formative influence of Italy and France on the Golden Age of Polish letters, as seen in the works of Rej, Kochanowski, Bielski, Orzechowski, Gornicki, Strykowski and Skarga. Mr. Rose and Mr. Halpert.

[3-0; 3-0]

Political Science

Requirements for:

(a) **Major**—A major in Political Science consists of Political Science 200, plus three courses in Political Science numbered 300 or above, chosen in consultation with a member of the Department, and approved by the Department.

(b) **Single Honours**—Prerequisites for admission to Third Year in the Honours course: A reading knowledge of French, German or Russian; First or Second class standing in Political Science 200. Students are also advised to take Economics 200 and History 201 in second year.

Third Year Course: 18 units, including Economics 200 and History 201 if not already taken, Political Science 300, and Political Science 330. Other courses are to be chosen by the student in consultation with the Department. Honours students will be assigned to a member of the Department who will act as their advisor.

Fourth Year Course: 18 units, including Political Science 441 (Honours Seminar), Political Science 449 (Graduating essay), two further courses in Political Science, and two electives.

(c) **Combined Honours**—The same prerequisites as for Single Honours.

Third Year Course: same as for Single Honours.

Fourth Year Course: for students writing their graduating essay in

Political Science, 18 units including Political Science 441 and 449, and one further course in Political Science; for students not writing their graduating essay in Political Science, 9 units in Political Science, chosen in consultation with the Department.

(d) **Five-Year Double Honours**—If the Double Honours Course is taken in Political Science in combination with some other subject the requirements for the Political Science portion of the course will, if the graduating essay is to be written in Political science, be the same as for Single Honours in Political Science. Otherwise the requirements will be the same as for Single Honours in Political Science with Political Science 449 omitted.

200. (3) Government of Canada.—A basic introductory course, to acquaint the student with the institutions of government in Canada, the manner in which they function and interact, and the political processes which surround and influence them. Text-book: Dawson, *The Government of Canada*. Other readings to be assigned. Two essays. Mr. Corbett. [3-0; 3-0]

300. (3) Governments of Britain and the United States.—The constitutions, systems of government and political processes of the United Kingdom and the United States. [3-0; 3-0]

310. (3) Public Administration.—The structure and organization of the administrative branch of government, in theory and practice. Illustrations are drawn from Canada, Great Britain and the United States. Administrative powers and administrative responsibility in the modern state. The personnel policies of modern governments, and the agencies of control. Mr. Corbett. [3-0; 3-0]

330. (3) History of Political Thought.—Contributions of some of the great political thinkers to the theory of government, with emphasis on present-day political problems. Readings to be assigned. [3-0; 3-0]

340. (3) Political Parties.—A study of the development, organization and interaction of political parties. The part played by parties in the electoral and legislative processes. One, two and multi-party systems. Text-book: M. Duverger, *Political Parties*. Mr. Laponce. [3-0; 3-0]

400. (3) Federalism.—An intensive study of Dominion-Provincial relations in Canada, in their constitutional, economic and political aspects. Comparisons will be made with the federal systems of other countries such as the United States, Australia, South Africa and Switzerland. Readings to be assigned. [3-0; 3-0]

420. (1½) Municipal Government.—A comparative study of local politics, administration and finance, in theory and practice. First term, 1½ units. Students are required to enroll in Law 317, *Municipal Law*, for 1½ units in the second term.

435. (3) Public International Law.—The nature, sources, and sanctions of international law; the notion of nationhood with particular reference to the status of the British Dominions; jurisdiction, nationality, normal relations between states; settlement of international disputes; war; organization of peace after the recent conflict. References: Oppenheim, *International Law*; Brierly, *The Law of Nations*; MacKenzie and Laing, *Canada and the Law of Nations*. This course may not be taken for both Arts and Law Faculty credit [3-0; 3-0]

440. (3) Honours Seminar.—Reports and group discussions under staff direction of important aspects of advanced political science for Third Year Honours credit. Credit requisite: Honours or graduate standing. [2-0; 2-0]

441. (3) Honours Seminar.—Same as 440 but for Fourth Year Honours credit. Credit requisite: Honours or graduate standing. [2-0; 2-0]

449. (3) Graduating Essay.—Essay on some theoretical or institutional aspect of political science to be selected in consultation with members of staff. Must be submitted in final form on or before the beginning of the

examinations preceding the Congregation at which the student expects to receive the degree.

540. (3) Master's Seminar.—Readings, consultations and reports on such phases of contemporary political theory and practices as may be designed to meet the needs of candidates for the M.A. degree in Political Science. May be held concurrently with the Honours seminars. Credit requisite: graduate standing. [2-0; 2-0]

549. (3) Master's Thesis.—A comprehensive treatment of some institutional and theoretical problem in political science to be selected in consultation with the departmental staff. Must be submitted in final form on or before the beginning of the examinations preceding the Congregation at which the candidate expects to receive the degree.

**Other Courses which Qualify for Graduate Credit in
Political Science in Approved Cases**

Asian Studies 310 (3).

History 415 (3), 419 (3), 420 (3).

International Studies 400 (3), 410 (3).

Slavonic Studies 308 (3), 311 (3), 330 (3), 412 (3).

Psychology

Requirements for:

(a) Major—First and Second Years: Psychology 100, and 201 or 202; Third and Fourth Years: 9 units, selected from Psychology 300, 301, 302, 305, 306, 400, 401, 403, 404, 405, of which 3 units must be either Psychology 305 or 405. Courses constituting a major must be selected in consultation with the Department during registration for the Third Year.

(b) Single Honours: Zoology 105, Mathematics 101 and a major in Psychology, including 410 and nine additional units, three of which must be in psychology and the remainder in psychology or cognate fields.

(c) Five-Year Double Honours—same as Single Honours.

Text-books and references will be announced in classes.

Note: In addition to the required psychology courses it is recommended that, in their undergraduate work, students intending to work in (a) the field of clinical psychology include biology and social science courses, (b) the field of industrial and business psychology include economics and social science courses, (c) the field of vocational psychology include education, economics and social science courses, (d) the field of experimental or scientific psychology include mathematics, physics and biology courses.

100. (3) Introductory Psychology.—A scientific and practical study of the basic forms of human thinking, emotions and activity. This course is also offered through correspondence. [3-0; 3-0]

201. (3) Social Psychology.—Personality development, motivation, beliefs and attitudes, language, institutional behaviour, leadership, propaganda, freedom and control, major social problems. Prerequisite: Psychology 100. [3-0; 3-0]

202. (3) Mental Hygiene.—Approaches to an understanding of personality, varieties of adjustive behaviour, modification of personal and social behaviour, systems of psychotherapy, approaches to mental health. Prerequisite: Psychology 100. [3-0; 3-0]

203. (3) Sensation and Perception.—The sensory-perceptual processes whereby experience becomes meaningful and understanding develops; brief consideration of sensory mechanisms and psychophysics; theories of perception; perception at the level of social interaction. Laboratory demonstrations. Prerequisite: Psychology 100. [2-2; 2-2]

300. (3) Business and Industrial Psychology.—Principles involved in the application of psychology to industrial and personnel problems. Prerequisites: Psychology 201 or 202, or permission of instructor. [3-0; 3-0]

301. (3) Developmental Psychology.—Psychological development, prenatal through adolescence; determiners of psychological growth; motor, emotional, social, intellectual, language and personality development. Implications for the guidance of psychological development. Prerequisite: Psychology 202. This course is also offered through correspondence. [3-0; 3-0]

302. (3) Applied Psychology.—The application of psychological principles in education, business, industry, mental health, clinical psychology, counselling, and related fields. Prerequisite: Psychology 201 or 202, or permission of instructor. Credit not allowed for both Psychology 300 and 302. [3-0; 3-0]

305. (3) Personality Theory.—Approaches to personality theory, principal theoretical problems, theories of personality as represented by psychological systems. Prerequisite: Psychology 201 or 202. [3-0; 3-0]

306. (3) Introduction to the Psychology of Speech Disorders.—A general outline of the field of deviate communication emphasizing cause and prevention of speech and hearing defects and the educational management of speech and hearing defectives. Case observation and discussion. Prerequisite: Psychology 202 (may be taken concurrently). This course may be taken only with the permission of the Department. [3-0; 3-0]

310. (3) Statistics.—Statistical methods as applied to psychological research; frequency distributions; measures of central tendency, variability, correlation; sampling theory and tests of significance. Prerequisites: Psychology 201 or 202, Mathematics 101 or equivalent. [2-3; 2-3]

400. (3) Abnormal Psychology. — Understanding human nature by a study of abnormal behaviour and mental processes; field trips and case studies. Prerequisites: Psychology 201 or 202, and 3 units of Third or Fourth year courses in Psychology. For Fourth Year and graduate students only. [3-0; 3-0]

401. (3) Clinical Psychology. — Basic principles of the clinical psychologist's approach to behaviour problems; contemporary controversial issues in the field; current interpretations of the more common clinical problems illustrated through case data examination. Brief survey of the functions and types of techniques of the clinical psychologist. Prerequisites: Psychology 201 or 202, and 305. [3-0; 3-0]

403. (3) Mental Measurement and Psychological Tests.—The principles underlying psychological measuring instruments; intelligence tests, personality inventories, and questionnaires; construction and standardization of tests. Prerequisites: Psychology 201 or 202. Knowledge of elementary statistics is desirable. [3-0; 3-0]

404. (3) Principles of Comparative Psychology.—Fundamental principles of the behaviour of man and the lower animals examined from the comparative point of view. Prerequisites: Zoology 105, Psychology 201 or 202, or permission of instructor. [3-0; 3-0]

405. (3) Learning.—A critical examination of the major theories of learning. Prerequisites: Psychology 201 or 202. [3-0; 3-0]

406. (3) Psychology of Speech Disorders.—Continuation of Psychology 306, with emphasis on principles and techniques of therapy. Prerequisite: Psychology 306. This course may be taken only with the permission of the Department. [3-1; 3-1]

410. (3) Experimental Psychology. — Experimental methodology and typical results in selected areas of psychology. Prerequisite: Psychology 201 or 202. [2-3; 2-3]

449. (3) Honours Essay.

Primarily for Graduate Students

500. (3) **History of Psychology Seminar.** [3-0; 3-0]
 501. (3) **Social Psychology Seminar.**—Prerequisite: Psychology 305 or equivalent. [3-0; 3-0]
 503. (3) **Advanced Personality Theory.**—A continuation of the studies in Psychology 305. Prerequisite: Psychology 305 or equivalent. [3-0; 3-0]
 510. (3) **Research Methods Seminar.** [2-0; 2-0]
 530. (3) **Projective Techniques.**—Survey and application of projective techniques; major emphasis on Rorschach. Prerequisites: Psychology 400 and 540. [3-0; 3-0]
 540. (3) **Clinical Techniques.** — Supervised practical experience in the clinical application of individual tests of intelligence. Prerequisites: Psychology 401 and 403. [0-3; 0-3]
 541. (3) **Diagnostic Techniques.**—Diagnostic testing; emphasis upon the application of projective techniques. Prerequisite: Psychology 530. [0-3; 0-3]
 549. (3-6) **Master's Thesis.**
 649. **Ph.D. Thesis.**

Renaissance Studies

The Departments of Classics, English, French, German, History, Philosophy, Slavonic Studies, Spanish, and the School of Architecture (with Fine Arts) have combined their appropriate courses to offer an Honours B.A. in Renaissance Studies, as shown below.

These courses are also open to students taking the General B.A. degree who may, if they wish, work under the supervision of the Committee on Renaissance Studies.

Students intending to enroll in Renaissance Studies should first consult with Mr. Grant, Department of Classics.

Prerequisites for admission to the Third Year: Philosophy 100, History 201 (or History 101 or 102), Latin 90 or High School equivalent. In addition, students in their First and Second Years are advised to take at least one of the following: Economics 100, Economics 200, Fine Arts 200, History 304, and a course in a second language.

Third and Fourth Years: Bibliography (History 333), first term for Third Year students; Seminar (staff and students, second term; Third Year students attend, Fourth Year Students participate); History 313; Philosophy 210; Italian 310 (Italian Civilization); English 436; Classical Studies 316; 12 units of options (chosen in consultation with the Committee) in Philosophy, History, Languages, English, or a combination of these; 6 units of the student's own choice.

440. (1½) **Renaissance Seminar.**

449. (3) **Graduating Essay** (which may be substituted for English 436).

Russian

Requirements for:

(a) Major—First Year: Russian 100; Second Year: Russian 200; Third and Fourth Years; a total of 9 units in Russian courses numbered 300 or above.

(b) Single or Combined Honours in Slavonic Studies—See page 138.

100. (3) **Basic Russian.** — First introductory course in the Russian language. Text-book: Gronicka, *Essentials of Russian.* [4-0; 4-0]

Note: Several sections of Basic Russian are specially designed for science students.

200. (3) **Russian.**—Second course in the Russian language. [3-0; 3-0]

203. (3) **Russian.**—More advanced study of Russian morphology, syntax, composition. Scientific study of Russian phonemics and phonetics. Mimeographed notes will be provided. Mr. Sobell. [3-0; 3-0]

300. (3) **Nineteenth and Twentieth Century Russian Literature.**—Texts: Reading in Russian of selected works of Pushkin, Lermontov, Gogol, Tolstoy, Dostoyevsky, Turgenev, Gorky. Translation of selected texts from English into Russian. Mr. Wainman. [3-0; 3-0]

318. (3) **Early Russian Literature.**—Kievan and Muscovite texts studied with a view to appreciating early social and historical patterns; the Povest; the Byliny; Daniil Zatochnik; the Domostroj, Ivan-Kurbskij correspondence. Text-books: Gudzij, *Khrestomatija po drevnej russkoj literature*; Gudzij, *History of Old Russian Literature*. [3-0; 3-0]

319. (3) **Old Church Slavonic.**—Origin of Old Church Slavonic; historical study of its morphology and syntax; Old Church Slavonic and Indo-European; reading and critical interpretation of earliest South Slav and Russian texts. Text-book: Diels, *Altkirchenslavische Grammatik*. [3-0; 3-0]

400. (3) **History of Russian Literature.**—Lectures delivered in Russian. References: Pypin, *Istoriya Russkoj Literatury*; Sakulin, *Novaya Literatura*. Mr. Ignatieff. [3-0; 3-0]

401. (3) **The History of the Russian Language.** — Texts: Shakhmatov, *Kurs III*; Bulakhovskij, *Istoricheskij kommentarij k literaturnomu russkomu yazyku*; Durnovo, *Očerki istorii russkogo yazyka*; Obnorsky, *Immenoe sklonenie*. [3-0; 3-0]

402. (3) **Introduction to Comparative Slavonic Philology, Part I.**—Comparative study of morphology and phonology of Eastern, Western, and South Slavic. Mimeographed notes will be provided. References: Meillet, *Le slave commun*; Isacenko, *Fonetika spisovnej rustiny*; Broch, *Očerki fiziolonii slavyanskoi rechi*. Mr. Sobell. [3-0; 3-0]

420. (3) **Indo-European Comparative Philology.**—Relationship and evolution of the Indo-European languages. Parallelism and regularity of sound change; historical phonology, morphology, syntax. History of words, etymology, semantics, loan-words. Emphasis on elements in English and other modern languages, particularly from the point of view of general linguistics. Fundamental principles of structure and history of language. Dialect geography of Europe and America. Examples will be selected to meet special needs of the students. [3-0; 3-0]

502. (3) **Comparative Slavonic Philology, Part II.**—A further examination of morphemes, accentology and advanced studies in phonology and semantics; a research theme will be assigned to each student. Mimeographed notes will be provided. Reference: Trubeckoj, *Principes de phonologie*. Mr. Sobell. [3-0; 3-0]

Note: Courses 401, 402 and 502 are essential for students wishing to do research work in the field of comparative Slavonic linguistics, philology, phonology and structural analysis.

449. (3) **Essay for the Bachelor's Degree.**

549. (3) **Thesis for the Master's Degree.**

Slavonic Studies

(Area Studies of Central and Eastern Europe and Soviet Asia)

Requirements for:

(a) Major—Second Year: Slavonic Studies 205; in the Third and Fourth Years: a total of 9 units of Slavonic Studies courses numbered above 300.

(b) Single Honours—First Year: Russian 100; Second Year: Russian 200 or 203 and one of Slavonic Studies 205, Polish 110; Third and Fourth Years: Russian 300, 400, and 12 units chosen from Slavonic Studies 306,

308, 310, 311, 312, 314, 330, 340, 404, 410, 412, 448; Russian 318, 319, 401, 402, 420, 502, Polish 210, 318, History 415, International Studies 400.

(c) Combined Honours—First Year: Russian 100; Second Year: Russian 200 or 203; Third and Fourth Years: Russian 300 and 9 units selected from Slavonic Studies 306, 308, 310, 311, 312, 314, 330, 340, 404, 412, 448.

Notes: (1) Knowledge of Russian is not required in the following courses.

(2) International Studies 400 and 405 and History 415 count for credit in Slavonic Studies.

205. (3) Economic History and Geography of U.S.S.R. and Eastern Europe.—Study of land, people, natural resources, industry and agriculture, systems of transportation and routes of foreign trade of Russia—Soviet and Tzarist—and of other countries of Eastern Europe. Text-books: Seton-Watson, *Eastern Europe Between Wars*; selected parts from Balzak, Vasjutin and Feigin, *Economic Geography of the U.S.S.R.* Mr. Ronimois.

[3-0; 3-0]

306. (3) Russian Literature in Translation.—Literary achievements of the Russian people, with stress on the important works of 19th and 20th century Russian writers. Text-books: Simmons, *Outline of Modern Russian Literature*; Mirsky, *History of Russian Literature*. Selected sections from Pushkin, Lermontov, Gogol, Turgenev, Tolstoy, Dostoyevsky, Chekhov, Gorky, Blok. Mr. Wainman.

[3-0; 3-0]

308. (3) History of Russia.—The antecedents of the Russian State; foundation and growth, with particular attention to colonization and expansion; evolution of political institutions; the history of the revolutionary movement and the development of Russian Marxism; the Soviet State. Text-books: Pares, *History of Russia*; or Vernadsky, *History of Russia*. References: Kliuchevsky, *A History of Russia*; Walsh, *Readings in Russian History*; Carr, *A History of Soviet Russia*.

[3-0; 3-0]

310. (3) Culture of the Slavonic Peoples.—A cultural history of the Slavs: an examination of the society, institutions, religion, thought, education and arts of the Slavonic peoples of the Soviet Union, Central Europe and the Balkans. References: Strakhovsky, *Handbook of Slavic Studies*; Miliukov, *Outlines of Russian Culture*; Rose, *Poland*.

[3-0; 3-0]

311. (3) History of Central and Southeast Europe.—The Slavonic nations in Central and Southeast Europe; the Byzantine Empire and the Crusades; Islam and the Turkish domination of the Balkans; Turkey and the Great Powers; cultural and political nationalism among the Slavonic peoples in the nineteenth century; formation of new states after World War I; the Communist era. References Strakhovsky, *Handbook of Slavic Studies*; Rose, *Poland*; Schevill, *A History of the Balkan Peninsula*.

[3-0; 3-0]

312. (3) Structure and Organization of the Soviet Economy.—Study of Soviet agriculture, industry, commerce, systems of banking, state revenues, ownership and economic administration. Analysis of planning of agricultural deliveries, industrial production, prices, money and credit, taxation and distribution of labour. Text-book: Baykov, *The Development of the Soviet Economic System*. Mr. Ronimois.

[3-0; 3-0]

314. (3) Theoretical Analysis of Soviet Planning.—Extension of economic analysis to economic life under various degrees of control; Soviet forms of investment, exchange, costs and profits, capital formation and personal income; structural deficiencies of the Soviet forms of control. Text-book: Ronimois, *Soviet Economic Life and the General Categories of Economic Analysis*. Prerequisite: Economics 200. Mr. Ronimois.

[3-0; 3-0]

330. (3) German-Slav Relations from the Earliest Times to the Present.—German and Slav origins and migrations; the Holy Roman Empire and

the Slavonic neighbours; German colonization in the Middle Ages and the Teutonic Knights; the Hussite Wars; the Thirty Years' War and its repercussions; rise of the Habsburg Empire and the Slavs; the development of Prussia; the Partitions of Poland; Slav nationalism in the nineteenth century; World War I; Nazism, Hitler and World War II. References: Barraclough, *Origins of Modern Germany*; Wojciechowski, *Poland's Place in Europe*; Thomson, *Czechoslovakia in European History*. [3-0; 3-0]

340. (3) **The Peoples of the Soviet Union.**—The Slav, Baltic, Iranian, Armenian, Uralic, Turkic, Mongol, Paleoasiatic and Caucasian peoples of the USSR; past and present geographical distribution; historical background; physical and cultural anthropology with especial emphasis on the non-Slav peoples; their influence on Russian race and culture; Imperial and Soviet policy towards national minorities; integration of national minorities into the Soviet state. Administrative and linguistic divisions; development of literary languages. Pre- and post-revolutionary oral and written literatures of the non-Slavic peoples; achievements of Soviet anthropology. [3-0; 3-0]

404. (3) **The Geography of the Soviet Union.**—The physical, human and regional geography of the Union: the relationship between the physical environment and human and economic geography; the distribution and use of resources; rural and urban settlement patterns; political geography of the U.S.S.R. Text: Jorre, G., *The Soviet Union, the Land and Its People*; Atlas: Horrabin and Gregory, *An Atlas of the U.S.S.R.*, 1945. Mr. Ruggles. [3-0; 3-0]

410. (3) **The Image of Russia in Western European Literature and Thought, 1700-1860.**—A critical study of attitudes and appraisals of Western European authors in regard to Russia from Peter the Great to the Crimean War. An investigation of the changing *myth* of Russia as it prevails in the collective consciousness of Western European nations, and as it is reflected in the works of their poets, essayists, novelists, historians and philosophers. Mr Ignatieff. [3-0; 3-0]

412. (3) **The Theory of the Soviet State.**—The Russian background; Soviet form of society; its philosophy, development and interpretation in the light of the logic of economic planning on the one hand and of the official dogma on the other. References: Kelsen, *The Political Theory of Bolshevism*; Towster, *Political Power in the U.S.S.R.*; Fainstod, *How Russia is Ruled*. [3-0; 3-0]

448. (3) **Seminar on Nationalism in Central and Eastern Europe.**—Traces of national consciousness in classical antiquity and in the Middle Ages; importance of the Napoleonic Wars; romanticism and nationalism; nineteenth-century nationalism in Russia, Germany and among the Slavs in the Austrian and Ottoman Empires; Pan-Slavism and Pan-Germanism; nationalism in partitioned Poland; nationalism and the origin of World War I; Nazism; Communism and nationalism. References: Kohn, *The Idea of Nationalism*; Kohn, *Pan-Slavism*. [3-0; 3-0]

449. (3) **Essay for the Bachelor's Degree.**

549. (3) **Thesis for the Master's Degree.**

Sociology

Requirements for:

(a) Major—A major is offered as follows:

Sociology—Second Year: Sociology 200 and Economics 200 or Anthropology 200. One of these may be taken concurrently with courses in the Third Year; Third and Fourth Years: three courses in Sociology.

(b) Single Honours—Prerequisites: for admission to the Third Year, a reading knowledge of French, German, or Russian and a First or high Second Class standing in Sociology 200 and Economics 200 or Anthropology 200; Third and Fourth Year Course: 18 units comprising a major

in Sociology, a thesis counting 3 units, a seminar, and one further course or seminar in Sociology.

(c) Combined Honours (Sociology combined with some other subject)—Prerequisites for admission to Third Year: as for Single Honours; Third and Fourth Year Course: a major in Sociology and an additional course in Sociology or Criminology. If the thesis is written in Sociology this course may be replaced by the thesis, and in this case a seminar must be taken in addition.

(d) Five-Year Double Honours (Sociology and some other subject) — The requirements for the Sociology portion of the course will, if the thesis is to be written in Sociology, be the same as for Single Honours in Sociology. Otherwise the requirements will be the same as for Single Honours with the thesis requirement omitted.

200. (3) **Introduction to Sociology.** — A general introduction to the sociological analysis of selected topics (such as values, work, stratification, kinship and socialization, particular social roles and the problem of national character) which together would constitute a broad description of a large scale society. Readings to be assigned. [3-0; 3-0]

305. (1½) **Kinship and Primary Groups.**—The main features and variations of the kinship system of Western societies; contrasts between the family and other kinds of small groups. Readings to be assigned. [3-0; 0-0]

306. (1½) **Socialization and Social Roles.**—Stages in the learning of social roles; age as a principle of social organization; processes governing the acquisition of adult roles. Readings to be assigned. [0-0; 3-0]

310. (3) **Small Groups and Complex Organization.**—Common features in such diverse groupings as a street corner gang, discussion groups and therapy groups, with particular reference to the development of a division of labour; followed by a study of informal groupings in bureaucratic, industrial, military and other settings. Readings to be assigned. [3-0; 3-0]

315. (3) **Stratification.**—A discussion of class and caste and of research dealing with such topics as ranking of occupations, symbols of social status, patterns of mobility and the relation between class structure and other aspects of society. An analysis of forms of discrimination and relations between majority and minority groups. Readings to be assigned. [3-0; 3-0]

320. (3) **The Sociology of Work.**—Social forces governing specialization and division of labor. Sociological analysis of major occupational groups in terms of work norms, motivations and goals; occupational status and role; formal and informal systems of social control; and inter-relationships of specialized occupational groups in large-scale undertakings. Text-book: T. Caplow, *The Sociology of Work*, 1955. [3-0; 3-0]

400. (3) **Deviance.**—Forms of deviance from an institutional order; the social roles of deviants; attitudes towards nonconformity; punishment and cure; evasion of rules; contributions of deviance to the functioning of social systems. Readings to be assigned. [3-0; 3-0]

405. (3) **Sociological Theory.**—Convergence and difference in the work of more recent sociological theorists, especially Durkheim, Weber, Parsons and Schuetz and the relevance of their work to selected problems of research. Readings to be assigned. [3-0; 3-0]

415. (3) **The Sociology of Religion.**—Analysis of religious beliefs, acts and organizations, with reference to their contribution to the functioning of society, including the study of roles of religious functionaries, ritual, and the inter-relations between religious and non-religious institutions, with particular reference to North America. [3-0; 3-0]

425. (3) **Human Communities.**—Critical examination of selected research on urbanisation, the spatial aspects of social relations, power structure, mobility, patterns of leisure and social aspects of housing and neighbourhood types.

426. (3) Rural Society in Transition.—The social and economic structure of the rural community with special emphasis on the changing role of selected institutions such as the rural family, the school, religious organizations, agencies of government. Some comparative material from under-developed countries will also be introduced. Text-book: Kolb and Brunner, *A Study of Rural Society*. [3-0; 3-0]

440. (3) Honours Seminar.—Discussion of research monographs and methods. Credit requisite: Honours or graduate standing.

441. (3) Honours Seminar. — Same as 440 for Fourth Year Honours credit. Credit requisite: Honours or graduate standing.

449. (3) Honours Essay.

540. (3) Master's Seminar.

549. (3) Master's Thesis in Sociology.

Spanish

(Given by the Department of Romance Studies)

Requirements for:

(a) Major—First and Second Years: Spanish 110 or 120, and 201; Third and Fourth Years: a minimum of 9 units in Spanish courses numbered 300 and above, including Spanish 300.

(b) Single Honours—First Year: Spanish 110 or 120 and one year of Latin (if Latin 92 has not been passed in high school). Second Year: Spanish 201; Third and Fourth Years: 18 units in Spanish courses numbered above 300, including Spanish 449 (3-6 units); and other courses to complete Honours requirements, chosen in consultation with the Department.

(c) Combined Honours—First Year: Spanish 110 or 120 and one year of Latin (if Latin 92 has not been passed in high school). Second Year: Spanish 201; Third and Fourth Years: 12 units of Spanish courses numbered 300 and above; and 12 units in the second subject selected in consultation with the departments concerned. Units must include a graduating essay (3-6 units) in one or the other subject.

Note: Attention is called to the courses in Italian, page 119.

90. (3) Beginners' Spanish.—Grammar, composition, translation, conversation. Texts: Mapes-Webber, *Brief Course in Spanish*; Kasten and Neale-Silva, *Lecturas escogidas*. [4-0; 4-0]

110. (3) First Year University Spanish.—(Prerequisite: Spanish 20 or pass standing in Spanish 90.)—Grammar, translation, reading, oral practice. Texts: Brett & Kurz, *Intermediate Spanish Grammar and Readings*; García Lorca, *La Zapatera prodigiosa*; Brady & Turk, *Cuentos y comedias de España*. [4-0; 4-0]

120. (3) First Year University Spanish.—(Prerequisite: Spanish 92, or Second Class or better in Spanish 90.)—Grammar, translation, reading, oral practice. Texts: as in Spanish 110. [3-0; 3-0]

201. (3) Second Year University Spanish.—Reading of modern stories, plays and poetry; grammar study; theme writing (three hours a week). Oral training (one hour a week). Assigned outside reading. Texts: Whitmore, *The Handbook for Intermediate Spanish*; Foster, *Spanish Composition*; Da Cal, *Literatura del siglo xx*; Spanish dictionary (to be prescribed). [3-1; 3-1]

300. (3) Survey of Spanish Literature.—Study of the literature of Spain from the *Poema del Cid* to the present. [3-0; 3-0]

301. (3) The Golden Age.—Spanish literature of the sixteenth and seventeenth centuries. [3-0; 3-0]

302. (3) Modern Authors.—Study of nineteenth and twentieth century prose. (Not given in 1957-58.) [3-0; 3-0]

304. (3) **Advanced Language Study.**—Phonetics, syntax, translation and composition. [3-0; 3-0]

401. (3) **History of the Spanish Language.**—The origins and development of Spanish; study of representative texts. (Not given in 1957-58.) [3-0; 3-0]

402. (3) **Cervantes.**—Study of the life and works of Cervantes, with special emphasis on *Don Quixote*. (Not given in 1957-58.) [3-0; 3-0]

404. (3) **Spanish American Literature.**—Study of representative writers and literary movements. (Not given in 1957-58.) [3-0; 3-0]

412. (1) **Cervantes in English.**—Study of *Don Quixote* for students who do not read Spanish. Students enrolled in Spanish 402 may not also enroll in this course. Text: Cervantes, *Don Quixote* (Putnam translation). [1-0; 1-0]

419. (3) **Mediaeval Spanish Literature.**—Spanish literature from the beginnings to the fifteenth century. Texts: Perry, ed., *The Harrap Anthology of Spanish Poetry*; Millares Carlo, *Literatura española: hasta fines del siglo xv*; and others to be announced. Mr. McDonald. [3-0; 3-0]

420. (3) **Modern Spanish Poetry.**—Poetry of Miguel de Unamuno, Rubén Darío, Juan Ramón Jiménez, Antonio Machado, Rafael Alberti, Federico García Lorca and other contemporaries. Mr. McDonald. (Not given in 1957-58.) [3-0; 3-0]

449. (3-6) **Graduating Essay.**—For Honours only.

Graduate Courses

501. (3) **Problems in Spanish Linguistics.** [3-0; 3-0]

502. (3) **Humanism and the Quijote.** [3-0; 3-0]

549. (3-6) **Master's Thesis.**

Zoology

Requirements for:

(a) Major—First and Second Years: Zoology 105 and 3 additional units in Biology, Botany or Zoology; Third and Fourth Years: a total of 9 units in Zoology or Biology courses numbered 200 or higher, chosen in consultation with the Department.

(b) Single Honours—First Year: English 100 or 101, French 110 or 120, Mathematics 101, Zoology 105, Chemistry 101; Second Year: English 200, German 90 or 130 or Russian 100, Zoology 202 or 301, Botany 105, Chemistry 205 (or 210 with special permission), Physics 100 or 101; Third and Fourth Years: Zoology 202 or 301, 408, 303, 417; two of Zoology 302 or 306, 309, 416; Biology 332; Chemistry 300 or 210 (unless exemption is given by the department); a course from Note 5 (ii), page 78; Zoology 449; and three or four options. All students must take Mathematics 205 or Plant Science 421. Optional courses: any other course in Zoology, courses in Botany, Biology 320, 400, 430, Geology 406; Mathematics 202 is recommended for Honours students in most fields of Zoology.

Within the Honours programme a student may proceed to one of several fields of academic zoology, for example, anatomy, embryology, physiology, parasitology, or to one of the applied fields of entomology, fisheries or wildlife management. Sequences of courses appropriate to these programmes should be chosen in consultation with the Head of the Department.

Entomology

A student may enter the field of entomology through zoology, forestry or agriculture. Facilities include an insectary, a museum collection and an excellent library.

Fisheries

Students desiring training in various fields related to fisheries may obtain instruction by a judicious selection of courses offered in various departments of the University. Courses in oceanography form an important part of the graduate work in fisheries biology. The following programmes are now available and graduate courses are available in the Institute of Fisheries. Those interested may obtain advice from Mr. Hoar or Mr. Larkin. Three subfields in fisheries are recognized:

- (a) **Biological Research.**—Students are advised to take the Honours Course in Zoology followed by graduate work leading to the Master's degree.
- (b) **Commerce.**—Students in Commerce may elect a science option during their Fourth and Fifth years (see Commerce).
- (c) **Food Technology.**—Students may take the course in Food Technology in the Faculty of Agriculture and choose courses in Zoology as electives.

Wildlife Management

Courses of study permitting a student to enter this field of applied zoology can be obtained either through the B.A. or B.Sc. degree, the B.S.A. degree, or the B.S.F. degree. In each instance the Master's degree is essential and students should not attempt to enter the field unless they can meet the academic requirements for it.

105. (3) General Zoology.—An introduction to animal biology; structure, function, evolution and classification of animals. This course is prerequisite to all other courses in Zoology and to most courses in Biology. Mr. Cowan and Mr. Bendell. [2-3; 2-3]

202. (3) Comparative Anatomy of Vertebrates.—Phylogeny and comparative anatomy of vertebrates and protochordates; dissection of representative forms. Mr. Udvardy. [2-3; 2-3]

301. (3) Invertebrate Zoology.—Anatomy, taxonomy, life histories of invertebrates with special reference to marine forms. Mr. Dehnel. [2-3; 2-3]

302. (3) Introduction to Entomology.—Functional anatomy, taxonomy and biology of insects with an introduction to spiders, mites and ticks. Insectary cultures provide experience in rearing and fresh material for study of internal anatomy. Prerequisite to all other courses in entomology.) Mr. Sanjean. [2-3; 2-3]

303. (1½) Histology.—Microscopic study of the cell and the basic tissues of vertebrate animals. Mr. Ford. [2-3; 0-0]

304. (1½) Human Embryology.—The development of man. A detailed study of the development of one animal with special reference to its organ systems and foetal membranes. Mr. Ford. [0-0; 2-3]

305 (3) Economic Entomology.—An ecological approach to selected insect pests. The course is broadened through guest lectures by researchers currently engaged in this field. (1958-59 and alternate years.) Mr. Sanjean [2-3; 2-3]

306. (3) Biology of the Vertebrates.—The vertebrates, chiefly of British Columbia; identification of species; observational methods of study of behaviour and habitat relations; systematics, biology, distribution, and speciation; methods of preservation for museum study. Mr. Cowan and Mr. Bendell. [1-4; 1-4]

308. (3) Principles of Forest Entomology.—Insects in relation to forestry, including effects on land use, tree development, forest protection, operation plans, logging, manufacture, marketing and construction. Mr. Graham. [2-2; 2-2]

309. (3) **Experimental Zoology.** — Relations of temperature, pressure, light, humidity, salinity, gases, etc., to animals and animal populations. Mr. Hoar. [1-4; 1-4]

400. (2) **History and General Principles of Biology.** — Lectures and seminars dealing with the principles and most recent advances in biology. Mr. Clemens. [2-0; 2-0]

402. (3) **Methods in Forest Entomology.** — Statistics of sampling for populations and damage, appraisal of trends, behaviour, physiological life histories, analysis of environment and of outbreak causes. Mr. Graham. [2-2; 2-2]

403. (3) **Biology of Fishes.** — Classification, identification, life histories and ecology of fishes, with an introduction to the study of their marine and fresh-water environments. Mr. Lindsey. [2-3; 2-3]

405. (1½) **Fisheries Technology.** — Handling, preparation, and preservation of fish. Practical work under the direction of the staff of the Pacific Fisheries Experimental Station in its laboratories. Course is open to students in the Commerce-Fisheries option and in Food Technology. Mr. Tarr, Mr. Larkin. [0-0; 1-4]

406. (3) **Parasitology.** — Classification, morphology, life histories of animal parasites affecting domestic and wild animals and man. Mr. Adams. [2-3; 2-3]

407. (3) **Insect Anatomy.** — Comparative external and internal anatomy of insects. Special attention is given to the evolution of the pterothorax. (1958-59 and alternate years.) Mr. Sanjean. [1-4; 1-4]

408. (1) **Biological Methods and Procedures.** — Scientific method of inquiry, organization of research material, use of literature, rules of nomenclature, preparation of manuscripts and illustrative materials, microscopy. The Staff. Required of all Honours and graduate students. [1-0; 1-0]

409. (1½) **Principles of Wildlife Biology and Conservation.** — Biological principles in conservation of economically important birds and mammals. Prerequisite: Zoology 306. Mr. Cowan. [2-0; 0-0]

410. (1½) **Biology and Population Dynamics of Galliform Birds.** — Identification, biology, ecology, factors affecting abundance and distribution of gallinaceous birds. Prerequisites: Zoology 306; Zoology 409. Mr. Bendell. [0-0; 1-3]

412. (3) **Comparative Physiology.** — Mr. Hoar. [1-4; 1-4]

414. (2) **Ecology of Birds.** — Analysis of daily and seasonal activities. Territorialism and migration. Autecology and synecology; measurement of bird populations. Mr. Udvardy. [1-1; 1-1]

415. (2) **Terrestrial Zoogeography.** — Factors of distribution. Faunal histories. Faunistical and descriptive zoogeography, distribution of biotic communities. (1957-58 and alternate years.) Mr. Udvardy. [1-0; 1-0]

416. (2) **Histological Technique.** — Advanced technique including special methods for tissues, including nervous tissue, cell inclusions, histochemical tests. Mr. Ford. [0-0; 1-4]

417. (3) **Comparative Vertebrate Embryology.** — A study of the development of animals within the vertebrates with reference to the causative factors involved. Embryology and evolution. Mr. Ford. [2-3; 2-3]

418. (3) **Insect Taxonomy.** — History, principles and practice of classifying insects. Advanced exercises are given in the use of taxonomic keys. (1957-58 and alternate years.) Mr. Sanjean. [1-4; 1-4]

419. (1) **Seminar in Entomology.** — Informal discussion of original research, current topics and book reviews by students, staff and guests. Attendance required of all entomology majors. Credit optional. Mr. Sanjean. [1-0; 1-0]

449. (3) Zoology Tutorial.—Readings in zoology with written and oral reports under supervision. Preparation for a comprehensive oral examination. Required of Honours students and restricted to them.

Courses for Graduate Students

500. Special Advanced Courses. — Special advanced courses correlated with the work for the thesis may be arranged for a graduate student upon the approval of the Head of the Department of Zoology. The credit shall not be more than 3 units in any one such course.

501. (2) Marine Invertebrate Zoology.—Life histories, ecology and systematics of marine invertebrates. (1958-59 and alternate years.) Mr. Dehnel. [1-3; 1-3]

503. (1½) Biology and Management of Forest and Wilderness Game.—Biology, ecology, management of the large ungulates, carnivores and fur bearers of Canada. Prerequisite: Zoology 409. (1957-58 and alternate years.) Mr. Cowan. [0-0; 2-0]

504. (2) Comparative Ethology.—Analysis of animal behaviour with particular reference to birds and fish. (1957-58 and alternate years.) Mr. Hoar and Mr. Urdvary. [1-0-1; 1-0-1]

505. (3) Morphogenesis.—Developmental processes of animals, tracing of causal factors in embryology; regeneration. Prerequisite: Zoology 417. Mr. Ford. [0-0; 1-4]

506. (3) Advanced Parasitology.—Seminars and laboratory work mainly on parasitic protozoa and helminths; taxonomy, identification, life cycle studies, physiological requirements of parasites, culture methods and other laboratory techniques. Mr. Adams. [1-4; 1-4]

507. (3) Forest Insect Ecology.—Insects in relation to the living and physical forest environment. Mr. Graham. [3-0; 3-0]

508. (2) Population Dynamics.—Characteristics of growth and fluctuation of animal populations. Some knowledge of statistics required. Mr. Larkin. [2-0; 2-0]

509. (1½) Biology and Management of Waterfowl. — North American waterfowl problems: life histories, distribution, food habits, environmental requirements of economically important species; management techniques, problems in conservation and related theoretical considerations. Prerequisites: Zoology 306 and 409. Mr. Hatter. [0-0; 1-3]

510. (3) Fisheries Biology and Management. — Quantitative treatment of population problems pertinent to commercial and game fishes; techniques of management of fish stocks. Prerequisites: Zoology 403; Mathematics 205 or equivalent. Mr. Hoar and Mr. Larkin. [3-0; 3-0]

511. (1) Introduction to Biological Oceanography.—Biology of the sea related to physical and chemical conditions. Prerequisites: Oceanography 500, Physics 536. Mr. Scagel. [0-0; 2-0]

512. (2) Marine Zooplankton.—Oceanographic factors in relation to the distributions of marine zooplankton. Prerequisite: Zoology 511. Mr. Scagel. [1-3; 1-3]

513. (3) Ichthyology.—Seminars on subjects related to the evolution of fishes, and directed research in the fish museum. Prerequisite: Zoology 403. Mr. Lindsey. [1-4; 1-4]

514. (2) Limnology.—Physical, chemical, and biological factors of lakes and streams in relation to productivity. Prerequisites: Zoology 301, 403. (1958-59 and alternate years.) Mr. Larkin. [1-3; 1-3]

515. (1½) Technology of Marine Products.—A course on the principles involved in the technological processes used in the utilization of marine organisms. Instruction given at the Pacific Fisheries Experimental Station. Mr. Tarr. [0-0; 2-2]

516. (1) **Seminar in Fisheries Biology.** — A review of the significant current literature and research problems. Mr. Larkin. [1-0; 1-0]

517. (2) **Quantitative Methods in Zoology.**—Mathematics applied to problems in the zoological sciences. Mr. Larkin. [2-0; 2-0]

540. (1) **Marine Field Course.**—A course designed for students whose work preparing for the Ph.D. Attendance is mandatory for a two-week period during their residence at the University. Each year the field course will commence immediately following sessional examinations in April. Special attention will be placed on marine forms—invertebrates, fishes and algae. Emphasis will concern anatomy, taxonomy, life histories and ecology of benthic and planktonic organisms.

549. (6) **M.A. Thesis.**

649. **Ph.D. Thesis.**

SCHOOL OF HOME ECONOMICS

For regulations regarding admission, registration, Senior Matriculation credits, examinations and advancement, etc., see pages 62-71, 75-83.

COURSES LEADING TO THE DEGREE OF B.H.E.

Students entering in the fall of 1957 with High School Graduation (University Programme) standing, including Home Economics 91, will receive the degree of Bachelor of Home Economics on completion of courses amounting to a total of at least 60 units chosen in conformity with the following requirements. Adjustments for transfer students and those with irregular courses may be made in consultation with the Director of the School.

First and Second Years

Bacteriology 100	3	units
Chemistry 101 and 210	6	"
English 100 and 101	3	"
Economics 200	3	"
*Mathematics 100	3	"
*Physics 103	3	"
Psychology 100	3	"
Zoology 105	3	"
Home Economics 101	1½	"
Home Economics 105 or 103 & 201	3	"
Home Economics 106 or 104 & 200	3	"
Home Economics 201	3	"

*See Note 2 below.

NOTES

1. A student who has not presented 15 credits of Home Economics as part of the high school graduation programme, will be required to precede all Home Economics courses by H.E. 100, and must complete 63 units to receive the degree.

2. (a) A student who has completed Mathematics 91 for high school graduation must substitute another subject for Mathematics 100.

(b) A student who has completed Physics 91 for high school graduation must substitute another subject for Physics 103.

3. A student who may proceed to graduate study in Textiles or Nutrition should include Mathematics 101 and substitute certain other courses in Chemistry, these substitutions to be arranged after consultation with the departments concerned.

4. A student entering with 15 units of credit from Senior Matriculation may enroll in Second Year Home Economics, but may be required to carry courses from First Year Home Economics and take additional units for graduation. No Senior Matriculation subject may count beyond First Year.

5. Students in Senior Matriculation (where Zoology 105 is not offered) should take Biology 100 in place of Zoology 105.

6. By the end of the Second Year the student should have decided upon a field of specialization and may elect to proceed to professional Dietetic Training, Teacher Training, or to take Textiles or General Home Economics without a view to a professional certificate.

Third and Fourth Years

Required Courses:	Units
Biology 304	3
Home Economics 300	3
Home Economics 303	3
Home Economics 410	1½
Home Economics 420	1½
Home Economics 421	3
Total	15

and in addition for

Dietetic Major:	Units	Teaching Major:	Units	Textile Major:	Units
Bact. 100	3	Bact. 100	3	Bact. 100	3
Com. 359	2	H.E. 203	1½	Chem. 205	3
H.E. 302	3	H.E. 302	3	H.E. 203	1½
H.E. 413	1½	H.E. 400	1½	H.E. 400	1½
H.E. 414	1½	H.E. 401	3	H.E. 401	3
H.E. 416	3	H.E. 403	1½	H.E. 402	1½
H.E. 431	1½	Elective	1-3	Elective	3-5
Elective	1-3				

Major in Five-Year Programme for B.Ed. degree (secondary field): see later section of this calendar.

Required courses: H.E. 101, 105, 106, 300, 403, and 3 units from H.E. 203 410, 420, 421.

Entrance requirements as for B.H.E. programme. If Chemistry 91 has not been completed for high school graduation (University Programme), Chemistry 101 should be taken in First Year. A student who completes these courses may proceed toward the B.H.E. degree by complying with requirements as set out above.

A General Major leading toward the following may be developed in consultation with the Directors of the School of Home Economics and the co-operating school:

Retailing—Minimum of 6 units from H.E. 203, 302, 306, 400, 401, 403 *plus* Commerce 151, 261, 363. Bacteriology 100 is not required.

Social Work—Minimum of 3 units from H.E. 203, 302, 400, 401 *plus* English 200, S.W. 499 and 3 units of social science.

Design—Minimum of 6 units from H.E. 203, 302, 306, 400, 401, 403 *plus* Fine Arts 200, 210 and Architecture 353. Bacteriology 100 is not required.

7. Preferred elective courses—Anthropology 200; Architecture 260, 353; English 200; Fine Arts 200, 210; Sociology 200; Psychology 201, 202; Slavonic Studies 205, 311, 330; Social Work 499.

8. The only course which may be taken for credit by students proceeding to the B.A. degree is H.E. 210. Courses 210, 211, 213, 310, 311, 312, 421, 430, 431 are provided as electives for students proceeding to degrees other than the B.A. Students who desire to elect these courses are subject to

the regulations for the degree toward which they are working. Consultation regarding sequences to meet specific needs may be arranged with the Director of the School of Home Economics.

In 1957-58, H.E. 211 will be offered and 210 may be offered.

Consideration may be given to the registration of a restricted number of students in professional courses H.E. 400, 403, 416. These students must submit evidence of specific vocational need and preparation through specialized courses in this or other schools or departments.

9. Fees are as shown on page 67. Additional expenses are incurred for fabrics, design supplies, special foods and residence in home management house.

COURSES IN HOME ECONOMICS

The following courses, with exceptions noted above, are open only to students of the degree course in Home Economics or, where required, Education.

100. (3) (a) **Introduction to Foods and Nutrition.**—Principles of food preparation and of nutrition. (b) **Introduction to Clothing.**—Fundamentals of dress appreciation, wardrobe planning, grooming; basic techniques of clothing construction. Text-books: Heseltine and Dow, *The Basic Cookbook*, 1957; Erwin, *Clothing for Moderns*, 1954. [2-3; 2-3]

101. (1½) **Colour and Design.**—Analysis of relationship of design elements; line, form, value, colour, texture. Application of principles in experimental studio problems. Colour theory and use. Text-book: to be announced. [0-0; 3-2]

103. (1½) **Home Management I.**—Activities in the home; development of standards, techniques and skills, with emphasis on work simplification and use of variety of equipment. Text-books: Gross and Crandall, *Management for Modern Families*, 1954. Prerequisite: Home Economics 91. [2-3]

104. (1½) **Textiles and Clothing.**—Textile fibres and fabrics, their characteristics and uses. Text-book: Hess, *Textile Fibres and Their Uses*, 1954. Prerequisite: Home Economics 91. [3-1; 0-0]

105. (3) **Food Management I.**—Meal planning, food preparation, development of standards and techniques with emphasis on work simplification and the use of a variety of equipment. Prerequisites: H.E. 91 or equivalent. Text-books: Heseltine and Dow, *The Basic Cookbook*, 1957; Justin, Rust and Vail, *Foods*, 1956. [2-3; 2-3]

106. (3) **Textiles and Clothing.**—Textile fibres and fabrics, their characteristics and uses; consumer problems in clothing, clothing needs of the family; techniques of clothing construction; tailoring. Prerequisites: H.E. 91 or equivalent. Text-books: Hess, *Textile Fibres and Their Uses*, 1954; B. V. Goodman, *Tailoring for the Family*, 1951. [3-1; 2-3]

200. (1½) **Intermediate Clothing**—Consumer problems in clothing, clothing needs of the family. Tailoring techniques. Text-book: B. V. Goodman, *Tailoring for the Family*. Prerequisite: H.E. 102 or 104. [0-0; 2-3]

201. (3) **Food Management.**—Food composition, processing methods; marketing and legislation; food preparation; meal planning and table service. Text-books: Justin, Rust and Vail, *Foods*, 1956; Heseltine and Dow, *The Basic Cook Book*, 1957; Department of National Health and Welfare, *Table of Food Values Recommended for Use in Canada*, 1951. Prerequisites: H.E. 100 or 103; Chemistry 210 concurrently or preceding. [2-1-3; 2-1-3]

203. (1½) **Textile Design.**—Experimental studio problems in individual expression using various materials and techniques; dyeing, stencilling, block-printing, batik, weaving. Prerequisites: H.E. 101. Text-book: Cox and Warren, *Creative Hands*, 1951. Enrolment limited by laboratory facilities. [2-3; 0-0]

210. (3) **Foods.**—Economics of selection; scientific aspects of preparation. Prerequisite: Chemistry 101. [2-3; 2-3]

211. (3) **Textiles, Colour and Design in Retailing.**—Analysis of relationships of design elements; design standards for consumers. Experimental laboratory problems in visual elements, design processes, colour relationships and dynamics, display, layouts, forms in space, using various materials and techniques. A study of basic textile fibres, their source, characteristics and uses. The apparel industry. Text-books: Scott, *Design Fundamentals*; Hess, *Textile Fibres and Their Uses*, 1954. [3-3; 3-0]

213. (3) **Problems in Consumer Buying.**—In relation to food, clothing, housing, equipment; family finance planning. [3-0; 3-0]

300. (3) **Home Management II.**—The house, selection and care of furnishings and equipment. Family expenditures and standards of living; budgeting of time and family funds. Text-books: Gross and Crandall, *Management for Modern Families*, 1954; Peet and Thye, *Household Equipment*, 1955. Prerequisites: H.E. 100 or 103, Physics 91 or 103, Economics 140 or 200. [3-2; 2-2]

302. (3) **Experimental Foods.**—Preparation of various types of food presented from an experimental point of view. Each student conducts an experimental food problem and prepares a scientific report on findings. Text-book: Lowe, *Experimental Cookery*, 4th edition. Prerequisites: Home Economics 201, Chemistry 210. [2-3; 0-6]

303. (3) **Principles of Nutrition.**—Study of foods in relation to nutritional needs throughout the life cycle. Laboratory studies of food values; projects in human nutrition; animal experimentation. Prerequisites: H.E. 201, Biology 304 preceding or concurrently. Text-book: Chaney, *Nutrition*, 1954. Laboratory Workbook. Reference: Sherman, *Chemistry of Food and Nutrition*, 8th edition, 1952. [2-3; 2-3]

306. (1½) **Experimental Design.**—Studio problems using various materials, techniques; design elements, designing processes, colour relationships, and dynamics, display, layouts, forms in space. Techniques of representation; lettering, drafting, perspective, sketching, figure drawing, light and shade. Prerequisites: H.E. 101, 203. Text-books: Scott, *Design Fundamentals*, 1951. [0-3; 0-3]

310. (3) **Nutrition for the Family.**—Prerequisites: Home Economics 210, 213; Chemistry 210, 300 or equivalent. [3-0; 3-0]

311. (3) **Food Study.**—Primarily for those interested in food manufacturing, merchandising or restaurant management. Experimental and demonstration methods included. Prerequisites: Home Economics 210; Chemistry 210 or 300. [2-3; 2-3]

312. (3) **Textiles.**—Source, production, use and care of fabrics and other materials used in wearing apparel and the home. Prerequisites: Home Economics 211; Chemistry 210 or 300 or equivalent. [3-0; 3-0]

400. (1½) **Advanced Textiles.**—Chemistry of natural and man-made fibres. Physical and chemical properties of all textile fibres; functional finishes and end uses of apparel and industrial fabrics. Physical and chemical testing of fabrics; fibre identification. Prerequisites: Chemistry 210, H.E. 102/104. Text-book: Hartsuch, *Introduction to Textile Chemistry*, 1951. [3-2; 0-0]

401. (3) **Advanced Clothing.**—Development of dress design by draping and flat pattern methods. Fundamentals of fashion. A brief survey of the history of costume. The economic, psychological and sociological aspects of clothing. The garment industry. Text-book: Hillhouse and Mansfield, *Dress Design, Draping and Flat Pattern Making*. Prerequisites: H.E. 101, 200. [2-3; 2-3]

402. (1½) Textile Seminar.—Reports and group discussion under staff direction of important aspects and current developments in textiles. Prerequisite: H.E. 400. [0-0; 3-0]

403. (1½) Interior Design.—Analysis of design elements for use in selection of furnishings and accessories; application of design principles in arrangements; scaled plans; traditional and contemporary concept of interiors. Prerequisites: H.E. 101; 203 for B.H.E. students. Text-book: Whiton, *Elements of Interior Design and Decoration*, 1951. [0-0; 2-3]

410. (1½) Communication Techniques.—Demonstration techniques and other means of presenting information to the public; discussions, demonstrations and radio talks. Prerequisite: Fourth Year standing in Home Economics. Practice time to be arranged. [2-3]

413. (1½) Diet Therapy.—A discussion of the relations of normal nutrition to certain diseases and the part that diet therapy may play in their treatment. Special diets are calculated and prepared in the laboratory. Text-book: McLester, *Nutrition and Diet in Health and Disease*, 6th edition, 1952. Prerequisites: Home Economics 303, Biology 304. [0-0; 2-3]

414. (1½) Quantity Cookery.—Preparation of food in large quantities. Reference: West and Wood, *Food Service in Institutions*, 3rd edition; Fowler and West, *Food for Fifty*, 3rd edition. Prerequisite: Home Economics 302.

416. (3) Institution Administration and Buying.—Discussion of problems in administration for food services; selection, operation and care of equipment; quantity buying of food. Text-books: West and Wood, *Food Service in Institutions*, 3rd edition; Fowler and West, *Food for Fifty*, 3rd edition. Prerequisites: Home Economics 302; Commerce 359 or equivalent. [2-2; 2-2-2]

420. (1½) Home Management III.—Residence in Home Management House. Open only to Third and Fourth Year students. Text-book: Gross and Crandall, *Management for Modern Families*, 1954.

421. (3) Child Development and Family Relations.—Physical, mental, social and emotional development of infant and child. Study of family relations and home nursing. Observation to be arranged. Open only to Third and Fourth Year students. [3-0; 3-0]

430. (1½) Nutrition.—Diet in disease. Prerequisite: Home Economics 310. [0-0; 3-0]

431. (1½) Nutrition Seminar.—Reports and group discussions under staff direction of important aspects and current developments in nutrition. Prerequisite: H.E. 303 or 310. [0-0; 3-0]

SCHOOL OF PHYSICAL EDUCATION

The School of Physical Education is responsible for (1) the physical education required of all students in the first two years, (2) the intramural sports programme, (3) the course leading to the degree of Bachelor of Physical Education, and (4) the physical education programme for students majoring in Physical Education in the College of Education.

Physical Education Requirements for First and Second Year

Two courses in Physical Education are required of all students in the First and Second Years of the Faculties of Arts and Science, Education, and Agriculture, and in the First Year of the Faculties of Applied Science, Forestry, Pharmacy, and Commerce and Business Administration. Ex-service personnel and active members of military units operating on the campus are exempt. Only courses numbered below 100 may be selected to meet the requirement.

Students who enter with Senior Matriculation or equivalent, with the exception of ex-service personnel and members of military units oper-

ating on the campus, will be required to take the Physical Education courses during their first year at the University, but for one year only.

Students who enter with a standing equivalent to the first two years at the University will not be required to take the Physical Education courses.

It is the responsibility of the student to complete this requirement. Information and instructions regarding registration will be issued in the Armouries during the week of registration.

No student will receive a degree until he has completed the required Physical Education courses. If his work in the Physical Education courses is unsatisfactory in any year, he will be required to repeat the work during the following year.

All First and Second Year students enrolling at the University for the first time must meet the requirements of the University Health Service. Students who are placed in Medical Category 3 or 4 by the University Health Service may, after consultation with the Physical Education staff, be assigned to remedial or other classes.

All members of athletic teams must have a yearly medical examination preceding active participation.

Students may satisfy the regulations by selecting any two courses during each year.

First and Second Year students may substitute membership on an approved University athletic team for both Physical Education courses.

First and Second Year students intending to major in Physical Education should consult the staff before registering.

MEN

Team Games

The following courses are open to students who are interested in increasing their knowledge of the rules and tactics of a particular sport and in obtaining some experience in the playing of a team game. These courses will be conducted similar to regular University team practices. Students must be prepared to play regardless of weather conditions.

10. **Basketball.**—Conditioning and fundamental practice drills, offensive and defensive tactics.

12. **American Football.**—Conditioning and fundamental practice drills, offensive and defensive tactics, including touch football and six man football.

14. **English Rugby.**—Conditioning, and fundamental practice drills, offensive and defensive tactics.

16. **Grass Hockey and Soccer.**—Conditioning, and fundamental practice drills, offensive and defensive tactics.

Individual and Dual Activities

20. **Badminton.**—Fundamentals and skills at beginners' level.

22. **Archery.**—Open only to students in Medical Category 3.

24. **Golf.**—Fundamentals of golf at beginners' level.

25. **Tennis.**—Fundamentals of tennis at beginners' level.

26. **Weight Training.**—General conditioning and body building.

28. **Track and Field.**—Introduction to track and field events.

Swimming and Life-Saving

30. **Swimming, Beginners.**—Open to students who cannot swim 150 feet using any recognized stroke.

32. **Swimming, Intermediate.**—Fundamental skills of breast stroke, back stroke, crawl, elementary diving.

34. **Life-Saving.**—Intermediate.

36. **Life-Saving.**—Advanced.

Dance

42. **American Folk Dance (Square, Round, Couple), Beginners.**—Men and women.

44. **American Folk Dance (Square, Round, Couple), Intermediate.** — Men and women.

46. **Ballroom Dance.**—Men and women.

48. **Modern Dance Club.**—Men and women.

Combative Sports

50. **Boxing.**—Fundamentals of self-defence, leading to competition on intramural level.

54. **Fencing Club.**—Introduction to fencing technique with foil, épée, sabre.

56. **Wrestling.**—Fundamental holds and breaks, leading to competition on intramural level.

Gymnastics

60. **General Activities.**—General body conditioning, apparatus work, and games.

62. **Tumbling and Apparatus.**—Fundamental skills on all types of apparatus. Basic and advanced tumbling.

64. **Individual Exercise Programme.**—Open only to students in category 3.

WOMEN

Team Games

11. **Team Games.**—Basketball, field hockey, volleyball.

Individual Games

13. **Archery, Beginners.**

15. **Archery, Intermediate.**

17. **Badminton, Beginners.**

19. **Badminton, Intermediate.**

21. **Golf, Beginners.**

23. **Golf, Intermediate.**

25. **Tennis and Archery.**

27. **Tennis, Beginners.**

29. **Tennis, Intermediate.**

Swimming and Life-Saving

30. **Swimming, Beginners.**

32. **Swimming, Intermediate.**

34. **Swimming, Senior and Life-Saving.**

Dance

41. **International Folk Dance.**

42. **American Folk Dance (Square, Round, Couple), Beginners.**—Men and women.

44. American Folk Dance (Square, Round, Couple), Intermediate. — Men and women.

46. Ballroom Dance.—Men and women.

48. Modern Dance Club.—Men and women.

Gymnastics

61. Body Mechanics and Conditioning.

65. Tumbling and Apparatus.

COURSE LEADING TO THE DEGREE OF B.P.E.

Except for the special provisions below, the regulations regarding registration and admission, senior matriculation credit, examinations and advancement are the same as those for the B.A. course in the Faculty of Arts and Science, as listed on pages 62-71 and pages 82-83.

Students in First Year are subject to the regulations in the B.A. course mentioned above.

Students in higher years are also normally subject to the same regulations as those in the B.A. course. Those with deficiencies in activity courses may, at the discretion of the School and with the approval of the Dean, be granted supplemental or deferred examinations, or be required to repeat all or part of the work of the year. When the privilege of supplemental or deferred examinations has been granted, students must complete requirements prior to attendance at the next regular session. The School may require that additional work be undertaken in Summer School.

A physical education project is required of all students. The topic must be approved by the Director before the end of the Third Year's work. One typewritten copy of the project must be submitted on standard-sized paper not later than February 15th of the graduation year.

Students intending to enroll in the Faculty and College of Education for the one-year course for university graduates should choose their electives so as to satisfy the requirements for admission.

Students intending to work in recreation must select a major in Sociology or another field approved by the School of Physical Education.

Students must have a yearly medical examination completed within the first two weeks of the session.

First Year		Units
English 100 and 101		3
Chemistry 101		3
Electives (to be chosen in consultation with the School of Physical Education)		9
Physical Education 100 (Activities)		2

Notes:

1. Students entering without credit in Mathematics 91 must take Mathematics 100 in the First Year.
2. Students planning to accompany the major in Physical Education with a major in Mathematics or any science should take Mathematics 91 for High School Graduation and Mathematics 101 in the First Year. For other courses and majors requiring Mathematics 91, 100, or 101 see page 78, note 6. Students in Physical Education, however, will be permitted to take Chemistry 101 without Mathematics 100 or 101 provided they have taken Mathematics 91 in High School.
3. Chemistry 91 is recommended for entrance.

4. Students entering the course from Senior Matriculation or from First Year Arts and Science may take Physical Education 100 and 200 concurrently.
5. Zoology 105 and Psychology 100 may be taken in First Year. If taken in First Year they may be replaced by optional courses in Second Year.

Second Year

	Units
English 200	3
Zoology 105	3
Psychology 100	3
Elective (to be chosen in consultation with the School of Physical Education)	3
Physical Education 260	1½
Physical Education 200 (Activities)	3

Third Year

	Units
Physical Education 360	1½
Physical Education 361	1½
Anatomy 390	3
Biology 304	3
Elective	3
Physical Education 300 (Activities)	5

Fourth Year

	Units
Physical Education 460	1½
Physical Education 461	1½
Physical Education 462	1½
Electives	9
Physical Education 400 (Activities)	5

ACTIVITY PROGRAMME FOR MEN

Physical Education 100	2 units
Consists of the following requirements:	
(a) 201	1½ units
(b) 230 or 218	½ unit
Physical Education 200	3 units
Consists of the following requirements:	
(a) 218 or 230	½ unit
(b) 240	½ unit
(c) Optional*	2 units
Physical Education 300	5 units
Consists of the following requirements:	
(a) 301	1½ units
(b) 330	½ unit
(c) 350	½ unit
(d) Optional*	2½ units
See also requirements for 480	
Physical Education 400	5 units
Consists of the following requirements:	
(a) 401	1 unit
(b) 450	1 unit
(c) 480	1½ units
(d) Optional*	1½ units

*Optional courses must be selected in consultation with the Faculty Advisor.

COURSES

101. (1) **Gymnastic Activities for the Elementary School.** [0-0; 0-3]
 104. ($\frac{1}{2}$) **Fundamentals of Movement.** [0-2; 0-0]
 201. ($1\frac{1}{2}$) **Gymnastics.**—Fundamental exercises; elementary activities, tumbling, and apparatus. [0-2; 0-2]
 208. ($\frac{1}{2}$) **Baseball.**—Fundamentals, rules of baseball and softball. [0-0; 0-2]
 210. ($\frac{1}{2}$) **Basketball.** — Fundamentals, basic drills, simple offensive tactics. [0-2; 0-0]
 212. ($\frac{1}{2}$) **Football.**—Fundamentals, basic drills and formations. [0-2; 0-0]
 213. ($\frac{1}{2}$) **Grass Hockey.**—Fundamentals, basic drills, rules. [0-2; 0-0]
 214. ($\frac{1}{2}$) **Rugby.**—Basic skills, rules, emphasis on playing. [0-0; 0-2]
 216. ($\frac{1}{2}$) **Soccer.**—Basic skills, rules, emphasis on playing. Text-book: *Football Association Handbook.* [0-2; 0-0]
 218. ($\frac{1}{2}$) **Games, Contests and Relays.**—Relay, group and recreational games and activities. [0-0; 0-2]
 219. ($\frac{1}{2}$) **Volleyball.**—Basic skills, rules, team tactics. [0-2; 0-0]
 220. ($\frac{1}{2}$) **Badminton.**—Strokes, tactics, systems, rules. [0-0; 0-2]
 221. ($\frac{1}{2}$) **Archery.**—Techniques, competitions, care of equipment. [0-0; 0-2]
 222. ($\frac{1}{2}$) **Boxing and Wrestling.**—Basic techniques and skills; practice in fundamentals. [0-2; 0-0]
 224. ($\frac{1}{2}$) **Golf.**—Theory of swing, practical application, etiquette, and rules. [0-2; 0-0]
 226. ($\frac{1}{2}$) **Tennis.**—Strokes, tactics, systems, umpiring. [0-0; 0-2]
 230. ($\frac{1}{2}$) **Swimming.** — Elementary swimming skills, strokes, entries, water safety. [0-1; 0-1]
 240. ($\frac{1}{2}$) **Dance.**—Ballroom, fox-trot, waltz, rhumba, samba, tango, jive. Text-book: Harris, Pittman, Swenson, *Dance Awhile.* [0-0; 0-2]
 243. ($\frac{1}{2}$) **Dance.**—Folk dance, Scandinavian. [0-1; 0-1]
 246. ($\frac{1}{2}$) **Skiing.**—Fundamentals; principles of teaching and coaching; equipment; conduct of tournaments. [1-1; 0-0]
 250. ($\frac{1}{2}$) **Track and Field.**—Introduction to track and field activities with emphasis on instruction for Elementary and Junior High Schools. [0-2; 0-0]
 301. ($1\frac{1}{2}$) **Gymnastics.**—Progression in gymnastic tables; tumbling and apparatus; theory to include the value of exercises and the anatomical functioning of movement; principles of teaching and mutual instruction. Prerequisite: P.E. 201. [0-2; 0-2]
 310. (1) **Advanced Basketball.**—Team tactics; rules; coaching and officiating techniques; use and development of material. Prerequisite P.E. 210. [0-0; 1-1]
 312. (1) **Advanced Football.**—Offensive and defensive tactics; generalship; conduct of practices; use and development of materials; rules; coaching. Prerequisite: P.E. 212. [0-0; 1-1]
 313. (1) **Advanced Grass Hockey.**—Team tactics; coaching and officiating techniques. Prerequisite: P.E. 213. [0-0; 1-1]
 314. (1) **Advanced Rugby.**—Team tactics; organization, coaching methods; rules, refereeing. Prerequisite P.E. 214. [1-1; 0-0]
 316. (1) **Advanced Soccer.**—Team tactics; organization, coaching methods; rules, refereeing. Prerequisite: P.E. 216. [0-0; 1-1]
 330. ($\frac{1}{2}$) **Swimming.**—Advanced swimming skills; diving; safety and rescue methods. Prerequisite: P.E. 230. [0-1; 0-1]

340. ($\frac{3}{4}$) Dance. — Square, couple. Text-book: McKay, Czarnowski, *How to Teach Folk and Square Dance*. [0-1; 0-1]

350. ($\frac{3}{4}$) Track and Field.—Fundamentals of sprinting, middle distance and distance running, high jumping, pole vaulting, and putting the shot. [0-1; 0-1]

401. (1) Gymnastics.—Advanced exercises; theory to include gymnastic tables, lessons and programme; conduct of competitions. Prerequisite: P.E. 301. [1-1; 0-0]

403. ($\frac{3}{4}$) Advanced Apparatus and Tumbling.—Single and dual activities; routines and combinations; judging; demonstration material. Prerequisite: P.E. 401 or permission of instructor. [0-0; 0-2]

430. (1) Aquatic Programmes.—Competitive swimming, coaching, training and conditioning; care of facilities; conduct of swimming galas and pageants; safety procedures. [2-0; 0-0]

440. (1) Dance.—Advanced square, with emphasis on calling. Prerequisite: P.E. 340. [1-1; 0-0]

450. (1) Track and Field.—Fundamentals of hurdling, broad jumping, throwing the javelin and discus, relay racing; rules, organization and conduct of meets. [0-0; 1-1]

480. (1½) Supervised Field Work.—In Third Year, three weeks in May or its equivalent; in Fourth Year, work assigned in the School of Physical Education.

ACTIVITY PROGRAMME FOR WOMEN

Physical Education 100 2 units

Consists of the following requirements:

(a) 201 $1\frac{1}{2}$ units

(b) 230 or 218 $\frac{1}{2}$ unit

Physical Education 200 3 units

Consists of the following requirements:

(a) 240 $\frac{1}{2}$ unit

(b) 241 $\frac{1}{2}$ unit

(c) 218 or 230 $\frac{1}{2}$ unit

(d) Optional* $1\frac{1}{2}$ units

Physical Education 300 5 units

Consists of the following requirements:

(a) 301 $1\frac{1}{2}$ units

(b) 330 $\frac{1}{2}$ unit

(c) Optional* 3 units

See also requirements for 480.

Physical Education 400 5 units

Consists of the following requirements:

(a) 401 1 unit

(b) 480 $1\frac{1}{2}$ units

(c) Optional* $2\frac{1}{2}$ units

*Optional courses must be selected in consultation with the Faculty Advisor.

COURSES

101. (1) Gymnastic Activities for the Elementary School. [0-0; 0-3]

104. ($\frac{3}{4}$) Fundamentals of Movement. [0-2; 0-0]

201. (1½) Gymnastics.—Fundamental exercises; elementary activities, tumbling, and apparatus. [0-2; 0-2]

209. ($\frac{3}{4}$) Softball.—Fundamentals and rules of softball. [0-0; 0-2]

210. ($\frac{1}{2}$) **Basketball**.—Fundamentals, basic drills, simple offensive tactics. [0-0; 0-2]
213. ($\frac{1}{2}$) **Grass Hockey**.—Fundamentals, basic drills, rules. [0-2; 0-0]
215. ($\frac{1}{2}$) **Soccer and Speedball for Women**.—Fundamentals, basic drills, rules and team play. [0-0; 0-2]
218. ($\frac{1}{2}$) **Games, Contests and Relays**.—Relay, group and recreational games and activities. [0-0; 0-2]
219. ($\frac{1}{2}$) **Volleyball**.—Basic skills, rules, team tactics. [0-2; 0-0]
220. ($\frac{1}{2}$) **Badminton**.—Strokes, tactics, systems, rules. [0-0; 0-2]
221. ($\frac{1}{2}$) **Archery**.—Techniques, competitions, care of equipment. [0-0; 0-2]
224. ($\frac{1}{2}$) **Golf**.—Theory of swing, practical application, etiquette, and rules. [0-2; 0-0]
226. ($\frac{1}{2}$) **Tennis**.—Strokes, tactics, systems, umpiring. [0-0; 0-2]
230. ($\frac{1}{2}$) **Swimming**. — Elementary swimming skills, strokes, entries, water safety. [0-1; 0-1]
240. ($\frac{1}{2}$) **Dance**.—Ballroom, fox-trot, waltz, rhumba, samba, tango, jive. Text-book: Harris, Pittman, Swenson, *Dance Awhile*. [0-0; 0-2]
241. ($\frac{1}{2}$) **Dance**.—Elementary modern dance, history of dance and dance personalities, introduction to movement resources. Text-book: Lockhart, *Modern Dance*. [0-0; 0-2]
243. ($\frac{1}{2}$) **Dance**.—Folk dance, Scandinavian. [0-1; 0-1]
246. ($\frac{1}{2}$) **Skiing**.—Fundamentals; principles of teaching and coaching; equipment; conduct of tournaments. [1-0; 0-0]
250. ($\frac{1}{2}$) **Track and Field**.—Introduction to track and field activities with emphasis on instruction for Elementary and Junior High Schools. [0-2; 0-0]
301. ($1\frac{1}{2}$) **Gymnastics**.—Progression in gymnastic tables; tumbling and apparatus; theory to include the value of exercises and the anatomical functioning of movement; principles of teaching and mutual instruction. Prerequisite: P.E. 201. [0-2; 0-2]
310. (1) **Advanced Basketball**.—Team tactics; rules; coaching and officiating techniques; use and development of material. Prerequisite: P.E. 210. [0-0; 1-1]
313. (1) **Advanced Grass Hockey**.—Team tactics; coaching and officiating techniques. Prerequisite: P.E. 213. [0-0; 1-1]
330. ($\frac{1}{2}$) **Swimming**.—Advanced swimming skills; diving; safety and rescue methods. Prerequisite: P.E. 230. [0-0; 0-1]
340. ($\frac{1}{2}$) **Dance**. — Square, couple. Text-book; McKay, Czarnowski, *How to Teach Folk and Square Dance*. [0-1; 0-1]
341. ($\frac{1}{2}$) **Dance**.—Intermediate modern dance, introduction to individual composition, and theory of composition. Prerequisite: P.E. 241. [0-1; 0-1]
343. ($\frac{1}{2}$) **Dance**.—Folk dance, European. [0-1; 0-1]
345. ($\frac{1}{2}$) **Dance**.—Folk dance, British Isles. [0-1; 0-1]
350. ($\frac{1}{2}$) **Track and Field**.—Fundamentals of sprinting, middle distance and distance running, high jumping, relay racing, and putting the shot. [0-1; 0-1]
401. (1) **Gymnastics**.—Advanced exercises; theory to include gymnastic tables, lessons and programme; conduct of competitions. Prerequisite: P.E. 301. [1-1; 0-0]
403. ($\frac{1}{2}$) **Advanced Apparatus and Tumbling**.—Single and dual activities; routines and combinations; judging; demonstration material. Prerequisite: P.E. 401 or permission of instructor. [0-0; 0-2]

430. (1) Aquatic Programmes.—Competitive swimming, coaching, training and conditioning; care of facilities; conduct of swimming galas and pageants; safety procedures. [2-0; 0-0]

440. (1) Dance.—Advanced square, with emphasis on calling. Prerequisite: P.E. 340. [1-1; 0-0]

441. (1) Dance.—Advanced modern, introduction to group composition, stage production, and methods of teaching. Individuals may apply for permission to substitute special supervised studies in conjunction with the programme of the Modern Dance Club for the requirements of this course. [0-0; 1-1]

450. (1) Track and Field.—Fundamentals of hurdling, broad jumping, throwing the javelin and discus, relay racing; rules, organization and conduct of meets. [0-0; 1-1]

480. (1½) Supervised Field Work.—In Third Year, three weeks in May or its equivalent; in Fourth Year, work assigned in the School of Physical Education.

ACTIVITY COURSES FOR STUDENTS IN THE FACULTY AND COLLEGE OF EDUCATION SELECTING A MAJOR IN PHYSICAL EDUCATION

First Year		Units
P.E. 105	Physical Education I Activity	3

Second Year

P.E. 205	Physical Education II Activity	1½
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The following courses must be included in either P.E. 105 or P.E. 205:

P.E. 101 (for Elementary Major)

P.E. 201 (for Secondary Major)

P.E. 218

P.E. 240

The programme must include P.E. 230 (Swimming), unless the student can demonstrate satisfactory swimming ability.

Third, Fourth, and Fifth Years

P.E. 305	Physical Education Activity	3
P.E. 405	Physical Education Activity	3

Note—Before registering, students must submit in writing the programme which they wish to present for credit for each of the above courses.

The programme will be approved by the School after consideration of the abilities, background, and need of the individual.

COURSES IN THEORY FOR MEN AND WOMEN

Note. Biology 304 and Anatomy 390 are considered theory courses for the B.P.E. degree.

260. (1½) History of Physical Education and Recreation.—A survey of physical education and recreation from the ancient civilizations, with emphasis placed on present day developments and methods. [3-0; 0-0]

†262. (1½) Health I.—An introduction to health education; body systems, growth and development, food habits and problems, personal hygiene. [0-0; 3-0]

360. (1½) Principles of Physical Education.—A study of fundamental principles, aims, objectives to formulate the student's professional point of view; a study of competition, its history, basic principles, and its place in education. [3-0; 0-0]

361. (1½) Correctives.—Posture, first aid, safety education, athletic injuries. [0-0; 3-0]

†363. (1½) History and Philosophy of Physical Education.—The historical background and development of physical education, foundations of physical educational, fundamental principles, function of physical education in a democratic society. [0-0; 3-0]

†406. (1½) Workshop in Physical Education.—Curriculum construction with emphasis on unit and lesson planning and teaching methods.

†408. (1½) Workshop in Physical Education Activities.—An advanced course covering a number of physical education activities. (Given in Summer Session.)

460. (1½) Organization and Administration of Physical Education.—A study of the problems relating to the organization and administration of physical education programmes. [0-0; 3-0]

461. (1½) Physical Education Project.—See page 154. An oral report of the project must be made to the seminar. [1-0; 1-0]

462. (1½) Health II.—Problems in health education; mental hygiene, common diseases, social hygiene, community, health and sanitation. Prerequisite: Biology 304 or Anatomy 390 or Physical Education 262. [3-0; 0-0]

†470. (1½) Tests and Measurements.—Physical education tests; physical fitness, physiological fitness, posture, strength, motor ability, social efficiency measures, skill tests, knowledge tests. [0-0; 2-2]

†490. (1½) Community Recreation.—An introduction to the background and principles of community recreation; the relationship of school programmes to community programmes. [3-0; 0-0]

Ed. 404. (1½) Methods in Physical Education. [1-1; 1-1]

†These courses may be taken for the B.P.E. degree only with the written approval of the Director.

THE SCHOOL OF SOCIAL WORK

The School of Social Work, a part of the Faculty of Arts and Science, offers work leading to the degrees of B.S.W. and M.S.W.

COURSES LEADING TO THE DEGREES OF B.S.W. AND M.S.W.

The accepted education for the profession of social work consists of a minimum of two university years of graduate study including lectures, clinical practice work in the field, and a research project or thesis, leading to the degree of Master of Social Work. The total course is designed to give a broad preparation for the field of social work and to develop skill in one or more fields of practice. Students who complete one-half of this programme qualify for the degree of Bachelor of Social Work.

Admission

Requirements for entrance to the School of Social Work are as follows:

- (a) The Bachelor of Arts degree, or an equivalent, from a recognized university. An emphasis on the humanities, the social and the biological sciences is preferred.
- (b) Personal qualifications for the field of social work. Because maturity is an important factor, students are usually advised to wait until they are at least 21 years of age before beginning their professional education.

- (c) Application for entrance, on forms obtainable from the School, filed not later than May 15th for the following September. An interview with a member of the faculty of the School (or, for out-of-town students, with a person designated by the School) is an essential part of the admissions procedure.

Undergraduate students who are considering social work as a career should consult the School each year about their courses. In addition to the arrangements for consultation during registration week, interviews may be arranged at any time during the University year on application to the School.

It is recommended that in the First and Second Years undergraduates select for their electives as many introductory courses in the social and biological sciences as possible. Third and Fourth Year courses which are particularly likely to be suitable for undergraduates proceeding to social work are anthropology, economics, political science, psychology and sociology. Other areas of study which are acceptable include biology, history, international studies, geography, community planning, literature, drama and music. Social Work 499 is specifically designed as a pre-professional course to be taken by undergraduates in the Fourth Year.

Students in Physical Education, Home Economics, or Nursing who plan to enter social work are advised to consult the School as early as possible in their undergraduate course to ensure that they will meet the social work requirements.

Students who are interested in the correctional field should major in sociology and criminology. Those who enter without such preparation may be required to complete certain undergraduate courses in criminology.

Student Advisors

On entrance to the School each student is assigned to a member of Faculty, who is responsible for assisting the student in planning his total programme of courses and in advising and helping him at all times.

Organization of Course

The School of Social Work at the University of British Columbia early established a generic social work training and continues to emphasize this approach to professional education in line with the most recent developments in the social work field. This general training is planned to cover two years leading to the Master's degree and should prepare students with (1) a broad knowledge of the organization of the social services (public and private); (2) an understanding of human behaviour as related to helping people with their problems; and (3) a degree of skill in the methods of social work.

The body of knowledge in professional social work can be divided in this way: first, there are general information courses, including knowledge of the history and organization of the social services as provided in S.W. 499, 503, 513, 583, 584, and knowledge and understanding of human behaviour as taught in S.W. 504, 508, 518, 540, 571, 572. Secondly, there are methods or technical courses arranged in the following way: *working with people as individuals*, S.W. 501, 502, 505, 506; *working with people in groups*, S.W. 507, 517, 563, 580; *working with the community*, S.W. 511, 565, *organization and administration of social services*, S.W. 545, 546, 559, 560, 568, 575, 582; *research in social welfare fields*, S.W. 520, 585, 586.

The School Year—Students are advised that the First Year is divided into two terms. The first extends from September to Christmas; the second from January to May. The Second Year is divided into three parts with classes and field work in the first, field work and research in the second, and research and seminars in the third.

Requirements for Degrees

The Degree of Bachelor of Social Work

The B.S.W. degree will be granted to students who, having received the B.A. degree or an equivalent, satisfactorily complete one University session, including a minimum of 12 units of lectures and 3 units of field work. Candidates must successfully write a comprehensive examination on the year's work.

The following is the usual plan of courses for the First Year:

<i>First Term</i>	<i>Second Term</i>
S.W. 501, Social Work Methods	S.W. 518, Development of Personality
S.W. 503, Development of Social Work	S.W. 507, Group Work
S.W. 511, Community Organization	S.W. 520, Social Research
S.W. 509, Field Work	S.W. 502, Case Work
S.W. 504, Medical and Psychiatric Information	S.W. 513, Public Welfare
S.W. 545, Law and Social Work	S.W. 509, Field Work

Field work under supervision is taken *concurrently* with the lecture programme and students spend a minimum of 450 hours (or from 2 to 2½ days each week) in this practice work, plus a block period of full-time work at the end of the session in a recognized social agency. This constitutes the necessary 3 units of field work credit.

The student should keep in mind that there are certain expenses involved in field and clinical work, primarily for transportation to the agency to which the student is assigned. These costs range from \$15.00 to \$30.00 a year. The student who cannot type must also budget for some expense for the typing of essays, etc.

Generally the public and private family and child welfare and community service agencies are used for field work in the First Year, since they provide fundamental work experience. The student remains in the same agency for all First Year field work, and is supervised by a qualified member of the agency staff. The School maintains a close relationship with the field work agencies through individual conferences between a faculty member and the agency supervisor, and by group meetings. In this way the student's total development and his ability to relate classroom material to practical work can be observed.

Field Work Agencies

Students will find opportunity for following their special interests in case work or group work practice, administration, and research in their Second Year. Students will find many settings in which to gain experience: family and child welfare, medical and psychiatric services, hospitals and clinics, public welfare, institutions, neighbourhood houses, public recreation, work with the handicapped, community centres, correctional, probation and court work.

The following social agencies were used for field work in 1956-57:

Alcoholism Foundation of B.C. Supervisor: Mr. P. Fogarty	Canadian National Institute for the Blind Supervisor: Miss E. Scott
Alexandra Neighbourhood House Supervisors: Miss M. Le Roy, Mr. B. Robinson	Catholic Family and Children's Service Supervisor: Miss E. Kinnaird
Canadian Arthritis & Rheumatism Society Supervisor: Miss E. Bradley	

Children's Aid Society of Vancouver

Supervisors: Miss M. Anderson, Mrs. A. Campbell, Mrs. C. Collier, Miss B. Balla, Miss R. Blinder, Miss M. Golley, Mrs. T. Kaufman, Miss E. Lieske, Miss M. Martin, Mr. J. Sanders, Miss M. Wightman, Mr. L. Wick.

Children's Aid Society of the Catholic Archdiocese of Vancouver

Supervisors: Miss B. Kennedy, Miss I. Roth

Cities and Municipalities (Social Welfare Departments)

Vancouver—Supervisors: Mrs. B. Jackson, Miss D. McRae, Miss B. Stanley,
Miss M. Wright.

Burnaby	Supervisor : Miss F. McCubbin
Richmond	Supervisor : Mr. C. Gorby
West Vancouver	Supervisor : Mr. C. Toren

Department of Health and Welfare (British Columbia)

Social Welfare Branch	
Vancouver District	Supervisor : Mr. C. Gorby
New Westminster District	Supervisor : Mrs. N. Watson
Division of T.B. Control	Supervisor : Miss M. MacInnes

Department of Provincial Secretary

Child Guidance Clinic	Supervisor : Mrs. E. Chave
Crease Clinic (P.M.H.)	Supervisors: Mr. J. Allman Mr. J. Ellis

Department of Veterans' Affairs (Canada)

Social Service Division	Supervisors: Mrs. M. Nicholson Miss U. Whitehead
Shaughnessy Hospital	Supervisors: Mrs. C. McAllister Miss G. Reid

Family Service Agency of Greater Vancouver

Supervisors: Miss L. Carscadden, Mrs. M. Rupp, Mr. G. Wright.

Gordon Neighbourhood House

Supervisor: Mr. E. Helm

Jewish Community Centre

Supervisor: Mr. W. Lampe

Juvenile Detention Home**Oakalla Prison Farm****Provincial Probation Service**

Supervisor: Mr. W. Jackson

St. Paul's Hospital

Supervisor: Miss M. Evans

Vancouver General Hospital

Supervisors: Miss F. Clayden,
Mr. K. Weaver

Western Rehabilitation Centre

Supervisor: Mr. F. Thompson

Young Women's Christian Association

Supervisor: Miss C. Herman

In addition to field work placements designed to give the student experience in case work, group work or community organization practice, a few arrangements are made each year for suitable Second Year students to have placements primarily in administration and research.

The Degree of Master of Social Work

1. Candidates for the M.S.W. degree (except as noted below) must have the B.S.W. degree, and should begin work leading toward the M.S.W. degree within five years after receiving the B.S.W. degree or they may be required to complete further preparatory work.

2. Candidates for the M.S.W. degree who hold the B.A. degree and the Diploma for Social Work, and who have had satisfactory social work experience, may proceed with the course for the M.S.W. degree without the B.S.W. degree but will be required to complete certain other work which may include a qualifying examination.

3. Students accepted as candidates for the M.S.W. degree will be required to complete a minimum of one year of University study including 9 units of lectures, 3 units of field work, and a thesis or research project to count for 3 units. At least Second Class standing is ex-

pected of all candidates for the Master's degree. Students who proceed directly from the B.S.W. degree to the M.S.W. degree without experience in the field of social work will be expected to work for the four months during the summer either in paid or in voluntary employment in a social agency, or will be required to complete extended field work during that period. For some students block placements in advanced field work may be arranged during the summer preceding or following the Second Year of study. Candidates for the M.S.W. degree are expected to complete a minimum of 500-600 hours of field work.

4. Details relating to the format, presentation, and submission of the M.S.W. thesis are set out in the special bulletin, *Instructions Relating to M.S.W. Thesis*, obtainable from the Registrar. The candidate is required to submit four copies of the completed thesis, of which at least the first two must be on good bond paper. If the thesis is approved, two copies are bound for permanent deposit in the University Library, one is retained by the School of Social Work, and the fourth is made available to the agency or agencies most directly interested in the subject of the research project.

5. The latest date for submission of thesis in time for graduation is April 30th.

6. Students who fail to complete requirements for the M.S.W. degree (including thesis and comprehensive examination) by the end of the session, will be required to re-register as partial students in a subsequent session, and to pay the appropriate fees. The course requisite for the completion of the degree will be determined by the School on the basis of the circumstances and the academic record of the candidate.

7. The M.S.W. degree is granted on the basis of professional knowledge, skill of performance, and research; and a comprehensive examination is required (oral or written, at the discretion of the School), to provide the final evidence of the competence of the candidate. The comprehensive examination may not be taken until the candidate has furnished satisfactory evidence that the thesis will be completed in the prescribed time.

COURSES IN SOCIAL WORK

Note: The following courses, except Social Work 499, are open only to students who have made application and have been accepted for admission to the School of Social Work. **Advanced courses normally taken in the Second Year are marked with an asterisk.**

Courses in other departments which may be taken for credit by some students in the Second Year are as follows: Architecture 460 (Community Planning and Housing), Economics 403 (Government Finance), Geography 307 (Human and Cultural Geography), Psychology 403 (Mental Measurement and Psychological Tests).

499. (3) Introduction to Social Work.—Survey of the field of social work, social problems and sociological considerations bearing on social work practice. Study of the functions of professional social workers, and current practice and community service to meet the needs of people. Presentation through lectures, visits to agencies, films, discussions, forums. **Prerequisite:** Fourth Year standing or permission of the School of Social Work. Miss Furness and Mr Marriage. [3-0; 3-0]

501. (1½) Social Work Methods.—Introduction to the philosophy underlying the practice of social work with individuals, groups and communities; orientation of the student to concepts and principles used in practice. A beginning is made in acquainting students with the knowledge and skills necessary for professional performance in social work. Illustrative material is drawn from the social work methods of casework, group work and community organization. There is close integration of this

course with first term field work. Mrs. McCrae, Miss Cunliffe and Miss Furness.

502. (1½) Social Casework II.—A continuation of 501. This course covers the application of increasing skill in social work diagnosis and assessment of social work treatment, with more emphasis on total case study than on single interviews. Services to children and families meeting need for financial assistance, foster placement, adoption, employment and conditions of illness are brought out; help with marital, parent-child and other intra-family problems are also stressed. Mrs. McCrae, Miss Cunliffe. [0-0; 3-0]

503. (1½) The Development of Social Work.—The fundamental attitudes of the professional social worker toward society, people and human rights. Social movements and leaders of the past and their influence on modern social work programmes, the professionalization of the field, ethics and moral problems. The development of methods. Issues in the current situation. Mrs. McCrae. [3-0; 0-0]

504. (1½) Physical and Emotional Aspects of Growth and Stress I.—Normal, physiological, social, and emotional development of infants, children, adolescents and adults, including knowledge and reactions about the common physical illnesses experienced by people in these age groups. The social worker's application of this knowledge is stressed together with medical lectures. Rehabilitation aspects are also brought out. Mrs. Tadych and lecturers. [3-0; 0-0]

*** 505. (1½) Social Case Work 3.**—An intensive continuing drill in social work diagnosis and casework treatment method in order to deepen and broaden understanding and skill. Casework records from various fields of practice will be used. Mrs. Exner. [3-0; 0-0]

*** 506. (1) Social Case Work 4.**—Continuation of 505. [0-0; 2-0]

507. (1½) Social Group Work 1.—Historical development of group work, relation to other methods in social work, present agency settings, trends. Analysis of groups, group process, individual and group behaviour; group-work process, focusing on the role of the group worker in relation to the individual member, the group, the community. Miss Furness. [0-0; 3-0]

*** 508. (1) Psychiatric Information.**—Medical information about psychotic, neurotic, and major psychosomatic disorders with emphasis on their geneses and major characteristics. Social work lectures stress the field of mental health and the social worker's use of psychiatric information in both clinical and general agency settings. Miss Cunliffe and Dr. Zeldowicz. [0-0; 3-0]

509. (3) Beginning Field Work.—Practice work under supervision in various social agencies. Mrs. McCrae and others. [see above]

*** 510. (3) Advanced Field Work.**—Supervised practice work during the Second Year required for the Master's degree. Mrs. McCrae and others. [see above]

511. (1) Community Organization.—The nature of the community, characteristics of the Canadian community; definition and process in community organization; historical development; the role of community organization; in the developing "welfare state"; structure in community organization; issues in fund raising; the executive and the board and the public; the role of volunteers; public relations; service institutions; public administration; political action. Mr. Dixon. [2-0; 0-0]

513. (1½) Public Welfare 2.—Principles and policies of public welfare exemplified in public welfare and assistance legislation; social security principles; treatment of the adult offender; mental hygiene programmes; housing policies; vocational rehabilitation services; administration and financing. Mr. Dixon. [0-0; 3-0]

***517. (1½) Social Group Work 2.**—Continues 507. Increasing understanding of group process, group behaviour, factors of individual and group differences: beginning skill in group leadership. Miss Furness. [3-0; 0-0]

518. (1½) Physical and Emotional Aspects of Growth and Stress II.—A continuation of 504 with more emphasis on the psycho-analytic orientation to growth and behavior. Some emphasis is given to understanding of unconscious factors in behaviour, as well as defence mechanisms. Social work lectures concentrate on the social worker's use of this information in order to understand and help people. Miss Hay-Shaw, Miss Cunliffe, and Dr. Lindenfeld. [0-0; 3-0]

520. (1½) Social Research 1.—Nature and development of research; social welfare, social work, and the social sciences. Basic scientific methods (survey method, genetic method, case method, etc.): special implications of evaluation studies and experimental method. Techniques applicable to qualitative material. Statistics (a) descriptive and definitive, (b) as tools of analysis. (Elementary statistical techniques covered in special workshop). Mr. Marsh and Mr. Marriage. [0-1; 2-0]

***540. (1) Medical and Psychiatric Information 3.**—A series of clinics (in which doctors, nurses, administrators and social workers participate) based on a group of mental and physical disorders selected for their social implications. Inter-agency and inter-professional relationships as they affect the medical, social and administrative aspects of these illnesses. Mrs. Tadych and lecturers. [0-0; 2-0]

545. (1) Social Work and the Law.—Principles of law with which the social worker should become familiar; structure of the court system; problems of judicial administration and law which particularly affect persons with low incomes. Judge Johnston. [2-0; 0-0]

***546. (1½) Administration of Social Agencies.**—Basic principles of administration and organization. Finance, personnel practices, public relations, office procedures. Mr. Dixon. [3-0; 0-0]

547. Bachelor of Social Work Comprehensive Examination.—A written examination. Six hours on one day. Date to be arranged.

***559. (1) Probation and Parole.**—An historical, comparative and analytical review of two major areas of correctional practice in which social work personnel and processes are employed, together with a consideration of some related philosophical and practical issues. Case material is used for illustrative purposes. Mr. Marriage. [0-0; 2-0]

***560. (1) Legal Protection of the Child.**—The administration of statutes designed to protect the child, from the standpoint of health, education, employment, dependency, and general welfare. Mr. Dixon. [0-0; 2-0]

***563. (1½) Social Group Work 3.**—Advanced social group work practice. Intensified understanding of individual and group behaviour. The group worker as a skilled leader in leisure-time agencies, "sheltered" groups, near-delinquent groups, institutional and hospital settings. Integration of understanding of psychological needs with use of programme media at intensive levels. Specialized problems of certain age and ethnic groups. Miss Furness. [0-0; 3-0]

***565. (1) Methods in Community Organization.**—An advanced course in community organization methods and techniques, with special emphasis on those needed by social workers in direct service agencies. Mrs. Exner and others. [2-0; 0-0]

***568. (1½) Public Welfare 3 (Social Security).**—Elements of social security; development of social security in Canada; reviews of systems of social security in Great Britain, New Zealand, Scandinavia, United States, etc. Analysis of existing and proposed programmes of old age and sur-

vivors' insurance, health insurance, hospital insurance, unemployment insurance, workmen's compensation, disability assistance, and family allowances. Mr. Dixon. [3-0; 0-0]

***571. (1) Delinquent Behaviour.**—Study of delinquent behaviour, and treatment of delinquency problems. Dr. Richmond and Mr. Marriage. [2-0; 0-0]

***572. (1) Advanced Psychodynamics.**—Case studies and discussion of deviations from normal behaviour. Maladjusted adults and children, the unmarried mother, marital problems, alcoholism, the emotional problems or middle age and of old age. Miss Hay-Shaw and Dr. Lindenfeld. [2-0; 0-0]

***575. (1) Seminar in Supervision.**—Discussion centering on psychological educational, and administrative aspects of supervision, the evaluation and the use of individual and group conference by both social worker and supervisor. Mrs. Exner. [0-0; 2-0]

***580. (1) Social Group Work 4.**—Continuation of 563. Cooperative, intensive work between social group worker and caseworker. Understanding of work with groups under psychiatric direction. [0-0; 2-0]

***581. (1½) Seminar in Advanced Case Work.**—A course designed for study of special fields and problems. [3-0; 0-0]

***582. (1½) Public Welfare 4.**—Public administration in modern society; its development in Canada. Principles of organization; the function of the executive; public welfare departments at national, provincial and local levels; personnel; functions of research; fiscal administration; supervision; public relations. Mr. Dixon. [0-0; 3-0]

***583. (1½) International Welfare.** — Comparative programmes; international cooperation in social welfare. [0-0; 2-0]

***584. (1½) Principles of Social Welfare.**—A study of the backgrounds of present day social agencies and programmes, the history of the English Poor Laws, how they affected the development of public welfare, and the rise of voluntary agencies and reform movements in Europe, England, and North America. Mr. Dixon and Faculty. [0-0; 3-0]

***585. (3) Social Research 2.**—Formulating and planning of social welfare studies; collection of data; the analysis of material; the writing of reports. Seminars supplemented by individual consultations. Mr. Marsh and other members of Faculty. [3-0; 3-0]

***586. (3) Social Research 3.** — A seminar in methods for advanced students specializing in research. Administrative applications, public and private agencies. Operational studies. Experimental projects. Surveys. Mr. Marsh. [3-0; 3-0]

***587. Master of Social Work Comprehensive Examination.**—Oral and/or written. Time and date to be arranged.

***588. (1½) Correctional Treatment Methods.**—A course designed for those whose field work is in a correctional institution. Mr. Dixon. [0-0; 3-0]

1957-58

**THE
FACULTY
OF
APPLIED SCIENCE**

(ARCHITECTURE; ENGINEERING; NURSING)

1957 - 1958

1957-58

FACULTY OF APPLIED SCIENCE

The degrees offered in this Faculty are:

Bachelor of Applied Science (B.A.Sc.). (See page 173.)

Bachelor of Architecture (B.Arch.). (See page 202.)

Bachelor of Science in Nursing (B.S.N.). (See page 210.)

For regulations concerning the degree of Master of Applied Science (M.A.Sc.), see *Faculty of Graduate Studies*.

GENERAL REGULATIONS

The following general regulations apply to all students in the Faculty. See, for additional regulations, page 173 (Engineering), page 202 (Architecture), page 210 (School of Nursing).

Registration and Admission

The general requirements for admission to the University are given on pages 62 to 64.

For admission to Applied Science, a student must have completed the First Year in Arts and Science at the University of British Columbia, or its equivalent at an approved university or by Senior Matriculation.

Candidates who expect to complete the requisite entrance standing through University or Senior Matriculation supplemental examinations, held in August or September, may apply for admission and their applications will be considered subject to the results of these examinations.

No student with deficient standing will be admitted to the First Year in any course in the Faculty.

Students considering Applied Science are advised to take First Year Arts and Science at the University because the Faculty feels strongly that students should adjust themselves to the University before undertaking the difficult work in First Year Applied Science.

Students intending to enter Applied Science are advised to present Chemistry 91, Mathematics 91, and Physics 91 for High School Graduation.

In order to allow time for practical work in the summer, the session is kept as short as is consistent with satisfactory mastery of the work. The student, therefore, should attend at the opening of session to assure a proper approach to the course.

If the summer employment either affords experience in the work of the course, or lightens the work of the session (as for example Geological Survey field work for geology students), and by its nature prevents the student attending the opening of session, he may be allowed by the Dean to enter late, provided he furnishes a statement from his employer showing that it was impossible for him to release the student earlier. The student must, however, make application in writing to the Dean prior to the first day of registration. A fee for late registration will be charged.

Examinations and Advancement

1. Examinations are held in December and in April. December examinations are obligatory in all subjects of the First and Second Years for all students in these years. December examinations in subjects of the Third and Fourth Years, excepting those subjects completed before Christmas, shall be optional with the departments concerned. Applications for special

consideration on account of illness or domestic affliction must be submitted to the Dean not later than two days after the close of the examination period. For information regarding medical certificates see pages 57-58.

2. Candidates, in order to pass, must obtain at least 50 per cent in each subject; in courses including both lecture and laboratory work students will be required to pass in both the written examinations and laboratory work before standing in the subject will be granted. The grades are as follows: First Class, an average of 80 per cent. or over; Second Class, 65 to 79 per cent.; Passed, 50 to 64 per cent.

3. No student will be allowed to take any subject unless he has previously passed in, or secured exemption from, all prerequisite subjects.

4. A student who fails twice in the work of the same year will be required by Senate to withdraw from the Faculty.

5. A student who fails to qualify for promotion to the Third Year after attending three academic sessions in this Faculty, will not be permitted to re-register in Engineering.

6. Any student whose academic record, as determined by the tests and examinations of the first term, is found to be unsatisfactory, may, upon the recommendation of the Faculty, be required by the Senate to discontinue attendance at the University for the remainder of the session. Such a student will not be re-admitted to the Faculty as long as any supplementals are outstanding.

7. Term essays and examination papers may be refused a passing mark if they are noticeably deficient in English.

8. Honours graduate standing will be granted to those who obtain First Class Standing in the Final Year and who have obtained an average of at least 75 per cent., with no supplementals, in each of the preceding three years.

Supplemental Examinations

1. If a student's general standing in the final examinations of any year is sufficiently high, the Faculty may grant him supplemental examinations in the subject or subjects in which he has failed. Supplementals will not be granted in more than three subjects. Notice will be sent to all students to whom such examinations have been granted.

2. A candidate who has been granted a supplemental examination may write it only twice. Permission to write a third time may be given only if the course is repeated or an equivalent course taken. Tutoring approved by the Dean may be accepted as an equivalent course.

3. No student may enter the Third or higher year with supplementals still outstanding in more than 4 units of the preceding year, or with any supplemental outstanding in the work of an earlier year unless special permission to do so is granted by Faculty.

4. Supplemental examinations will be held in August and at the time of the regular April examinations. Special examinations will not be granted, except by special permission of the Faculty and on payment of a fee of \$7.50 per paper.

5. Applications for supplemental examinations, accompanied by the necessary fees (see "Special Fees", page 70), must be in the hands of the Registrar by July 15th. For supplemental centres, etc., see page 66.

Re-readings

See page 66

COURSES LEADING TO THE DEGREE OF B.A.Sc.

The degree of Bachelor of Applied Science is granted on completion of the work in one of the courses given below:

1. Agricultural Engineering
2. Chemical Engineering
3. Civil Engineering
4. Electrical Engineering
5. Forest Engineering
6. Geological Engineering
7. Mechanical Engineering
8. Metallurgical Engineering
9. Mining Engineering
10. Engineering Physics

Admission

The general requirements for admission to the Faculty are given on page 171.

For admission to courses in Engineering, a student must have completed the First Year in Arts and Science at the University of British Columbia, or its equivalent at an approved university or by Senior Matriculation.

Required subjects are:

English 100 and 101

Mathematics 101

Chemistry 101

Physics 100 or 101

Language: one of the following—Latin 110 or 120, French 110 or 120, German 90 or 110 or 120 or 130, Russian 100.

The passing grade for entrance to courses in Engineering is 60 per cent. in Mathematics, Chemistry, and Physics, and 50 per cent. in other subjects.

Examinations and Advancement

The regulations set out on pages 171 to 172 apply to all courses in Engineering, with the following addition:

A student who is required to repeat his year will not be allowed to take any work in a higher year. A student repeating his year need not repeat the laboratory work of certain courses if he has obtained a standing in this work acceptable to the head of the department in which the course is given.

Practical Work Outside the University

Before a degree will be granted, a candidate is required to satisfy the department concerned that he has completed a suitable amount of practical work related to his chosen profession.

Practical work such as shopwork, freehand drawing, mechanical drawing, surveying, etc., done outside the University may be accepted in lieu of laboratory or field work (but not in lieu of lectures) in these subjects, on the recommendation of the head of the department and with the approval of the Dean. Students seeking this exemption must make written application to the Dean before April 1st.

Professional Associations

In order to practise as a Professional Engineer in the Province of British Columbia, it is necessary to be registered as a member of the Association of Professional Engineers of the Province of British Columbia.

Graduates in Engineering from the Faculty of Applied Science of the University of British Columbia may become registered after they have obtained satisfactory engineering experience subsequent to graduation and have submitted a satisfactory engineering report or other written evidence in support of their application for registration.

During the period between graduation and registration, the graduate should be enrolled with the Association of Professional Engineers in B.C. as an Engineer-in-Training.

Students in Engineering should enroll with the Association of Professional Engineers of British Columbia in their Second Year and should associate themselves with the appropriate technical societies. Facilities for enrollment in the Association are available each fall at the University during the period of registration.

In order to practise forestry in the Province of British Columbia it is necessary to be registered as a member of the Association of British Columbia Foresters. A graduate in Forest Engineering from the Faculty of Applied Science, University of British Columbia, may become registered after he has completed two years of forestry work and has submitted a satisfactory thesis.

Curricula

First and Second Years

The work of both years is the same in all curricula, except in Forest Engineering.

No student with deficient standing will be admitted to First or Second Year Applied Science.

Two courses in Physical Education are required of all students in First Year Applied Science, except ex-service personnel and members of military units operating on the campus. For details of requirements see page 151 in the Faculty of Arts and Science.

Students entering Second Year are required to submit an essay of not less than 1000 words. This should take the form of a scientific report based preferably upon original observations made during the summer. Any suitable subject, however, may be chosen. Emphasis will be placed upon the precise and accurate use of English, but credit will also be given for subject matter, form, and illustrations. If the essay is not up to the standard of a pass mark in English, it will be returned for re-writing. One copy only is required, which may be retained for future reference by the department most interested. The essay shall be handed in to the Dean not later than October 15th.

First Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Math. 155 Calculus.....	4	.....	4	.....
Math. 156 Analytic Geometry and Algebra.....	2	.....	2	.....
Phys. 155 Mechanics.....	2	3*	2	3*
Phys. 156 Heat, Light and Sound.....	2	3*	2	3*
†Chem. 155 Analytical Chemistry.....	2	3	2	3
C.E. 150 History of Engineering.....	1	.....	1	.....
C.E. 151 Surveying I.....	1	2*	1	2*
C.E. 160 Engineering Problems I.....	.....	4	.....	4
M.E. 152 Mechanical Drawing.....	.....	3	.....	3
Eng. 150 Composition.....	2	.....	2	.....
†For. 151 Profession of Forestry.....	1	.....	1	.....
†For. 252 Forest Botany.....	2	2	2	2

NOTE.—All First Year students will take C.E. 250, Surveying Field Work, immediately after the close of the spring examination for a period of two weeks.

Second Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
C.E. 250 Field work in Surveying.....	End of 2nd Term, 1st Year			
Eng. 298 Essay.....	.....	.....	.....	.....
Math. 250 Calculus.....	3	.....	3	.....
Math. 251 Vector Analysis and Statistics.....	2	.....	2	.....
Phys. 250 Electricity and Magnetism.....	2	3	2	3
†Chem. 255 Physical Chemistry.....	2	2	2	2
C.E. 255 Descriptive Geometry.....	.....	3	.....	3
C.E. 270 Strength of Materials.....	2	3*	2	3*
C.E. 275 Dynamics.....	1	2	1	2
Geol. 200 General Geology.....	2	2	2	2
Eng. 250 Reading and Composition.....	2	.....	2	.....
†For. 251 Fire Protection.....	1	2	1	2
†Bot. 303 Dendrology.....	2	2	2	2

*Alternate weeks.

†Not required for Forest Engineering students.

†For Forest Engineering students only.

Third and Fourth Year Essays

Essays are required of certain students entering Third and Fourth Years as shown in the Curricula given on pages 176 to 185.

The essay is to be based on the student's summer work in engineering, or on any scientific or engineering work with which he is familiar. Particular emphasis is to be placed on clarity of English expression, the orderly arrangement and accuracy of the material, and on the analytic interpretation of data rather than on description. All reference works should be duly acknowledged and the essay should be suitably illustrated by diagrams, photographs or specimens.

The following regulations should be observed:

1. The essay shall consist of not less than 2,000 words.
2. Two copies shall be submitted in properly bound form. Only one copy need contain maps and illustrations.
3. The essays shall be typewritten, or clearly written on paper of substantial quality, standard letter size (8½x11 inches), on one side of the paper only, with a clear margin on top and left-hand side. If typewritten, essays must be "double-spaced". Students are recommended to examine sample reports to be found in the departments and also copies of Masters' theses in the Library.
4. These essays shall be handed in to the Dean not later than November 1st. All essays, when handed in, become the property of the department concerned, and are filed for reference. A maximum of 100 marks is allowed, the value being based on presentation, English, and subject matter.
5. All other essays and reports required for graduation shall be handed in before the last day of lectures in the second term, and the corresponding date for the Autumn Congregation shall be October 1st.

1. Agricultural Engineering

For courses in First and Second Years, see page 175.

Third Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Bacteriology 100	2	3	2	3
Soil Science 200 Introduction to soils	3	2	.....	.....
Chemistry 300 Organic	3	3	3	3
C.E. 360 Fluid Mechanics	2	2	2	2
M.E. 371 Applied Thermodynamics	2	.....	2	.....
M.E. 374 Thermodynamics Laboratory .....	.....	3*	.....	3*
E.E. 451 Electrical Circuits	2	2	2	2
A.E. 350 Field Work	end of term 2nd year			
A.E. 360 Agricultural Machinery	2	3	.....	.....
A.E. 370 Agricultural Power .....	.....	.....	3	3
A.E. 380 Agricultural Products Processing	2	.....	2	3
A.E. 398 Essay .....	.....	.....	.....	.....

Fourth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
A.S. 302 Animal Science and Poultry Science	2	2	2	2
P.S. 302 Plant Science	2	2	2	2
Soil Sc. 313 Soil Physics	2	2	.....	.....
Ec. 307 Agricultural and Land Economics.....	3	.....	3	.....
C.E. 475 Engineering Economics	1	1	1	1
Met. 370 Physical Metallurgy	2	.....	2	.....
Met. 371 Metallography I .....	.....	3*	.....	3*
A.E. 450 Structures	2	2	2	3
A.E. 460 Soil and Water Engineering	2	3	2	3
A.E. 489 Seminar .....	.....	2*	.....	2*
A.E. Thesis .....	.....	3	.....	3

2. Chemical Engineering

For courses in First and Second Years, see page 175.

Third Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Ch.E. 398 Essay .....	.....	.....	.....	.....
M.E. 352 Mechanical Drawing	Attend of 2nd Term, 2nd Year			
Eng. 350 Literature of Ideas	1	1	1	1
M.E. 367 Mechanical Design	1	3*	1	3*
Math. 350 Differential Equations	3	.....	3	.....
Met. 370 Physical Metallurgy	2	.....	2	.....
Chem. 300 Organic Chemistry	3	3	3	3
Chem. 352 Inorganic Chemistry and Analysis	1	3	1	3
Chem. 457 Advanced Physical Chemistry	3	4	3	4
Ch.E. 350 Unit Operations I	3	.....	3	.....
Ch.E. 351 Process Calculations and Laboratory	2	3	2	3

Fourth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Ch.E. 498 Chemical Technology .....	.....	.....	.....	.....
E.E. 451 Electrical Circuits	2	2	2	2
Ch.E. 450 Unit Operations II	3	.....	3	.....
Ch.E. 451 Chem. Eng. Thermodynamics	2	.....	2	.....
Ch.E. 452 Automatic Control	1	.....	1	.....
Ch.E. 453 Plant Design and Economics	1	2	1	2
Ch.E. 455 Chem. Eng. Kinetics	2	.....	2	4
Ch.E. 456 Applied Electrochemistry	1	3*	1	.....
Ch.E. 457 Seminar	1	.....	1	.....
Ch.E. 460 Chem. Eng. Laboratory .....	.....	6	.....	3
Ch.E. 499 Thesis .....	.....	3	.....	9
Chem. 459 Qual. Organic Anal. ....	.....	4	.....	.....

*Alternate weeks.

3. Civil Engineering

For courses in First and Second Years, see page 175.

Third Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
C.E. 398 Essay.....	.....	.....	.....	.....
C.E. 350 Surveying Field Work II.....	At end of 2nd Term, 2nd Year			
E.E. 451 Electrical Circuits.....	2	2	2	2
Math. 350 Differential Equations.....	3	.....	3	.....
M.E. 371 Applied Thermodynamics.....	2	.....	2	.....
M.E. 374 Thermodynamics Lab.....	.....	3*	.....	3*
C.E. 351 Astronomy.....	.....	.....	2	.....
C.E. 352 Theory of Measurements.....	.....	.....	1	3
C.E. 353 Photogrammetry.....	1	3	.....	.....
C.E. 355 Strength of Materials II.....	2	2*	2	2*
C.E. 356 Materials Testing.....	1	3*	.....	3*
C.E. 360 Fluid Mechanics.....	2	2	2	2
C.E. 365 Foundations.....	2	3	.....	.....
C.E. 370 Structural Design I.....	2	2	2	2
C.E. 380 Seminar.....	1	.....	1	.....

Fourth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
C.E. 498 Essay.....	.....	.....	.....	.....
C.E. 450 Surveying Field Work III.....	At end of 2nd Term, 3rd Year			
C.E. 380 Seminar.....	1	.....	1	.....
C.E. 455 Theory of Structures.....	2	3	2	3
C.E. 460 Structural Design II.....	2	3	2	3
C.E. 461 Reinforced Concrete Design.....	2	3	.....	4
C.E. 465 Municipal Engineering.....	2	2	2	2
C.E. 466 Water Power Development.....	.....	.....	2	2
C.E. 470 Transportation Engineering.....	2	2	2	.....
C.E. 471 Soil Mechanics.....	2	.....	2	2
C.E. 475 Engineering Economics.....	1	1	1	1
C.E. 476 Engineering Law.....	1	.....	1	.....
C.E. 477 Earth Pressure.....	.....	.....	2	.....

*Alternate weeks.

4. Electrical Engineering

For courses in First and Second Years, see page 175.

Third Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
E.E. 398 Essay .....	.....	.....	.....	.....
M.E. 352 Mechanical Drawing	At end of 2nd Term, 2nd Year			
C.E. 357 Materials Testing .....	.....	2*	.....	2*
C.E. 360 Fluid Mechanics	2	2	2	2
Math. 350 Differential Equations	3	.....	3	.....
M.E. 358 Machine Shop Practice .....	.....	3*	.....	3*
E.E. 353 Electrical Machinery I	2	3	2	3
E.E. 355 Circuit Analysis I	2	2	2	2
E.E. 357 Electronics and Electron Devices	2	2	2	2
E.E. 361 Fundamentals of Electrical Eng.	2	1	2	1
E.E. 365 Electrical Eng. Analysis	2	1	2	1
E.E. 367 Electrical Measurements	1	2	1	2

Fourth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
E.E. 498 Essay .....	.....	.....	.....	.....
C.E. 475 Engineering Economics	1	1	1	1
M.E. 375 Applied Thermodynamics	2	3	2	3
Phys. 472 Modern Physics	2	.....	2	.....
E.E. 457 Electrical Machinery II	3	5	3	5
E.E. 463 Electric Power Transmission	2	2	2	2
E.E. 465 Applied Electronics	2	3	2	3
E.E. 467 Transients in Linear Systems	2	1	2	1
E.E. 469 Circuit Analysis II	2	1	2	1

* Alternate weeks.

5. Forest Engineering

For courses in First and Second Years, see page 175.

Third Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
C.E. 350 Surveying Field Work.....	At end of 2nd Term, 2nd Year			
C.E. 352 Theory of Measurements	1	3	1	3
C.E. 353 Photogrammetry.....	1	3*	.....	3*
C.E. 356 Materials Testing.....	2	2	2	2
C.E. 360 Fluid Mechanics.....	2	3	.....	.....
C.E. 365 Foundations.....	2	2	2	2
C.E. 370 Structural Design I.....	1	2	.....	.....
For. 250 Silvics .....	.....	.....	3	2
For. 350 Silviculture.....	1	.....	1	.....
For. 353 Seminar.....	2	3	2	3
For. 360 Mensuration	2	3	2	3
For. 370 Wood Technology.....	1	.....	1	.....
For. 380 Policy and Administration.....	.....	.....	.....	.....
For. 398 Essay.....	.....	.....	.....	.....

Fourth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
†For. 390 Summer Camp.....	2	2	2	.....
C.E. 470 Transportation Engineering.....	2	2	2	2
For. 351 Forest Protection II	1	.....	1	.....
For. 453 Seminar.....	2	2	2	2
For. 463 Forest Management.....	2	2	2	2
For. 472 Logging Engineering.....	2	3*	1	3*
For. 473 Milling and Marketing.....	.....	.....	1	2
For. 474 Lumber Grading.....	2	3*	2	3*
For. 475 Forest Products.....	2	2	2	2
For. 481 Forest Economics and Finance.....	.....	.....	.....	.....
For. 498 Essay.....	.....	.....	.....	.....

*Alternate weeks.

†Between the Third and Fourth Years all Forestry and Forest Engineering students are required to take the four weeks' summer camp at the University Research Forest near Haney. In addition, short field trips are required from time to time throughout the Third and Fourth Years. Fee for summer camp is \$75.00, payable to the Accountant at the time of registration for the camp.

6. Geological Engineering

For courses in First and Second Years, see page 175.

Third Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Geol. 398 Essay.....	.....	.....	.....	.....
C.E. 350 Surveying.....	At end of 2nd Term, 2nd Year			
C.E. 353 Photogrammetry.....	1	3	.....	.....
C.E. 360 Fluid Mechanics.....	2	2	2	2
Min. 350 Principles of Mining I.....	2	.....	2	.....
Min. 370 Mineral Dressing I.....	2	3*	2	3*
Zool. 105 General Zoology.....	2	3*	2	3*
Geol. 301 Crystallography.....	2	2	.....	.....
Geol. 302 Mineralogy.....	.....	.....	2	2
Geol. 303 Optical Mineralogy.....	2	2	.....	.....
Geol. 304 Structural Geology.....	3	.....	3	.....
Geol. 305 History of Geology.....	1	.....	1	.....
Geol. 307 Petroleum and Natural Gas.....	2	.....	2	.....
Geol. 317 Petrology.....	.....	.....	2	2
†Geol. 410 Field Geology.....	.....	.....	.....	2

Fourth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
C.E. 475 Engineering Economics.....	1	1	1	1
Min. 450 Mining Engineering I.....	2	.....	2	.....
Phys. 461 Geophysics.....	2	.....	2	.....
Geol. 406 Palaeontology.....	2	2	2	2
Geol. 407 Petrology.....	2	3	2	3
Geol. 408 Mineral Deposits.....	3	.....	3	.....
Geol. 409 Mineralography.....	1	3	.....	4
Geol. 411 Principles of Stratigraphy.....	1	.....	1	.....
Geol. 412 Geomorphology.....	2	2	2	2
Geol. 413 Regional Geology.....	2	.....	2	.....
Geol. 499 Thesis.....	.....	4	.....	5

*Alternate weeks.

†Includes 3 weeks' field work after lectures close in the second term.

7. Mechanical Engineering

For courses in First and Second Years, see page 175.

Third Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
M.E. 398 Essay .....	.....	.....	.....	.....
M.E. 352 Mechanical Drawing	At end of 2nd Term, 2nd Year			
C.E. 357 Materials Testing .....	.....	2*	.....	2*
E.E. 351 A.C. Circuits and Electronics	2	3	2	3
Eng. 350 Literature of Ideas	1	1	1	1
Math. 350 Differential Equations	3	.....	3	.....
Met. 370 Physical Metallurgy	2	.....	2	.....
Met. 371 Metallography .....	.....	3*	.....	3*
M.E. 356 Machine Shop Practice .....	.....	3*	.....	3*
M.E. 361 Kinematics of Machines	1	2	1	2
M.E. 363 Machine Design 1	2	2	2	2
M.E. 372 Mechanical Testing and Measurement	1	3	1	3
M.E. 373 Applied Thermodynamics	2	.....	2	.....
M.E. 381 Fluid Mechanics 1	2	2*	2	2*

Fourth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
M.E. 498 Essay .....	.....	.....	.....	.....
E.E. 453 D.C. and A.C. Machines	2	3	2	3
**Met. 370 Physical Metallurgy	2	.....	2	.....
**Met. 371 Metallography .....	.....	3*	.....	3*
***M.E. 457 Production Processes	2	3*	2	3*
M.E. 463 Machine Design 2	2	3	2	3
M.E. 465 Dynamics	2	3*	2	3*
M.E. 472 Mechanical Engineering Laboratory .....	.....	3	.....	3
M.E. 473 Heat Transfer	2	3*	2	3*
†M.E. 479 Thermal Power	3	3*	3	3*
†M.E. 481 Aerodynamics	3	3*	3	3*
M.E. 491 Industrial Engineering	2	.....	2	.....

*Alternate weeks.

**1957-58 only.

***Not given in 1957-58, but in subsequent years.

†Students in the Fourth Year must select as an option either M.E. 479 or M.E. 481.

8. Metallurgical Engineering

For courses in First and Second Years, see page 175.

Third Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Met. 398 Essay.....	.....	.....	.....	.....
M.E. 352 Mechanical Drawing.....	At end of 2nd Term, 2nd Year			
C.E. 357 Materials Testing.....	.....	2*	.....	2*
Ch.E. 350 Unit Operations I.....	3	.....	3	.....
Eng. 350 Literature of Ideas.....	1	1	1	1
Geol. 301 Crystallography.....	2	2	.....	.....
Math. 350 Differential Equations.....	3	.....	3	.....
M.E. 367 Mechanical Design.....	1	3*	1	3*
Min. 351 Introduction to Mining.....	2	.....	.....	.....
Min. 370 Mineral Dressing I.....	2	3*	2	3*
Phys. 372 Elementary Atomic Physics.....	1	.....	1	.....
Met. 350 Chemical Metallurgy.....	2	.....	2	.....
Met. 351 Laboratory Methods.....	.....	3	.....	3
Met. 352 Metallurgical Thermodynamics.....	.....	.....	2	.....
Met. 355 Principles of Analysis.....	.....	.....	1	3
Met. 374 Principles of Physical Metallurgy.....	2	.....	2	.....
Met. 371 Metallography I.....	.....	3*	.....	3*
Met. 390 Seminar.....	.....	.....	.....	1

Fourth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Met. 498 Engineering Report.....	.....	.....	.....	.....
C.E. 475 Engineering Economics.....	1	1	1	1
E.E. 451 Electrical Circuits.....	2	2	2	2
Met. 450 Theoretical Chemical Metallurgy.....	2	.....	2	.....
Met. 451 Chemical Metallurgy Laboratory.....	.....	3	.....	3
Met. 452 Process Chemical Metallurgy.....	2	.....	2	.....
Met. 453 Metallurgical Calculations.....	.....	2	.....	2
Met. 455 Laboratory and Research Methods.....	.....	4	.....	4
Met. 456 Metal Chemistry.....	1	.....	1	.....
Met. 460 Applied Radioactivity.....	1	.....	1	.....
Met. 470 Structure of Metals.....	1	.....	1	.....
Met. 471 Metallography II.....	3	.....	3	.....
Met. 472 Metal Physics.....	1	.....	1	.....
Met. 474 Process Physical Metallurgy.....	2	.....	2	.....
Met. 476 Rate Processes in Metals.....	1	.....	1	.....
Met. 478 X-ray Metallography.....	1	.....	1	.....
Met. 490 Plant Management.....	1	1	1	1
†Electives:	.....	.....	.....	.....
Chem. 412 Physical Inorganic.....	2	.....	2	.....
Ch.E. 450 Unit Operations II.....	3	.....	3	.....
M.E. 463 Machine Design II.....	2	3	2	3
Phys. 452 Atomic and Nuclear Physics.....	3	.....	3	.....

†One elective may be chosen, in consultation with the staff in Metallurgy, to replace one or more of the following courses: Met. 452, 456, 460, 472, 474.

*Alternate weeks.

9. Mining Engineering

For courses in First and Second Years, see page 175.

Third Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Min. 398 Essay.....	.....	.....	.....	.....
C.E. 350 Surveying.....	At end of 2nd Term, 2nd Year			
C.E. 357 Materials Testing.....	.....	2*	.....	2*
C.E. 360 Fluid Mechanics.....	2	2	2	2
C.E. 370 Structural Design I.....	2	2	2	2
Eng. 350 Literature of Ideas.....	1	1	1	1
Geol. 301 Crystallography.....	2	2	.....	.....
Geol. 302 Mineralogy.....	.....	.....	2	2
Geol. 304 Structural Geology.....	3	.....	3	.....
M.E. 371 Applied Thermodynamics.....	2	.....	2	.....
M.E. 374 Thermodynamics Laboratory.....	.....	3*	.....	3*
Met. 350 Chemical Metallurgy.....	2	.....	2	.....
Met. 351 Laboratory Methods.....	.....	3	.....	3
Met. 372 Physical Metallurgy.....	1	.....	1	.....
Met. 390 Seminar.....	.....	.....	.....	1
Min. 350 Principles of Mining.....	2	.....	2	.....
Min. 370 Mineral Dressing I.....	2	3*	2	3*

Fourth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Min. 498 Engineering Report.....	.....	.....	.....	.....
C.E. 475 Engineering Economics.....	1	1	1	1
E.E. 451 Electrical Circuits.....	2	2	2	2
Geol. 408 Mineral Deposits.....	3	.....	3	.....
M.E. 367 Mechanical Design.....	1	3*	1	3*
Met. 490 Plant Management.....	1	1	1	1
Min. 450 Mining Engineering I.....	2	.....	2	.....
Min. 451 Mining Engineering II.....	3	.....	1	.....
Min. 470 Mineral Dressing II.....	2	3*	2	3*
and one of the following options:				
MINING				
Geol. 317 Petrology.....	.....	.....	2	2
Phys. 461 Geophysics.....	2	.....	2	.....
Min. 454 Problems and Reports.....	.....	4	.....	3
MINERAL DRESSING				
Geol. 409 Mineralography.....	1	3	.....	4
Min. 474 Mineral Dressing III.....	.....	4	.....	6
Met. 352 Metallurgical Thermodynamics.....	.....	.....	2	.....

*Alternate weeks.

10. Engineering Physics

For courses in First and Second Years, see page 175.

Third Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
M.E. 352 Mechanical Drawing	Attend of 2nd Term, 2nd Year			
C.E. 357 Materials Testing	2*	2*	2*	2*
E.E. 363 Introd. to Circuits and Electronics	2	3*	2	3*
Math. 320 Differential Calculus	2	.....	2	.....
Math. 321 Integral Calculus	3	.....	3	.....
Math. 322 Algebra and Geometry	3	.....	3	.....
Phys. 358 Physical Optics	2	3	2	3
Phys. 352 Mathematical Physics	2	.....	2	.....
Phys. 354 Thermodynamics	2	.....	2	.....
and one of the following:				
Chem. 300 Organic Chemistry	3	3	3	3
Ch.E. 350 Unit Operations I	3	.....	3	.....
E.E. 453 D.C. and A.C. Machines	2	3	2	3
Geol. 304 Structural Geology	3	.....	3	.....
†M.E. 381 Fluid Mechanics I	2	2*	2	2*
{ Met. 374 Physical Metallurgy	2	.....	2	.....
{ Met. 371 Metallography I .....	.....	3*	.....	3*

Fourth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
E.E. 465 Applied Electronics	2	3	2	3
Math. 402 Differential Equations	2	.....	2	.....
Math. 404 Functions of a Complex Variable	2	.....	2	.....
Phys. 405 Theory of Elasticity	1	.....	1	.....
Phys. 409 Experimental Physics .....	.....	6	.....	6
Phys. 451 Electricity and Magnetism	2	.....	2	.....
Phys. 452 Atomic and Nuclear Physics	3	.....	3	.....
Phys. 453 Mechanics and Statistical Mechanics	2	.....	2	.....
and one of the following:				
Chem. 412 Physical Inorganic Chemistry	2	.....	2	.....
Ch.E. 450 Unit Operations II	3	.....	3	.....
E.E. 467 Transients in Linear Systems	2	2*	2	2*
{ Phys. 461 Geophysics	2	.....	2	.....
{ Geol. 317 Petrology .....	.....	.....	2	2
M.E. 481 Aerodynamics	3	3*	3	3*
{ Met. 470 Structure of Metals	1	.....	1	.....
{ Met. 471 Metallography II .....	.....	3	.....	3
{ Met. 472 Metal Physics	1	.....	1	.....

*Alternate weeks.

†See course description, page 196.

COURSES IN ENGINEERING

Note: The following subjects may be modified during the year as the Senate deems advisable.

The hours assigned for laboratory and lectures in the courses are designated as shown by the following examples:

2 lectures and 3 hours laboratory per week, both terms. [2-3; 2-3]

1 lecture per week and 3 hours laboratory in alternate weeks, both terms. [1-3*; 1-3*]

1 lecture and 2 hours laboratory per week, first term. [1-2; 0-0]

1 lecture and 2 hours laboratory per week, second term. [0-0; 1-2]

Where no definite times are assigned for laboratory and lectures, the number of units for which credit will be granted is shown in parentheses after the course number.

Agricultural Engineering

350. Field Work.—Engineering problems in the agricultural industry. Visits to agricultural research stations, commercial processing and manufacturing plants. Work commences at the close of the spring examinations, and continues for two weeks.

360. Agricultural Machinery.—The application of engineering principles to agricultural machinery design. Performance of machines under field conditions and need for design modifications in agriculture. Mr. Thomas. [2-3; 0-0]

370. Agricultural Power.—The application of engineering principles and practices in the development of agricultural power units. Types of power plants, transmission of power, fuels, lubricants and accessories necessary for the agricultural unit. Mr. Thomas. [0-0; 3-3]

380. Agricultural Products Processing.—Basic principles of heat transfer and application to the design of agricultural processing equipment. The unit operations pertaining to processing agricultural products. Size reduction, separation, mixing, evaporation and drying, refrigeration. Text-book: Henderson and Perry, *Engineering Elements of Agricultural Processing*. Reference: McAdams, *Heat Transmission*. Mr. Watson. [2-0; 2-3]

450. Structures.—Design problems in structures for agricultural products, processes, and livestock: respiration of stored products, storage temperature and humidity, grain drying and ventilation. Text-book: Barre & Sommett, *Farm Structures*. [2-2; 2-3]

460. Soil and Water Engineering.—Theory and practices in land drainage. Irrigation practices and principles. Engineering in soil conservation and land reclamation. Text-book: Frerent, et al, *Soil and Water Engineering*. Mr. Coulthard. [2-3; 2-3]

489. Seminar.—Lectures, papers, and discussions on recent developments. [0-2*; 0-2*]

499. Thesis.—For B.A.Sc. degree. [0-3; 0-3]

Animal Science

302. Animal Husbandry.—For students in Agricultural Engineering.

Chemical Engineering

350. Unit Operations I.—Theory of solids processing, fluid flow, dimensional analysis, filtration, fluid-solid dynamics, heat transfer, and evaporation, illustrated by problems. Text-book: McCabe and Smith, *Unit Operations of Chemical Engineering*. [3-0; 3-0]

351. Process Calculations and Laboratory.—Stoichiometry and interrelation of variables in chemical process industries; water treatment, psychro-

metry, combustion, petroleum refining; unit operations and processes; local plant visits. Text-books: Hougen, Watson, and Ragatz, *Chemical Process Principles, Part I*; Kobe, *Chemical Engineering Reports*. [2-3; 2-3]

450. Unit Operations II.—Theory of diffusional operations including extraction, distillation, absorption, humidification and drying, illustrated by problems. Text-books: Treybal, *Mass-Transfer Operations*; Perry, *Chemical Engineers' Handbook*. [3-0; 3-0]

451. Chemical Engineering Thermodynamics.—Application of fundamental laws to fluid flow, heat transfer, phase equilibrium and chemical processes; power cycles, refrigeration, expansion and compression of fluids. Text-book: Hougen and Watson, *Chemical Process Principles, Vol. 2*. [2-0; 2-0]

452. Automatic Control.—Theory and application of automatic control in chemical processes; regulation of process variables; types of instruments. Text-book: Ceaglske, *Automatic Process Control for Chemical Engineers*. [1-0; 1-0]

453. Plant Design and Economics.—Economics of chemical engineering processes; materials of construction; principles of engineering design of chemical processes. Text-book: Tyler, *Chemical Engineering Economics*. [1-2; 1-2]

455. Chemical Engineering Kinetics.—Chemical reaction kinetics, catalytic processes, and reactor design. Unit processes in petroleum refining, and pulp and paper technology; nuclear engineering. Text-book: Smith, *Chemical Engineering Kinetics*. [2-0; 2-4]

456. Applied Electrochemistry.—Electrochemical principles, electrolytic oxidation and reduction, corrosion. Text-book: Mantell, *Industrial Electrochemistry*. [1-3*; 1-0]

457. Seminar.—Current topics in chemical engineering and industrial engineering. [1-0; 1-0]

460. Chemical Engineering Laboratory.—Experiments in unit operations and instrumentation; local plant visits. [0-6; 0-3]

498. Chemical Technology.—A summer reading course covering the more important chemical processes, and emphasizing the inorganic process industries. Text-book: Kobe, *Inorganic Process Industries*.

499. Thesis.—Experimental research or design under the direction of a staff member. [0-3; 0-9]

Courses for Graduate Students

550. (2) Industrial Kinetics and Catalysis.—Chemical reaction kinetics and catalytic processes; heat and mass transfer in industrial reactors; design of catalytic converters. Text-book: Hougen and Watson, *Chemical Process Principles, Vol. III*.

551. (1) Chemical Engineering Thermodynamics.—Pressure-volume-temperature relations; chemical equilibria by Gibbs' method; vapor-liquid equilibria; thermodynamic calculations by third law and quantum-statistical methods. Text-books: Dodge, *Chemical Engineering Thermodynamics*; Dole, *Statistical Thermodynamics*.

553. (1) Process Engineering Calculations.—Dimensional analysis, scaling up, correlation of chemical engineering data, numerical and graphical methods. Text-book: Sherwood and Reed, *Applied Mathematics in Chemical Engineering*.

554. (2) Momentum, Heat, and Mass Transfer.—Prediction of velocity, temperature, and concentration profiles for flowing fluids; unifying concepts in momentum, heat, and mass transfer; turbulence and eddy diffusion, the laminar layer and buffer zone, boundary layers, smooth and rough conduits, Reynolds' and other analogies. Text-book: Knudsen and Katz, *Fluid Dynamics and Heat Transfer*.

Note: Courses 555, 556, 557, 558 and 560 may not all be given in 1957-58. Courses to be offered in this group will be announced prior to the beginning of the fall term.

555. (1) Solvent Extraction.—Theory of liquid-liquid equilibria, rates of diffusion, illustrated by problems; analytical and graphical methods of design of extraction systems; use of mixed and double solvents. Text-book: Treybal, *Liquid Extraction*.

556. (1) Distillation.—Systems of complete and of limited miscibility; multicomponent systems; graphical and analytical design methods; azeotropic and extractive distillation.

557. (1) Fluid Flow.—Mechanism of streamline and turbulent flow, fluid friction, compressibility phenomena, fluid metering, two-phase flow, non-Newtonian fluids, pipe-line design, fluid-solid dynamics, economics in flow problems. Text-book: Lapple, *Fluid and Particle Mechanics*.

558. (1) Heat Transfer.—Steady state and transient state studies; calculation and design of industrial heat exchangers. Text-book: Kern, *Process Heat Transfer*.

560. (1) Nuclear Engineering.—A brief introduction to nuclear physics and radiochemistry. Elementary pile theory and nuclear reactor design with emphasis on heat transfer problems. Separation processes.

598. (1) Seminar.—Presentation and discussion of current topics in chemical engineering.

599. Thesis.—For M.A.Sc. degree.

Chemistry

155. Analytical Chemistry.—Chemical laws, chemical equilibrium, equilibrium applied to ionization, precipitation, complex ions, and hydrolysis. Solubility products, common-ion effect. Theory of qualitative and quantitative analysis. Oxidation-reduction potentials, theory of indicators. Text-book: Welcher and Hahn, *Semi-micro Qualitative Analysis*. [2-3; 2-3]

255. Physical Chemistry.—Gaseous, liquid and solid states; thermochemistry; chemical thermodynamics; chemical equilibrium; chemical kinetics; phase diagrams. [2-2; 2-2]

352. Inorganic Chemistry and Analysis.—Modern methods of inorganic separations on laboratory and plant scales, including precipitation, solvent extraction, ion exchange and adsorption chromatography, separation of isotopes. Instrumental methods of analysis. Text-book: Vogel, *Quantitative Analysis*. [1-3; 1-3]

457. Advanced Physical Chemistry.—Chemical thermodynamics; elementary statistics; electrochemistry; atomic and molecular structure; chemical kinetics; catalysis; surface phenomena; colloids; photo-chemistry. Reference: Moore, *Physical Chemistry*; Glasstone, *Text-book of Physical Chemistry*; Prutton and Maron, *Fundamental Principles of Physical Chemistry*; Daniels and Alberty, *Physical Chemistry*. [3-4; 3-4]

459. Qualitative Organic Analysis.—Similar to Chemistry 409, (Arts, page 94) but with reduced amount of laboratory work. For Chemical Engineering students only. [0-4; 0-0]

For description of other courses in Chemistry, see page 92.

Civil Engineering

150. History of Engineering.—A history of technology, engineering, and physical sciences; their interrelationships and their part in modern civilization. References: Forbes, *Man the Maker*; Wightman, *The Growth of Scientific Ideas*. [1-0; 1-0]

151. Surveying I.—Construction, use and adjustment of surveying instruments. Application to engineering problems. Text-book: Kissam, *Surveying*. Mr. de Jong, Mr. Heslop. [1-2*; 1-2*]

160. Engineering Problems I.—Training in methods of attacking, analyzing and solving engineering problems; drill in systematic arrangement and workmanship in calculations. Analytical and graphical solutions of problems in mechanics and engineering. Mr. Peebles. [0-4; 0-4]

250. Field Work I.—Elementary surveying; field problems involving the use of compass, transit, tape and level and plane table. Compilation of maps and plans from field notes and other data. Work commences at the close of the spring examinations and continues for twelve days, eight hours a day, or equivalent. Mr. de Jong.

255. Descriptive Geometry.—First and third quadrant orthographic projection involving points, lines and planes; use of auxiliary planes and revolution; interpenetrations, sections and developments; practical applications. Text-book: Warner, *Applied Descriptive Geometry*. Mr. Pretious. [0-3; 0-3]

270. Strength of Materials.—An introductory course dealing with elementary relations existing between external forces and accompanying stresses, strains and deflection produced in simple types of structural and machine elements. Text-book: Singer, *Strength of Materials*. Mr. Lipson. [2-3*; 2-3*]

271. Materials Testing.—Properties and testing of engineering materials; proportioning and testing of concrete. Mr. Hrennikoff. [0-2*; 0-2*]

275. Dynamics.—A study of kinematics and kinetics of particles and rigid bodies, in which full use is made of the student's training in the calculus. Text-book: Higdon and Stiles, *Engineering Mechanics*. Mr. Hooley. [1-2; 1-2]

350. Field Work II.—Route survey including running in the final location from notes; solar observation for latitude and azimuth; adjusting instruments; use of plane table; survey of a mineral claim involving "fractions"; bridge-pier triangulation. Work commences at close of spring examinations and lasts for 12 days. Mr. Finlay, Mr. Pretious.

351. Astronomy.—The celestial sphere, astronomical coordinate systems, the astronomical triangle and determination of azimuth, latitude, time and longitude by solar and stellar observations. Text-book: Hosmer and Robbins, *Practical Astronomy*. Mr. de Jong. [0-0; 2-0]

352. Theory of Measurements and Survey Problems.—An introduction to the theory of measurements, errors and method of least squares, with special reference to surveying; special survey problems. Text-book: to be announced. Mr. Bell. [0-0; 1-3]

353. Photogrammetry.—The principles of terrestrial and aerial photogrammetry; photogrammetric problems and map compilation from aerial photographs using radial triangulation; parallax measurement and height determination; field trips. Text-book: Breed and Hosmer, *Higher Surveying*. Mr. de Jong. [1-3; 0-0]

355. Strength of Materials II.—An extension of C.E. 270 to meet the needs of students in Civil Engineering. Text-book: Timoshenko and McCullough, *Elements of Strength of Materials*, 3rd edition. Reference: Timoshenko, *Strength of Materials*, Vols. I and II. Mr. Finlay. [2-2*; 2-2*]

356. Materials Testing.—Properties and testing of engineering materials; proportioning and testing of concrete. Mr. Hrennikoff. [1-3*; 0-3*]

357. Materials Testing.—Physical testing of metals. Mr. Bell. [0-2*; 0-2*]

360. Fluid Mechanics.—Problems and laboratory work on fluid statics, kinematics of fluid flow, energy equation for steady flow of any fluid, viscosity, dimensional analysis, dynamic similarity, flow of compressible

and incompressible fluids, fluid-measuring instruments, momentum and propulsion, resistance of immersed bodies, flow in open channels, hydraulic machinery. Text-book: Binder, *Fluid Mechanics*. Reference: Freeman, *Hydraulics Laboratory Practice*; Russell, *Hydraulics*; Streeter, *Fluid Mechanics*; Rouse, *Elementary Mechanics of Fluids*. Mr. Pretious. [2-2; 2-2]

365. Foundations.—Soil exploration; bearing power of soils; pile and other foundations; cofferdams; caissons; open dredging; pneumatic and freezing processes. Mr. Hrennikoff. [2-3; 0-0]

370. Structural Design I.—Design and details of engineering structures; estimates of quantities and costs. Text-books: Scofield-O'Brien, *Modern Timber Engineering*; A.I.S.C. *Steel Construction Manual*; Grinter, *Elementary Structural Analysis and Design*. Mr. Muir. [2-2; 2-2]

380. Seminar.—Training in public speaking by the oral presentation of engineering or other topics by the student before the class. Reference: Rickard, *Technical Writing*. [1-0; 1-0]

450. Field Work III.—Adjustment, care, and use of precise surveying instruments; method of carrying out triangulation surveys, base line measurement, determination of latitude, azimuth, and time to a high degree of accuracy; precise levelling; spiral curves. Mr. Heslop, Mr. Bell.

455. Theory of Structures.—An analysis of the principal types of structures, including simple trusses, 3-hinged arches, continuous girders, and rigid frames, under the action of fixed and moving loads. Text-book: Timoshenko and Young, *Theory of Structures*, 1st edition. Reference: Johnson, Bryan and Turneure, *Modern Framed Structures*, Vols. I and II. Mr. Finlay. [2-3; 2-3]

460. Structural Design II.—Design of simple span steel bridges; determination of stresses due to vertical, longitudinal, and lateral forces; proportioning of parts; design of sections, connections, end supports, and various details; making detail drawings. Text-books: American Institute of Steel Construction, *Steel Construction*; American Railway Engineering Association, *Specifications for Steel Railway Bridges*; Canadian Standards Association, *Specifications for Steel Highway Bridges*. Mr. Hrennikoff. [2-3; 2-3]

461. Reinforced Concrete Design.—Analysis and design of reinforced concrete structures, including beams, slabs, columns, footings, and rigid frames. Typical design calculations of a small reinforced concrete building, and the necessary drawings, are prepared by each student. Text-book: Sutherland and Reese, *Reinforced Concrete Design*. Mr. Lipson. [2-3; 0-4]

465. Municipal Engineering.—Physical and economic factors of sewerage and sewage treatment; water supply; town planning and city management. Text-book: Steel, *Water Supply and Sewerage*. Reference: Lewis, *City Planning*. Mr. Muir. [2-2; 2-2]

466. Water Power Development.—Principles of hydrology; selection of hydraulic turbines and centrifugal pumps; hydro-electric installations. Text-book: Barrows, *Water Power Engineering*. Mr. Muir. [0-0; 2-2]

470. Transportation Engineering.—Coordination of transportation systems, economics of operations of railway and highway transportation, location, drainage, materials and methods of construction. Highway planning and design, traffic behaviour and control. Laboratory analysis of soils and soil stabilization. References: Raymond, *Elements of Railroad Engineering*; Hewes and Oglesby, *Highway Engineering*. Mr. Peebles. [2-2; 2-0]

471. Introductory Soil Mechanics.—An introduction to the physical and mechanical properties of soil that govern its behaviour as an engineering material. Mr. Spence. [2-0; 2-2]

475. Engineering Economics.—Elementary mathematics of investment; interest; annuities; financial comparison of engineering installations; organiza-

tion of business enterprise; principles of financing; bonds; stocks, graphical analysis of fixed and variable expense; interpretation of financial statements; elements of statistical method. Text-book: Grant, *Principles of Engineering Economy*. Mr. Kania. [1-1; 1-1]

476. Engineering Law.—The law insofar as it affects engineers; contract law and specifications; preparation of specifications and engineering contract documents. Companies, partnerships, mechanics liens, agency, patents. Text-book: Kirby, *Elements of Specification Writing*. References: Laidlaw and Young, *Engineering Law*; H. D. and W. H. Anger, *Digest of Canadian Mercantile Law*. Mr. Pretious. [1-0; 1-0]

477. Earth Pressure.—Theory of earth pressure for cohesionless and cohesive materials; active and passive pressures; design of retaining walls; bulkheads; pressure on hoppers; stability of unretained slopes. Mr. Hrennikoff. [0-0; 2-0]

Courses for Graduate Students

550. (3) Advanced Structural Analysis.—Plane and spatial "complex" trusses and their analysis; the analysis of statically indeterminate structures, such as arches, rigid frames, continuous trusses, and suspension bridges. Mr. Finlay.

551. (3) Advanced Strength of Materials.—Torsion of shafts of non-circular section; advanced problems in bending of beams; centre of twist; beams on elastic foundations; trigonometric series; curved beams; column theory, buckling of columns, circular members and beams, strength theories. Mr. Hrennikoff.

552. (3) Soil Mechanics.—Basic soil properties; classification; subsurface exploration; permeability, capillarity, seepage, flow nets; compression and consolidation; stresses in soil, settlement analysis; strength theory; direct and triaxial shear machines; stability of slopes; lateral pressure and retaining walls; application of soil mechanics to dams; bearing capacity of soil. Mr. Hrennikoff.

553. (3) Advanced Hydraulics.—Flow in open channels with rigid and mobile boundaries; fluid mechanics; hydraulic models; experimental projects in hydraulic laboratory; sedimentation behaviour and control. Mr. Pretious.

554. (3) Advanced Reinforced Concrete Design.—Elastic and plastic deformations in reinforced concrete, torsional stresses in beams, design for earthquake forces, rigid frames, precast concrete, ultimate load design. Mr. Lipson.

555. (3) Theory of Plates and Shells.—A study of the stress distribution in flat plates by Fourier analysis, energy methods, relaxation and models; large deflections of plates; stability of compressed plates. Stresses and deflections of cylindrical shells, domes of revolution, and some discontinuous shells. Mr. Hooley.

556. (2) Inelastic Bending and Limit Design.—Stresses and deflections in statically determinate and indeterminate beams and frames beyond the proportional limit; limit design; static and kinematic principles; variable loading; Bauschinger effect; shakedown principle; failure by alternating plasticity and incremental collapse; application to reinforced concrete slabs. Mr. Hrennikoff.

557. (3) Advanced Fluid Mechanics.—Mathematical hydrodynamics of real and ideal fluids. Theory of turbulence; application to transport of suspended material. Waves. Hydraulic machinery; operating characteristics, surge, water-hammer, cavitation. Mr. Marris.

558. (3) Prestressed Concrete.—Design and analysis for flexure and shear, losses in prestress, anchorage zone stresses, deflections, composite beams, statically indeterminate beams. Mr. Lipson.

559. (3) Numerical Procedures in Structural Analysis.—Numerical and approximate methods for the solution of complex problems with wide application to engineering structures: moments and deflections of beams and beam-columns, moments and deflections of beams on elastic supports, critical buckling loads of bars of variable cross section loaded in various ways, vibrations of elastically supported mass system. Mr. Cherry.

599 Thesis.—For M.A.Sc. degree.

Economics

307. Agricultural Economics.—As in Arts. (See page 100.)

Electrical Engineering

351. Alternating Current Circuits and Electronics.—Single-phase and polyphase alternating current circuits; power measurements. Theory and application of electron tubes. Text-books: Loew, *Direct and Alternating Currents*; Benedict, *Introduction to Industrial Electronics*. Mr. Kersey.

[2-3; 2-3]

353. Electrical Machinery I.—The theory, operating characteristics, efficiency, and applications of direct current generators and motors. Theory and application of transformers. Text-book: Kloeffer, Kerchner, Brenne-
man, *D.C. Machinery*. Reference: Langsdorf, *Principles of Direct Current Machines*. Mr. Kersey.

[2-3; 2-3]

355. Circuit Analysis I.—An introduction to the theory of electrical circuits in the steady and transient states using pole-zero concepts; systematic analysis of electrical systems by determinantal methods; application to representative problems in the communications and power fields. Mr. Moore.

[2-2; 2-2]

357. Electronics and Electron Devices.—Motion of charged particles; electrons in metals; thermionic emission; electrical discharges in gases; semi-conducting materials; solid-state devices; electron tubes and elementary electronic circuits. Text-book: Gray, *Applied Electronics*. Mr. Beddoes.

[2-2; 2-2]

361. Fundamentals of Electrical Engineering.—Field concepts, potential theory, electrodynamics, applications in electrical sciences, mechanics and heat flow. Text-book: Shedd, *Fundamentals of Electromagnetic Waves*. Mr. Bohn.

[2-1; 2-1]

363. Introduction to Circuit Theory and Electronics.—Fundamentals of circuit analysis including lumped and distributed elements, electron ballistics and vacuum tubes. Text-book: Gray, *Applied Electronics*. Reference: Le-
page and Seeley, *General Network Analysis*. Mr. Woods.

[2-3*; 2-3*]

365. Electrical Engineering Analysis.—The application of mathematical methods to the problems of electrical engineering. The use and interpretation of determinants, matrices and Fourier series; an introduction to transform methods; applications of elementary concepts of the theory of functions of a complex variable in electrical engineering. Mr. Moore.

[2-1; 2-1]

367. Electrical Measurements.—Resistors, inductors and capacitors, their construction and calibration; D.C. bridges and potentiometers; galvanometers and standard cells; magnetic measurements; indicating instruments and energy meters; oscillographs; A.C. bridges. Text-book: Golding, *Electrical Measurements and Measuring Instruments*. Mr. Woods.

[1-2; 1-2]

451. Electrical Circuits and Apparatus.—D.C. and A.C. circuits and machinery; theory and application of electron tubes. Text-book: Fitzgerald, *Basic Electrical Engineering*. Mr. Noakes.

[2-2; 2-2]

453. D.C. and A.C. Machines.—The theory and characteristics of direct current generators and motors, and alternating current machines. Text-

books: Loew, *Direct and Alternating Currents; Electrical Circuit and Machine Experiments*. Mr. Kersey. [2-3; 2-3]

457. Electrical Machinery II.—A detailed analysis of the theory and characteristics of alternating current machinery, including the transformer, the alternator, the synchronous motor, the induction motor, the rotary converter, and the commutator motor. Design problems. Text-books: to be announced. Mr. Coulthard. [3-5; 3-5]

459. Electrical Services and Illumination.—Principles of electrical services and illumination of buildings. For students in Architecture. Text-books: *Westinghouse Lighting Handbook; Province of British Columbia Rules and Regulations for the Installation and Maintenance of Electrical Equipment*. [2-3; 0-0]

463. Electric Power Transmission and Distribution.—Transmission line resistance, inductance, and capacitance; circle diagrams; the electrical layout of power plants, substations, and distribution systems; short circuit calculations; relays; introduction to system stability. Text-book: to be announced. Mr. Noakes. [2-2; 2-2]

465. Applied Electronics.—The theory and application of vacuum tubes in amplifiers, oscillators, modulators, detectors and related devices used in communications. instrumentation and control. Text-book: Gray, *Applied Electronics*. Mr. Beddoes. [2-3; 2-3]

467. Transients in Linear Systems.—Introduction to the Laplace transform, applications to transients in mechanical and electrical systems. Solution of partial differential equations using the Laplace transform; problems in dynamics and heat flow; transmission-line transients; elementary theory of servomechanisms; solution of problems by electrical analogues; solution of the inverse Laplace transform by numerical methods. Text-book: to be announced. Mr. Bohn. [2-1; 2-1]

469. Circuit Analysis II.—Theory of the 4-terminal network; applications to matching networks, pads and attenuators; the constant-k and m-derived filter; the uniform transmission line at high frequencies; the Smith chart; effect of losses; wave guides as circuit elements; cavity resonators; the dipole radiator. Text-book: to be announced. Mr. Moore. [2-1; 2-1]

Courses for Graduate Students

Students should consult the Department for information regarding courses to be offered in 1957-58.

551. (3) Applied Electromagnetic Theory.—Maxwell's equations; guided waves, uniform and non-uniform metallic waveguides, dielectric waveguides, discontinuities in waveguide, cavity resonators; introduction to microwave circuit theory; radiation and antennas. References: Jordan, *Electromagnetic Waves and Radiating Systems*; Ramo and Whinnery, *Fields and Waves in Modern Radio*; Lamont, *Wave Guides*. Mr. Auld.

553. (3) Electric Power Systems.—The theory of energy flow; synchronous machine characteristics; electrically long transmission lines; generalized circuit constants and circle diagrams; symmetrical components; stability and surge phenomena; network analyser studies. References: *The Westinghouse Transmission and Distribution Reference Book*; selected texts from the *General Electric Series*. Mr. Noakes.

555. (2) Application of Operational Methods to Engineering.—Operational mathematics applied to the solution of linear and of partial differential equations; topics selected from electric circuit theory, dynamical theory; electric wave and diffusion problems. References: Coulthard, *Transients in Electric Circuits*; MacLachlan, *Complex Variable and Operational Calculus*. Mr. Coulthard.

557. (2) Non-linear Systems.—Theory and applications of linear and non-linear systems. Text-book: Stoker, *Non-linear Vibrations*. Reference: Minorski, *Non-linear Mechanics*. Mr. Coulthard.

559. (1) Electronic Instrumentation.—Theory and design of pulse circuits for generating, amplifying and measuring non-sinusoidal wave forms; applications in communication, instrumentation and control.

561. (2) Network Theory.—Analysis and synthesis of linear electrical networks; the relationship between transient response and frequency response using the Laplace transform; general properties of two-terminal and four-terminal networks in terms of resonances and antiresonances at complex frequencies; modern synthesis methods; topics of current interest in systems with non-linear or time-varying elements; applications in the field of communication and control. Mr. Moore.

563. (2) Servomechanisms.—Theory and application of servomechanisms; closed linear systems; principles of mathematical analysis; applications to electrical engineering. Text-book: Nixon, *Principles of Automatic Control*. Mr. Bohn.

565. (1) Communication Theory.—The mathematical representation of signals and noise; the information content of signals; sampling; coding; optimization of communication channels; applications in communications, computation, and control.

567. (1) Analogue Computers.—The electronic and electromechanical components used in analogue computation. Specialized circuitry and methods for function generation, multiplication and the solution of trigonometric problems. Various types of analogue computers and their application to the solution of differential equations. Mr. Bohn.

569. (1) Digital Computers.—The symbolic representation of arithmetic processes and their realization by means of electronic gating, switching and storage circuits. Input-output equipment and overall computer operation.

599. Thesis.—For M.A.Sc. degree.

699. Thesis.—For Ph.D. degree.

English

150. Composition.—The work consists of (1) essays, class exercises, and selected reading; (2) written examinations. Students will be required to make a passing mark in each. [2-0; 2-0]

250. Reading and Composition.—Students will be asked to read a half-dozen notable books and to write essays on the ideas they encounter. [2-0; 2-0]

350. Studies in the Literature of Ideas.—Students will be asked to read a half-dozen texts illustrating the theme of Utopian society. Seminars and essays will be required. [1-1; 1-1]

For descriptions of other courses in English, see Arts, pages 101-105.

Forestry

For descriptions of other courses in English, see Arts, pages 101-105.

Geology and Geography

499. Thesis.—For B.A.Sc. degree.

Courses for Graduate Students

599. Thesis.—For M.A.Sc. degree.

699. Thesis.—For Ph.D. degree.

For descriptions of other courses in Geology and Geography, see Arts and Science, pages 108-112.

Mathematics

155. Calculus.—Differentiation and integration of the elementary functions of one variable with applications. [4-0; 4-0]

156. Analytic Geometry and Algebra.—Elementary vector analysis; determinants; parametric equations; complex numbers; theory of equations. [2-0; 2-0]

250. Calculus.—Partial derivatives; multiple integrals; infinite series; introduction to differential equations. [3-0; 3-0]

251. Vector Analysis and Statistics.—Vector analysis; spherical trigonometry; elementary statistics. [2-0; 2-0]

350. Applied Calculus and Differential Equations.—Advanced calculus, Fourier series; ordinary and partial differential equations. Prerequisite: Mathematics 250. [3-0; 3-0]

For descriptions of other courses in Mathematics, see Arts and Science, pages 122-125.

Mechanical Engineering

152. Mechanical Drawing.—Free hand lettering, orthographic projection; dimensioning; thread conventions; technical sketching; detail and assembly drawings of machine parts; tracing and blueprinting. Text-book: *Zozzora, Engineering Drawing*. Mr. Wolfe. [0-3; 0-3]

352. Mechanical Drawing.—(Continuation of M.E. 152). Isometric and oblique projection; auxiliary views; more advanced working drawings; checking a drawing. This course commences immediately after the spring examinations and continues for a period of twelve days, eight hours a day. Mr. Wolfe.

356. Machine Shop Practice.—Practical experience on the basic metal cutting machines; engine lathe, shaper, drill press and milling machine. Simple jigs and fixtures. Layout and bench work. Reference: Ford Trade School, *Shop Theory*. [0-3*; 0-3*]

358. Machine Shop Practice.—Similar to M.E. 356 but intended for students in Electrical Engineering. [0-3*; 0-3*]

361. Kinematics of Machines.—Velocity and acceleration diagrams of mechanisms; instantaneous axes; linkages; quick-return mechanisms; motion by direct contact; cams; rolling contact. Text-book: Billings, *Applied Kinematics*. Mr. Wolfe. [1-2; 1-2]

363. Machine Design 1.—Strength of materials applied to machine design; elastic and plastic stress distribution in beams and twisted shafts; curved bars; combined stress and theories of strength; design of pressure vessels; fatigue and stress concentration; properties and selection of materials. Text-books: Faired, *Design of Machine Elements*; Marks, *Mechanical Engineers Handbook*. Mr. Richmond. [2-2; 2-2]

367. Mechanical Design.—Application of principles of strength of materials to design of machine and structural elements; properties and selection of power transmission equipment. Text-book: to be announced. Mr. Richmond. [1-3*; 1-3*]

371. Applied Thermodynamics.—A study of thermodynamic phases, properties, energies and processes. Application to thermodynamic cycles. Mr. McIlroy. [2-0; 2-0]

372. Mechanical Tests and Measurement.—Methods of measurement; calibration and use of instruments; tests of machines and principles covered in the fluid mechanics and thermodynamics lecture courses. Mr. Green, Mr. McIlroy, Mr. Parkinson. [1-3; 1-3]

373. Applied Thermodynamics.—Similar to M.E. 371 but for students in Mechanical Engineering. Mr. McIlroy. [2-0; 2-0]

374. Thermodynamics Laboratory. — Calibration and use of measuring instruments; testing of engines and power plant apparatus. Mr. Green, [0-3*; 0-3*]

375. Applied Thermodynamics.—Similar to M.E. 371 with the inclusion of laboratory period. For students in Electrical Engineering. Mr. McIlroy. [2-3; 2-3]

377. Mechanical Services.—Heating, ventilation, and plumbing design of buildings; calculation of building heat losses and gains; design of the steam, hot water, and warm air heating systems; measurement of air flow and design of duct systems; layouts and practice of plumbing and sanitation for buildings; drainage systems; water supply; sewage disposal; materials and fixtures. Text-book: Gay and Fawcett, *Mechanical Equipment of Buildings*. Mr. Green. [3-0; 3-0]

381. Fluid Mechanics I.—Physical properties of fluids, fluid statics, dynamics of ideal fluids, energy and momentum relations, dimensional analysis and similitude, flow of real fluids, resistance of immersed bodies, flow of compressible fluids, fluid film lubrication, pumps, turbines, fans and propellers, jet propulsion, rockets. Engineering Physics students will be required to take 10 laboratory periods in Fluid Mechanics. Text-book: to be announced. Mr. Parkinson. [2-2*; 2-2*]

457. Production Processes.—Processes and machines used in industrial manufacture; foundry practice; pattern making; welding; hot and cold forming; press work; plastic moulding; machine tools; problems of measurement; inspection; quality control; statistical methods; control charts; time and motion study; production planning; department organization. Mr. Boston. [2-3*; 2-3*]

463. Machine Design 2.—Design of power transmission equipment, shafts, bearing, belt and chain drives, gears and gear trains; design for welding; flat plates; thick cylinders and press fits; stress analysis, statically indeterminate problems; design of machines and preparation of working drawings. Text-books: as for M.E. 363. Mr. Richmond. [2-3; 2-3]

465. Dynamics.—Review of basic dynamics using vector notation; inertia forces; mechanical vibration; balancing; engine dynamics; the gyroscope; governors; dynamics of automatic controls. Text-book: Hartman, *Dynamics of Machinery*. [2-3*; 2-3*]

472. Mechanical Engineering Laboratory. — Experimental work in thermodynamics and heat power; each laboratory group is assigned a special project for investigation. [0-3; 0-3]

473. Heat Transfer.—Heat transfer by conduction, radiation and convection; film transfer coefficients; transient heat flow; errors in temperature measurement; design of heat transfer and condensation equipment. Mr. Wolfe. [2-3*; 2-3*]

479. Thermal Power.—Internal combustion engines; steam turbines; combustion turbines; power plant cycles; nuclear power plant cycles; steam boilers and combustion; power plant equipment; condensers; water treatment; refrigeration; gas vapour mixtures. Mr. McIlroy. [3-3*; 3-3*]

481. Aerodynamics.—The principles upon which modern aerodynamics is based; dynamics of ideal fluids; thin airfoils; finite wing theory; compressible flow and shock waves; airfoils in compressible flow; viscous flow; turbulence; laminar and turbulent boundary layer theory; viscous compressible flow; application of principles to wing design; elements of airplane performance, stability, and control; experimental work in the low-speed wind tunnel. Text-book: Kuethe and Schetzer, *Foundations of Aerodynamics*. References: Perkins and Hage, *Airplane Performance, Stability, and Control*; Prandtl, *Fluid Dynamics*. Mr. Parkinson. [3-3*; 3-3*]

491. Industrial Engineering.—Industrial organization; structure of business enterprise; role of management; management and labour; wage

payment methods; budgeting; cost analysis; methods of engineering economic analysis. Mr. Boston. [2-0; 2-0]

Courses for Graduate Students

561. (3) **Advanced Applied Mechanics.**—Bending of beams on elastic foundation; thin plates and shells; torsion; stress concentration; deformation beyond the elastic limit; photoelasticity; plane stress and plane strain. Text-book: Den Hartog, *Advanced Strength of Materials*. Mr. Richmond.

565. (3) **Mechanical Vibrations.**—(Extension of M.E. 465). Vibration of elastic bodies; engine dynamics and torsional vibrations; self-excited vibrations; vibration of non-linear systems; problems and computations; methods of vibration measurement. Text-book: Den Hartog, *Mechanical Vibrations*. Mr. Richmond.

566. (2) **Dynamics of Automatic Controls.**—Study of the control behaviour of an installation with respect to stability, accuracy and speed of control; action law of the controller; dynamic properties of the proportional controller, the proportional plus reset controller, the proportional reset plus pre-act controller. Text-book: Oldenbourg and Sartorius, *The Dynamics of Automatic Controls*. Mr. Wolfe.

571. (2) **Heat Transfer.**—Theory of heat transfer as applied to problems in the field of mechanical engineering; principles and applications of the mechanism of heat transfer by conduction, convection, and radiation. Mr. Wolfe.

573. (2) **Power Plant Design.**—Practical design of steam generating plants and auxiliaries. Preparation and discussion of engineering reports on topics associated with the design of plants. Mr. Wolfe.

581. (2) **Fluid Mechanics II.**—The dynamics of real and perfect fluids; circulation and vorticity; viscous flow; conformal transformations; steady and non-steady flow; applications to air foil and wing theory; boundary layer theory; surface waves; heat transfer. Prerequisites: M. E. 381, Math. 350 or equivalent. Mr. Parkinson.

583. (3) **High Speed Aerodynamics.**—The dynamics of ideal compressible fluids; one-dimensional channel flows; shock waves; condensation phenomena; linearized theory of subsonic and supersonic flows; slender body theory; applications to high speed wings and wing-body combinations; hodograph methods; characteristics, with application to channel design; methods of measurement; dynamics of missiles; stability. Prerequisites: M.E. 381 and Math. 350 or equivalents. Mr. Parkinson.

599. Thesis.—For the M.A.Sc. degree.

Metallurgy

350. **Chemical Metallurgy.**—Introduction to metallurgy; chemical principles of metal production; inter-phase reactions; composition and properties of metal salts, solvents, slags, refractories; survey of unit processes. Reference: Liddell, *Handbook of Non-Ferrous Metallurgy*, 2nd Edition. Mr. Forward, Mr. Wiles. [2-0; 2-0]

351. **Laboratory Methods.**—Selected procedures illustrating the application of pyrometallurgical and chemical principles, including some aspects of assaying; in alternate weeks, problems and calculations in stoichiometry, heat and material balances related to metallurgical processes. Mr. Samis. [0-3; 0-3]

352. **Metallurgical Thermodynamics.**—Theory and application of chemical thermodynamics to metallurgical processes: thermodynamic equilibria, phase rule, heat of reaction, free-energy, activity, equilibrium constant. Mr. Samis. [0-0; 2-0]

355. **Principles of Analytical Methods.**—Chemical equilibrium in ionization, precipitation, complex ions, and ion exchange reactions. Electrode

potentials, oxidation—reduction reactions, and electro-deposition. Applications in hydro metallurgy. Mr. Samis. [0-0; 1-3]

370. Physical Metallurgy.—Structure and properties of metals; plastic flow; phase diagrams; principles of heat-treatment of steel and non-ferrous alloys; properties and selection of steels, cast-iron, and non-ferrous alloys. Reference: Samans, *Engineering Metals and Their Alloys*. Mr. Armstrong. [2-0; 2-0]

371. Metallography I.—Observation and analysis of microstructures of ferrous and non-ferrous alloys. Assignments illustrate theory of physical metallurgy presented in Metallurgy 370. Reference: Kehl, *The Principles of Metallographic Laboratory Practice*, 3rd edition. Mr. Armstrong. [0-3*; 0-3*]

372. Physical Metallurgy. — Structure and heat treatment of ferrous alloys with application to welding, forming and service performance of commercial steels. Text-book: to be announced. Mr. Armstrong. [1-0; 1-0]

374. Principles of Physical Metallurgy.—Bonding forces and lattice arrangements; alloy theory; binary and ternary alloy diagrams; plastic deformation; phase transformation. References: Smith, *Alloy Series in Physical Metallurgy*; Smith, *Principles of Physical Metallurgy*. Mr. Armstrong. [2-0; 2-0]

390. Seminar.—Oral presentation of the subject matter contained in the Third Year Essay; training and practice in public speaking and technical writing. [0-0; 0-1]

398. Essay.—See page 176.

450. Theoretical Chemical Metallurgy.—Thermodynamic equilibria in metal chemistry: phase rule applications; gas-solid, slag-metal, electrolytic, and electrode reactions. Introduction to metallurgical kinetics: reaction order, rate and diffusion control. Mr. Samis. [2-0; 2-0]

451. Chemical Metallurgy Laboratory.—Experiments and problems illustrating the principles and practice of chemical metallurgy. Mr. Samis. [0-3; 0-3]

452. Process Chemical Metallurgy.—Application of chemical principles in unit processes employed in the metallurgy of iron and steel, the common base metals, light metals, precious metals and ferro-alloys. Economic and engineering aspects of process selection and plant operation. References: A.I.M.E., *Basic Open Hearth Steelmaking*, 2nd edition; Liddell, *Handbook of Non-Ferrous Metallurgy*, 2nd edition; Hampel, *Rare Metals Handbook*. Mr. Armstrong, Mr. Forward, Mr. Samis. [2-0; 2-0]

453. Metallurgical Calculations.—Problems on material and heat balances in metallurgical unit processes; plant design and quality control. Text-book: Butts, *Metallurgical Problems*. Mr. Samis. [0-2; 0-2]

455. Laboratory and Research Methods.—Temperature measurement and control; vacuum and high temperature techniques; controlled atmospheres; autoclave operations; electrolytic polishing. Study of selected problems in chemical or physical metallurgy. Mr. Samis, Mr. Armstrong. [0-4; 0-4]

456. Metal Chemistry.—Periodic classification and valence of the metals; chemical properties of metallic oxides, sulphides, silicates, salts, complex ions, and metal-organic compounds; oxidation-reduction and ion-exchange reactions. References: Sidgwick, *Chemical Elements and their Compounds*; Evans, *Metals and Metallic Compounds*. Mr. Wiles. [1-0; 1-0]

460. Applied Radioactivity.—Principles of nuclear structure and radioactive disintegration; principles and practice of radiation measurement; tracer methods; applications in metallurgical processes, and operations. Mr. Wiles. [1-0; 1-0]

470. Structure of Metals.—Interatomic forces; melting and solidification; lattice arrangements; alloy structures; binary and ternary phase diagrams. Re-

ferences: Beynon, *The Physical Structure of Metals*; Hume-Rothery, *Atomic Structure for Students of Metallurgy*; Barrett, *Structure of Metals*. Mr. Armstrong. [1-0; 1-0]

471. **Metallography II.**—Alloying, heat-treatment and micro-structure of ferrous and non-ferrous metals; photography; dilatometry; X-ray diffraction. References: Mondolfo, *Metallography of Aluminum Alloys*; Kehl, *The Principles of Metallographic Laboratory Practice*, 3rd Edition. Mr. Lund. [0-3; 0-3]

472. **Metal Physics.**—Atomic structure and bonding; electron theory; cohesion; conductivity, specific heat, magnetic properties. References: Cottrell, *Theoretical Structural Metallurgy*; Raynor, *An Introduction to the Electron Theory of Metals*. [1-0; 1-0]

474. **Process Physical Metallurgy.**—Metallurgical and mechanical aspects of metal fabrication processes; casting, welding, rolling, forging, and extrusion; residual stresses. References: Udin et al, *Welding for Engineers*; Underwood, *Rolling of Metals*; Heine and Rosenthal, *Principles of Metal Casting*. Mr. Armstrong, Mr. Lund. [2-0; 2-0]

476. **Rate Processes in Metals.**—Diffusion in solids; nucleation and growth reactions; diffusionless transformation; plastic deformation and recrystallization; melting and solidification. References: Smoluchowski, *Phase Transformation in Solids*; American Society for Metals, *Atom Movements and Cold Working of Metals*. Mr. Armstrong. [1-0; 1-0]

478. **X-Ray Metallography.**—Theory of X-ray generation, absorption, scattering; structure factors, Laue equation and Bragg Law; experimental methods and interpretation. References: Barrett, *Structure of Metals*; Taylor, *An Introduction to X-Ray Metallography*. [1-0; 1-0]

490. **Plant Management.**—Metal production statistics and markets; ore-buying contracts; personnel and labour relations; metallurgical accounting cost-finding, and inspection; professional ethics. Weekly seminar for formal discussion of current technical and social topics; written report on production methods and economic aspects of one of the metals. [1-1; 1-1]

498. **Engineering Report.**—A comprehensive report based on the student's summer work. Emphasis will be placed on English expression, as well as on the arrangement and accuracy of the material, and on the analytic interpretation of data rather than on description. Draft copy to be handed to the Head of the Department not later than October 1st; final typed copies (2) to be handed in on the first day of the second term.

Courses for Graduate Students

550. (1) **Metallurgical Thermodynamics.**—Application to metallurgy of advanced thermodynamic principles: partial molar quantities, Gibbs-Duhem integration, configurational entropy, quasi-chemical equilibria in the analysis of equilibrium diagrams, properties of binary and ternary mixtures. Mr. Samis.

552. (1) **Metallurgical Kinetics.**—Application of the principles of absolute reaction rates to metallurgical processes including oxide film formation, diffusion, and heterogenous reactions. Mr. Samis.

558. (1) **Theory of Metal Surface Reactions.**—Chemical properties of metal surfaces; theory of surface reactions and corrosion processes.

561. (1) **Nuclear Metallurgy.**—Survey of principles of reactor operation; metallurgical aspects of fuels, constructional materials, radiation damage, corrosion. Mr. Griffiths, Mr. Wiles. [1-0; 1-0]

570. (1) **Diffusion in Metals.**—Mathematical analysis; Kirkendall effect; mechanism; theories of self-diffusion and chemical diffusion; grain-boundary and surface effects. Mr. Griffiths. [1-0; 1-0]

572. (1) Phase Transformations in Metals.—Structures and properties of crystal boundaries and phase interfaces; solidification of metals; nucleation and growth reactions; precipitation hardening, eutectoid decomposition; diffusionless transformation.

573. (1) Structure and Properties of Grain Boundaries.—Development from amorphous cement to transition lattice theory; dislocation arrays; boundary energy and melting; boundary migration, shear, segregation, corrosion, and grooving. Mr. Teghtsoonian. [1-0; 1-0]

574. (1) Theory of Alloys.—Order-disorder; solid solutions and intermediate phases; internal friction; ferro-magnetism. Mr. Griffiths. [1-0; 1-0]

578. (1) Plastic Deformation and Lattice Imperfections.—Properties of ideal lattice; Griffith crack theory; work hardening, creep, yield stress and other phenomena in terms of dislocation theory; effect of vacancies and interstitials. Mr. Griffiths. [1-0; 1-0]

580. (1) Principles of Metal Fabrication.—Mechanisms of plastic deformation; deformation and recrystallization textures; theories of rolling and other metal forming processes. Mr. Lund. [1-0; 1-0]

598. Research Conference.—A required course for all graduate students in Metallurgy or Metallurgical Engineering, in which current research projects will be discussed. The course carries no academic credit.

599. (6) Thesis.—For M.A.Sc. and M.Sc. Degrees. Research studies in chemical metallurgy or physical metallurgy.

699. Thesis.—For Ph.D. Degree.

Mining

350. Principles of Mining.—Nature of mineral resources; mine development; breaking ground, ground support, transportation, mining methods. Text-book: Lewis, *Elements of Mining*. References: Young, *Elements of Mining*; Peele, *Mining Engineers' Handbook* (references for all courses in Mining). Mr. Crouch. [2-0; 2-0]

351. Introduction to Mining.—Nature of mineral resources, mining economics. For students in Metallurgical Engineering. Mr. Crouch. [2-0; 0-0]

370. Mineral Dressing I.—Principles; testing procedure; sampling; crushing; screening; grinding; classification; gravity concentration; flotation; cyanidation; magnetic separation; milling calculations. Text-book: Richards and Locke, *Text-book of Ore Dressing*. Mr. Howard. [2-3*; 2-3*]

450. Mining Engineering I.—Mineral economics; exploration; mine sampling and valuation; cost analysis; mining law. References: Hoover, *Economics of Mining*; Parks, *Examination and Valuation of Mineral Property*; Harrison, *Boring, Sampling and Valuation of Alluvial Deposits*; McKinstry, *Mining Geology*. Mr. Crouch. [2-0; 2-0]

451. Mining Engineering II.—Mine plant; ventilation, industrial hygiene, accident prevention; organization and management; mine surveying. Mr. Crouch. [3-0; 1-0]

454. Problems and Reports.—Problems in mine plant design; reports on selected topics; discussion of current technical literature. Reference: Staley, *Mine Plant Design*. Mr. Crouch. [0-4; 0-3]

470. Mineral Dressing II.—(Continuation of Mining 370.) Flowsheets; mill location and design, smelter contracts; metallurgical calculations; non-metallics; coal preparation; plant control. Text-book: Taggart, *Elements of Ore Dressing*. References: Richards and Locke, *Text-book of Ore Dressing*; Taggart, *Handbook of Mineral Dressing*; Gaudin, *Principles of Mineral Dressing*; current periodicals. Mr. Howard. [2-3*; 2-3*]

474. Mineral Dressing III.—A study of selected problems in mineral dressing. Mr. Howard. [0-4; 0-6]

498. Engineering Report.—A comprehensive report, based on the student's summer work. Emphasis will be placed on English expression, as well as on the arrangement and accuracy of the material, and on the analytic interpretation of data rather than on description. Draft copy to be handed to the Head of the Department not later than October 1st; final typed copies (2) to be handed in on the first day of the second term.

Courses for Graduate Students

550. (1) Mining Methods.—A more advanced study of some aspects of mining methods. Mr. Crouch.

570. (2) Theory of Fine Particles.—Measurement of particle size and surface area; physical and chemical behaviour of fine particles; methods of separation; settling; filtration; use of electrolytes; effect of slime coatings. Reference: Dalla Valle, *Micromeritics*, 2nd Edition. Mr. Howard.

599. Thesis.—For M.A.Sc. Degree. Research studies in mining or mineral dressing.

Physics

155. Mechanics and Properties of Matter.—The principles of statics and dynamics; work and energy; impulse and momentum; elementary hydrostatics and hydrodynamics; some elastic constants and properties of matter. Text-book: Singer, *Engineering Mechanics*. [2-3*; 2-3*]

156. Heat, Light and Sound.—The thermal properties of matter; the first and second laws of thermodynamics. Reflection, refraction of light; elementary atomic theory and the origin of spectra. Wave motion and the propagation of sound; sound intensity and absorption; measurements. Text-book: Tyler, *Intermediate Heat*. [2-3*; 2-3*]

160. Mechanics and Heat.—For Architecture students, emphasizing statics. Text-books: Hausmann and Slack, *Physics*. [2-3; 2-3]

250. Electricity and Magnetism.—Quantitative study of basic principles; introduction to alternating currents and to electronic circuits. Text-book: Shortley and Williams, *Physics*, vol. II. [2-3; 2-3]

260. Electricity, Optics and Acoustics.—For students in Architecture. Basic theory of electricity and A.C. circuits; principles of propagation of light and sound. Text-book: Hausmann and Slack, *Physics*. [2-3; 2-3]

352. Introduction to Mathematical Physics.—Applications of differential equations and elementary vector analysis to some physical problems with emphasis on the mathematical formulation of the physical problem and on the physical discussion of the solution. Text-book: Joos, *Theoretical Physics*. [2-0; 2-0]

354. Thermodynamics.—Fundamental laws of thermodynamics with some applications of engineering interest. Text-book: Zemansky, *Heat and Thermodynamics*. [2-0; 2-0]

358. Physical Optics.—Geometrical and physical optics; optical instruments, interference, diffraction, polarization, spectroscopy. Text-book: Jenkins and White, *Fundamentals of Optics*. [2-3; 2-3]

372. Elementary Atomic Physics.—A descriptive course primarily for metallurgical students on the evidence for and the development of quantum concepts as applied to the structure of the atom. [1-0; 1-0]

451. Electricity and Magnetism.—Classical electricity and magnetism leading up to Maxwell's equations and some of their applications. [2-0; 2-0]

452. Atomic and Nuclear Physics.—A quantitative study of atomic, molecular and nuclear properties of matter. Quantum aspects of radiation and wave nature of matter. [3-0; 3-0]

453. Mechanics and Statistical Mechanics.—Topics from classical theoretical mechanics, and an introduction to the statistical theory of matter.

[2-0; 2-0]

461. Geophysics.—Geophysical exploration; magnetic, electrical, gravimetric and seismic methods of exploration for oil and minerals. Text-book: Nettleton, *Geophysical Prospecting for Oil*. Prerequisite: Physics 250.

[2-0; 2-0]

472. Modern Physics.—A course primarily for students of electrical engineering on the fundamental concepts underlying modern physics; origin and development of physical principles; the philosophical implications; quantum theory; applications to atomic theory, nuclear reactions and solid state physics.

[2-0; 2-0]

Courses for Graduate Students

552. Introduction to Theoretical Physics.—Problems in mechanics, elasticity, fluid flow, electricity and magnetism treated by vector methods. Text-book: Page, *Introduction to Theoretical Physics*.

[3-0; 3-0]

599. Thesis.—For M.A.Sc. Degree.

For descriptions of other courses in Physics, see Arts and Science, pages 128-132.

Plant Science

302. Plant Science.—For students in Agricultural Engineering.

For descriptions of other courses, see Agriculture, pages 236-239.

Soil Science

313. Physical Properties of Soils.—For students in Agricultural Engineering.

For descriptions of other courses, see Agriculture, pages 240-241.

Zoology

For descriptions of courses in Zoology, see Arts and Science, pages 144-147.

SCHOOL OF ARCHITECTURE

The aim of the School is to direct the students in systematic studies of the scientific, aesthetic and humanistic aspects of architecture, and through these studies, to guide individual creative development.

The programme as a whole forms a basis for the practice of architecture as a profession, and also for entry into allied studies such as community and regional planning, industrial design, landscape architecture, building research, and architectural history and criticism.

The course extends over a period of five years and, on satisfactory completion, the degree granted is Bachelor of Architecture (B.Arch.).

Admission

The general requirements for admission to the Faculty are given on page 171.

For admission to the School of Architecture, a student must have completed the First Year in Arts and Science, at the University of British Columbia, or its equivalent at an approved university or by Senior Matriculation, and must have obtained an average grade of at least 60 per cent.

Required subjects are:

English 100 and 101.

Mathematics 101.

Chemistry 101.

Physics 100 or 101.

Language: one of the following—French 110 or 120, German 90, 110, 120, or 130, Latin 110 or 120, Russian 100.

A reading knowledge of French or German is highly desirable.

Before registering in Architecture, a student is required to arrange an interview with the Director or a member of the staff of the School to discuss the qualifications necessary to ensure success in the course.

Examinations and Advancement

The regulations as listed for Applied Science, pages 171 to 172, apply to the School of Architecture with the following additions and changes:

A student may be permitted to enter Second Year Architecture carrying one supplemental of not more than three units upon the recommendation of the School. This supplemental must be cleared, however, prior to admission to the Third Year.

Students are required to submit assignments in studio courses. Failure to submit a regular assignment may cause the student to fail in that course.

Competence in Design is required in Architecture and a candidate, in order to be admitted into the Third, Fourth, and Fifth Years of Architecture, must obtain a pass mark in Architectural Design in the previous year. In the Final Year, a student will not obtain a pass mark in Architecture 550 if he should fail in the Thesis Project.

A student who fails in Architectural Design (Arch. 250, 350, 450, 550) will be required to repeat his year, though he may be exempted from certain courses and may register as a "partial student" upon the recommendation of the School. Only one of the years after the First Year may be repeated by a student. If he does not pass a repeated year he may, upon the recommendation of the School Council, be required by Senate to withdraw from the School.

Prizes, Bursaries, Scholarships

A number of prizes, bursaries and scholarships are open to students in the School of Architecture (see later section of Calendar). Prizes may also be offered during the term for specific project.

A field trip to a neighbouring urban centre is part of the work in the Fifth Year. The student is expected to prepare a report upon his observations as a part of his regular assignments. Students should reserve a sum of \$40 to cover the expenses of this trip.

Summer Work

Before the degree of Bachelor of Architecture is granted, the student is required to submit satisfactory evidence of having had twelve months (50 weeks) of practical experience after entering the School of Architecture.

Of these twelve months, at least four must be spent in an architect's office, and another four on building sites where construction is taking place. If a student submits satisfactory evidence that this summer employment is not available, he may present a set of measured drawings in lieu of each deficiency of two months in the required twelve. The choice must be approved in advance, and the drawings must be completed to the satisfaction of the School. No student may graduate with less than eight months (32 weeks) of practical experience.

A planned study-tour abroad approved by the School may be substituted in lieu of two months (8 weeks) of practical experience upon the submission of adequate testimonials of study.

Professional Associations

Provincial regulations governing professional registration vary slightly across Canada but all accept university graduation as a preliminary qualification. In order to practice as a Registered Architect in the Province of British Columbia the graduate must present himself to the A.I.B.C. for examination after spending 2 years under professional direction subsequent to his graduation. Members of the A.I.B.C. will automatically become Members of the Royal Architectural Institute of Canada. So that an early professional contact may be established students are urged to make application to the Institute for membership as Undergraduate Associates not later than the beginning of the Third Year in the School.

Curriculum

Two courses in Physical Education are required of all students in First Year Architecture, except ex-service personnel and members of military units operating on the campus. For details of requirements see page 151.

First Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
C.E. 160 Engineering Problems .....	.....	4	.....	4
Eng. 200 Eng. Composition and Literature	3	.....	3	.....
F.A. 200 History of Art	3	.....	3	.....
Math. 156 Analytic Geometry and Algebra	2	.....	2	.....
Math. 202 Calculus	3	.....	3	.....
Phys. 160 Mechanics and Heat	2	3	2	3
Arch. 150 Basic Design	1	4	1	4
Arch. 152 Building Materials	2	.....	2	.....
Arch. 170 Architectural Drawing and Descriptive Geometry	1	6	1	6

Second Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Arch. 298 Essay .....	.....	.....	.....	.....
C.E. 270 Strength of Materials	2	3*	2	3*
C.E. 271 Materials Testing .....	.....	2*	.....	2*
Hort. 216 Landscape Materials .....	.....	.....	2	2
Phys. 260 Electricity, Optics and Acoustics	2	3	2	3
Arch. 250 Architectural Design I	1	10	1	6
Arch. 251 Architectural Planning	3	.....	3	.....
Arch. 252 Building Construction I	2	3	2	8
Arch. 260 Architectural History I	3	.....	3	.....
Arch. 262 Architectural Report .....	.....	.....	.....	.....
Arch. 270 Drawing and Painting .....	.....	6	.....	.....

*Alternate weeks.

Third Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Arch. 398 Essay.....	.....	.....	.....	.....
C.E. 370 Structural Design I.....	2	2	2	2
Ec. 200 Principles of Economics.....	3	.....	3	.....
M.E. 377 Mechanical Services.....	3	.....	3	.....
Arch. 350 Architectural Design II.....	1	16	1	12
Arch. 352 Building Construction II.....	.....	.....	2	.....
Arch. 353 Furnishings and Finishes.....	2	2	2	2
Arch. 360 Architectural History II.....	3	.....	3	.....
Arch. 362 Architectural Report.....	.....	.....	.....	.....
Arch. 370 Summer Sketching.....	Taken at start of 3rd Year			

Fourth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Arch. 498 Summer Reading.....	.....	.....	.....	.....
Eng. 350 Literature of Ideas.....	1	1	1	1
Phil. 412 Philosophical Problems.....	3	.....	3	.....
E.E. 459 Electrical Services and Illumination.....	2	3	.....	.....
Arch. 450 Architectural Design III.....	1	16	1	14
Arch. 451 Sciences in Building.....	.....	.....	2	.....
Arch. 452 Building Construction III.....	2	.....	.....	.....
**Arch. 453 Industrial Processes and Materials.....	2	.....	2	.....
Arch. 455 Structural Engineering II.....	2	3	2	3
Arch. 460 Elements of Community Planning.....	3	.....	3	.....
Arch. 462 Architectural Report.....	.....	.....	.....	.....
Arch. 470 Summer Sketching.....	Taken at start of 4th Year			
Arch. 471 Sculpture.....	.....	.....	.....	6

**Not offered in 1957-58.

Fifth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Arch. 598 Summer Reading.....	.....	.....	.....	.....
Plan. 501 Housing.....	3	.....	.....	.....
Plan. 502 Planning Analysis.....	.....	.....	3	.....
Arch. 550 Architectural Design IV and Thesis.....	.....	21	.....	24
Arch. 551 Professional Practice.....	2	.....	2	.....
Arch. 552 Specifications.....	2	.....	.....	1
Arch. 555 Structural Engineering III.....	.....	2	.....	2
Arch. 560 Theory of Architecture II.....	2	.....	2	.....
Arch. 562 Thesis Report.....	.....	.....	.....	.....
Arch. 565 Commercial Law.....	.....	.....	2	.....
Arch. 570 Summer Sketching.....	Taken at start of 5th Year			

COURSES IN ARCHITECTURE

150. (3) **Basic Design.**—Basic visual elements of line, shape, colour, volume and texture; two and three dimensional studies of space with different shapes, colours, materials and lighting effects. Laboratory demonstrations and illustrated lectures. Text-book: Moholy-Nagy, *Vision in Motion*. Mr. Thomas. [1-4; 1-4]

152. (2) **Building Materials.**—A study of the basic nature of materials for building, their development and performance. Textbook: Handisyde, *Building Materials*. Mr. Peeps. [2-0; 2-0]

170. (3) **Architectural Drawing and Descriptive Geometry.**—Drafting and lettering; descriptive geometry; shades and shadows; orthographic, isometric, and oblique projections; angular and parallel perspective. Text-book: Martin, *Architectural Graphics*. Mr. Lyman. [1-6; 1-6]

250. (4) **Architectural Design I.**—Fundamental concepts of space, form and function as expressed by structural, colour, texture and light relationships; relation of exterior to interior space; design of simple architectural elements, elementary planning, construction integration. Mr. Erickson. [1-10; 1-6]

Note: Students are made increasingly familiar during this and following years with the thoughts and feelings basic in good design, by analysis of site and of human and social factors; introduction of clients, contractors and authorities concerned; preparation of programmes (clients' requirements); sketches, presentation and execution drawings, models.

251. (3) **Architectural Planning.**—Technique of planning. Basic plan and design elements of buildings. Planning and design principles of good architecture. Analysis reports and exercises are required throughout the session. Text-books: to be announced. Mr. Lasserre. [3-0; 3-0]

252. (4) **Building Construction I.**—Basic wood and masonry construction techniques; integration of structure and design; field trips to building sites; procedure in construction; building codes. Elementary working drawings and detailing. Text-books: Ramsey and Sleeper, *Architectural Graphic Standards*, 4th ed.; Department of Finance and National Research Council of Canada, *National Building Code*; Huntington, *Building Construction*; National Lumber Manufacturers' Association, *House Framing Details*. Mr. Lyman. [2-3; 2-8]

260. (3) **Architectural History I.**—Origins to Industrial Revolution. A study of the evolution of western architecture and related design by consideration of the social, cultural and spiritual background of societies. Text-books: Lucas, *A Short History of Civilization*; Hamlin, *Architecture Through the Ages*. Mr. Peeps. [3-0; 3-0]

262. (1) **Architectural Report.**—Illustrated essay of 1,500 words or visual dissertation with adequate explanatory notes on some subject related to the history or theory of architecture and design prior to 1500 A.D., to be handed in to Director of School by February 15th. Text-book: *Summer Essay Specifications and a Guide to the Use of Numbers, Abbreviations, Hyphens*. Mr. Gerson.

270. (1) **Drawing and Painting.**—Drawing and painting in various media with emphasis on structural form and pictorial organization. Text-book: Blake, *The Art and Craft of Drawing*. Mr. Thomas. [0-6; 0-0]

298. (2) **Essay.**—Summer essay to be submitted to Director of School of Architecture on the first day of term. Essay to be not less than 1,000 words on some part of student's summer experience or on some technical subject related to architecture or planning. Emphasis will be placed upon the precise and accurate use of English, but credit will also be given for subject matter, form, and illustrations. If the essay is not up to the standard of a pass mark in English, it will be returned for re-writing. One

copy only is required. Text-books: Blakey and Cooke, *Preparation of Term Essays; Summer Essay Specifications and a Guide to the Use of Numbers, Abbreviations, Hyphens*; The Royal Bank of Canada, *The Communication of Ideas*.

350. (5) Architectural Design II.—(Continuation of Arch. 250.) Simple building problems; planning, design and construction. Text-books: Kennedy Woods, *The House and the Art of its Design*; Pierce and Cutbush, *Planning*. Mr. Gerson. [1-16; 1-12]

352. (1) Building Construction II.—Integration of structure and services; advanced detailing and cabinet work; hardware; mill construction; steel frame buildings. Text-books: Ramsey and Sleeper, *Architectural Graphic Standards*, 4th ed.; Crane, *Architectural Construction*. Mr. Lyman. [0-0; 2-0]

353. (3) Furnishings and Finishes.—Application of visual design (Arch. 150) to fabrics, finishes, texture, colour, as they relate to interior design, furniture and various functional art forms; historical survey. Prerequisite: Arch. 150. Text-books: Jacobson, *Basic Color*; Aronson, *The Encyclopedia of Furniture*. Mr. Thomas. [2-2; 2-2]

360. (3) Architectural History II, Industrial Revolution to To-day.—Its origins, relation to social economic, and technical changes, and to developments in the arts; work and theories of contemporary architects; national characteristics of architecture. Text-books: Giedion, *Space, Time and Architecture*; Whittick, *European Architecture in the Twentieth Century*; Richards and Mock, *An Introduction to Modern Architecture*. Mr. Oberlander. [3-0; 3-0]

362. (1) Architectural Report.—(As for Arch. 262 but of the period 1500-1850 A.D.) Text-book: The Royal Bank of Canada, *The Communication of Ideas*. Mr. Gerson.

370. (1) Summer Sketching.—Before beginning of classes in September, students spend ten days at the University gaining experience in the techniques of pen and ink, pencil and colour for architectural presentation. Mr. Thomas and Mr. Erickson.

398. (2) Essay.—Essay to be submitted to Director of School of Architecture on the first day of term, on some part of the student's summer experience or some technical subject related to architecture or planning. For further regulations, see "Third and Fourth Year Essays", paragraphs 1 to 3. Text-books: see Arch. 298. Mr. Lasserre.

450. (5) Architectural Design III. — (Continuation of Arch. 350.) Complex building problems; advanced research, analysis and method; advanced planning; integration with structure, services, and landscape; oral presentation. Text-book: Pierce and Cutbush, *Planning*. Mr. Peeps. Mr. Erickson. [1-16; 1-14]

451. (1) Sciences in Building.—Review of sciences related to architecture and their implications in design and performance of buildings. Role of electricity, heat, hydraulics, acoustics and mechanics, related equipment and procedures. Text-books will be announced. Mr. Wisnicki. [0-0; 2-0]

452. (1) Building Construction III. — Concrete structures; surfacing materials. Text-book: Crane, *Architectural Construction*. Mr. Lyman. [2-0; 0-0]

453. (2) Industrial Processes and Materials.—Principles and methods of design for industrial production; study of materials, processes and financial considerations in manufacturing; industrialization in the building industry. Some problems in Arch. 450 will be related to this course; visits to factories. Mr. Boston. Not offered 1957-58. [2-0; 2-0]

455. (3) Structural Engineering II.—Characteristics of concrete as structural material, design of basic members and entire building frames in

reinforced concrete; soil properties, design of foundations and retaining walls; redundant vs. simple structures, selection of structural systems and materials. Text-book: Dunham, *Theory and Practice of Reinforced Concrete*; Crane, *Architectural Construction*. Mr. Wisnicki. [2-3; 2-3]

460. (3) **Elements of Community Planning.**—The first term deals with the history of urban development through an analysis of Western cities, their growth, maturity and decline in economic, cultural and aesthetic terms. The emerging urban environment will be related to broad cultural and historic trends, with some emphasis on urbanization in Canada. The second term focuses on the theory, principles, and problems of contemporary planning. Special emphasis is placed on planning as a process. Text-books: A.P.R.R., *The Town and Country Planning Textbook*; International City Managers Association, *Local Planning Administration*, Second Edition, 1948. Hackett, *Man, Society and Environment*. Mr. Oberlander and Mr. Robinson. [3-0; 3-0]

462. (1) **Architectural Report.**—(As for Arch. 262, Arch. 362 but to be confined to a North American topic). Mr. Gerson.

470. (1) **Summer Sketching.**—(Continuation of Arch. 370.). Mr. Thomas and Mr. Erickson.

471. (1) **Sculpture.**—Modelling, carving and construction, using various materials; a study of form, texture, material and space. Prerequisite: Arch. 150. Mr. Thomas. [0-0; 0-6]

498. (2) **Summer Reading.**—Before entering Fourth Year the student must have read "Colony to Nation—a History of Canada" by A. R. Lower (Longmans Green). An examination based upon this book will be held at the beginning of the term. Mr. Peeps.

550. (6) **Architectural Design IV.**—(Continuation of Arch. 450.) Housing and civic or community planning projects. Design Analyses. Thesis problem occupies most of second term; programme for it is to be submitted by student to Director of School not later than the first day of first term for approval by staff. Mr. Lasserre, Mr. Oberlander, Mr. Gerson. [0-21; 0-24]

551. (2) **Professional Practice.**—Procedure in conduct of a commission; relations with public, clients, contractors, engineers and other allied professions; professional ethics and conduct; zoning and building codes; financing and estimating. Text-book: *R.A.I.C. Documents*. Mr. Davison and guest lecturers. [2-0; 2-0]

552. (1) **Specifications.**—Technique of specification writing; material covered under various trades; review of good practice in construction; supervision. Assignment related to Thesis in second term. Text-book: Sleeper, *Architectural Specifications*. Mr. Davison. [2-0; 0-1]

555. (2) **Structural Engineering III.**—Design problems involving comparison of different structural systems and materials. Assignment related to Thesis in second term. Mr. Wisnicki. [0-2; 0-2]

560. (2) **Theory of Architecture.**—Review of architectural theory with stress on its relation to the other arts, the social sciences and the engineering sciences. The course will be partly lecture and partly seminar. Text-books: Mumford, *Roots of Contemporary American Architecture*; Brewster Ghiselin, *The Creative Process*, and as announced. Mr. Gerson. [2-0; 2-0]

562. (1) **Thesis Report.**—Essay of at least 2,000 words relating to Thesis Problem in Arch 550. To be submitted to Director of School by February 15. Mr. Lasserre.

565. (1) **Commercial Law.**—Elementary outline of law of contract with special reference to building contracts; agreements between architects and

client; tenders; Architect's Act; legal rights and obligations of architects, owners and contractors. Text-books: Cheshire and Fifoot, *Law of Contracts*, 3rd ed., 1952; Hudson, *Building Contracts*, 7th ed., 1946; *The Standard Documents of the R.A.I.C.* Mr. Todd. [0-0; 2-0]

570. (1) Summer Sketching.—(Continuation of Arch. 470.). Mr. Thomas and Mr. Erickson.

598. (2) Summer Reading.—Before entering Fifth Year, the student must have read "Foundations of Psychology" by Boring, Langfeld and Weld. An examination based upon the material read will be held at the beginning of the term. Mr. Peeps.

Note: Planning 501 (1½) (Housing) and Planning 502 (1½) (Planning Analysis) are counted as courses in Architecture. See Graduate Studies.

Horticulture 416 (1½) (Landscape Materials) is also counted as a course in Architecture. See Agriculture.

For descriptions of courses given by other departments, see "Courses in Engineering", pages 186 to 202, and "Courses in Arts and Science", pages 84-147.

SCHOOL OF NURSING

The School of Nursing is administered by a Council nominated by the Dean of the Faculty and acting under the chairmanship of the Director of the School.

The purpose of the School is to assist students to become competent professional nurses, capable of participating with other individuals and groups in a comprehensive health programme designed to assure to all citizens a high quality of nursing service; to help them develop the concept that nursing is concerned with the promotion of mental and physical health, as well as the care of the sick; that it is a service to the family as well as to the individual, and is given in homes, hospitals and other community agencies.

Within this broad framework, the School of Nursing offers the following curricula:

1. **Basic Professional Curriculum leading to the Degree of Bachelor of Science in Nursing (Nursing A).**

This curriculum is designed to provide qualified high school graduates with the opportunity for furthering their general education, cultivating their analytical and creative powers, and developing a better understanding of the biological, social, psychological and economic forces that influence health and disease; and with opportunity to integrate with their general education the special preparation needed for the development of professional competency in nursing.

In addition to acquiring skill in bedside nursing, students gain an understanding of the principles underlying good nursing care, of the principles of teaching and supervision and their application, of the use of community resources for the care and prevention of illness and the promotion of health, and of the significance and responsibilities of professional relationships. Upon satisfactory completion of the Course, students receive the degree of Bachelor of Science in Nursing (B.S.N.) and are qualified for staff nursing positions in all fields including public health. Those with the ability can progress through appropriate experience to more responsible positions.

For details see pages 211-214.

2. **Curricula for Graduate Nurses.**

Curriculum leading to the Degree of Bachelor of Science in Nursing (Nursing D).

The ultimate goal of this curriculum is essentially the same as that of the basic professional curriculum (Nursing A). It is designed to enable the nurse who has graduated from a hospital school to supplement and extend her education, and thus to increase her ability to give a competent professional service in all fields of nursing including public health. The curriculum includes preparation for teaching and a study of the fundamentals of supervision and administration. Upon graduation the individual's qualifications for employment and the positions for which she can be recommended will depend to some extent upon her experience prior to admission.

For details see pages 214-215.

Curriculum leading to a Diploma in Public Health Nursing (Nursing B).

A ten-month curriculum for graduate nurses who do not intend to complete requirements for the Bachelor's degree but who wish to prepare themselves to function as staff nurses in official or voluntary public health agencies. For details see page 216.

Curriculum leading to a Diploma in Clinical Teaching and Supervision (Nursing C).

A ten-month curriculum for graduate nurses who do not intend to complete requirements for the Bachelor's degree but who wish to prepare themselves to function more effectively in hospital nursing positions that entail administrative, supervisory and teaching activities. For details see pages 215-216.

Part-time Courses.

Because some nurses are unable to arrange for full-time attendance, the School of Nursing is prepared to encourage them to register as part-time students for one or more of the courses regularly offered. Credit for courses completed satisfactorily may be granted only under the conditions indicated on pages 216-217.

Registration, Examinations, Advancement, and Expenses

1. In addition to the information given below, students should read carefully the general regulations set forth on pages 171 and 172, as these also are applicable to students in the School of Nursing.
2. Because it is very important that applicants have the personal qualifications deemed essential for their chosen field, the Faculty reserves the right of selection of all students. Whenever possible, a personal interview is required.
3. No student may proceed to the work of a higher year without having completed satisfactorily all previous requirements, except by special permission of the Faculty.
4. Prior to entering the Fourth Year the student is required to present a report of a complete health examination including an X-ray of the chest.
5. The requirement of field work may vary to some extent according to the individual's background of preparation and experience. In the Fourth Year, field work is usually given in January and in the summer months, following the close of the academic session. All required field work must be completed before a student can be recommended for graduation.
6. Ability to drive well is often a deciding factor in securing a public health nursing position. Therefore students are advised to learn to drive a car and to secure their drivers' licenses.
7. In order to qualify for the degree of B.S.N., candidates must obtain at least 50 per cent. in each subject and at least 65 per cent. on the aggregate in the Fourth Year examinations.
8. Fees are listed on page 67. Costs of board and lodging are indicated on page 58. Because nursing practice is involved, there are additional expenses (e.g. for uniforms and field work) which vary for the different curricula. The School will provide applicants with information regarding these additional costs.
9. For application forms and any further information students should write to the Director, School of Nursing, University of British Columbia, stating the specific curriculum in which they are interested. Because the facilities for field work limit the number of students who can be enrolled, it is advisable that applications be submitted early.

**I. BASIC PROFESSIONAL CURRICULUM
Nursing A**

The requirements for the first two years beyond High School Graduation (University Programme) consist of 32 units as indicated on page 212, at least 15 of which are taken in First Year Arts and Science or Senior Matriculation. Where a student has the opportunity to take the First Year

at University she would be well advised to do so. Special orientation lectures, planned activities with other students, and contact with University organizations will help the student make the sometimes difficult adjustment from high school to University methods. While not registered in the School of Nursing at this time, students who have not already done so are advised to establish contact with the School as soon as possible so that guidance can be given in planning their programme.

Requirements for Formal Admission

Application for admission should be submitted not later than August 15th. The requirements are:

1. Satisfactory completion of the First Year of the following portion of the curriculum. Students must have obtained 60 per cent. in either Zoology or Chemistry, or, in lieu of this, an overall average of at least 60 per cent. In other subjects at least 50 per cent is required.
2. Establishment of eligibility for admission to the Vancouver General Hospital School of Nursing for Second and Third Year Nursing. Instructions as to procedure should be obtained from the Director of the University School of Nursing.
3. A personal interview with the Director of the University School of Nursing. (See No. 2 on page 211.)

First Year Arts and Science (or Senior Matriculation) and First Year Nursing

Subject	Units
English 100 and 101, and 200	6
Chemistry 101	3
Zoology 105, or Biology 100 (Senior Matriculation)	3
Biology 304	3
Bacteriology 100	3
Psychology 100	3
Anatomy 390 (Elementary Human Anatomy)	2
Nursing 156 (Introduction to Nursing)	3
*Mathematics 100 or 101	3
One additional course selected from the following:	
Economics 100, 200	3
Anthropology 200	
History 101, 102	
Sociology 200	
A language other than English	

*Students who have completed Mathematics 91 and obtained a mark of at least 65 per cent., may substitute for Mathematics a second course from the group of additional courses listed.

Courses in Physical Education are required in First Year Arts and First Year Nursing. (For details see page 151).

Students are advised to obtain a certificate in First Aid prior to entering First Year Nursing.

Summer Programme in First Year Nursing

1. **Orientation to Nursing at the Vancouver General Hospital.**—Early in May students begin an eight-week period of practice in elementary nursing. This is planned and directed by members of the Faculty of the University School of Nursing in cooperation with the Vancouver General Hospital School of Nursing.

2. **Junior Medical-Surgical Nursing.**—Following a four-week vacation students return to the University for a six-week period of study of the nursing care of patients with common medical and surgical conditions. This period is designed to help students relate their understanding of anatomy, physiology, pharmacology, diet therapy and nursing procedures to comprehensive care of patients.

Second and Third Year Nursing

During the Second and Third years of the Course, students are provided with further opportunities to develop their knowledge and skill in the practice of nursing. The programme is planned in cooperation with the Vancouver General Hospital and other hospitals and health agencies, working in close cooperation with the faculty of the University School of Nursing.

This portion of the curriculum, including two vacations (a total of 8 weeks), consists of the following:

1. Introductory courses in:

Community Health and Social Needs
History of Nursing
Human Growth and Development
Legal Aspects of Nursing
Pharmacology
Professional Adjustments
Public Health Aspects of Nursing (including home visits)
Sociological Aspects of Nursing
Trends and Opportunities in Nursing
Ward Administration

2. Instruction and supervised experience in the nursing care of patients:

	Approximate Number of Weeks of Super- vised Experience
Medical-Surgical Nursing (including Operating Room, Dietetics and Tuberculosis nursing).....	46
Paediatric Nursing	12
Obstetric Nursing	12
Psychiatric Nursing	8
Public Health Aspects of Nursing.....	8

These experiences are provided by: The Vancouver General Hospital (medical, surgical, paediatric, and obstetric nursing); the Provincial Department of Health (tuberculosis and venereal disease nursing); the Provincial Mental Health Services (psychiatric nursing); the Victorian Order of Nurses, Metropolitan Health Committee of Greater Vancouver, The British Columbia Cancer Institute, and the Western Rehabilitation Centre (public health nursing).

Following completion of Third Year, students are eligible to write the Provincial Registered Nurse examinations and thus qualify to practise as Registered Nurses in British Columbia.

Fourth Year Nursing

Subject	Units
N. 201 Foundations of Nursing Education.....	1
N. 202 Principles of Teaching.....	1
N. 400 Human Growth and Development II.....	1½
N. 454 Preventive Medicine.....	3
N. 456 Clinical Nursing (Advanced).....	2
N. 460 Fundamentals of Supervision.....	1
N. 463 Principles and Practice of Public Health Nursing.....	4
N. 467 Current Nursing Problems.....	1
N. 468 Fundamentals of Clinical Teaching.....	1
N. 471 Social Work Processes.....	1
N. 477 Sociology of the Family.....	1
N. 483 Field Work.....	2
N. 484 Methodology.....	1
N. 485 Nursing Study.....	1

II. CURRICULA FOR GRADUATE NURSES

Nursing D (Curriculum Leading to the Degree of B.S.N.)

Admission requirements:

1. Academic: High School Graduation (University Programme). (See page 62.)
2. Personal: Good physical and emotional health, and the personal qualities considered essential for success in the chosen field.
3. Nursing.

Satisfactory completion of the basic course in a recognized school of nursing and registration in the province or country from which the applicant comes. The basic course should have included adequate instruction and experience in:

- (i) paediatric nursing.
- (ii) communicable disease nursing, including tuberculosis.
- (iii) psychiatric nursing.
- (iv) public health nursing.

Where deficiencies are found to exist for which suitable supplementary instruction and experience can be obtained, the School of Nursing will assist the student in making arrangements for such experience.

4. Credit for previous courses:

(a) Candidates otherwise qualified who already hold a Diploma in Nursing from the University of British Columbia may be granted full credit toward a degree for equivalent courses in the diploma programme (completed previously) provided an average mark of at least 65 per cent. was attained in the final examinations, and provided all requirements for the degree are met within a period of five years following completion of the diploma programme.

Students who do not qualify for a degree within the five-year period allowed will have their programmes reviewed, following which requirements may be revised.

(b) Those who have completed a diploma programme in Nursing at another approved university will be required to complete a minimum of 15 units of senior courses in order to qualify for the degree of

Bachelor of Science in Nursing from the University of British Columbia. In such cases, however, effort will be made to avoid duplication of courses in which a satisfactory degree of proficiency has been demonstrated.

Course requirements: Courses in Arts and Science and in Nursing representing approximately three years of study beyond University Entrance as indicated below. Credit will be given for appropriate subjects completed in Senior Matriculation.

Subject	Units
English 100 and 101, and English 200.....	6
*Mathematics 100 or 101	3
Bacteriology 100	3
**Biology 304	3
Chemistry 101	3
Psychology 100	3
Three electives to be chosen as follows:	
a. Two (only one from each subject group) from:	6
Anthropology 200; Economics 100 or 200; History 101, 102; Sociology 200.	
b. One from:	3
Zoology 105, or Biology 100 (Senior Matric.); Chemistry 210; Physics 100, 101 or 103; Psychology 201; A language other than English.	
N. 200 Human Growth and Development I.....	1½
All subjects required for the Fourth Year of Nursing A. (See page 214).....	21½

Diploma Curricula for Graduate Nurses

Admission requirements:

1. Academic: High School Graduation (University Programme).
2. Personal: good physical and emotional health, and the personal qualities considered essential for success in the chosen field.
3. Nursing:
 - (a) Satisfactory completion of the basic course in a recognized school of nursing and registration in the province or country from which the applicant comes.
 - (b) Satisfactory graduate-nurse experience appropriate to the field of study to which the applicant seeks admission.

*Students who have completed Mathematics 91 and obtained a mark of at least 65 per cent may substitute for Mathematics a fourth elective course from either of the two groups shown.

**Zoology 105 or a satisfactory alternative, is prerequisite to Biology 304

Nursing B—Public Health Nursing

Subject	Units
N. 200 Human Growth and Development I.....	1½
N. 202 Principles of Teaching	1
N. 203 Methods of Teaching	1
N. 400 Human Growth and Development II.....	1½
N. 454 Preventive Medicine	3
N. 463 Principles and Practice of Public Health Nursing.....	4
N. 467 Current Nursing Problems	1
N. 471 Social Work Processes	1
N. 477 Sociology of the Family	1
N. 484 Methodology	1
N. 486 Field Work	2

For course descriptions see pages 217-218.

Nursing C—Clinical Teaching and Supervision

Subject	Units
N. 200 Human Growth and Development I.....	1½
N. 201 Foundations of Nursing Education	1
N. 202 Principles of Teaching	1
N. 203 Methods of Teaching	1
N. 400 Human Growth and Development II.....	1½
N. 454 Preventive Medicine	3
N. 460 Fundamentals of Supervision	1
N. 461 Health and Welfare Resources	½
N. 468 Fundamentals of Clinical Teaching	1
N. 469 Ward Management and Supervision	1
N. 470 Clinical Teaching	1
N. 477 Sociology of the Family	1
N. 484 Methodology	1
N. 487 Field Work	2
and one of the following:	
N. 490 Medical-Surgical Nursing	2
*N. 492 Obstetric Nursing	
N. 494 Paediatric Nursing	
N. 496 Psychiatric Nursing	

*N. 492 may not be offered in 1957-58.

For course descriptions see pages 217-218.

Part-Time Study for Graduate Nurses

Credit for courses completed satisfactorily may be granted only under the following conditions.

1. Toward a diploma (in Clinical Teaching and Supervision or in Public Health Nursing) provided:
 - a. the student is qualified for admission to the diploma programme before she registers for the course, and
 - b. all requirements for the diploma are met within a period of three calendar years.
2. Toward the degree of Bachelor of Science in Nursing provided:
 - a. the student is qualified for admission to the degree programme and has completed satisfactorily the prerequisite courses stipulated by the School of Nursing, before she registers for the course,

b. all requirements for the degree are met within a period of six calendar years for those who have to take the entire programme, or a period of four calendar years for those who can be granted credit for approximately one-third of the total requirements (e.g., for Senior Matriculation), and

c. one academic year is spent in full-time study at the University with at least one-half of the programme for that year composed of courses given in the School of Nursing.

Nurses interested in part-time study should arrange for a personal interview with the Director of the School of Nursing.

COURSES IN NURSING

156. (3) **Introduction to Nursing.**—Basic principles of elementary nursing and their application to the care of patients. The course includes an introduction to pharmacology and basic diet therapy. [2-3; 2-3]

200. (1½) **Human Growth and Development I.**—Modern concepts of growth and development of the normal human being with emphasis on the application of these concepts to an understanding of maturation and learning.

201. (1) **Foundations of Nursing Education.**—The evolution of nursing education; those forces which have influenced it; present patterns; and some of the problems of to-day.

202. (1) **Principles of Teaching.**—Designed to help students understand general principles of learning and teaching.

203. (1) **Methods of Teaching.**—Application to nursing of the principles of teaching.

400. (1½) **Human Growth and Development II.**—Further study of the growth and development of the normal human being with emphasis on the psychosomatic and analytic approach to the individual pattern of life with its manifest as well as its unconscious motivation.

454. (3) **Preventive Medicine.**—The epidemiological approach to the control of disease (communicable and non-communicable, acute and chronic), and to the promotion of health; environmental sanitation and food control.

456. (2) **Clinical Nursing (Advanced).**—A consideration of current concepts and problems in medical-surgical, obstetric, paediatric and psychiatric nursing, and of their impact upon the general practice of nursing.

460. (1) **Fundamentals of Supervision.**—An introduction to principles of supervision and ward management.

461. (¾) **Health and Welfare Resources.**—Organization, policies, functions and interrelationships of official and voluntary organizations in the health and welfare field.

463. (4) **Principles and Practice of Public Health Nursing.**—Fundamental principles and their application to the various functions of public health nursing in its several branches.

467. (1) **Current Nursing Problems.**—Nursing as a profession; trends, current problems, and professional organizations, their activities and relationships.

468. (1) **Fundamentals of Clinical Teaching.**—Principles and methods of teaching applied to clinical nursing.

469. (1) **Ward Management and Supervision.**—The application of principles of supervision with emphasis on the role of the headnurse and clinical supervisor.

470. (1) **Clinical Teaching.**—Teaching responsibilities of the headnurse and clinical instructor.

471. (1) Social Work Processes.—A discussion of the approach and methods of social work, designed to promote the effective correlation of nursing and social work services.

477. (1) Sociology of the Family.—The family as a primary unit of society.

483. (2) Field Work (required for B.S.N. Degree).—Students will be placed in selected areas for planned and supervised programmes of experience, each of four weeks duration, in (a) a public health nursing agency, (b) a large urban hospital and (c) a smaller community hospital. At the discretion of the Faculty, modifications may be made for students enrolled in the Nursing D curriculum.

484. (1) Methodology.—A general study of the methods of selecting, defining and dealing with problems typical of those encountered in the professional field, including preparation for oral and written presentation.

485. (1) Nursing Study.—An original study and written report of a specific nursing problem selected in consultation with the instructor.

486. (2) Field Work (required for Diploma in Public Health Nursing).—Planned observation and guided participation in public health nursing.

487. (2) Field Work (required for Diploma in Clinical Teaching and Supervision).—Planned observation and guided participation in ward management, supervision and clinical teaching.

The following courses (490-496) are designed to meet the needs of students electing one of the following as their focus of interest in relation to clinical supervision.

- | | |
|---|---|
| 490. (2) Medical-Surgical Nursing. | } A review of the fundamental principles of nursing in the specific area and a consideration of problems and changing concepts in the care of patients. |
| *492. (2) Obstetric Nursing. | |
| 494. (2) Paediatric Nursing. | |
| 496. (2) Psychiatric Nursing. | |

*492 may not be offered in 1957-58.

**THE
FACULTY
OF
AGRICULTURE**

1957 - 1958

1957-58

FACULTY OF AGRICULTURE

The Faculty of Agriculture offers courses leading to:

1. Bachelor of Science in Agriculture (B.S.A.), General Course.
2. Bachelor of Science in Agriculture (B.S.A.), Honours Course.
3. Master of Science in Agriculture (M.S.A.), Faculty of Graduate Studies
4. Master of Science (M.Sc.), Faculty of Graduate Studies.
5. Diploma in Agriculture (Occupational Course).
6. Diploma in Horticulture (Professional Gardeners' Course).

The main aim of the Faculty of Agriculture is to give students an understanding of the application of scientific principles to the technical and commercial processes of agriculture and its associated industries. At the same time its overall purpose is to develop in men and women the power of logical, exact and independent thinking.

In designing the programmes for the B.S.A. degree the Faculty recognizes the need for persons who have a professional training along with a background of knowledge and experience which will enable them, as citizens, to deal intelligently with present day social and economic problems. Accordingly the study programme includes training in (1) the basic sciences; (2) the humanities and social sciences; (3) the fundamental agricultural sciences and techniques.

General Course

In the General Course the Faculty offers a four-year programme of study designed to prepare graduates to enter a wide variety of careers associated with agriculture in business, education, extension, farming, management, marketing, quality control and research in either private enterprise or the public service. The first two years of work are devoted largely to acquiring a knowledge of the basic sciences and to laying a foundation for the work of the following years. During the last two years a student may select, in consultation with the Dean, a generalized course or a course which emphasizes one phase of agriculture such as agricultural economics, agricultural mechanics, agronomy, animal husbandry, dairying, horticulture, poultry science or soil science.

Honours Course

In the Honours Course the Faculty offers a five-year programme of study to students who are primarily interested and capable of a career in various specialized fields of study associated with agriculture. The first three years are devoted mainly to laying a foundation in sciences and the humanities. The student is also brought into early association with the fundamental agricultural sciences and techniques. In this way the student has the opportunity of obtaining the proper background for the specialization in the final two years, which may be chosen, in consultation with the Dean of the Faculty, from the fields of study listed below:

Agricultural Economics	Dairy Technology
Agricultural Mechanics	Entomology
Agricultural Microbiology	Food Technology
Agricultural Science	Horticultural Science
Agriculture and Teaching	Plant Breeding
Agriculture and Wildlife	Plant Nutrition
Management	Plant Pathology
Agromony	Poultry Nutrition
Animal Nutrition	Poultry Science
Animal Science	Soil Science
Commerce	

Detailed descriptions will be found on pages 231-241.

Masters' Courses

See Faculty of Graduate Studies.

The Occupational Course for Young Farmers

Young men and women who are interested in a career in farming, who may not wish to proceed towards a degree and who may not have completed high school, may enroll in a course leading to a Diploma in Agriculture.

A wide choice is open to the student who wishes to enter the Occupational Course. In consultation with the Dean and heads of departments he may elect courses to meet his individual requirements from among the following subject fields:

Agricultural Economics
Agricultural Mechanics
Animal Husbandry
Dairying

Agronomy
Horticulture
Poultry Science
Soil Science

The course is offered during the regular Winter Session. Thus, in addition to his classes in Agriculture, the occupational student is able to participate in a variety of activities associated with life on the campus of a university, such as sports, social activities, special lectures and concerts.

If at the end of his course the student elects to proceed further in Agriculture, credit toward a degree will be granted for those subjects in which satisfactory grades have been obtained, provided High School Graduation (University Programme) requirements have been met.

The Diploma is awarded to candidates who obtain passing marks in at least 15 units of course work.

In order to obtain maximum benefit from the course, students should have completed at least Grade X and be 18 years of age.

Those interested should write to the Dean of Agriculture, The University of British Columbia.

Regulations regarding Board and Residence and Fees are given on pages 58 and 67 respectively.

Professional Gardeners' Course

This course in horticulture is designed to give special training in the more important horticultural practices, together with instruction in horticulture and in certain closely allied subjects.

The course is intended to prepare students for the profession of gardening. Prerequisites include high school graduation or its equivalent. A "Certificate of Progress" will be issued on satisfactory completion of certain required courses, together with four years' experience in applied horticulture. On satisfactory completion of certain additional University courses, together with five years of experience in applied horticulture, a "Diploma in Horticulture" will be granted.

It is anticipated that instruction in certain courses will be offered during the session 1957-58. Details will be provided through the Registrar's office.

Veterinary Medicine

Students wishing to proceed to the degree of Doctor of Veterinary Medicine of the University of Toronto, may enter Second Year with advanced standing at the Ontario Veterinary College, Guelph, upon satisfactory completion of the following courses in the Faculty of Agriculture at the University of British Columbia.

English: English 100 and 101 (Literature and Composition), English 200 (Literature and Composition).

Mathematics and Physics: Mathematics 101 (Algebra, Geometry and Trigonometry); Physics 100 or 101 (Elementary Physics).

Chemistry: Chemistry 101 (General Chemistry); Chemistry 210 (Elements of Organic Chemistry) or Chemistry 300 (Organic Chemistry).

Biology and Zoology: Zoology 105 (General Zoology) and 3 additional units from Biology or Zoology.

Agriculture: Agriculture 100 (History of Scientific Agriculture); Animal Husbandry 200 (General); Dairying 200 (Introductory); Poultry Science 200 (General); Soil Science 200 (Introductory Soils).

All students proceeding to advanced standing in the course in Veterinary Medicine at the Ontario Veterinary College are required to obtain prerequisite standing in Veterinary Embryology and Anatomy by attendance at pre-session short courses given at the Ontario Veterinary College.

Short Courses

The Short Courses are planned for those men and women who are unable to take advantage of the longer courses, but who desire to extend their knowledge of agriculture in one or more of those branches in which they are particularly interested.

Special announcements giving details of the various courses are issued each year, and may be obtained from the Director of University Extension on application.

Admission, Registration, Etc.

For statement as to general requirements for admission to the University, registration, etc., see pages 62-71.

Physical Education

Two courses in Physical Education are required of all students in the First and Second Years of the Faculty of Agriculture except ex-service personnel and members of military units operating on the campus. For details of requirements see pages 151-154.

Professional Association

In order to practice as a Professional Agrologist in the Province of British Columbia it is necessary to be registered as a member in the British Columbia Institute of Agrologists. There are three classes of membership governed by the provisions of the Agrologists Act of the Province of British Columbia and the By-Laws of the B. C. Institute of Agrologists. A student who plans to become an agrologist may enroll with the Institute as an undergraduate. A graduate may be accepted and enrolled as an Agrologist-in-Training. After the Agrologist-in-Training has completed three years of satisfactory agrology work he may become a fully registered agrologist. Applications should be forwarded to the Registrar, B. C. Institute of Agrologists, Department of University Extension, The University of British Columbia, Vancouver 8, B. C.

COURSES LEADING TO THE DEGREE OF B.S.A.

High School Graduation (University Programme) or its equivalent, is required for admission to all courses leading to the degree of B.S.A.

Four-Year General Course Curriculum

Students are required to select their courses in consultation with the head of the department in which the undergraduate essay is to be written. All students are required to take Agriculture 100 and 300 and 12 other

units of agricultural subjects including not less than 6 units of electives A. Ten and one-half units of these agricultural subjects are to be selected outside the major department and are to be chosen in the disciplines of: Agricultural Economics, Agricultural Mechanics, Agronomy, Animal Husbandry, Dairying, Horticulture, Poultry Science and Soil Science. Not more than 18 units of courses may be taken in the discipline in which the undergraduate essay is being written.

In the case of students entering the Faculty for the first time after satisfactory completion of two or more years of University work in other faculties or institutions, courses in cognate fields may be accepted in lieu of the elective A requirements, subject to the approval of the Dean and the Committee on Courses.

First and Second Years

The requirements for the first two years consist of 31 units, 16 of which must be taken in the First Year and 15 in the Second Year. Courses must be chosen in conformity with the requirements that follow:

Each student must take:

- (a) Agriculture 100
- (b) Botany 105 or Zoology 105
- (c) Chemistry 101
- (d) English 100 and 101, and English 200
- (e) Mathematics 101
- (f) Six units from electives A (three in each year).
- (g) Not less than 9 units from electives B and C, at least 6 of which shall be from electives B.

Electives		
A	B	C
Agricultural Economics 200	Bacteriology 100	German 90
Agricultural Mechanics 200	Biology 332	Russian 100 or 200
Agronomy 200	Botany 105	Spanish 90
Animal Husbandry 200	Chemistry 200 or 205	Language continued from University Entrance, 3 or 6 units
Dairying 200	Geology 200	Commerce 151
Horticulture 200	Mathematics 201 or 202	Economics 200
Poultry Science 200	Physics 100 or 101	History 101
Soil Science 200	Zoology 105	Home Economics
		Political Science
		Psychology 100

Students planning to do their major work in Agricultural Economics may substitute Economics 200 for one of the B electives in their Second Year, but prior to graduation they must elect a second subject from Group B.

Students planning to do their major work in the Division of Plant Science are required to take Zoology 105 and Botany 105, and it is strongly recommended that these be taken in the First and Second Years.

Subject to the approval of the Dean and the Committee on Courses, other subjects from the Faculty of Arts and Science, or from the Faculty of Applied Science, may be accepted for credit in the Faculty of Agriculture; also, but for First Year only, from Senior Matriculation; further, any two of the elective subjects in the Second Year not taken in that year may, subject to approval, be taken in the Third Year. A student may take in his Fourth Year an elective of the Second Year, subject to the approval of the Faculty.

Third and Fourth Years

Prior to registration, and preferably before the close of the Second

Year, all students are required to discuss with the Dean and the chairman of a division the course which they intend to take.

The particular course or courses taken by any student must be approved by the Dean and chairman of a division.

Students are required, however, to elect up to a total of 37 units, essay included, but not more than 19 units of study may be undertaken in either year without approval of the Faculty.

Each student is required to complete one week of work on a field trip (Agriculture 300) taken in September prior to the beginning of lectures. Usually the field trip is to be taken between the Second and Third Years. This work must be completed to the satisfaction of the Faculty before graduation. The cost to each student may approximate \$25.

A student's standing at graduation will be determined by averaging the grades obtained in the best 37 units of required work taken in the Third and Fourth Years.

An essay shall be prepared by each student on some topic, the subject of which shall be selected, with the approval of the heads of the divisions or departments concerned, before the end of the Third Year's work.

Two typewritten copies of each essay on standard-size paper (8½x11 ins.) shall be submitted not later than the last day of lectures in the second term of the graduating year. The corresponding date for the Autumn Congregation shall be October 1st.

Five-Year Honours Curricula

Candidates for Honours must complete a minimum of 89 units of work extending over 5 academic years or their equivalent.

Students whose proposed scheme of work for the Third, Fourth, and Fifth Years involves Honours must obtain the consent of the divisions or departments concerned and of the Dean before entering on these courses; and this consent will normally be granted only to those students who have a clear academic record at the end of their Second Year with at least Second Class standing in the work of the first two years, and who have chosen their courses and fulfilled the prerequisites in accordance with the outline below:

First Year

Course and Number	Description	Units
Agriculture 100.....	History of Scientific Agric.....	1
Botany 105 or Zoology 105.....	Introduction to Botany or General Zoology.....	3
Chemistry 101.....	General Chemistry	3
English 100.....	Literature	3
English 101.....	Composition	
Mathematics 101.....	Algebra, Geom. and Trig.....	3
Electives A.....	(See Head of Division or Department)	3

Second Year

Course and Number	Description	Units
English 200.....	Literature and Composition.....	3
Mathematics 202.....	Calculus	3
Physics 100 or 101.....	Elementary Physics	3
Electives A.....	(See Head of Division	3
Electives B and/or C.....	or Department)	6

Third, Fourth and Fifth Years

In order to retain Honours standing, a student must obtain at least Second Class standing in each of the succeeding years in all courses as required by the head of the division or department concerned.

The specific subjects listed below, which must be taken in the Third, Fourth, and Fifth Years in the various Honours courses, must be approved by the Dean and by the head of the division or department concerned. Nineteen units in the Third year and eighteen units in the Fourth and Fifth years constitute a full course. In addition to Agriculture 100 and Agriculture 300, all students are required to take Chemistry 200 or 205, and as a minimum of agricultural subjects outside of their major department, 12 units of courses to be chosen in the disciplines of: Agricultural Economics, Agricultural Mechanics, Agronomy, Animal Husbandry, Dairying, Horticulture, Poultry Science, and Soil Science. Of these 12 units taken outside the major department, $7\frac{1}{2}$ units must be chosen from electives A.

Honours are of two grades: First and Second Class. A student's standing at graduation will be determined by averaging the grades obtained in the best 36 units of required work taken in the Fourth and Fifth Years. If a student fails to meet the above requirement with regard to Second Class standing in his Fifth Year, he may be granted Pass standing for graduation.

A graduating essay embodying the results of some independent investigation shall be presented by each student. The topic shall be selected, with the approval of the head of the division or department concerned, before the end of the Fourth Year's work.

Two typewritten copies of each essay on standard-size paper ($8\frac{1}{2} \times 11$ ins.) shall be submitted not later than the last day of lectures in the second term of the graduating year. The corresponding date for the Autumn Congregation shall be October 1st.

Candidates for Honours are required to take at the end of their Fifth Year a general examination, oral or written, or both, as the divisions or departments concerned shall decide. This examination is designed to test the student's knowledge of his chosen subject or subjects as a whole, and is in addition to the ordinary class examinations of the Third, Fourth, and Fifth Years.

Agricultural Economics

Course: In the Third Year, Commerce 261, Economics 304 and 307, Language (3 units), and 6 units of other courses; in the Fourth Year, Agricultural Economics 300 and 401, Economics 402, and 9 units of other courses; in the Fifth year, Agricultural Economics 402 and 425, Economics 300, 405, and 301 or 306, and $4\frac{1}{2}$ units of other courses.

Agricultural Mechanics

Course: In the Third Year, Agricultural Economics 300, Agricultural Mechanics 302 and 303, Soil Science 314, Language (3 units), Physics 200, Elective ($4\frac{1}{2}$ units); in the Fourth Year, Agricultural Mechanics 304 and 305, 404, 406 and 407, 412, Approved Elective (3 units), Agriculture ($4\frac{1}{2}$ units); in the Fifth Year, Agricultural Mechanics 408, 425, Agriculture and/or Applied Science ($13\frac{1}{2}$ units).

Agricultural Microbiology

Chemistry 200 and Bacteriology 100 should be taken in the Second Year.

Course: In the Third Year, Chemistry 300, Dairying 304 and 305, Language (3 units), Soil Science 312 and 6 units of other courses; in the

Fourth Year, Bacteriology 300, Biochemistry 410, Dairying 413, Dairying 432 or Soil Science 430, Plant Science 421 and 6 units of other courses; in the Fifth Year, Dairying 407, Dairying or Soil Science 425, Seminar, and other courses to a total of 18 units.

Agricultural Science

Botany 105 and Chemistry 200 should be taken in the Second Year.

Course: In the Third Year, Soil Science 212, Bacteriology 100, Chemistry 300, Language (3 units), and $7\frac{1}{2}$ units of other courses; in the Fourth Year, Agricultural Economics 300, Zoology 105, 9 units of courses from Agriculture, and 3 units of other courses; in the Fifth Year, an undergraduate essay and 15 units of other courses.

Agriculture and Teaching

Electives A of the First Year: Animal Husbandry 200 and Horticulture 200; of the Second Year: Soil Science 200 and 212; Electives B: Botany 105 and Chemistry 200.

Course: In the Third Year, Agronomy 200, Agricultural Mechanics 200, Dairying 200, Poultry Science 200, Biology 332, Chemistry 300, Psychology 100, Language (3 units) and one additional unit; in the Fourth Year, Agricultural Economics 200 or Economics 307, Bacteriology 100, Zoology 105, Education 502, 503, 504 (part), 505 (part); in the Fifth Year, Poultry Science and Animal Husbandry 322, Education 500, 501, 504 (part), 505 (part), an undergraduate essay and 3 units of other courses.

Agriculture and Wildlife Management

Electives A of the First Year: Animal Husbandry or Poultry Science 200, Soil Science 200; of the Second Year: two of Agronomy 200, Agricultural Economics 200, Agricultural Mechanics 200, Horticulture 200; Electives B: Chemistry 200 and Zoology 105.

Course: In the Third Year, Bacteriology 100, Botany 105, Chemistry 300 or 304 or 310 or 409-410, Zoology 202, Soil Science 212, an Elective A, Poultry Science and Animal Husbandry 322 or Soil Science 314; in the Fourth Year, Biochemistry 410 or Chemistry 304 or Chemistry 310 or Physics 420, Zoology 306, Zoology 304 or 303, and 9 units of courses from either Group A or Group B as follows:

Group A: Poultry Science and Animal Husbandry 313, with 6 units of courses from Animal Husbandry 418, 419, 420, 424, 324, 320, Poultry Science 300, 315, 400, 401, 415, 420, etc.

Group B: Soil Science 314 or Poultry Science and Animal Husbandry 322, with 6 units of courses from Agronomy 304, 305, Plant Science 421 and Soil Science 312, 415, 416.

In the Fifth Year, Botany 404, Zoology 309, 409, 410, an undergraduate essay, seminar, Language (3 units), Animal Husbandry 522 or Poultry Science 410-411 or 3 units from Group B.

Agronomy

Chemistry 200 or 205 should be taken in the Second Year.

Course: In the Third Year, Soil Science 212, Botany 105, Chemistry 300, Language (3 units), and $7\frac{1}{2}$ units of other courses; in the Fourth Year, Agricultural Economics (3 units), Agronomy 304, 305, Soil Science 404, 405, Biology 332, Geology or Geography (3 units), and 4 units of other courses; in the Fifth Year, Agronomy 406, 425, Animal Husbandry (3 units), Plant Science 407, and 6 units of other courses.

Animal Nutrition

Bacteriology 100 and Chemistry 200 should be taken in the Second Year.

Course: In the Third Year, Soil Science 200-212, Animal Husbandry and Poultry Science 322, Chemistry 300 and 304, Dairying 304 and 305, and 3 units of other courses from Agriculture; in the Fourth Year, Animal Husbandry 422 and 424, Biochemistry 410, Chemistry 310 and 409, Plant Science 421, Poultry Science 410, and $4\frac{1}{2}$ units of other courses; in the Fifth Year, Animal Husbandry 425 and 522, Biology 400, and 9 units of other courses.

Animal Science

Course: In the Third Year, Bacteriology 100, Botany 105, Chemistry 300, Language (3 units), Soil Science 212 and $4\frac{1}{2}$ units of other courses from Agriculture; in the Fourth Year, Animal Husbandry and Poultry Science 322, Biology 332 and 400, Plant Science 421, and $8\frac{1}{2}$ units of other courses; in the Fifth Year, Animal Husbandry 419 and 425, and 12 units of other courses.

Commerce

Course: In the Third Year, Commerce 261, Economics 303, Language (3 units), and 9 units of other courses; in the Fourth Year, Agricultural Economics 401, Commerce 252, Economics 300 and 304, and 6 units of other courses; in the Fifth Year, Agricultural Economics 405 and 425, Commerce 281, 331 and 371, and $4\frac{1}{2}$ units of other courses.

Dairy Technology

To be taken in accordance with the curriculum provided under Food Technology. The electives of the Fourth and Fifth Year are to be selected after consultation with the Chairman of the Division of Animal Sciences.

Entomology

Chemistry 200 and Zoology 105 should be taken in the Second Year.

Course: In the Third Year, Biology 332, Botany 105, Chemistry 300, Zoology 302, Zoology 303 or 306, and 4 units of other courses; in the Fourth Year, Plant Science 309, Zoology 301, 305, 400, 309, and 6 units of other courses from Agriculture; in the Fifth Year, Animal Husbandry 420, Horticulture 317, Plant Science 441, Zoology 407 and 408, an undergraduate essay, and $3\frac{1}{2}$ additional units.

Food Technology

The electives of the Fourth and Fifth Years are to be selected after consultation with the head of the division or department in which the graduation essay is being written.

Bacteriology 100 and Chemistry 200 should be taken in the Second Year.

Course: In the Third Year, Agricultural Mechanics 300 and 301, Agronomy 406, Chemistry 300 and 304, Dairying 304 and 305, Poultry Science 306, Soil Science 212, and $1\frac{1}{2}$ additional units; in the Fourth Year, Agricultural Mechanics 401, Animal Husbandry 322 and 406, Biochemistry 410, Dairying 406, Plant Science 421 and 441, Poultry Science 322 and Soil Science 312; in the Fifth Year, Commerce 457 and 498, Dairying 413 and 431, and undergraduate essay and $6\frac{1}{2}$ units of other courses.

Students interested in Food Technology in relation to Fisheries are advised to consult the Department of Zoology before the Third Year with regard to selection of courses. Zoology 105 should be taken in the First or Second Year.

Horticultural Science

Course: In the Third Year, Biology 332 or equivalent course in genetics, Horticulture 300, 316, 317, 318, Soil Science 212, Zoology 201 and 3½ additional units; in the Fourth Year, Horticulture 301 and 420, Plant Science 304, 441, 442 and 443 and 5 additional units; in the Fifth Year, Horticulture 425, 530, Horticulture 517 or Plant Science 547, and 8 units of other courses from Agriculture, Biology, or Chemistry.

Plant Breeding

Course: In the Third Year, Biology 332, Chemistry 300, Language (3 units), Plant Science 441, Soil Science 212, and 6 additional units; in the Fourth Year, Agronomy 406, Botany 404 or Zoology 302, Botany 340, Plant Science 407 and 421, and 6 additional units; in the Fifth Year, Agronomy 405, 425, Botany 404 or Zoology 302, Plant Science 409, 410, Soil Science 405, and 6 additional units.

Plant Nutrition

Course: In the Third Year, Bacteriology 100, Chemistry 300, Horticulture 300 and 317, Soil Science 212 and 314 and 4½ additional units; in the Fourth Year, Horticulture 301 and 420, Plant Science 441, 442 and 443 and 7 additional units; in the Fifth Year, Horticulture 425, 530, Horticulture 517 or Plant Science 547, and 8 additional units from Agriculture, Biology or Chemistry.

Plant Pathology

Electives A of the Second Year: Soil Science 200 and 212; Electives B, Botany 105 and Chemistry 200.

Course: In the Third Year, Bacteriology 100, Botany 315, 318, 330, 340, Plant Science 309 and Zoology 105; in the Fourth Year, Plant Science 308, 409, 410, Botany 404, Chemistry 300, Soils 312, and 6 additional units from Agriculture; in the Fifth Year, Horticulture 317, Plant Science 407, 421, 422, 425, 509; Elective (3 units).

Poultry Nutrition

Course: In the Third Year, Bacteriology 100, Chemistry 300, Language (3 units), Poultry Science 400 or 401, Zoology 202 or 303 or 304, and 4½ units of other courses; in the Fourth Year, Animal Husbandry 322, Biochemistry 410, Dairying 304 and 305, Plant Science 421, Poultry Science 322, 405, Poultry Science 420 or 315, and 4½ units of other courses; in the Fifth Year, Animal Husbandry 424, Biology 400, Poultry Science 410, 411, 415, 425, and 6 units of other courses.

Poultry Science

Course: In the Third Year, Animal Husbandry 322, Bacteriology 100, Biology 430, Chemistry 300, Language (3 units), Poultry Science 322, 400, and 401; in the Fourth Year, Animal Husbandry 313, Biology 448, Plant Science 421, Poultry Science 300, 313 and 415, Zoology 202, and 4½ units of other courses; in the Fifth Year, Biology 400, Poultry Science 315, 405, 410, 411 and 425, Zoology 304, and 3 units of other courses.

Soil Science

Course: In the Third Year, Soil Science 312, 313, 314, Chemistry 300, Chemistry 304 or 310, Language (3 units), and 4½ units of other courses; in the Fourth Year, Botany 105, Chemistry 310 or Chemistry 304 or Chemistry 409 and Dairying 413, Geology 200 or Biology 400 or Bacteriology 300, Plant Science 421, Soil Science 403, 404, 405 and 416, and 1½ units of other courses; in the Fifth Year, Soil Science 423, 425, Botany 330, Biochemistry 410 or alternate, and 9 units of other courses.

TEACHER TRAINING COURSE

As well as satisfying the requirements of their own departments in the Faculty, students planning to enter the one-year Teacher Training Course for graduates through Agriculture must have at least 9 units of credit to be selected at will from the following subjects: Chemistry, Mathematics, Physics, Biology, Botany, Zoology, in addition to Chemistry 101, Mathematics 101, Physics 100 or 101, and Biology 100 (Senior Matriculation) or Botany 105 or Zoology 105.

Students who intend to proceed to the Teacher Training Course are advised to take Psychology 100 as a prerequisite to Educational Psychology.

For further particulars see "Faculty and College or Education".

EXAMINATIONS AND ADVANCEMENT

1. Examinations in all subjects, obligatory for all students, are held in April. In the case of subjects which are final at Christmas and in the case of courses of the First and Second Years, examinations will be held in December as well. Applications for special consideration on account of illness or domestic affliction must be submitted to the Dean not later than two days after the close of the examination period (see page 58).

2. In any course which involves both laboratory work and written examinations, students will be required to make satisfactory standing in both parts. Results in laboratory work will be announced prior to the final examination, and students who have not obtained a mark of at least 50% will neither be permitted to write the examination nor to receive any credit for the course. If the course is repeated no exemption will be granted from the work in either part.

3. Successful candidates will be graded as follows: First Class, an average of 80% or over; Second Class, 65 to 80%; Passed, 50 to 65%.

4. (a) A student taking 9 or more units in the Winter Session will receive credit for a course only if, as a result of the final examinations of that Session, he passes in courses totalling at least 9 units, including the course in question. The passing grade for a course is 50%.

(b) A student taking less than 9 units in the Winter Session will receive credit for a course only if, as a result of the final examinations of that Session, he passes in all his courses. The passing grade for a course is 50%.

(c) A student in the Summer Session will receive credit for each course in which he obtains a grade of at least 50%.

5. Courses for which credit has not been obtained must be repeated, or permissible substitutes taken, in the next regular session attended. In the Winter Session the total of all courses taken may not exceed 18 units except with approval of the Faculty.

6. (a) In the Winter Session, a candidate will be granted a supplemental in a subject which he has taken during the year provided (i) he has written the final examination and has obtained a final mark of not less than 35%, and (ii) he has obtained at least 9 units of credit in the Session. In any one session, no candidate will be granted supplementals in more than 6 units.

(b) In the Summer Session, a candidate will be granted a supplemental in a subject which he has taken during that session provided (i) he has written the final examination and has obtained a final mark of not less than 35%, and (ii) he has obtained 3 units of credit in that session.

7. Special examinations will not be granted, except by special permission of the Faculty, and on payment of a fee of \$7.50 for each paper. Appli-

cation for special examinations must be made at least two weeks prior to the scheduled meetings of the Faculty in October and February.

8. If a supplemental granted in a course is passed with a grade of at least 50%, credit will be given for the course.

9. In all but the Final Year a candidate who has been granted a supplemental may write it only once. If he fails, he must repeat the course or take a permissible substitute. In the Final Year he may write it twice (subject to the limitation in paragraph 5).

10. Supplemental examinations, covering the work of both the first and second terms, will be held in August or September in respect of Winter Session examinations, and in July in respect of Summer Session examinations. See also page 66.

11. Term essays and examination papers will be refused a passing mark if they are noticeably deficient in English; and, in this event, students will be required to pass a special examination in English to be set by the Department of English.

12. For regulations regarding re-reading of papers, see page 66.

13. A student with standing defective in respect of more than 3 units, although he will not be permitted to register in a higher year, may be allowed to continue by registering in the lower year and by taking courses in accordance with Paragraph 5 above.

14. A student who, twice in succession, fails to obtain credits in the Winter Session may, upon the recommendation of Faculty, be required by the Senate to withdraw from the Faculty.

15. Any student whose academic record, as determined by the tests and examinations of the first term of the First or Second Year, is found to be unsatisfactory, may upon the recommendation of the Faculty be required by the Senate to discontinue attendance at the University for the remainder of the Session.

COURSES IN AGRICULTURE

Note: for unit values of courses and the number of lecture and laboratory hours per week in each course, see page 84.

Agriculture

100. (1) **History of Scientific Agriculture.**—An orientation course embracing a study of the history and development of modern scientific agriculture; the contributions of the sciences to this development, and the nature, problems, and relationship of the various branches of agriculture. [1-0; 1-0]

300. (1) **Field Trip.**—Observing, recording and correlating agricultural facts in the field. One week of work is required of all students in Agriculture prior to Third Year entry (see page 225). Staff and other members of the B. C. Institute of Agrolologists.

Agricultural Economics

200. (1½) **Introduction to Agricultural Economics.**—A survey of the subject matter of agricultural economics. Principles which determine production, price and income applied to agricultural production, marketing, and public policy. Mr. Anderson. [3-2; 0-0]

300. (3) **Farm Organization and Management.**—Farm accounts and records. Economic principles in rotations, rates of fertilizer application, rates of feeding and combinations of enterprises. Management problems connected with capital equipment, labour, financing, valuation of a farm, getting started in farming, and obtaining information. Farm management

research methods. Text-book: Black, Clawson, Sayre and Wilcox, *Farm Management*. [2-2; 2-2]

401. (3) **Marketing**.—The evolution and structure of the marketing system; the price making process on various markets; causes and effects of price fluctuations; marketing legislation; cooperative marketing; efficiency in marketing. Text: Shepherd, G. S., *Marketing Farm Products*. [3-0; 3-0]

402. (3) **Production Functions and Linear Programming**.—Theory and empirical derivation of production functions; introduction to the theory and techniques of linear programming; applications to problems of profit maximization and cost minimization in agricultural production and in marketing. Texts: Heady, E. O., *Economics of Agricultural Production and Resource Use*; Charnes, Cooper and Henderson, *An Introduction to Linear Programming*. References: journal articles and research bulletins. [3-0; 3-0]

405. (1½) **Seminar**.—Application of economic analysis to contemporary problems in agricultural economics. [0-0; 3-0]

425. (3) **Undergraduate Essay**.

430. (1½-3) **Directed Studies**.—On an approved problem.

Other Courses Which Qualify for Agricultural Economics Credit

Economics 307. (3): recommended for students interested in economic policy for agriculture.

Geography 201. (3).

Slavonic Studies 312. (3).

Courses Primarily for Graduate Students

500. (1-3) **Graduate Seminar**.

501. (3) **Advanced Marketing**.—Price making forces at retail, wholesale and farm market level. Critical analysis of various marketing schemes. Prerequisite: adequate background in economics. [3-0; 3-0]

502. (3) **Agricultural Problems and Policy**.—Influential doctrines in agricultural policy; problems of economic efficiency and welfare. Critical review of present and proposed price and income policies. Prerequisite: adequate background in economics. Mr. Anderson. [3-0; 3-0]

549. (6) **Master's Thesis**.

Agricultural Mechanics

200. (1½) **Introduction to Agricultural Mechanics**.—A consideration of the scope, work, and materials of the department, including an introduction to farm power problems. Text-book: McColly & Martin, *Introduction to Agricultural Engineering*. Mr. Coulthard and Staff. [3-3; 0-0]

300. (1½) **Food Mechanics**.—Fundamental mechanics, work and power, electric motors, fluid flow and its measurement, pumps and fans. Text-book: Henderson & Perry, *Agricultural Process Engineering*. Prerequisite: Physics 100 or 101. Mr. Watson. [2-2; 0-0]

301. (1½) **Food Mechanics**.—Heat transmission and heat exchangers, steam generation, psychrometry and drying, refrigeration, storage and handling, and grinding. Text-book: Henderson & Perry, *Agricultural Process Engineering*. Prerequisite: Physics 100 or 101. Mr. Watson. [0-0; 2-2]

302. (1½) **Farm Engines**.—The construction, operation, and maintenance of I.C. engines. Theory and practice directed toward automotive and agricultural applications. Mr. Thomas. [2-3; 0-0]

303. (1½) **Farm Tractors**.—Course deals with all parts of the tractor, except the engine, and with the use of tractors on farms. Prerequisite: Agricultural Mechanics 302. Mr. Thomas. [0-0; 2-3]

304. (1½) **Drainage.**—Introduction to hydrology, rainfall and run-off relationships, drainage systems, levelling, mapping, and estimates of drainage costs. Text-book: Ayres & Scoates, *Land Drainage and Reclamation*. Mr. Coulthard. [2-3; 0-0]

305. (1½) **Irrigation.**—Sources of water, distribution systems, soil and water relationships, application methods, and efficient use of water. Text-book: Israelsen, *Irrigation Principles and Practices*. Mr. Coulthard. [0-0; 2-3]

401. (3) **Food Mechanics.**—Thermodynamics, evaporation, chemical and mechanical separations, mixing, instrumentation, canning and freezing, quality control, electromagnetic radiations, and drafting. Prerequisites: Agricultural Mechanics 301 and Mathematics 202. Mr. Watson. [2-3; 2-3]

403. (1½) **Internal Combustion Engines.**—The theory of internal combustion engines, fuels, and lubricants. Fundamentals of thermodynamics. Prerequisites: Agricultural Mechanics 302. Mr. Thomas. [0-0; 2-2]

404. (3) **Farm Buildings.**—Farm building requirements, materials, methods of construction. Farmstead planning. Drafting. [2-3; 2-3]

406. (1½) **Tillage Machinery.**—Study of cultivation equipment, crop planting machines, fertilizer and manure equipment, and weed control machines. Mr. Thomas. [2-3; 0-0]

407. (1½) **Harvesting and Crop Handling Machinery.**—Study of haying, harvesting, threshing, and crop handling machinery. Mr. Thomas. [0-0; 2-3]

408. (1½) **Seminar.**—Lectures, discussions, and papers.

410. (1½) **Shopwork.**—Oxy-acetylene and arc welding, heat treating. Mr. Gleave. [0-3; 0-3]

412. (1½) **Rural Electrification.**—Application of electricity in agriculture. farmstead wiring; selection, operation, and protection of A.C. and D.C. motors. Lighting and heating. Mr. Watson. [2-3; 0-0]

425. (3) **Undergraduate essay.**

430. (1½-3) **Directed studies.**

501. (3) **Food Mechanics.**—Problems in the selection and operation of food processing machinery. Process analysis, work simplification, plant layout. Problems in specific industries may be attempted by individual students where feasible. Mr. Watson. Prerequisite: Agricultural Mechanics 401. [2-3; 2-3]

500. (1-3) **Graduate Seminar.**

530. (3) **Directed Studies.**—On an approved problem (farm power and machinery, farm structures, irrigation and drainage, processing).

549. (5-6) **Master's Thesis.**

Agronomy

For courses see Plant Science, page 236.

Animal Husbandry

For courses see Animal Science, below.

Animal Science

(a) Courses in Animal Husbandry

200. (1½) **General Animal Husbandry.**—Judging of livestock; origin, development, characteristics, adaptations of breeds of livestock; principles of breeding, selection, feeding, management, marketing; disease problems. Text-book: Ewen and McEwen, *Canadian Animal Husbandry*. [3-2; 0-0]

302. (1½) **General Animal Husbandry, Dairying, and Poultry Science.**—For Agricultural Engineering Students.

313. (1½) Animal Breeding.—Variation and inheritance; selection and mating systems; herd and pedigree studies; hereditary defects. Text-book: Winters, *Introduction to Animal Breeding*. Prerequisite: Poultry Science 313. [0-0; 2-2]

320. (3) Comparative Anatomy and Physiology of Farm Animals.—A study of the anatomy and physiology of farm animals, discussing systematically the organs and systems of the living animal body. Prerequisites: Chemistry 200 or 205, which may be taken concurrently. [2-3; 2-3]

322. (1½) Fundamentals of Animal Growth and Energetics.—Energetics of animal growth and its nutritional implications. Text-book: Maynard, *Animal Nutrition* (1951). Prerequisites: Chemistry 200 or 205; Poultry Science 322. Recommended concurrently: Chemistry 300. [0-0; 2-3]

324. (1½) Judging Dairy Cattle.—Open only to Third Year students in Animal Husbandry. [0-0; 0-4]

406. (1½) Technology of Animal Products.—The chemical, physical and microbiological changes arising in the course of the processing of animals and animal by-products. Prerequisites: Chemistry 300, Bacteriology 100. [0-0; 2-3]

418. (3) Livestock Marketing and Management.—Requirements of livestock markets, marketing livestock products; breeding stock; management of range, ranch, and farm for production of livestock. [2-3; 2-3]

419. (3) Seminar.—Research and experimental problems; preparation of reports and bulletins; current problems of animal industry. [2-2; 2-2]

420. (3) Physiological Problems in Animal Husbandry.—A detailed study of rumen physiology, milk secretion and physiology of reproduction. Recent advances in animal physiology. Prerequisites: Zoology 105; Chemistry 300, which may be taken concurrently. [2-3; 2-3]

422. (1½) Animal Feeding.—The economic and nutritional problems involved in feeding all types of livestock. Text-book: Morrison, *Feeds and Feeding*, 21st edition. Prerequisites: Animal Husbandry 322, Poultry Science 322. [3-0; 0-0]

424. (1½) Experimental Feeding.—Laboratory experiments with domestic animals. Assigned current literature. Prerequisites: Animal Husbandry 322, Poultry Science 322. [0-0; 0-5]

425. (3) Undergraduate Essay.

430. (3) Directed Studies.

Courses Primarily for Graduate Students

500. (1-3) Graduate Seminar.

513. (1½) Advanced Animal Breeding.—Special phases and recent research findings. Lectures, seminars and research. Text-book: Lush, *Animal Breeding Plans*. Prerequisites: Animal Husbandry 313, Plant Science 421, Biology 332. (Poultry Science 513 must be taken in the second term.) (Given in 1957-58 and alternate years.) [2-2; 0-0]

522. (3) Advanced Animal Nutrition.—Special phases of animal nutrition. Nutritional deficiency state, bioenergetics, and growth. Text-book: Brody, *Bioenergetics and Growth*, 1945. Prerequisites: Animal Husbandry 322, Poultry Science 322. [2-4; 2-4]

530. (3) Directed Studies.—Production, management, marketing, breeding, nutrition, and physiological disturbances.

549. (5-6) Master's Thesis.

(b) Courses in Dairying

Note: Dairying 304, 305, 407 are accepted for credit in Bacteriology in the Faculty of Arts and Science.

200. (1½) Introduction to Dairying.—Principles underlying hygienic aspects of milk production; processing, testing, grading of market milk and related products. [0-0; 3-2]

301. (3) Dairy Technology.—Principles and practices in manufacture of butter, cheese, ice cream, concentrated milk products. Prerequisites: Dairying 200; also Dairying 304 and 305, which may be taken concurrently. [1-6; 1-6]

304. (1½) Dairy Bacteriology.—Bacterial content of milk; normal and abnormal fermentations of milk and a study of certain organisms responsible therefor. Prerequisite: Bacteriology 100. This course is open for credit in Arts and Science. [2-2; 0-0]

305. (1½) Dairy Bacteriology.—Physical and chemical properties of milk and their influence on growth of bacteria in milk and milk products; handling and management of milk for city consumption; grading of milk and milk products on bacterial standards. Prerequisite: Bacteriology 100. This course is open for credit in Arts and Science. [0-0; 2-2]

406. (1½) Analytical Methods.—Standard methods for the bacteriological, chemical and physical analysis of products and materials important in the dairy industry. Prerequisites: Chemistry 300; Dairying 304 and 305. [1-4; 0-0]

407. (3) Advanced Dairy Bacteriology.—Detailed studies on bacteria associated with dairy products. Prerequisites: Dairying 304 and 305, Chemistry 300. This course is open for credit in Arts and Science. [1-4; 1-4]

413. (1½) Food Mycology.—A study of the molds and yeasts associated with foods and fermentation. Prerequisite: Bacteriology 100. [0-0; 1-4]

425. (3) Undergraduate Essay. — On a prescribed laboratory study. Fourth Year.

430. (3) Undergraduate Seminar.—Presentation, discussion, criticism of scientific and technical papers pertaining to dairy industry.

431. (3) Undergraduate Seminar.—Presentation, discussion, criticism of scientific and technical papers. Open only to students taking the Food Technology option.

432. (3) Directed Studies.—On an approved problem.

Primarily for Graduate Students

500. (3) Graduate Seminar.

501. (3) Lactic Acid Bacteria. — Metabolic processes. Prerequisites: Dairying 304 and 305; Biochemistry 410, which may be taken concurrently. (Given in 1957-58 and alternate years.) [3-0; 3-0]

502. (3) Laboratory Methods and Procedures. — Quantitative analytical laboratory methods in fermentative and oxidative metabolism of microorganisms associated with dairy products. Prerequisite: Biochemistry 410, which may be taken concurrently. (Given in 1958-59 and alternate years.) [0-6; 0-6]

530. (3) Directed Studies.—On approved problems.

549. (5-6) Master's Thesis.

Bacteriology

For descriptions of courses in Bacteriology, see Arts and Science.

Biochemistry

For description of course in Biochemistry, see Medicine.

Biology

For descriptions of courses in Biology, see Arts and Science.

Botany

For descriptions of courses in Botany, see Arts and Science.

Chemistry

For descriptions of courses in Chemistry, see Arts and Science.

Commerce

For descriptions of courses, see Commerce and Business Administration.

Dairying

For courses see Animal Science, page 234.

Economics

For descriptions of courses in Economics, see Arts and Science.

English

For descriptions of courses in English, see Arts and Science.

French

110 or 120. (3) As in Arts and Science.

Geology

200. (3) As in Arts and Science.

German

For descriptions of courses in German, see Arts and Science.

History

101. (3) **Main Currents in Twentieth-Century History.**—As in Arts and Science.

Horticulture

For courses see Plant Science, below.

Mathematics

For descriptions of courses in Mathematics, see Arts and Science.

Physics

100. (3) **Elementary Physics.**—As in Arts and Science.

101. (3) **Elementary Physics.**—As in Arts and Science.

200. (3) **Mechanics, Heat, and Molecular Physics.**—As in Arts and Science.

Plant Science**(a) Courses in Agronomy**

200. (1½) **Introduction to Field Crops.** — Study of important grain, forage and root crops. Noxious weed seeds, commercial and seed grades of Canada, identification of principal types and varieties of field crops. Special problems of production, weed control and harvesting. [0-0; 3-2]

304. (1½) **Range Management.**—Ecology, maintenance, and management of rangeland. Text: Sampson, *Range Management*. [2-2; 0-0]

305. (1½) **Pasture Management.**—Grasses and legumes for pasture and forage, their management and conservation. Text: Hughes, Heath & Metcalf, *Forages*. [0-0; 2-2]

405. (1½) **Field Crops for Food and Fibre.**—Plant characteristics and production practices contributing to optimum production of selected field crops. Prerequisite: Agronomy 200. [2-2; 0-0]

406. (1½) **Field Crop Technology.**—Chemical constituents of field crops as influenced by climate, soil, and variety, applied to processing of farm crops. Prerequisite: Chemistry 200 or 205. [0-0; 2-2]

425. (3) **Undergraduate Essay.**

430. (1-3) **Directed Studies.**

Courses for Graduate Students

530. (3) **Directed Studies.**

549. (5-6) **Master's Thesis.**

(b) Courses in Horticulture

200. (1½) **General Horticulture.**—Horticultural enterprises, both commercial and home. An introduction to important tree fruits, small fruits, vegetables, landscape materials. Description, identification, classification, displaying and judging of the various crops. [0-0; 3-2]

216. (1½) **Landscape Materials.**—Plant material. Garden construction. Historical and critical study of landscape practices. Problems in conjunction with Architecture 250. (For students in Architecture.) [0-0; 2-2]

300. (3) **Small Fruits.**—The science and practice of small fruit growing and handling; grapes, strawberries, bramble fruits, currants, gooseberries, blueberries, cranberries. (Nut culture included.) Text: Shoemaker, *Small Fruit Culture*. (Offered in 1958-59 and alternate years.) [2-2; 2-2]

301. (3) **Tree Fruits.**—Location of fruit plantings and varieties; growth and fruiting habits; orchard soil management; propagation and root stocks; training, pruning, top-working; climatic responses; winter injury; disease and pest control; identifying, displaying and judging tree fruit varieties; harvesting, storage and transportation. (Offered in 1957-58 and alternate years.) [2-2; 2-2]

316. (1½) **Landscape Gardening.**—Culture and identification of plant materials. Elementary principles of landscape composition. [2-2; 0-0]

317. (3) **Vegetable Crops.**—Vegetable growing; sites, soils; planting, fertilizing, irrigating, cultivating; vegetable varieties; vegetable forcing. [2-2; 2-2]

318. (1½) **Floriculture.**—The flower garden. Commercial floriculture. Greenhouse and nursery practice. [0-0; 2-2]

416. (1½) **Landscape Construction and Design.**—Principles of landscape design. Garden construction. Visits to landscaped sites. Landscape problems. Prerequisite: Horticulture 316. [2-2; 0-0]

420. (2) **Problems in Horticulture.**—Orchard, plantation and laboratory experimental horticulture. Horticultural institutions and a review of their investigational work. Practice in planning horticultural investigations and in preparing reports. [2-0; 2-0]

425. (3) **Undergraduate Essay.**

430. (1-3) **Directed Studies.**

Courses Primarily for Graduate Students

517. (4) **Advanced Vegetable Crops.**—The improvement and production of vegetable crops, with emphasis on research methods and current problems. (Offered in 1957-58 and alternate years.) [2-4; 2-4]

530. (3) **Directed Studies.** — Pomology, vegetable crops, floriculture, plant nutrition and applied plant physiology.

549. (5-6) **Master's Thesis.**

(c) Courses in Plant Science

300. (1½) Field Studies and Practices in Crop Production.—Course offered in the summer season by the Division of Plant Science and the Canada Department of Agriculture in British Columbia at (a) Vancouver (b) Agassiz (c) Kamloops (d) Prince George (e) Saanichton (f) Summerland. Sixty to seventy hours of instruction will be timed to season, and emphasis will be placed on the growth of plants and production of crops under the conditions of the region in which the station is located. Credit may be given for this course taken in each of two seasons. Permission to register must be obtained from the Chairman of the Division.

302. (1½) General Plant Science.—Open only to students registered in the Faculty of Applied Science.

308. (2) Weed Control.—Common noxious weeds of the province. Influence of weeds on crop growth; identification; mode of reproduction; cultural and chemical methods of control. [3-2; 0-0]

309. (3) Pathology of Crops.—Common diseases of agricultural plants; control measures; laboratory and field techniques. [2-2; 2-2]

407. (3) Genetics and Breeding of Crops.—Genetics in relation to crop improvement and preparation of plant breeding programmes for improved agricultural plants. [2-2; 2-2]

409. (1½) Plant Pathology Techniques.—Phytopathological methods of disease identification, isolation, and inoculation. Prerequisite: Plant Science 309. [2-2; 0-0]

410. (1½) Control of Plant Diseases.—Principles and practices of disease control, relation of environment to disease development, and host-parasite interactions. Prerequisite: Plant Science 309. [0-0; 2-2]

421. (1½) Biometry.—Biological variation; graphs; central tendency and dispersion; elementary analysis of variance; simple linear correlation and regression; chi-square; machine calculation. Prerequisite: Mathematics 100 or 101. [2-2; 0-0]

422. (1½) Field Design.—Principles of experimental design including consideration of randomized blocks, Latin squares, factorial experiments, lattice designs, confounding, long term experiments. Prerequisite: Plant Science 421. [0-0; 2-2]

423. (2) Undergraduate Seminar.

440. (1½) Morphology of Crop Plants.—The structure and development of crop plants in relation to function and use. (To be taken only with consent of instructor.) [2-2; 0-0]

441. (2) Physiology and Nutrition of Crops (A).—Organic constituents of plants and physiological changes occurring during plant growth. Text: Steele, *Introduction to Plant Biochemistry*. Reference: Haas and Hill, *The Chemistry of Plant Products*. [2-4; 0-0]

442. (2) Physiology and Nutrition of Crops (B).—Diagnosing plant deficiency diseases; growth of plants in artificial media; micronutrient elements and plant growth; soil-plant-atmosphere relationships; absorption and accumulation of inorganic solutes; biochemical problems associated with salt absorption; photoperiodism; photosynthesis; respiration; plant hormones; enzyme action and growth rates. Text: Hoagland, *Inorganic Plant Nutrition*. Reference: Miller, *Plant Physiology*. [0-0; 2-4]

443. (2) Seminar in Plant Nutrition. [2-0; 2-0]

450. (1½) Ecology of Crop Plants.—A study of the distribution and production of agricultural crops as affected by environmental factors. [0-0; 2-2]

500. (2) Graduate Seminar.

507. (3) Advanced Plant Genetics and Breeding.—The genetics of crop plants. Prerequisite: Plant Science 407 or equivalent. [1-4; 1-4]

509. (3-5) **Advanced Plant Pathology.**—Laboratory and field techniques and procedures. Experimental methods, culture methods, virus studies, miscellaneous experimental methods, interpretation of experimental results.

547. (4) **Advanced Plant Nutrition.**—Physiology and chemical constituents of plants and plant products; food values of horticultural crops and factors which affect these; chemical and biological food assays. Open to graduates or to others with permission of the instructor. (Offered in 1958-59 and alternate years.) [2-4; 2-4]

Political Science

300. (3) **Constitutional Government.**—As in Arts and Science.

400. (3) **The Government of Canada.**—As in Arts and Science.

Poultry Science

200. (1½) **General Poultry Husbandry.**—Principles and practices employed in poultry production. Text-book: Lippincott and Card, *Poultry Production*, 8th edition. [0-0; 3-2]

300. (1½) **Markets and Marketing.** — Poultry products in B.C., the market, inter-provincial trade, export trade, egg grading, Dominion and Provincial regulations, care and preparation of eggs and poultry for market, killing, dressing, grading, packing. [0-0; 2-2]

301. (1) **Turkey Production.**—Principles and practice of breeding and management, modern methods of marketing. (Given in 1958-59 and alternate years.) [2-0; 0-0]

306. (1½) **Technology of Poultry Products.**—Lectures, laboratory experiments, and demonstrations. Processing and preservation (freezing, dehydrating, canning) of poultry products. Quality control—standards and grades for poultry products, laws and regulations applying to processing. Merchandising practices. [2-2; 0-0]

313. (1½) **Poultry Breeding.**—The application of genetic principles to poultry breeding. Text-book: Jull, *Poultry Breeding*. Prerequisites: Poultry Science 200; recommended: Biology 332. (Animal Science 313 must be taken in the second term) [2-2; 0-0]

315. (1½) **Poultry Genetics.**—Detailed genetic analyses of the production characteristics of chickens. Prerequisites: Poultry Science 200 and 313; Biology 332. (Given in 1958-59 and alternate years.) [0-0; 2-2]

322. (1½) **Fundamentals of Nutrition.**—An introductory study of the essential nutrients and their functions in animal nutrition. Text-book: Maynard, *Animal Nutrition* (1951). Prerequisite: Chemistry 200 or 205. Recommended concurrently: Chemistry 300. (Animal Husbandry 322 must be taken in the second term.) [2-3; 0-0]

400. (1½) **Poultry Farm Management.** — Types of poultry farms; farm lay-outs; investment of capital in land, buildings, stock, equipment; efficiency in labour, housing, production, personnel; farm income, labour income. (Given in 1958-59 and alternate years.) [2-2; 0-0]

401. (1½) **Principles of Incubation.**—A study of physical factors in incubation practice. Physical and chemical changes in the developing embryo prior to and during incubation. Text-book: Taylor, *Fertility and Hatchability in Chicken and Turkey Eggs* (1949). Prerequisite: Poultry Science 200. (Given in 1957-58 and alternate years.) [0-0; 2-2]

405. (1½) **Seminar.**—Poultry literature; research and experimental problems; preparation of reports and bulletins; marketing problems; advertising poultry products; poultry services and organizations. [1-2; 0-0]

410. (1½) **Poultry Nutrition.**—Principles of poultry nutrition. Recent advances in the knowledge of the nutritive requirements of the domestic

fowl. Interrelationships among proteins, vitamins, enzymes and hormones. References: Ewing, *Poultry Nutrition*, latest edition. Prerequisites: Poultry Science 322, Animal Husbandry 322, Chemistry 300. [2-3; 0-0]

411. (1½) **Poultry Feeds and Feeding.**—Physiology of avian digestion. Review of nutritional requirements. Composition and classification of feed-stuffs. Formulation of rations for different classes of poultry. Feeding practices and management. Text-book: Heuser, *Feeding Poultry*. Prerequisites: Poultry Science 322, Animal Husbandry 322. [0-0; 2-2]

415. (1½) **Diseases and Hygiene.**—Anatomy and physiology of the fowl; poultry sanitation and hygiene; common ailments of poultry and their treatment. Study of micro-organisms pathogenic for poultry. Practice in serological tests. Microbial content of eggs. Autopsies. Inspection of farms. [0-0; 2-2]

420. (1½) **Physiology of Sex, Reproduction, and Endocrinology** — Fundamentals of egg production and reproduction in the domestic fowl. Recent advances in endocrinology affecting poultry. [0-0; 2-2]

425. (3) **Undergraduate Essay.**

430. (1½-3) **Research.**—Directed.

Courses Primarily for Graduate Students

500. (1½) **Seminar in Poultry Nutrition.**—Current research and literature. Studies of experimental methods and design. To be taken only with consent of instructor.

513. (1½) **Advanced Poultry Breeding.**—Special phases and recent research findings. Lectures, seminars, and research. Text-books: Hutt, *Genetics of the Fowl*; Lerner, *Population Genetics and Animal Improvement*. Prerequisites: Biology 332, Poultry Science 313, Plant Science 421, Animal Husbandry 513. (Given in 1957-58 and alternate years.) [0-0; 2-2]

522. (3) **Nutritional Bio-assay Techniques.** — References: A.O.A.C. *Methods of Analysis*; Emmens, *Principles of Biological Assay*. To be taken only with consent of instructor. (Lecture and laboratory hours to be arranged.)

530. (3) **Directed Studies.**—On an approved problem. (Breeding, nutrition, physiology, marketing.)

549. (5-6) **Master's Thesis.**

Psychology

100. (3) **Introductory Psychology.**—As in Arts and Science.

Russian

100. (3) **Basic Russian.**—As in Arts and Science.

200. (3) **Russian.**—As in Arts and Science.

Soil Science

Note: Soil Science 312 is open to students in Bacteriology for credit in Arts and Science.

200. (1½) **An Introduction to the Study of Soils.**—Weathering; mechanical constitution of soil—organic matter, minerals, water and air, soil biology. Soil development and classification. [3-2; 0-0]

203. (2) **General Forest Soils.**—An introduction to the physical, chemical, and biological characteristics of soils, soil-plant relationships, soil formation, morphology and classification, nature and properties of forest soil groups. [1-2; 2-2]

212. (1½) **Soil Fertility.**—The principles underlying soil management and tillage, plant nutrient relationships in soil, acid alkaline and saline soils, commercial fertilizers. [0-0; 2-2]

300. (3) General Soils.—The genesis, characterization, classification, distribution and use of soils. The course is designed for students requiring a general knowledge of the characterization and factors determining the suitability of soil for specific uses. Credit will not be given to students both for this course and for Soil Science 200. Not offered in 1957-58.

[2-2; 2-2]

312. (3) Soil Bacteriology.—Soil as a natural habitat for microorganisms; factors determining distribution and activity of bacterial species. Prerequisite: Bacteriology 100. Text: Waksman, *Soil Microbiology*, latest edition. This course open for credit in Arts and Science.

[1-4; 1-4]

314. (1½) Soil Conservation.—Soil-water-plant relationships, utilization of soil resources, run-off and erosion, conservation practices. Prerequisites: Physics 100 or 101, Soil Science 200 or 203.

[2-2; 0-0]

403. (1½) Soil Physics.—Nature, surface behaviour and electro-chemical properties of soil clays, soil moisture, structure, permeability, air and temperature. Prerequisites: Soil Science 200 or 203, Physics 100 or 101, Chemistry 200 or 205—recommended, Chemistry 304.

[3-0; 0-0]

404. (1½) Soil Chemistry.—Ion exchange and colloidal properties of soils, factors affecting the behaviour of ions in the soil and soil solution. Prerequisites: Soil Science 200 or 203, Chemistry 200 or 205—recommended, Chemistry 304.

[0-0; 3-0]

405. (1½) Laboratory Methods for Studying the Physical and Chemical Properties of Soils.—Prerequisites: Soil Science 200 or 203, Chemistry 200 or 205.

[0-3; 0-3]

416. (1½) Soil Genesis, Morphology, and Classification.—Factors of soil formation, description and classification of soils, soil survey, soil maps and reports. Prerequisites: Geology 200, Soil Science 200 or 203.

[0-0; 2-2]

417. (1½) Soil Surveying.—Two to three months of field work under direction of an accredited soil surveyor, supported by an essay relative to some phase of the field operations. Prerequisite: Second Class standing in Soil Science 416.

423. (1) Undergraduate Seminar.

425. (3) Undergraduate Essay.

430. (3) Directed Studies.—Systematic work on approved problem.

Courses Primarily for Graduate Students

500. (2) Graduate Seminar.

512. (3) Advanced Soil Bacteriology.—Lectures and laboratories relating to specific groups of soil organisms. Prerequisites: Chemistry 300 and Soil Science 312.

[1-4; 1-4]

515. (3) Advanced Physical and Chemical Properties of Soils.—Lectures and laboratories relating to specific phases of soil physics and soil chemistry. Prerequisites: Soil Science 313 and 415, and at least 9 units of chemistry.

[1-4; 1-4]

530. (3) Directed Studies.

549. (5-6) Master's Thesis.

Spanish

90. (3) Beginners' Spanish.—As in Arts and Science.

Zoology

For descriptions of other courses in Zoology, see Arts and Science.

201. (2) Agricultural Entomology.—Structure, recognition and life histories of insects and their control. Text-book: Metcalf and Flint, *Destructive and Useful Insects*.

[0-0; 2-3]

1957-58

**THE
FACULTY
OF
LAW**

1957 - 1958

1957-58

FACULTY OF LAW

General

The course in the Faculty of Law covers a period of three years and prepares students for admission to the practice of law and for business and government service. The curriculum is based on the standard curriculum adopted by the Canadian Bar Association for instruction in the common law system. The degree granted is that of Bachelor of Laws (LL.B.).

Admission

The general requirements for admission to the University are given on pages 62-64 of this Calendar.

Candidates seeking admission to the Faculty of Law must submit to the Registrar two recent passport-type photographs of themselves (in addition to the photograph required on first admission to the University), endorsed with their names, at the time of their first registration in the Faculty.

Candidates must present evidence of having:

- (a) graduated from an approved university; or
- (b) successfully completed the requirements of the Faculty of Commerce and Business Administration in the combined B.Com., LL.B. course in the University of British Columbia; or
- (c) successfully completed the first three years of the course leading to the degree of Bachelor of Arts in the University of British Columbia and obtained in the Third Year thereof an average of not less than 60% at the regular sessional examination;* or
- (d) successfully completed the first two years of the course leading to the degree of Bachelor of Arts in the University of British Columbia and obtained in the Second Year thereof an average of not less than 65% at the regular sessional examination;* or
- (e) successfully completed the equivalent of (b), (c), or (d) at an approved university.

These requirements are subject to this qualification: candidates who have failed or have other deficient standing in any year of a law course at another institution must, unless the Faculty of Law determines otherwise because of very exceptional circumstances, obtain full standing in that year before they will be considered for admission, for repetition or otherwise, to the Faculty of Law.

Advanced Standing

Undergraduates in other faculties or schools of law may, upon application, be granted such standing as the Faculty may determine.

General University Regulations

General University regulations concerning discipline, health, and other matters as detailed on pages 56-71 of this Calendar are applicable to students in the Faculty of Law.

Registration

Application for entrance to the Faculty of Law must be made to the Registrar of the University not later than September 16th, when lectures begin. Registration must be completed by September 21st.

*Students proposing to seek admission to the Faculty of Law are strongly recommended to take Commerce 151.

It is recommended that those planning to enter the Faculty interview a member of the Faculty of Law as early as possible in their University course.

Combined Course

Students who have completed their matriculation requirements may take a combined course leading to the degrees of B.Com., LL.B. See page 292.

Attendance and Examinations

A student who fails to comply with the regulation in respect of attendance at lectures, except for reasons deemed satisfactory by the Faculty, may, upon the recommendation of the Faculty, be required by the Senate either to repeat the work of the year or to withdraw from the Faculty.

Examinations will be held in April at the close of each session except in respect of those subjects which are given in the First Term only, when examinations will be held immediately prior to the Christmas vacation.

A student, in order to pass his year, must obtain an average of not less than 55 per cent. on the work of that year. No supplemental examinations will be granted or held. Successful candidates will be graded as follows:

First Class, an average of 80 per cent. or over; Second Class, 65 to 80 per cent.; Passed, 55 to 65 per cent.

A student who does not meet the above requirements in any year may, on the recommendation of the Faculty, be required by the Senate either to repeat the work of the year or to withdraw from the Faculty.

For regulations regarding re-reading of papers see page 66.

Admission as Barristers and Solicitors

Admission to the Bar of the Province of British Columbia is governed by the provisions of the Legal Professions Act and the regulations of the Law Society of British Columbia. Information concerning the requirements may be obtained on application to the Secretary of the Law Society, Court House, Vancouver, B.C.

The examinations held in the Faculty are co-examined by examiners appointed by the Law Society, and applicants for admission to the Bar who hold the degree of LL.B. from the University are granted exemption by the Law Society from the professional examinations prescribed by the regulations of the Society, which form part of the qualifications for admission to the Bar.

Prizes, Bursaries, Scholarships

A number of University prizes, bursaries, and scholarships are open to students in the Faculty of Law. See later section of this Calendar.

Moot Court

Students in the Faculty are required to argue at least one case before the Moot Court in each year of the course. Students who do not meet the requirements with respect to the Moot Court in any year may, on the recommendation of the Faculty, be required by the Senate either to repeat the work of the Year or to withdraw from the Faculty.

COURSES OF INSTRUCTION

FIRST YEAR

Contracts

101. References: Wright (Milner ed.), *Cases on the Law of Contracts*; Cheshire and Fifoot, *Law of Contracts*; Anson, *Law of Contract*; Williston,

Contracts (Students' Ed.); Corbin, *Contracts* (Students' Ed.); Readings in the Law of Contracts; Pollock, *Principles of Contracts*; Salmond and Williams, *Contracts*. Mr. Curtis.

Criminal Law

104. References: *U.B.C. Cases on Criminal Law*; Criminal Code; Tremear; Crankshaw; Kenny, *Outlines of Criminal Law*. Mr. Remnant.

History of English Law

107. References: Potter, *Historical Introduction to English Law*; Maitland and Montague, *Sketch of English Legal History*; Windeyer, *Legal History*; MacRae, *History of English Law*; Holdsworth, *History of English Law*; Pollock and Maitland, *History of English Law*. Mr. Herbert.

Judicial and Legislative Process

110. References: Glanville Williams, *Learning the Law*; Hood-Phillips, *First Book of English Law*; Cardozo, *Nature of the Judicial Process*; Wise and Winfield, *Elements of Jurisprudence*; Allen, *Law in the Making*. Mr. Kennedy.

Property I

113. References: Crossley Vaines, *Personal Property*; Brown, *Personal Property*; Cheshire, *Modern Real Property*; *Land Registry Act*, R.S.B.C. 1948. Mr. Todd.

Torts

116. References: Wright, *Cases on the Law of Torts*; Prosser, *Torts*; Salmond, *The Law of Torts*; Pollock, *The Law of Torts*; Winfield, *Text-book on the Law of Tort*. Mr. MacIntyre.

SECOND YEAR

Agency and Partnership

201. References: *U.B.C. Cases on Agency*; Bowstead, *Agency*; Pollock, *Law of Partnership*. Mr. Herbert.

Bills and Notes

204. References: *U.B.C. Cases on the Law of Bills and Notes*; Russell, *Bills of Exchange*; Falconbridge, *Banking and Bills of Exchange*; MacLaren, *Bills, Notes, and Cheques*; Britton, *Bills and Notes*. Mr. Vaughan.

Company Law

207. References: *U.B.C. Cases on Company Law*; Gower, *Company Law*; Companies Act, R.S.B.C. 1948. Mr. Todd.

Equity

210. References: Smith and Read, *Cases on Equity*; Ashburner, *Equity*; Hanbury, *Modern Equity*; Maitland, *Equity*. Mr. Justice Sheppard.

Insurance

213. References: *U.B.C. Cases on Insurance Law*; Insurance Act of British Columbia. Mr. Schmitt, Mr. Brown.

Labour Law

216. References: *U.B.C. Cases on Labour Law*; other references to be announced. Mr. Carrothers.

Property II

219. References: *U.B.C. Cases on Property*; Williams, *Canadian Law of Landlord and Tenant*; Hill and Redman, *Law of Landlord and Tenant*. Mr. MacIntyre.

Procedure I

222. References: Odgers, *Pleading and Practice*; Supreme Court Rules. Mr. Smith.

Public International Law†

225. References: Oppenheim, *International Law*; Brierly, *The Law of Nations*; Starke, *Law of Nations*; MacKenzie and Laing, *Canada and the Law of Nations*; Nussbaum, *Concise History of the Law of Nations*; Sohn, *Cases on World Law*. Mr. MacKenzie, Mr. Bourne.

THIRD YEAR

Administrative Law

301. References: C. K. Allen, *Law and Orders*; Carr, *Concerning English Administrative Law*; Carr, *Delegated Legislation*, Griffith and Street, *Principles of Administrative Law*; Robson, *Justice and Administrative Law*; Landis, *The Administrative Process*; Gellhorn, *Administrative Law*; Report of the Committee on Ministers' Powers. Mr. Bourne.

Conflict of Laws

304. References: *U.B.C. Cases on Conflicts*; Cheshire, Falconbridge, Cook, Dicey, Goodrich, Graveson. Mr. Kennedy.

Constitutional Law

307. References: MacRae, *Materials on Constitutional Law*; O'Connor, *Report on B.N.A. Act*; Laskin, *Canadian Constitutional Law*. Mr. Bourne.

Domestic Relations

310. References: *U.B.C. Cases on Domestic Relations*; Eversley, *Domestic Relations*. Mr. Herbert.

Evidence

313. References: Phipson, *Law of Evidence*; Cockle, *Leading Cases on Evidence*; Wigmore, *Evidence*. Mr. Dryer.

Legislation*

314. References: To be announced. Mr. Carrothers.

Mortgages and Suretyship

316. References: *U.B.C. Cases on Mortgages*; Falconbridge, *Mortgages*; Hanbury and Waldcock, *Law of Mortgages*; Turner, *Equity of Redemption*. Mr. MacIntyre.

†A student who has taken Political Science 435 may be exempted from taking this course, but he will then be required to take in its place some other course to be prescribed by the Faculty of Law.

*A student may at his option take either (i) Legislation or (ii) Taxation and either Municipal Law or Shipping.

Municipal Law*

317. References: The Municipal Act, The Vancouver Charter, The Village Municipalities Act; P.A.S. Report on City of Vancouver, 1955; Report on Provincial-Municipal Relations in B.C., 1948; Manning, *Assessments and Rating*; Proctor, *Municipal Corporations*. Mr. Todd.

Procedure II

319. References: Court of Appeal Act and Rules; Supreme Court Act (Dom.) and Rules; Crown Office Rules. Mr. Beckett. Mr. Branca.

Shipping*

322. References: Mayers, *Admiralty Law and Practice*; Roscoe, *Admiralty Practice*; Canada Shipping Act; Admiralty Act; Water Carriage of Goods Act. Mr. Tuck.

Taxation

325. References: *U.B.C. Cases on Income Taxation*; Willis, *Lectures on Taxation*; LaBrie, *The Meaning of Income*; Perry, *Taxation in Canada*; Magill, *Taxable Income*; Stikeman, *Lectures on Taxation*; Ratcliffe and McGrath, *Income Tax Laws*; Hannan and Farnsworth, *Principles of Income Taxation*; LaBrie and Westlake, *Deductions Under the Income War Tax Act*; Plaxton, *Canadian Income Tax Laws*. Mr. Ladner, Mr. Carlyle.

Trusts

328. References: Keeton, *Trusts*; Scott, *Trusts*; Scott, *Essays on Wills and Trusts*; Trustee Act. Mr. Kennedy.

Wills

331. References: *U.B.C. Cases on Wills and Trusts*; Bailey, *Wills*; Widdifield, *Executors' Accounts*; Administration Act; Wills Act. Mr. Kennedy.

*A student may at his option take either (i) Legislation or (ii) Taxation and either Municipal Law or Shipping.

1957-58

**THE
FACULTY
OF
PHARMACY**

1957 - 1958

1957-58

FACULTY OF PHARMACY

General

The course in the Faculty of Pharmacy covers a period of three years and leads to the degree of Bachelor of Science in Pharmacy (B.S.P.). The curriculum is based on the standard curriculum adopted by the Canadian Conference of Pharmaceutical Faculties.

Admission

The general requirements for admission to the University are given on pages 62-64.

For admission to Pharmacy it is required that the student shall have completed the First Year in Arts and Science with credit for the courses shown below and an average grade of at least 60%, or that he shall have fulfilled these requirements by Senior Matriculation or equivalent work taken in an approved university.

The required subjects are Chemistry 101; English 100 and 101, Mathematics 101; Physics 100 or 101 or Zoology 105 (or Senior Matriculation Biology 100), and one optional subject to be chosen from Economics 100, French 110 or 120, Geography 101, German 90 or 110 or 120 or 130, History 101 or 102, Latin 90 or 110 or 120, Music 105, Philosophy 100, Polish 110, Psychology 100, Russian 100, Spanish 90 or 110 or 120.

Because of limited laboratory accommodation, the number of students admitted to the First Year in the Faculty of Pharmacy is restricted to 60. Preference will be given to those students who have completed the practical training requirement and to such others as have been accepted as registered students of the Pharmaceutical Association of the Province of British Columbia on or before August 15th. Candidates should submit their credentials, prior to this date, to the Registrar, Pharmaceutical Association of the Province of British Columbia, 310 Dominion Bank Bldg., 207 West Hastings Street, Vancouver 3.

Requirements for Licensing

In order to practice Pharmacy in the Province of British Columbia it is necessary to be licensed by the Pharmaceutical Association of the Province. The licensing requirements include twelve consecutive months of practical training which must be completed: (a) prior to attendance at the Faculty of Pharmacy or (b) following graduation with the B.S.P. degree. When the period of practical training is completed prior to attendance at the Faculty it is preferable that it follow First Year Arts and Science. However, provided certain requirements are met, the practical training may be completed following high school graduation. Details of these requirements may be obtained from the Registrar of the Pharmaceutical Association.

The bylaws of the Council of the Pharmaceutical Association of the Province of British Columbia provide that persons desirous of becoming registered students of the Association shall before either commencing the period of practical training or attendance at the Faculty of Pharmacy send to the Registrar of the Pharmaceutical Association an application on the form required by the Association, together with the fee prescribed for such registration.

Physical Education

Two courses in Physical Education are required of all students in First Year of the Faculty of Pharmacy except ex-service personnel and members of military units operating on the campus. For details of requirements see pages 151-154.

Examinations and Advancement

1. Examinations in all subjects, obligatory for all students, are held in April. Examinations in December are obligatory in all First Year courses, and in all Second and Third Year courses except where exemption has been granted by Faculty. Applications for special consideration on account of illness or domestic affliction must be submitted in writing to the Dean not later than two days after the close of the examination period. (See page 58.)
2. The passing mark is 50 per cent. in each subject, and successful candidates taking a complete year's work of eighteen units will be graded as follows: First Class, an average of 80 per cent or over; Second Class, 65 to 80 per cent.; Passed, 50 to 65 per cent.
3. In any course which involves laboratory work, a student must complete the laboratory assignments with a satisfactory record before being admitted to the written examination of the course. A student may be required by the Faculty to discontinue such a course during any term if he fails to maintain a satisfactory standing in laboratory work, or if he is absent from an appreciable number of laboratory periods through illness or other causes.
4. A student who has failed at the regular final examinations in not more than 6 units, but has made an average of at least 50 per cent. on the work of the year, may be granted supplemental examinations in the subject or subjects in which he has failed. Notice will be sent to students to whom such supplemental examinations have been granted.
For regulations regarding re-reading of examination papers see page 66.
5. Supplemental examinations will be held in August. Applications for supplemental examinations must be in the hands of the Registrar on or before July 15th, and must be accompanied by the required fee.
6. A student must pass in all subjects of each year before being admitted to the Pharmacy courses of the succeeding year. If the general standing of a student is sufficiently high he may be permitted to take certain courses of the succeeding year in addition to the courses necessary to complete the year in which he is registered, but in no case shall the total exceed 18 units. Any student who has taken scheduled courses in another faculty or university, or any student who is required to repeat his year, may be exempted from attending lectures and laboratories and from passing examinations in subjects in which he has made at least 65%.
7. Any student whose academic record, as determined by the tests and examinations of the first term, is found to be unsatisfactory, may, upon the recommendation of the Faculty, be required by the Senate to discontinue attendance at the University for the remainder of the session.
8. Term essays and examination papers may be refused a passing mark if they are noticeably deficient in English.

Prizes, Bursaries, Scholarships

A number of prizes, bursaries and scholarships are open to students in the Faculty of Pharmacy. See later section of this Calendar.

Curriculum

First Year

Zoology 105 or Physics 100 or 101, Chemistry 205 or 200, Bacteriology 100, English 150, Pharmacy 211, 222, 231, 261.

Second Year

Biology 400, Chemistry 300, Commerce 359 and 369, Pharmacy 312, 332, 352, 361.

Third Year

Biochemistry 410, Pharmacy 413, 433, 442, 452, 463; a three-unit optional subject to be selected with the approval of the head of the department and the Dean.

Thesis

A thesis, acceptable to the Faculty, will be required of all students in the Third Year of Pharmacy as part of the graduation requirements. The topic must be selected, with the approval of the Dean, early in the Third Year's work.

First Aid

A recognized first aid certificate is a requirement for graduation in the Faculty of Pharmacy.

COURSES OF INSTRUCTION

211. (3) **General Principles and Processes of Pharmacy.**—The operations and apparatus used in the manufacture, testing and dispensing of medicinal products, with special reference to the general principles involved. Various types of official and non-official preparations. [2-3; 2-3]

222. (1) **Metrology and Pharmaceutical Calculations.** — Weights and measures; calculations involved in pharmaceutical procedures. [1-0; 1-0]

231. (1½) **Botanical Basis of Pharmacognosy.**—An introduction to the structure and function of plants as a basis for the study of pharmacognosy. [3-2; 0-0]

261. (1½) **Introduction to Pharmacy.**—A brief history of the development of pharmacy; pharmaceutical terminology; various types of pharmaceutical literature. [1-0; 2-0]

312. (3) **Compounding and Dispensing.**—Types of extemporaneous and official preparations; reading, compounding and dispensing of prescriptions. [2-3; 2-3]

332. (1) **Introductory Pharmacognosy and Biopharmacy.**—General introduction to the physiological, therapeutic, and chemical classes of plant and animal drug products; vaccines, sera, etc.; sources, constituents, production, actions and uses. [0-0; 2-0]

352. (2) **Pharmaceutical Chemistry.**—The principles of inorganic chemistry as applied to pharmaceutical procedures; medicinally important inorganic chemicals, including radioactive materials; the assay and testing of chemical drugs. [1-4; 1-4]

361. (1) **Pharmaceutical Law and Ethics.**—Early legislation pertaining to pharmacy; Provincial and Federal legislation affecting the practice of pharmacy; ethical principles and responsibilities. [2-0; 0-0]

413. (3) **Prescriptions.**—More involved types of standard and extemporaneous preparations; more advanced methods of compounding and dispensing of prescriptions; study of pharmaceutical specialties. [1-4; 1-4]

414. (3) **Problems in Pharmaceutics.**—More difficult types of pharmaceutical procedures and preparations; practical assignments involving review of current literature; independent investigation of official and commercial drug products. [1-4; 1-4]

415. (1) **Problems in Dispensing.**—A study of unusual problems occurring in the compounding and dispensing of prescriptions; individual assignments involving library and laboratory work. [0-0; 1-3]

416. (3) Manufacturing Pharmacy.—The apparatus, methods and problems of large scale production of pharmaceutical products. Registration limited. [1-4; 1-4]

421. (2) Hospital Pharmacy Administration.—History, development and organization of hospitals; supervision, control and economics of the hospital pharmacy; and related topics. Field work and field work conferences will be conducted during the second term. [2-0; 1-2]

423. (3) Cosmetic Preparations. — Physical, chemical and physiological properties of various types of cosmetics; packaging and merchandising; preparation of typical cosmetic formulas. [2-3; 2-3]

433. (3) General Pharmacognosy. — Plant and animal products used in pharmacy and medicine, chemotherapeutic agents of biological origin, hormones and glandular products; sources, physico-chemical characteristics, constituents, production, actions and uses. [2-3; 2-3]

434. (3) Problems in Pharmacognosy.—Individual problems for experimental investigation on drug products derived from biological sources. [1-4; 1-4]

442. (3) Pharmacology.—The mechanism of action, therapeutic applications and toxicity of drugs. Text-book: to be announced. [3-0; 3-0]

443. (2) Common Diseases and Newer Therapeutic Agents.—General description of the more common diseases with particular reference to newer pharmaceutical preparations used in their treatment. [2-0; 2-0]

444. (3) Problems in Pharmacology.—Individual assignments involving library and laboratory investigation of certain aspects of drug action. [1-4; 1-4]

452. (3) Organic Medicinal Products.—The chemistry of natural and synthetic organic medicinal compounds and their physico-chemical relationships; identification and synthesis of representative organic drugs. [3-2; 3-2]

455. (3) Drug Testing and Assaying.—Analytical techniques applied to pharmaceutical preparations including photometric, fluorimetric, chromatographic and electrotitrimetric; assay of official and non-official preparations involving special techniques. Registration limited. [1-4; 1-4]

456. (3) Problems in Pharmaceutical Chemistry.—Recent advances in the chemistry of organic medicinal products; individual problems related to synthesis and the isolation of active principles from crude drugs. Registration limited. [1-4; 1-4]

463. Selected Topics.—A series of lectures designed to introduce students to various special aspects of pharmaceutical practice. Thesis. No unit value. [1-0; 1-0]

472. (1) Pesticides.—Physiological action and chemical properties of insecticides, rodenticides, weedicides, etc. [2-0; 0-0]

473. (1) Veterinary Pharmacy.—Drugs used in common animal and poultry diseases, veterinary pharmacology, etc. [0-0; 2-0]

482. (1) Photographic Materials.—Photographic principles and practices; characteristics of photographic equipment. [1-1; 1-1]

Other Departments

For descriptions of courses offered by other departments see under Arts and Science or Medicine.

**THE
FACULTY
OF
MEDICINE**

1957-1958

1957-58

FACULTY OF MEDICINE

General Information

The medical course extends through four academic sessions and leads to the degree of Doctor of Medicine (M.D.). The purpose is to provide graduates with the basic knowledge and technical skill required for the modern practice of medicine.

The first two years of the course, devoted to the fundamental or pre-clinical medical sciences, are mainly given on the campus of the University. However, at the beginning of the second term of the Second Year, instruction is transferred in part to the Vancouver General Hospital, Shaughnessy Hospital and St. Paul's Hospital.

The Third and Fourth Years of the course, the clinical years, are designed, not only to bring the student into contact with patients and to give him a knowledge of the natural history of diseases and how to recognize them, but also to provide him with the essentials of modern treatment. During the clinical years, in addition to the hospitals previously mentioned, the facilities of the Children's Hospital, Grace Hospital, the Provincial Mental Hospital, and Western Rehabilitation Centre are also utilized for clinical teaching.

The physical plant of the medical school consists of well-lighted, well-equipped laboratories, lecture halls and research laboratories. Library facilities, including medical reference sections and study areas, are located in the Bio-Medical Section of the University Library and in the Bio-Medical Branch Library at the Vancouver General Hospital.

Admission to the Faculty of Medicine

General Information

Admission to the Faculty of Medicine is based primarily on ability and pre-medical achievement as demonstrated by scholastic records and aptitude tests, and on personal qualities as evidenced by interviews and letters of recommendation from persons who know the applicant well.

It is required that candidates shall have completed the equivalent of three full years in the Faculty of Arts and Science at the University of British Columbia. The minimum acceptable scholastic average is Second Class standing (65 to 80 per cent).

Classes entering the First Year of Medicine are limited to sixty (60) students.

A candidate is to take the Medical College Admission Test before the fall of his third year of pre-medical training. Arrangements to take the test should be made with the pre-medical advisor of the institution at which the student is taking his pre-medical work. Information regarding this test may be obtained from the Educational Testing Service, P.O. Box 592, Princeton, New Jersey. At the time the test is taken, the student should request that the scores be sent to the Screening Committee, Faculty of Medicine, the University of British Columbia, Vancouver 8, B.C. Failure to take the test by the time indicated above will result in relatively late consideration of the applicant's credentials by the Screening Committee.

An applicant who has attended the University of British Columbia must take the Medical College Admission Test before he will be considered for admission. In the case of a non-resident of the Province, the Faculty of Medicine will not insist that the Medical College Admission Test have been taken. If not taken, however, the applicant, if he is to receive proper consideration, must give an explanation of the circumstances.

No applicant will be accepted if he has been required to withdraw from another medical school for academic reasons.

Application blanks will be available in the Medical School office from August 15th to December 15th. Completed application should be received by that office as early as possible, and in any case not later than December 31st. It is the responsibility of the applicant to see that all official transcripts of university or college credits, including senior matriculation marks, are received in the Medical School office not later than the date mentioned.

An applicant with physical handicaps requiring periodic medical attention, or interfering with normal activities, must submit a medical certificate with his application. In this certificate, the examining physician should describe the extent of the disability and estimate its effect upon the applicant's future ability to practice medicine.

A personal interview with the Screening Committee may be required of any applicant.

An applicant who is accepted must pay a preliminary fee of \$100.00 to be applied to the tuition of the First Year of the medical course. This fee must be paid within two weeks of notification of acceptance and will not be refunded if the student subsequently enters another medical school, or if, without adequate reason, he fails to register in the Faculty of Medicine at the University of British Columbia.

A successful applicant who is taking a pre-medical course at the University of British Columbia is required to pass a physical examination at the University Health Service preceding admission. A successful applicant from another institution must pass this examination at the earliest date practicable in the first term of residence. Immunization against certain diseases is required.

Pre-Medical Requirements

The requirements listed below apply to the student taking his pre-medical work in the Faculty of Arts and Science at the University of British Columbia. An applicant from another university must submit evidence of having successfully completed equivalent prerequisite courses.

English: English 100 and 101 (Literature and Composition), English 200 (Literature and Composition).

Mathematics: Mathematics 101 (Algebra, Geometry and Trigonometry).

Chemistry: Chemistry 101 (General Chemistry), Chemistry 200 (Quantitative and Qualitative Analysis) or Chemistry 205 (Inorganic and Analytical Chemistry), Chemistry 300 (Organic Chemistry).

Physics: Physics 100 or 101 (Elementary Physics).

Zoology: Zoology 105 (General Zoology).

It is recommended that the student select courses to conform with the requirements for a baccalaureate degree. In general, medical school courses should not be anticipated.

Admission of Students by Transfer

1. A student who has successfully completed two years of the medical course at an accredited medical school may apply to transfer to this Faculty of Medicine as a Third Year student. No student will be accepted by transfer after the beginning of the Third Year.

2. The acceptance of transfer students will depend upon the existence of vacancies.

3. An applicant for transfer must present credentials covering the pre-medical and medical courses completed at the institution of his first registration.

Registration

The academic year of the Faculty of Medicine begins on the first Tuesday after Labour Day.

Registration of medical students will take place in the Medical School office, and students in each year of the medical course will be notified of the time for their registration. On the opening day of the new session, students must personally obtain registration cards at the Medical School office.

No student will be allowed to register after the first day of instruction in the term, nor will he be admitted to any class after its first meeting, except at the discretion of the Faculty.

Fees

Tuition and incidental fees in each year of the medical course are \$445.00. Additional fees include the Graduating Class Fee of \$7.00, payable by all students in their Final Year, and the Hospital Fee of \$10.00 where applicable (see page 67.)

Students in the Faculty of Medicine must conform to the general regulations of the University with respect to payment of fees at the office of the Accountant on the day of registration.

Student Expense

The following instruments and supplies will be required during the course; it is recommended that no purchases be made until details are furnished at the beginning of the courses by the departments concerned.

First Year:	Approximate Price
Microscope—an approved student model.....	(\$150.00-\$200.00)
Instruments for anatomy and physiology.....	(\$10.00)
Stethoscope	(\$5.00-\$8.00)
Laboratory coats (4).....	(\$18.00)

The microscope should be of substantial construction and provided with the following accessories: objectives—16 mm., 4 mm. and 1.8 mm. oil immersion; oculars 5 X and 10 X; triple nose piece; and substage condenser with an iris diaphragm. In Second Year the student is advised to obtain a "scanning objective" (x 2.5 or 3.5) which can be substituted for one of the standard objectives of the microscope. This is needed in the Pathology course. (The cost will vary from \$3.50 to \$7.50.)

Second Year:

Haemoglobinometer	(\$12.50-\$15.00)
Haemocytometer	(\$15.00)
Reflex Hammer	(\$2.00)

Third Year:

Ophthalmoscope with otolaryngological attachments.....	(\$40.00-\$60.00)
Sphygmomanometer	(\$35.00-\$40.00)

Information regarding text-books will be given at the first class period in each course. Not less than \$100.00 per year should be available for purchasing text-books and expendable supplies.

Financial Aid

For descriptions of bursaries, fellowships, scholarships and loans see later section of this Calendar.

Veterans' Benefits

An applicant who is entitled to educational benefits under D.V.A. may address inquiries to the Veterans' Bureau at the University.

Time Tables

Time Tables will be announced at the time of registration.

Course Leading to the M.D. Degree

The subjects in which instruction is given in the four academic sessions leading to the M.D. degree are as follows:

First Year:

Anatomy (including Embryology and Histology), Biochemistry, Human Behaviour, Physiology, Introduction to Public Health and Preventive Medicine, and History of Medicine.

Second Year:

Applied Biochemistry, Clinical Microscopy, Medicine (Clinical Diagnosis), Microbiology, Introduction to Obstetrics, Parasitology, General and Special Pathology, Introduction to Paediatrics, Introduction to Psychiatry, Pharmacology and Toxicology, Public Health, Introduction to Surgery, and Social and Cultural Values I.

Third Year:

Medicine and Therapeutics, Obstetrics and Gynaecology, Paediatrics, Special Pathology, Psychiatry, Preventive Medicine I, Radiology, Surgery (including specialties), and Social and Cultural Values II.

Fourth Year:

Medicine (including specialties), Medical Ethics and Economics, Medical Jurisprudence, Obstetrics and Gynaecology, Paediatrics, Clinical Pathology, Preventive Medicine II, Psychiatry, Physical Medicine, Radiology, Therapeutics, and Surgery (including specialties).

The First, Second, and Third Years of the medical course are divided into two terms; the Fourth Year is divided into three terms.

Examinations and Advancement

Attendance

1. Students are expected to attend all lectures and laboratory periods in each course. Admission to a lecture or laboratory and credit for attendance may be refused by the instructor for lateness, misconduct, inattention, or neglect of duty.
2. A student absent from classes because of illness must comply with the regulations of the University.
3. Unavoidable absence of one day or less for reasons other than sickness must be explained to the instructor or instructors concerned when the student returns to classes. If the absence is for longer than one day, he must receive a class re-admission slip from the Medical School office and present it to the instructors concerned.
4. A student *planning* to be absent from classes *for any reason* must obtain previous permission from the Medical School office.

Examinations

1. Examinations in the Faculty of Medicine are held in January and May. These examinations are obligatory for all students.
2. Should a student find that he will be unavoidably absent from a sessional examination, he or someone familiar with his situation must notify the Medical School office of the facts in the case before the end of the period during which the examination is scheduled. Failure to observe this rule may result in a failure being recorded in the course.
3. When a sessional examination has been missed through illness or some other justifiable cause, application for deferred examination or special consideration must be made in writing to the Dean not later than two days after the close of the examination period. If the absence was for reasons

of health, a physician's certificate indicating the nature and duration of the illness must be submitted to the University Health Service.

4. A student may be denied the privilege of writing a sessional examination in any subject because of unsatisfactory work or attendance and in this case he will be considered to have failed in the course.

5. In any course which involves both laboratory work and written examinations, a student is required to make satisfactory standing in both parts. If the course is repeated, no exemption will ordinarily be granted from the work in either part.

6. Term essays and examination papers may be refused a passing mark if they are illegible or noticeably deficient in English.

7. The passing mark in the Faculty of Medicine is sixty per cent. Examinations will be graded as follows: First Class, an average of 80% or over; Second Class, 65% to 79%; Passed, 60% to 64%.

8. All results of final examinations will be passed upon by the Promotions Committee and approved by Senate. Release will be made by the Registrar. Final examination results will not be communicated through any other channel.

Advancement

1. The Faculty will determine the student's fitness for promotion at the end of each session. No student with defective standing will be promoted.

2. A student whose academic standing is unsatisfactory may, upon the recommendation of the Faculty, be required by Senate either to withdraw from the Faculty or to repeat the entire work of the year.

3. If the progress of a student has been unsatisfactory in any given session, the Faculty may permit a supplemental examination in the subject failed provided: (i) his attendance has been satisfactory; (ii) he has not failed in more than three subjects; and (iii) he has an average of at least 60% in the work of the year including the failed subjects. The department or departments concerned may direct such work as will be necessary to prepare for the supplemental examination. If this work is completed satisfactorily during the summer, and the student passes the supplemental examination, he may be promoted.

4. A student in the First Year who fails to be promoted will not be permitted to repeat the year except under special circumstances and with the permission of Senate on the recommendation of the Faculty.

5. A student will not be permitted to repeat a year more than once, except under special circumstances and with the permission of the Senate on the recommendation of the Faculty.

Subjects of the Final Examinations

First Year:

Anatomy (including Embryology and Histology), Biochemistry, Physiology, and Public Health and Preventive Medicine.

Second Year:

Applied Biochemistry, Clinical Microscopy, Medicine, Microbiology, Pathology, Parasitology, Pharmacology, Public Health, Surgery, and Toxicology.

Third Year:

Medicine, Obstetrics and Gynaecology, Paediatrics, Pathology, Psychiatry, Preventive Medicine, and Surgery.

Note: Questions on Radiology may be asked on the papers in Medicine, Surgery, Paediatrics or Obstetrics.

Fourth Year:

Conjoint Examinations

The majority of the Canadian medical colleges now utilize the Medical Council of Canada Examinations as final examinations in the Fourth Year, and the University of British Columbia conforms to this practice.

The Medical Council prescribes papers in Medicine and Therapeutics, Obstetrics and Gynaecology, Public Health and Preventive Medicine, and Surgery. The Faculty of Medicine will grade these papers for University purposes. In addition, the Faculty of Medicine will administer University examinations in the subjects of Paediatrics and Psychiatry.

All written and oral examinations will be held in late April or in May, depending upon the schedule of the Medical Council of Canada.

The fee which is charged by the Medical Council of Canada is one hundred dollars (\$100.00) payable to the Registrar of the Medical Council.

The successful completion of these examinations is prerequisite to the granting of the M.D. degree.

Enabling Certificates

1. An Enabling Certificate is required for admission to the examinations of the Medical Council of Canada. This Certificate must be obtained from a Provincial College of Physicians and Surgeons.

2. If a student plans to practice in British Columbia, he should make application to the Registrar, College of Physicians and Surgeons of British Columbia, to receive the required Enabling Certificate. Application should be made *not later than February 1st* in the Final Year of the medical course.

3. A student planning to practice medicine outside this Province should comply with the regulations of the appropriate licencing body, including the requirements of other Colleges of Physicians and Surgeons.

4. A student who has registered in another Province should ordinarily obtain his Enabling Certificate from the Province of his student registration.

Requirements for the Degree of M.D.

1. Each candidate for the degree of Doctor of Medicine is required to present a thesis acceptable to the Faculty before March 1st of his Final Year. The subject is to be chosen between the end of the Second Year and mid-January of the Third Year. The Medical School office is to be advised of the title and form of the proposed thesis and the name of the supervisor not later than February 1st in the Third Year.

The thesis must embody the results of original investigation or of a planned course of study in a field of learning, related or unrelated to the medical sciences. It is the responsibility of the student to obtain the guidance and assistance of a counsellor in the Faculty of Medicine, or in another faculty of the University, in selecting the subject of the thesis and proceeding with its preparation in a creditable manner.

2. A candidate for the M.D. degree must be at least twenty-one years of age. He must have fulfilled all the requirements for entrance to the Faculty of Medicine and have attended the four full sessions of instruction which comprise the medical course. No one will be admitted to candidacy for the M.D. degree who has not attended at least two full sessions in the Faculty of Medicine at the University of British Columbia.

3. Each candidate for graduation must have passed all the required examinations in the subjects comprising the medical course.

4. Each candidate for the M.D. degree must make formal application for graduation at least one month prior to the Congregation at which he

expects to obtain the degree. Special forms for this purpose may be obtained from the Registrar's office.

Regulations Regarding Licence to Practice Medicine

The possession of an M.D. degree does not, in itself, confer the right to practice medicine in any Province in Canada. Each province has a College of Physicians and Surgeons, as mentioned previously, and these Colleges have the final authority to grant a licence to practice medicine within their jurisdictions. The possession of the Certificate of the Medical Council of Canada (L.M.C.C.) is one of the principal requirements of the Provincial Colleges of Physicians and Surgeons for registration.

In British Columbia, the College of Physicians and Surgeons requires that in addition to holding the certificate of the Medical Council of Canada *an applicant must have served a one-year rotating internship in an approved hospital before being eligible for a licence to practice.*

Interneship

The serving of an internship is not prerequisite to graduation from the Faculty of Medicine. In all but exceptional cases, however, it is in the best interests of the medical graduate to interne for at least one year. This is true even if he plans a career which does not involve the care of patients. Basic medical education is not considered complete without the serving of an internship.

The Faculty of Medicine assists in the arrangements for internships and advises on the merits of the internships available. The office of the Dean should be consulted early in the Fourth Year before students apply to the hospitals in which they are interested.

It should be clearly understood that the Faculty of Medicine does not undertake interne placement or the assignment of graduating students to internships. The Canadian Association of Medical Students and Internes, however, operates a placement service.

COURSES OF INSTRUCTION

Medical students are offered courses numbered 400 to 424 in the First Year of the medical course, 425 to 449 in the Second Year, 450 to 474 in the Third Year, and 475 to 499 in the Fourth Year.

Courses offered to non-medical students, numbered below 500, are intended primarily for students at pre-baccalaureate levels in the University. Courses numbered 500 or higher are normally for post-graduate students in the Faculty of Medicine and candidates for advanced degrees in the Faculty of Graduate Studies. Registration in these courses is at the discretion of the department concerned.

Department of Anatomy

390. (3) **Elementary Human Anatomy.**—An elementary course dealing with the basic structure of the human body. Prerequisites: Chemistry 101, and Zoology 105 or equivalent. Permission of the Department is required. [3-0; 3-0]

400, 401. **Human Anatomy.**—A correlated course of study of the structure of the human body including gross, microscopic and radiological anatomy, embryology and neuroanatomy. Clinics are held in cooperation with the Departments of Medicine and Surgery. Both terms. Text-books: (1) *Last, Anatomy Regional and Applied*, *Gray's Anatomy*, *Cunningham's Text-book of Anatomy*, or *Grant, Method of Anatomy*; (2) *Grant, Atlas of Anatomy*, or *Jamieson,*

Illustrations of Regional Anatomy; (3) Friedman, *Visual Anatomy*; (4) Le Gros Clark, *Practical Anatomy*; (5) Ham, *Text-book of Histology*; and (6) Elliott, *Text-book of the Nervous System*, Ransom, Clark, *Anatomy of the Nervous System*.

For Graduate Students

500. (6) Gross Human Anatomy.—An advanced laboratory course in the structure of the human body. Prerequisite: Anatomy 400 or equivalent.

501. (3) Microscopic Human Anatomy.—An advanced laboratory course in the microscopic structure of the human body. Prerequisite: Anatomy 401 or equivalent.

502. (4) Microscopic Anatomy.—The microscopic anatomy of tissues and organs in man.

503. Surgical Anatomy. — A review course in human anatomy as applied to surgery. [1-0; 1-0]

510. (2) Neuroanatomy.—The gross and microscopic study of the nervous system in man.

549. (6) M.Sc. Thesis.

649. Ph.D. Thesis.

Department of Bacteriology and Immunology

(Faculty of Arts and Science.)

425. Microbiology for Medical Students.—Principles of sterilization and microscopy; basic techniques of bacteriology and immunology; a systematic study of pathogenic bacteria; and an introduction to pathogenic fungi, rickettsiae, and viruses. Both terms.

Department of Biochemistry

400. General Biochemistry.—A laboratory and lecture course dealing with the chemical and physical chemical phenomena underlying the functioning of the normal human body; the digestion, absorption and metabolism of carbohydrates, lipids, proteins and minerals; their metabolic interrelations and energy exchanges as influenced by enzymes, vitamins and hormones. Text-books: (1) West and Todd, *Textbook of Biochemistry*; (2) Hawk, Oser, Summerson, *Practical Physiological Chemistry*. Both terms.

410. (3) Outlines of Biochemistry.—A lecture and laboratory course dealing with the chemical and physical chemical reactions associated with life processes; the digestion and absorption of carbohydrates, lipids, proteins and minerals; the metabolic interrelations and energy exchanges of these substances in living cells and the influence on such reactions of enzymes, vitamins and hormones. Text-books: (1) West and Todd, *A Textbook of Biochemistry*; (2) Hawk, Oser, Summerson, *Practical Physiological Chemistry*. [2-3; 2-3]

420. (3) General and Advanced Biochemistry.—A comprehensive course in the fundamentals of biochemistry. Primarily for Honours students. [3-0; 3-0]

421. (3) General and Advanced Biochemistry Laboratory.—A laboratory course covering the basic techniques used in biochemical research. Primarily for Honours students and normally to be taken in conjunction with Biochemistry 420. [0-9; 0-9]

449. (3) Thesis.—A laboratory research problem under the direction of a staff member.

For Graduate Students

Biochemistry 400 or 410, or the equivalent, is prerequisite to all graduate courses in Biochemistry.

500. (2) **Topics in Intermediary Metabolism.**—A course of lectures dealing with advanced aspects of intermediary metabolism selected from the current biochemical literature. [2-0; 2-0]

501. (2) **Enzymology.**—Physical chemistry of enzymes, mechanisms and chemical kinetics of biological reactions; theories of enzyme specificity and inhibition by antimetabolites. [2-0; 2-0]

502. (1) **Endocrinology.**—The chemistry and metabolic activities of the hormones. [2-0; 0-0]

505. (2) **Molecular Structure and Biological Function.**—Modern concepts of the relationship between chemical structure and function of biologically important compounds (proteins, carbohydrates, lipids, steroids, vitamins and antibiotics). [2-0; 2-0]

510. (1) **Biochemistry of Cancer.**—Biochemical aspects of neoplastic as compared with normal tissues. [0-0; 2-0]

520. (5) **Advanced Biochemical Techniques.**—A laboratory course to provide training in the practical applications of certain advanced techniques to biochemical problems. The following subjects are studied: chromatography, enzyme kinetics, quantitative immuno-chemistry, spectro-photometry and colorimetry, radioactive isotope techniques, electrophoresis, ultra centrifuge techniques. [0-12; 0-12]

530. (1) **Seminar in Biochemistry.**—Attendance at weekly seminars throughout the term and presentation of one or more papers on topics selected from the current biochemical literature. [1-0; 1-0]

549. (6) **M.Sc. Thesis.**

649. **Ph.D. Thesis.**

Department of Medicine

425. **Clinical Diagnosis.**—The methods and application of techniques of clinical history taking and physical examination, covered by lecture demonstrations and bedside clinics. Correlation of disordered function and anatomical changes as well as analysis of symptoms and signs. Close integration with the Department of Surgery is maintained in the presentation of this subject. Text-books: required—Leopold, *Principles and Methods of Physical Diagnosis*; recommended—Chamberlain, *Symptoms and Signs in Clinical Medicine*; Major, *Physical Diagnosis*; MacBryde, *Signs and Symptoms*; Hutchison and Hunter, *Clinical Methods*. Second term.

427. **Clinical Microscopy.**—A course of lectures and laboratory periods in which methods used in haematological diagnosis are studied, with emphasis particularly on their clinical application and significance. Methods of microscopic examinations of the body fluids and excreta are also studied. First term.

450. **Principles of Medicine and Clerkship in Medicine.**—1. Systematic lectures and clinics covering the broad range of the medical disorders of the following groups—cardiovascular, dermatological, endocrinological and metabolic, gastro-intestinal, haematological, infections, neurological, renal, respiratory including pulmonary tuberculosis, and rheumatic. Application of the basic medical sciences to clinical medicine is stressed. 2. Individual work and instruction of small groups on the medical wards. Students record case histories, perform physical examinations and carry out laboratory studies. Text-books: Meakin, *Practice of Medicine*; Cecil and Loeb, *Textbook of Medicine*; Harrison, *Principles of Internal Medicine*. Both terms.

451. **Introduction to Therapeutics.**—A course of didactic lectures and class exercises to introduce systematic therapeutics and the use of drugs for specific disease processes. Practice in prescription writing is included in the course. (Subject to examination at the end of the Fourth Year.) Both terms.

465. Principles of Radiological Diagnosis.—A course of lectures to acquaint the student with the use of X-ray in diagnosis. The basic physics of roentgenology is dealt with. (Questions may be included on papers in Medicine, Obstetrics, Paediatrics, or Surgery.) Both terms.

475. Medicine.—Outpatient service: the student is assigned new patients for study and takes part in the general medical clinic and specialty clinics including neurology and dermatology (five weeks). Inpatient service: the student takes part in the activities of the service by having assigned patients, attending ward rounds and clinics. Social Service aspects of medicine are discussed with the students. Division of Tuberculosis Control—the student is assigned to the Willow Chest Centre for practical experience in respect to pulmonary tuberculosis (one week). Weekly conferences are held in conjunction with the Department of Surgery for the purpose of discussion of topics in both fields. Clinical pathological conferences are held in conjunction with the Department of Pathology. Text-books—as for Medicine 450.

476. Therapeutics.—Further presentation of lectures and class exercises covering systematic therapeutics and the proper employment of drugs. Case presentations are used to demonstrate specific treatment problems. (Questions will be included on paper in Medicine.)

490. Principles of Therapeutic Radiology.—Lectures and conferences covering the physical principles employed in therapeutic radiology. First term.

Department of Neurological Research For Graduate Students

500. (1) Seminar in Research Techniques.—Attendance at weekly seminars throughout the term and presentation of one or more papers on topics selected from the related current literature. Demonstrations of classical and recently developed techniques for research in the basic neurological sciences. [1-0; 1-0]

520. (2) Cerebral Localization.—A course for senior and graduate students in the field of clinical psychology. Dissection of human brain will be undertaken in the laboratory sessions. [2-3; 0-0]

521. (1) Problems of Cerebral Localization.—A dissertation on a field related to the content of the preceding course will occupy the second term. Prerequisite is Neurology 520. [0-0; 0-1]

549. (6) M.Sc. Thesis.

Department of Obstetrics and Gynaecology

425. Introduction to Obstetrics.—A course of lectures on pelvic anatomy as applied to obstetrics, the physiology of the generative tract, physiology of pregnancy, labor and the puerperium, and the early development of the embryo. (Subject to examination at the end of the Third Year.) Text-books: Eastman, *Williams Obstetrics*; or Beck, *Obstetrical Practice*. Reference Books: Greenhill, *Principles and Practice of Obstetrics*; Johnstone, *Textbook of Midwifery*. Second term.

450. Principles of Obstetrics.—Lectures and demonstrations which deal with normal and abnormal pregnancies, labour and the puerperium. Teaching aids, such as moving pictures, models and museum material, are used extensively. Practical demonstrations and bedside clinics are utilized to collate the principles with the practice of obstetrics in managing obstetrical patients. Text-books: Eastman, *Williams Obstetrics*, or Beck, *Obstetrical Practice*. Reference Books: Greenhill, *Principles and Practice of Obstetrics*; Johnstone, *Textbook of Midwifery*. First term.

451. Principles of Gynaecology.—A series of lectures and demonstrations which deal with the more common gynaecological diseases. Teaching of small groups of students at the bedside supplements the didactic work. Text-books: Curtis & Huffman, *Textbook of Gynaecology*; Young, *Textbook of Gynaecology*; or Norvak, *Textbook of Gynaecology*. Second term.

475. Obstetrics.—Each student lives in the maternity pavilion for a period of five weeks during which he takes histories and examines patients in the Out-Patient Department, arranges for their admission to the wards, and continues to observe them through delivery up to their discharge from hospital. Daily ward rounds and teaching clinics are scheduled. A weekly clinico-pathological conference, at which the students living-in-hospital present cases to the remainder of the class, is held weekly throughout the year.

476. Gynaecology.—A weekly clinico-pathological conference at which students present cases. Gross and microscopic pathology reports are reviewed, and clinical findings are discussed. During the living-in-hospital period, the student attends Gynaecology Out-Patient Department clinics, is assigned patients on the ward for study, and is required to assist at operations.

Department of Paediatrics

425. Introduction to Paediatrics.—An introductory course of lectures and of bedside teaching in which the methods of history taking, physical examination, and diagnosis, as applicable to children are covered. (Subject to examination at the end of the Third Year.) Second term.

450. Principles of Paediatrics and Clerkship in Paediatrics.—1. Systematic lectures and clinics devoted to the essential principles of paediatrics. Among the subjects dealt with are: (a) normal digestion and pathological deviations from it in infants; (b) infant and child feeding; (c) deficiency diseases in childhood; (d) acute infectious diseases; (e) metabolic and endocrine diseases in childhood; (f) allergy; and (g) heart disease. 2. As clinical clerks, the students are instructed in methods of history taking and physical examination of infants and children.

475. Paediatrics.—Students are assigned to the Department of Paediatrics for five weeks. Mornings are spent in the Paediatric Out-Patients Department; afternoons and certain evenings are spent on the Paediatric Wards. Students are responsible for history taking and general investigation of cases assigned to them. Formal exercises throughout the period include ward rounds, demonstrations and a theatre clinic each week in which the students participate.

Department of Pathology

425. General and Special Pathology.—A lecture and laboratory course in human pathology. The gross and microscopic anatomy of human disease is considered in correlation with the clinical symptomatology of the disease processes. Text-book: Boyd, *Textbook of Pathology*. Both terms.

426. Applied Biochemistry.—A course of lectures and laboratory periods devoted to metabolic and biochemical aspects of disease. Discussions and demonstrations emphasize appropriate diagnostic laboratory procedures. Text-book: Cantarow and Trumper, *Clinical Biochemistry*. Second term.

450. Special Pathology.—A continuation of Special Pathology. Students attend demonstrations of pathological material at the Vancouver General Hospital. Both terms.

475. Clinic—Pathological Conference.—A series of pathological conferences held in cooperation with the Departments of Medicine and Surgery. A pathology externship of one week is served.

Department of Pharmacology

425. Medical Pharmacology.—A lecture and laboratory course covering the fundamental pharmacological actions of drugs. First term.

426. Toxicology.—A lecture course in toxicology. Second term.

475. Medical Jurisprudence.—A general survey of medico-legal problems likely to be encountered by physicians. The role of forensic medicine and toxicology in the administration of justice is emphasized. Third term.

For Graduate Students

500. (2) Advanced Pharmacology.—Conferences, laboratory assignments and supervised reading in the pharmacological literature. Prerequisite: Pharmacology 425 or its equivalent. [2-4; 0-0]

511. (2) Pharmacology Seminar.

[0-0; 2-4]

512. (4) Advanced Pharmacological Techniques.—Conferences, assigned readings and laboratory exercises in methods available for studying various types of drug actions. Prerequisite: Pharmacology 425 or its equivalent.

[2-6; 1-4]

513. (2) Pharmacology of Anaesthesia.—Advances in the pharmacological aspects of anaesthesiology. Conferences, assigned reading and laboratory exercises demonstrating the actions of drugs as currently applied in the practices of anaesthesiology. Prerequisite: Pharmacology 425 or its equivalent.

[1-2; 1-2]

514. (5) Neuropsychopharmacology.—Chemical mediation of central synapses and the action of drugs on the central nervous system will be emphasized. Conferences, assigned reading, and laboratory exercises. Prerequisites: Pharmacology 425 or its equivalent.

[3-6; 3-6]

549. (6) M.A. Thesis.

649. Ph.D. Thesis.

Department of Physiology

Chemistry 101 and Zoology 105 or the equivalent are prerequisite to all courses in Physiology.

400. Human Physiology.—A lecture and laboratory course on body function with particular reference to human physiology. The functions of muscle, nerve, central nervous system, special senses, metabolism, circulation, respiration, excretion, digestion, and the endocrines are dealt with. Correlation clinics are held in cooperation with the Department of Medicine. Text-books: Best & Taylor, *The Physiological Basis of Medical Practice*; Wiggers, *Physiology in Health and Disease*; Houssay, *Human Physiology*; Lovatt Evans, *Principles of Human Physiology*; Fulton, *Text-book of Physiology*; Bard, *Macleod's Physiology in Modern Medicine*; or Samson, Wright, *Applied Physiology*. Both terms.

410. (3) Advanced Mammalian Physiology.—A lecture course on body function with particular reference to mammalian and human physiology.

[3-0; 3-0]

411. (3) Advanced Mammalian Physiology Laboratory.—A laboratory course designed to illustrate physiological principles and to impart some training in physiological techniques. Normally taken in conjunction with Physiology 410, Enrollment is limited and subject to the consent of the Department.

[0-6; 0-6]

449. (3) Graduating Essay.—Students in the Fourth Year of the Honours course in Arts and Science will be required to carry out an investigation approved by the Head of the Department which will form the basis of the graduating essay.

For Graduate Students

Physiology 410, Biochemistry 410, or the equivalent, or consent of the Department, are prerequisite to all graduate courses.

511. (3) Seminar in Mammalian Physiology.—Seminar in selected topics in mammalian physiology.

[1-4; 1-4]

512. (3) **Advanced Physiological Techniques.**—A laboratory course designed to familiarize the student with certain research techniques applicable to investigation of problems in mammalian physiology. Exercises have been arranged in cooperation with the Departments of Anatomy, Biochemistry, Neurological Research, and Pharmacology. [1-4; 1-4]

513. (1) **Developmental Physiology.**—Development of physiological function during fetal life, infancy and childhood. [2-0; 0-0]

514. (1) **Physiology of Respiration.**—A study of advances in the physiology of respiration. [2-0; 0-0]

549. (6) **M.A. Thesis.**

649. **Ph.D. Thesis.**

Department of Psychiatry

400. **Human Behaviour.**—A study of personality development with particular reference to influence of age and of family relationships, and the psychological defences of the personality. Text-book: Cameron, *The Psychology of Behaviour Disorders*. Second term.

425. **Introduction to Psychiatry.**—Fundamental psychiatric concepts are discussed with particular emphasis upon psycho-pathological reactions and patterns. The elementary techniques of psychiatric examination are covered. (Subject to examination at the end of the Third Year.) First term.

450. **Principles of Psychiatry and Clerkship in Psychiatry.**—1. Lectures, clinics and ward teaching arranged to show the tangible effects of pathological thinking, feeling and behaviour. 2. As clinical clerks, the students study cases on the psychiatric wards. Observation of patients who have acute emotional disturbances, and search for psychosomatic factors in these illnesses as observed on the medical, surgical and obstetrical wards. Text-books: Mayer-Gross, Slater and Roth, *Clinical Psychiatry*; Curran & Guttman, *Psychological Medicine*. Both terms.

475. **Psychiatry.**—Lectures and demonstrations of the major psychoses. Each student attends the Provincial Mental Hospital at Essondale as a living-in-hospital clerk during a two-week period.

Department of Public Health

400. **Introduction to Public Health and Preventive Medicine.**—The development of our society and the relationship of its sociological and anthropological aspects to the practice of medicine. Factors which operate to produce health and disease, the epidemiologic concept of health and disease, and the measurement of problems in health and disease. First term.

425. **Public Health Practices.**—A demonstration of public health facilities in the community and their relation to the private practice of medicine carried on through lectures, discussion groups and field trips. The application of statistical and epidemiological methods to health problems is illustrated through lectures, demonstrations and laboratory exercises. Text-book: Smillie, *Preventive Medicine and Public Health*. Second term.

426. **Parasites of Man.**—A lecture and laboratory course which deals with the life histories of the parasites of man and of insect vectors of human infections. The application to clinical practice is stressed. Text-book: Sawitz, *Medical Parasitology*. First term.

450. **Preventive Medicine I.**—Lectures, conferences and field trips dealing with the prevention of and rehabilitation after communicable diseases, accidents, chronic diseases, and diseases peculiar to aging individuals. Text-books: Smillie, *Preventive Medicine and Public Health*; The American Public Health Association, *The Control of Communicable Diseases in Man*. Both terms.

475. Preventive Medicine II.—Occupational health, principles of comprehensive health care, medical ethics and economics, role of the practicing physician in community and environmental medicine. Both terms.

Department of Surgery

425. Introduction to Surgery.—A series of lectures designed to illustrate the basic surgical principles. Bedside and out-patient clinics illustrating the principles of physical diagnosis are given in cooperation with the Department of Medicine and surgical specialties. Students are given the opportunity to examine patients. A series of lectures and demonstrations in first aid technique is given. Text-book: Hamilton Bailey, *Physical Signs in Clinical Surgery*. Second term.

450. Principles of Surgery and Clerkship in Surgery.—Systematic lectures and clinics in general surgery, orthopaedic surgery, ophthalmology, otorhinolaryngology, urology, neurosurgery, plastic surgery, chest surgery, and anaesthesiology, which emphasize the relationships of the basic sciences to an understanding of surgical conditions. The students are expected to acquire some knowledge of the whole field of surgery during their Third Year. Surgical diagnosis is emphasized rather than surgical techniques.

On the surgical wards of the Vancouver General Hospital, Shaughnessy Hospital and St. Paul's Hospital and at the B.C. Cancer Institute, individual work and instruction of small groups of students is carried on.

As clinical clerks, the students record case histories, perform physical examinations and carry out assigned laboratory studies on the general surgical, urological and orthopaedic wards. Both terms.

Text-books: Homans, *Textbook of Surgery*; Aird, *A Companion in Surgical Studies*; Cole and Elman, *Textbook of General Surgery*; Babcock, *Principles and Practice of Surgery*; Christopher, *Textbook of Surgery*; Moseley, *Textbook of Surgery*.

475. Surgery.—Each student receives surgical instruction in the Department of Surgery for a ten-week period during which he rotates through the services of general surgery, orthopaedic surgery, ophthalmology, otorhinolaryngology, neurosurgery, urology and anaesthesiology. The student enters into the routine work of these services, attends the Out-Patient and Emergency Departments, and is assigned to operating rooms, etc.

A series of theatre clinics is scheduled in cooperation with the Department of Medicine.

A series of pathological conferences is held in cooperation with the Department of Pathology.

476. Physical Medicine and Rehabilitation.—An introduction to the principles of physical medicine and rehabilitation. Didactic lectures are combined with demonstrations. First term.

Social and Cultural Values

400. Introduction to History of Medicine.—The beginnings of medicine and its evolution as a biological science in relation to non-medical science. Great names and great events are emphasized to highlight medical progress up to the present. First term.

425. Humanities in the Western World.—An examination of the basic values of western civilization with emphasis upon philosophy and the arts. The main theme developed is that art is the expression of the cultural values of the age to which it belongs. First term.

450. Introduction to Social Sciences.—A brief review of the social sciences. The main themes of economic theory, social economics, political science, sociology, cultural anthropology, and their contributions to the understanding of contemporary problems. First term.

**THE
FACULTY
OF
FORESTRY**

1957 - 1958

1957-58

FACULTY OF FORESTRY

General

The degree of Bachelor of Science in Forestry is granted on the completion of four years' work in the Faculty of Forestry.

For the requirements for the degree of B.A.Sc. in Forest Engineering, see pages 171-202.

The courses in Forestry provide a strong, well-rounded professional forestry training and at the same time give the student, through his choice of electives, an opportunity to supplement his knowledge of allied sciences as a background for further specialized training. This objective is attained by requiring the student to take during each academic year a basic core of essential subjects and a certain number of other courses which are elective. The choice of the student's electives is governed by the particular phase of forestry in which he is interested. The electives have also been arranged so that a student wishing to proceed with graduate studies in a particular specialty may do so without the necessity of having to take, before commencing his graduate programme, a number of prerequisite undergraduate courses. The main phases of technical forestry or allied fields are: *Forest Management, Forest Business Administration, Forest Harvesting, Forest Products and Wood Technology, Forest Pathology, Forest Entomology, and Wildlife Management.*

During the period between the spring and fall sessions the student is required to engage in some industrial or professional work that will afford practical experience not obtainable in the laboratory or field classes. Before a degree will be granted, a candidate is required to satisfy the Faculty that he has completed a suitable amount of practical work related to his profession.

Between the Third and Fourth Years, the student is required to complete four weeks' work at the University Research Forest near Haney; this work must be completed to the satisfaction of the Faculty before the student can proceed into the Fourth Year. The fee for the four weeks' summer camp is \$75. In addition to the summer camp, field trips are required from time to time throughout the Third and Fourth Years.

In order to practise forestry in the Province of British Columbia it is necessary to be registered as a member of the Association of British Columbia Foresters. A forestry graduate from the Faculty of Forestry, University of British Columbia, may become registered after he has completed two years of forestry work following graduation and has submitted a satisfactory thesis.

Admission

The general requirements for admission to the University are given on pages 62-64.

For admission to Forestry, a student shall have completed the First Year in Arts and Sciences at the University of British Columbia, or its equivalent at an approved university or by Senior Matriculation.

Students who plan to enter Forestry should register for the following courses in First Year Arts and Science or in Senior Matriculation:

- Botany 105 (or Physics 100 or 101)
- Chemistry 101
- English 100 and 101
- Mathematics 101
- One additional course

A student who does not have credit for either Botany 105 or Physics 100 or 101 may be admitted to First Year Forestry but must consult the Dean before registering.

Candidates who expect to complete the requisite entrance standing through University or Senior Matriculation supplemental examinations, held in August or September, may apply for admission and their applications will be considered subject to the results of these examinations.

Students intending to enter Forestry are advised to present Chemistry 91, Mathematics 91, and Physics 91 for High School Graduation (University Programme).

Courses

Two courses in physical education are required of all students in First Year Forestry, except ex-service personnel and members of military units operating on the campus. For details of requirements see page 151.

Students entering Second Year are required to submit an essay of not less than 1000 words. This should take the form of a scientific report, preferably on original observations made during the summer. Any suitable subject, however, may be chosen. Emphasis will be placed upon the precise and accurate use of English, but credit will also be given for subject matter, form and illustrations. If the essay is not up to the standard of a pass mark in English, it will be returned for re-writing. One copy only is required. The essays must be handed in to the Dean not later than January 15th.

Students entering Third and Fourth Years are required to submit an essay. In preparing the essay the following regulations should be observed:

1. The essay shall consist of not less than 2000 words.
2. Two copies shall be submitted in properly bound form. Only one copy need contain maps and illustrations.
3. The essay shall be a technical description of the work on which the student was engaged during the summer, or of any scientific or professional work with which he is familiar. In the preparation of the essay, advantage may be taken of any source of information, but due acknowledgment must be made of all authorities consulted. It should be suitably illustrated by drawings, sketches, maps, photographs or specimens.
4. The essays shall be typewritten "double-spaced" on paper of substantial quality, standard letter size ($8\frac{1}{2}$ x 11 inches), on one side of the paper only, with a clear margin on top and left-hand side. Every student shall submit a duplicate copy of his essay for the correction of English. Students are advised to examine sample essays to be found in the Faculty library. Each student should obtain a copy of "Specifications for Summer Essays", available at the Bookstore.
5. All essays shall be handed in to the Dean not later than October 15th. All essays, when handed in, become the property of the Faculty, and are filed for reference. A maximum of 100 marks is allowed, the value being based on presentation, English and subject matter.

Forestry (B.S.F. Course)**First Year**

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
Bot. 303 Dendrology	2	2	2	2
C.E. 151 Surveying I	1	2*	1	2*
Econ. 200 Principles of Economics	3	.....	3	.....
English 150 Composition	2	.....	2	.....
For. 151 Profession of Forestry	1	.....	1	.....
Geog. 302 Weather and Climate	2	2	2	2
Math. 205 Elementary Statistics	3	2	3	2
M.E. 152 Mechanical Drawing .....	.....	3	.....	3
Phys. 100 or 101 Elementary Physics or Bot. 105 Introduction to Botany	3	2	3	2

Second Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
C.E. 250 Field Work in Surveying	End of 2nd Term, 1st Year			
For. 298 Essay .....	.....	.....	.....	.....
Bot. 303 Dendrology	2	2	2	2
Bot. 330 Introductory Plant Physiology	2	4	.....	.....
English 250 Reading and Composition	2	.....	2	.....
For. 250 Silvics .....	.....	.....	1	2
For. 251 Forest Protection I, Fire Control	2	0	1	2
For. 260 Surveying and Mapping	1	3	.....	.....
For. 264 Photogrammetry .....	.....	.....	1	3
For. 360 Mensuration	2	3	2	3
For. 371 General Logging	1	2	1	2
Soil Science 203 Forest Soils	1	2	2	2

Electives**Botany 205.****Forest Management: Geology 200.****Forest Business Administration: Geology 200.****Forest Harvesting: Mathematics 202.†****Forest Products and Wood Technology: Mathematics 202.†****Forest Pathology: Botany 315.****Forest Entomology: Zoology 105.****Wildlife Management: Zoology 105.**

*Alternate weeks.

†Satisfactory completion of Mathematics 202 is prerequisite for further work in this option.

Third Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
For. 398 Essay.....	.....	.....	.....	.....
*Biol. 331 Forest Genetics.....	0	0	2	4
†Bot. 318 Forest Pathology.....	2	2	2	2
Com. 457 Accounting and Finance.....	2	.....	2	.....
Com. 481 Industrial Management.....	2	.....	.....	.....
For. 350 Silviculture.....	.....	.....	3	2
For. 353 Seminar.....	1	.....	1	.....
†For. 355 Seeding and Planting.....	2	.....	.....	.....
†For. 365 Forestry Problems.....	.....	2	.....	2
For. 370 Wood Technology.....	2	3	2	3
For. 380 Forest Policy and Administration.....	1	.....	1	.....
‡Zool. 308 Forest Entomology.....	2	2	2	2

Electives

Forest Management: 2 to 3 units selected in consultation with the Dean.

Forest Business Administration: Commerce 331.

Forest Harvesting: Not given in 1957-58.

Forest Products and Wood Technology: Chemistry 210 or 300, Forestry 351, Physics 155 and 156.

Forest Pathology: Botany 404.

Forest Entomology: Botany 404.

Wildlife Management: Botany 404.

*Not offered in 1957-58.

†Not required for students taking the Forest Products and Wood Technology Option.

Fourth Year

Subject	First Term		Second Term	
	Lect.	Lab.	Lect.	Lab.
For. 498 Essay.....	.....	.....	.....	.....
**For. 390 Summer Camp.....	.....	.....	.....	.....
For. 453 Seminar.....	1	.....	1	.....
For. 463 Management.....	2	2	2	2
For. 473 Milling and Marketing.....	2	3*	1	3*
For. 474 Lumber Grading.....	.....	.....	1	2
For. 475 Forest Products.....	2	3*	2	3*
For. 481 Forest Economics and Finance.....	2	2	2	2

Electives

Forest Management: 8 to 10 units to be selected from the following —
Agronomy 304; Botany 425, 448; Commerce 321, 341, 458; Forestry 450, 455, 460, 464, 465, 470, 472, 476, 477, 478; Soil Science 313, 314.

Forest Business Administration: 8 to 10 units to be selected from the following—Commerce 321, 458, 341 or 464.

Forest Harvesting: Not given in 1957-58.

Forest Products and Wood Technology: 6 units from the following —
Forestry 470, 476, 477, 478, and not more than 4 units chosen in consultation with the Faculty.

Forest Pathology: Botany 418, 425; Zoology 105.

Forest Entomology: Botany 425; Zoology 302, 402.

Wildlife Management: Zoology 301, 306, 409 and 410.

EXAMINATIONS AND ADVANCEMENT

1. Examinations are held in December and in April. December examinations will be held in all subjects of the First and Second Years, and are obligatory for all students taking these subjects. December examinations in subjects of the Third and Fourth Years, excepting those subjects that are completed before Christmas, are optional with the departments concerned. Application for special consideration on account of illness or domestic affliction must be submitted to the Dean not later than two days after the close of the examination period. For further information see page 58.

2. Candidates, in order to pass, must obtain at least 50 per cent. in each subject; in courses which comprise both lecture and laboratory work students will be required to pass in both the written examinations and laboratory work before standing in the subject will be granted. The grades are as follows: First Class, an average of 80 per cent. or over; Second Class, 65 to 79 per cent.; Passed, 50 to 64 per cent. (See pars. 12 and 13.)

3. If a student's general standing in the final examinations of any year is sufficiently high, the Faculty may grant him supplemental examinations in the subject or subjects in which he has failed. Notice will be sent to all students to whom such examinations have been granted.

A candidate who has been granted a supplemental examination may write it only twice. Permission to write a third time may be given only if the course is repeated or an equivalent course taken. Tutoring approved by the Dean may be accepted as an equivalent course.

For regulations regarding re-reading of paper see page 66.

*Alternate weeks only.

**See paragraph 5, page 275.

4. Supplemental examinations will be held in September. For further information see page 66. Special examinations will not be granted, except by special permission of the Faculty and on payment of a fee of \$7.50 per paper, and then only during the third week in October or the third week in January. Special permission is granted only in exceptional circumstances, such as domestic affliction or certified illness.

5. No student with defective standing will be admitted to the Second Year.

6. No student may enter the Third or higher year with supplemental examinations still outstanding in respect of more than 4 units of the preceding year, or with any supplemental examination outstanding in respect of the work of an earlier year unless special permission to do so is granted by Faculty.

7. No student will be allowed to take any subject unless he has previously passed, or secured exemption, in all prerequisite subjects.

8. A student who is required to repeat his year will not be allowed to take any work in a higher year. A student repeating his year need not repeat the laboratory portion of certain courses provided he has obtained a standing in the laboratory work which is acceptable to the head of the department in which the course is given.

9. Any student repeating his year will not be admitted with any supplementals outstanding.

10. A student who fails twice in the work of the same year may, upon the recommendation of the Faculty, be required by the Senate to withdraw from the University.

11. Any student whose academic record, as determined by the tests and examinations of the first term, is found to be unsatisfactory, may, upon the recommendation of the Faculty, be required by the Senate to discontinue attendance at the University for the remainder of the session. Such a student will not be re-admitted to the Faculty as long as any supplemental examinations are outstanding.

12. Term essays and examination papers may be refused a passing mark if they are noticeably deficient in English.

13. Honours graduate standing will be granted to those who obtain First Class in the Final Year and who have passed any one of the three preceding years with at least 50 per cent. in each subject and 75 per cent. on the whole.

The University Research Forest

An area comprising a solid block of land about 7 miles long and $2\frac{1}{2}$ miles wide, situated north of the town of Haney was crown-granted to the University by the Provincial Government on March 25th, 1949. This area is well suited for field instruction in cruising, mensuration, silviculture, logging engineering and management and for research in forestry and related sciences.

A gift of \$140,000 by the B. C. Loggers Association has provided a well equipped and exceptionally effective camp centrally located in the area. This camp provides accommodation for 60 students and staff engaged in field practice and research.

The University Campus Forest

The Campus Forest portion of the Botanical Garden consists of a narrow belt south and west of the University, and is an example of the lowland stands on the southern coast. It contains the principal species of trees

and shrubs of the region, including old trees as well as young growth of different ages. It serves as a convenient demonstration and field study area for the Faculty of Forestry, and Departments of Biology and Botany and Zoology.

A small forest nursery is operated within the Botanical Garden nursery and is used for experimentation and demonstration and for the production of seedlings for planting on the University Forest at Haney.

Vancouver Laboratory
FOREST PRODUCTS LABORATORIES DIVISION
Forestry Branch
DEPARTMENT OF NORTHERN AFFAIRS
AND NATIONAL RESOURCES
CANADA

Professional Staff:

Administrative Section

K. G. FENSOM, B.Sc.F. (Toronto), Superintendent.
MRS. ANNE REDWOOD, B.A. (Brit. Col.), B.L.S. (Toronto), Librarian

Timber Mechanics Section

W. J. SMITH, B.A.Sc. (Brit. Col.).
P. L. NORTHCOTT, M.A.Sc. (Brit. Col.).
W. M. MCGOWAN, B.A.Sc. (Brit. Col.).
T. W. LITTLEFORD, B.A.Sc. (Brit. Col.).

Wood Preservation and Pathology Section

Wood Preservation Unit

W. M. CONNERS, B.A.Sc. (Toronto).
G. BRAMHALL, B.A.Sc. (Brit. Col.).

Wood Pathology Unit

H. W. EADES, B.Sc.F. (Washington).
J. W. ROFF, B.S.F. (Brit. Col.).
MISS E. I. WHITTAKER, B.Sc. (Alberta), M.A. (Toronto).

Wood Chemistry Section

J. A. F. GARDNER, M.A. (Brit. Col.), Ph.D. (McGill).
H. MACLEAN, M.B.E., M.A. (Brit. Col.).
G. M. BARTON, M.A. (Brit. Col.).

Wood Utilization Section

F. W. GUERNSEY, B.A.Sc. (Brit. Col.).
C. F. MCBRIDE, B.A.Sc. (Brit. Col.).
C. F. ARCHER, B.Sc.F. (Toronto).
W. C. FOUNTAIN, B.Sc.F. (Toronto).

The Vancouver Laboratory is one of two laboratories in the Federal Department of Northern Affairs and National Resources organized to carry out research on forest products. The second laboratory is located in Ottawa, serving the forest products industries of Eastern Canada with the exception of the pulp and paper industry which maintains a laboratory at McGill University—The Pulp and Paper Research Institute of Canada—for the purpose of investigating problems relating to pulp and paper research.

The Vancouver Laboratory has been maintained in close association with the University of British Columbia since its establishment in 1918. Research programmes at both it and the Ottawa Laboratory are co-

ordinated through the Forest Products Laboratories Division of the Forestry Branch with headquarters in Ottawa.

Four major sections at the Vancouver Laboratory provide facilities and equipment necessary to cover a wide range of investigations in timber mechanics, wood preservation and pathology, wood chemistry, and wood utilization. Close cooperation with industry in British Columbia and Alberta permits the ready application of research findings to commercial practice.

Contact is maintained with other forest products research organizations throughout the world, thus permitting a free exchange of technical information on a wide range of forest products subjects which is made available to the timber industry and to all interested in the use of wood. This technical service has been a most important function of the laboratory. The association between the staff of the laboratory and the University, and the ready availability of specialized equipment necessary to carry out many intricate studies, have greatly enhanced the value of the laboratory to the general public and also to the University.

COURSES OF INSTRUCTION

Agronomy

For descriptions of courses, see Agriculture.

Biology

For descriptions of courses, see Arts and Science.

Botany

For descriptions of courses, see Arts and Science.

Chemistry

For descriptions of courses, see Arts and Science.

Civil Engineering

For descriptions of courses, see Applied Science.

Commerce

For descriptions of courses, see Commerce.

Economics

For descriptions of courses, see Arts and Science.

English

150. **Composition.**—As in Applied Science.

250. **Technical Writing.**—As in Applied Science.

For descriptions of other courses in English, see Arts and Science.

Forestry

Courses in Forestry, with the exception of Forestry 300, are ordinarily open only to students proceeding towards the B.A.Sc. in Forest Engineering, and the B.S.F. Students taking the Forestry option in the Faculty of Commerce or the Wildlife Management option in Arts and Science may register in the forestry courses listed in these options provided that the full option is taken as presented. Other students may take certain of the courses offered in Forestry provided they offer the necessary prerequisites, but in all such cases permission of the instructor must be obtained.

151. (1) **The Profession of Forestry.**—Survey of the profession, opportunities available to trained men. Text-book: Shirley, *Forestry and its Career Opportunities*. Mr. Allen. [1-0; 1-0]

250. (1) **Silvics.**—Climatic, edaphic, physiographic, and biotic factors affecting the establishment and growth of trees and forests. Text-book: Toumey and Korstian, *Foundations of Silviculture*, 2nd edition. Mr. Griffith. Forest Engineering students take this course in the first term. [0-0; 1-2]

251. (2) **Forest Protection I, Fire Control.**—Fire prevention: danger rating; fire behaviour, detection, communication, transportation and suppression; control planning. Mr. Smith. [2-0; 1-2]

252. (3) **Forest Botany.**—An introduction to botany, with special reference to forest conditions. Text-book: Holman and Robbins, *A Text-book of General Botany*. Mr. Griffith. [2-2; 2-2]

260. (1) **Forest Surveying.**—Stadia; route surveying, simple curves and earthwork; solar and stellar observations; and type mapping. Text-book: Breed and Hosmer, *Elementary Surveying*. Mr. Wood. [1-3; 0-0]

264. (1) **Introduction to Forest Photogrammetry.**—Aerial surveying, photo-interpretation, and the use of air photographs in forestry. Text-book: Spurr, *Aerial Photographs in Forestry*. Mr. Smith. [0-0; 1-3]

300. (3) **Introduction to Forestry.**—This course is not open to Forestry or Forest Engineering students. Identification and distribution of the principal commercial timber trees of the world with particular reference to those of British Columbia; identification, properties and uses of the woods of these species; units of tree and forest product measurements. Prerequisite: Botany 105 or Forestry 252. Mr. Griffith. [2-3; 2-3]

†350 (2) **Silviculture.**—Silvicultural systems; intermediate cuttings; natural regeneration; applied silviculture in the various regions of North America. Text-book: Hawley & Smith, *Practice of Silviculture*, 6th edition. Mr. Haddock. [0-0; 3-2]

351. (3) **Forest Protection II, Insect and Disease Control.**—Diseases and insects in relation to forest protection, silviculture, management and forest products. Mr. Graham. [2-2; 2-2]

353. (1) **Seminar.**—Oral presentation and discussion of current forestry topics; reviews of important papers in forestry periodicals. The Staff. [1-0; 1-0]

355. (1) **Seeding and Planting.**—Artificial regeneration; forest nursery practice. Text-book: Toumey and Korstian, *Seeding and planting in the Practice of Forestry*, 3rd edition. Mr. Haddock. [2-0; 0-0]

360. (3) **Forest Mensuration.**—Log scaling; timber cruising; application and preparation of volume, stand and yield tables; statistical analysis. Text-book: Bruce & Schumacher, *Forest Mensuration*. Mr. Ker. [2-3; 2-3]

365. (1) **Forestry Problems.**—Mathematical and graphical solutions of problems drawn from the various fields of forestry. Mr. Ker. [0-2; 0-2]

370. (3) **Wood Technology.**—The macroscopic and microscopic characteristics and identification of wood; properties, morphology, and economic uses of commercial North American timbers. Text-book: Brown, Panshin and Forsaith, *Wood Technology, Volume I*. Mr. Kennedy. [2-3; 2-3]

371. (2) **General Logging.**—General and distinctive logging methods in the forest regions of North America. Text-book: Wackerman, *Harvesting Timber Crops*. Mr. Knapp. [1-2; 1-2]

380. (1) **Forest Policy and Administration.**—The development and implementation of forest policies in Canada, the United States, and other countries. Text-book: B. C., *Forest Act*. Mr. Allen. [1-0; 1-0]

390. (3) **Summer Camp.**—A four weeks' summer camp at the University Research Forest near Haney is required of all forestry students preceding their final year at the University. (See page 276.) The Staff.

†Field trips are a required part of this course.

450. (2) Advanced Silvics and Silviculture.—Fundamental silvicultural problems; the application of research findings to the practice of silviculture. Text-book: Baker, *Principles of Silviculture*. Mr. Haddock. [2-0; 2-0]

453. (1) Seminar.—Oral presentation and discussion of current forestry topics; reviews of important papers in forestry periodicals. The Staff. [1-0; 1-0]

455. (2) Directed Studies in Forestry.—In special cases and with the approval of the instructor concerned a student may carry on directed studies of specific problems in forestry. The Staff. [0-4; 0-4]

460. (2) Advanced Mensuration. — Forest inventories; prediction of growth and yield; recent developments in mensuration research methods; design and analysis of experiments. Text-book: Spurr, *Forest Inventory*. Mr. Ker. [1-2; 1-2]

463. (3) Forest Management.—Principles of forest organization and regulation of the cut; sustained yield management; working plans. Text-book: Chapman, *Forest Management*. Mr. Griffith, Mr. Smith. [2-2; 2-2]

464. (2) Forest Photogrammetry. — Forest photo-interpretation; forest mapping; volume estimation; inventory systems. Text-book: Spurr, *Aerial Photographs in Forestry*. Mr. Smith. [1-2; 1-2]

465. (2) Advanced Forest Management. — Preparation of management and working plans; forest record systems; industrial forest management. Mr. Smith. [0-0; 2-4]

470. (2) Methods in Wood Technology.—A basic study of the anatomical tissues of woody plants; preparation, sectioning, staining, and mounting; maceration. Mr. Kennedy. [1-3; 1-3]

472. (3) Logging Engineering.—Principles of engineering as applied to logging in the Pacific Northwest; analysis and cost studies of various phases of logging; the preparation of detailed logging plans; operating methods. Text-book: Matthews, *Cost Control in the Logging Industry*. Mr. Knapp. [2-2; 2-2]

†473. (2) Milling and Marketing.—Lumber manufacturing methods and machinery, mill layout and design. Lumber markets and marketing methods. Text-book: Brown, *Lumber*. Mr. Knapp. [2-3*; 1-3*]

474. (1) Lumber Grading.—An intensive study of the grading, tallying, and shipping of Pacific Coast lumber products. Text-books: B. C. Lumber Manufacturers' Association, *Lumber Grading*; B. C. Lumber Manufacturers' Association, *Standard Grading and Dressing Rules*. Mr. Dixon. [0-0; 1-2]

†475. (2½) Forest Products.—The pulp and paper industry; veneer and plywood; laminated wood; chemical and physical treatment of woods. Text-book: Panshin, Harrar, Baker and Proctor, *Forest Products*. Mr. Wellwood. [2-3*; 2-3*]

†476. (2) Plywood and Laminated Wood.—Types and characteristics of wood adhesives; manufacture, properties, and uses of plywood, laminated wood, and modified wood products. Mr. Wellwood. [3-3; 0-0]

†477. (2) Wood Seasoning and Preservation.—Principles and methods of seasoning forest products; preservative treatments. Mr. Wellwood. [0-0; 3-3]

*Alternate weeks.

†Field trips are a required part of these courses.

478. (2) Physical and Mechanical Properties of Wood.—Physical properties of wood in relation to moisture, heat, sound, and electricity. Mechanical properties of wood; standard timber testing procedures; problems. Text-book: Brown, Panshin and Forsaith, *Wood Technology, Vol. II*. Mr. Wellwood. [1-3; 1-3]

481. (3) Forest Economics and Finance.—Economic values and valuation of forest land, timber, forest products, forest areas and enterprises; land use, taxation, credit, insurance, appraisals. Text-book: Chapman and Meyer, *Forest Valuation*. Mr. Ker. [2-2; 2-2]

Courses for Graduate Students

549. (3-6) Thesis.—For M.F. degree.

551. (1-3) Problems in Forest Fire Control.—Advanced work in specialized phases of forest fire control with particular emphasis on recent developments in the fields of detection, communication, and transportation planning. Hours to be arranged. Mr. Smith.

553. (1) General Forestry Seminar.—Required of all graduate students in forestry. The Staff. [0-2; 0-2]

555. (1-3) Research in Silvics and Silviculture.—A course designed to supplement and guide the work on the thesis may be arranged with the approval of the Faculty. Hours to be arranged. Mr. Allen and Mr. Haddock.

556. Forest Tree Seed.—Seed production, collection, provenance, testing, treatment, and the application of these to the practice of forestry. Mr. Allen. [1-0; 1-0]

557. Forest Genetics.—Principles of forest genetics, extensive and intensive methods of forest tree improvement, techniques used in tree-breeding. Mr. Allen. [1-0; 1-0]

560. (1-3) Problems in Forest Mensuration.—Students with adequate training in mensuration may undertake research in forest mensuration under direction. Hours to be arranged. Mr. Ker.

561. (1-3) Problems in Forest Management.—Advanced work and special studies may be taken in forest management under direction. Hours to be arranged. Mr. Griffith and Mr. Smith.

564. (2) Problems in Forest Photogrammetry.—Students with adequate training in photogrammetry may undertake research in forest-photo interpretation and other applications of photogrammetry to forestry. Hours to be arranged. Mr. Smith. [1-2; 1-2]

565. (2) Forest Research Methods.—Curve fitting, multiple correlation, tests of significance, analysis of variance and covariance, design of experiments. Mr. Smith. [1-2; 1-2]

570. (1-3) Research in Wood Anatomy.—Advanced studies in wood anatomy; survey of literature on structure and properties of wood; laboratory technique. Hours to be arranged. Mr. Wellwood, Mr. Kennedy.

572. (1-3) Problems in Logging Engineering.—Advanced work and special studies may be taken in logging engineering under direction. Hours to be arranged. Mr. Knapp.

575. (1-3) Problems in Forest Products.—Special investigations in wood and other forest products; research, development, and marketing involved in the production of forest products. Hours to be arranged. Mr. Wellwood.

576. (2) Commercial Timbers of the World.—Structure, identification, properties, and uses of commercial timbers of the world. Mr. Wellwood. [1-3; 1-3]

578. (1-3) Research in the Problems of Wood or Wood Products.—Advanced studies in the physical properties of wood; stress-strain relationships in composite materials, derivation of working stresses for wood; chemical analysis; pulp and paper properties. Hours to be arranged. Mr. Wellwood.

581. (1-3) Problems in Forest Economics and Finance.—Advanced work may be taken under special assignment. Hours to be arranged. Mr. Ker.

645. Thesis.—For Ph.D. degree.

Geology and Geography

For descriptions of courses, see Arts and Science.

Mathematics

For descriptions of courses, see Arts and Science.

Mechanical Engineering

For description of M.E. 152, see Applied Science.

Physics

For descriptions of courses, see Arts and Science; for Physics 155 and 156, see Applied Science.

Soil Science

For descriptions of courses, see Agriculture.

Zoology

For descriptions of courses, see Arts and Science.

**THE
FACULTY
OF
COMMERCE
AND
BUSINESS
ADMINISTRATION**

1957 - 1958

1957-58

FACULTY OF COMMERCE AND BUSINESS ADMINISTRATION

The Faculty of Commerce and Business Administration offers courses leading to the degree of:

1. Bachelor of Commerce (B.Com.), after First Year Arts and Science.
2. Bachelor of Commerce (B.Com.), combined programme with C.A.
3. Bachelor of Commerce (B.Com.), for graduates of other Faculties.
4. Bachelor of Commerce, Bachelor of Laws (B.Com., LL.B.), combined degree with Faculty of Law, option 14. (Page 292.)
5. Master of Business Administration (M.B.A.), for graduates of an approved university whose academic standing meets the admission requirements of the Faculty of Graduate Studies.

Courses Leading to the Degree of B.Com.

After First Year Arts and Science or Senior Matriculation

This five-year programme, comprising First Year Arts and Science and four years in the Faculty of Commerce and Business Administration, is intended for students interested in one of the specialized fields of administrative practice.

The first three years are devoted to laying a foundation in the related sciences and the humanities, and to introducing the student to the basic business problems, principles, and practices of business.

The professional aspects of the curriculum are largely concentrated in the last two years. Because of the breadth and variety of techniques and practices involved, it has been found necessary to specify a "core" of courses which all students must take, and then to arrange a series of carefully selected and integrated programmes, known as "options", in one of which a student must register.

For each option the necessary prerequisites are specified in the pre-Commerce, First Year and Second Year Commerce programmes. Few electives are provided within the option and no deviation from the prescribed course of studies in the field of concentration is allowed unless approved by the Dean.

Admission to B.Com. Courses

(1) The general requirements for admission to the University are given on pages 62-64.

(2) For admission to the School of Commerce, students must have completed 15 units in First Year Arts and Science or its equivalent. For admission to any of the options, they must have credit in English 100, 101, and Mathematics 100 or 101. Students proposing to take Physics 100 or 101 or options 8, 9, 11, or 12 must complete Mathematics 101.

(3) Admission with advanced standing: students will be admitted with such advanced standing as is approved by the Dean, subject to the general rule that all candidates for the degree of Bachelor of Commerce must be in residence and registered in Commerce for a minimum of two Winter Sessions.

(4) Students in First Year Arts and Science who are considering enrollment in the Faculty are advised to consult the Dean during their first year at the University.

Transfers from Applied Science to Commerce

(1) Students who have spent one or two years in Engineering may be admitted to advanced standing with some credit if there is evidence from

their records that they will profit by training in the Faculty. They will require at least three years to complete any option in the Faculty.

(2) Students who have obtained full First Year standing in the B.A.Sc. Course will be admitted to First Year Commerce with credit toward a B. Com., (options 3 and 8), in Mathematics (3 units), Science (3 units), and Engineering (4 units).

(3) Students who have obtained full or partial Second Year in the B.A.Sc. Course may be given credit toward a B.Com. degree up to a maximum of English (3 units), Mathematics (6 units), Science (5 units), and Engineering (4 units). They will be excused from Mathematics 201 or 205 but will be required to take Commerce 151, Commerce 190 and Economics 200. They may be eligible for a wider range of options than those who have completed only the First Year of the B.A.Sc. Course.

(4) Students who wish to transfer should make application in writing to the Dean before the registration period, giving details of standing obtained in courses.

Optional Programmes

Students who complete the course of studies in any one of the following options will receive the degree of Bachelor of Commerce (B.Com.).

1. Accounting
2. Marketing
3. Production
4. Finance
5. Transportation and Utilities
6. Commerce and Economics
7. Commerce and Public Administration
8. Commerce and Science
9. Commerce and Actuarial Science
10. Commerce and Teaching
11. Commerce and Forestry
12. Commerce and Agriculture
13. Commerce and Hospital Administration
14. Commerce and Law (for combined degrees)

Combined Programme for C.A. and Degree of B.Com. (option 1).

1. Students Eligible for Programme

- (a) Students will be eligible to register for the Combined Programme only if:
 - (i) they have completed all the requirements for admission, without condition, to the accounting option in First Year Commerce; (ii) they are registered with the Institute of Chartered Accountants of British Columbia and are proceeding with the "Uniform Course" conducted by the Institute; (iii) they are recommended by the Institute and are approved by the Faculty of Commerce and Business Administration; (iv) they undertake, while registered at the University, to devote full-time to the University part of the programme.
- (b) Students who at any time discontinue the "Uniform Course" will be ineligible to proceed with the Combined Programme.

2. Course Requirements for the B.Com. Degree in the Programme

- (a) Except where exemptions in certain specified subjects may be granted as in (b) below, students taking the Combined Programme must complete all the course requirements announced in the Calendar for regular students in the accounting option.

- (b) At the discretion of the Faculty, students taking the Combined Programme may be granted exemption, up to 18 units, in the following courses:

Commerce 151 (3 units)—Fundamentals of Accounting; Commerce 253 (3 units)—Intermediate Accounting; Commerce 353 (1½ units)—Advanced Accounting; Commerce 450 (1½ units)—Accounting and Auditing Problems; Commerce 455 (3 units)—Auditing; Commerce 331 (3 units)—Commercial Law; Commerce 432 (1½ units)—Statute Law; Commerce 456 (1½ units)—Taxation. Exemption will be withdrawn, however, in the case of students who do not satisfactorily complete the "Uniform Course" of the Institute or who do not satisfy all other requirements of the University.

3. Attendance Requirements for Students in the Programme

- (a) Students will not be eligible to receive the B.Com. degree unless they have attended the University of B.C. (or Victoria College) as full-time students for at least one regular Winter Session.
- (b) Students must take all course work by attendance as full-time students in regular Winter Sessions at the University of B.C. (or Victoria College) or in Spring and Summer Sessions at the University of B.C.

B.Com. Degree for Graduates of Other Faculties

1. Options 1 to 7 inclusive:

(a) Graduates of other faculties of this University or of approved universities who wish to obtain training in business procedures, but who do not wish to proceed to a Master's degree or cannot qualify for admission to the Faculty of Graduate Studies, will be allowed to register as Third Year students in a programme leading to the degree of B.Com. A total of 36 units in approved courses, and full-time attendance for a minimum of two Winter Sessions, will be required.

(b) The programme consists of 27 units in prescribed courses and 9 units in electives. For students without previous training in commerce or economics the sequence of courses will be as set out below. If specified courses, or their equivalents, have been taken to meet the requirements of an earlier degree, additional electives must be chosen in consultation with the Dean, and the sequence of courses arranged accordingly. These electives will normally be in Commerce courses.

Third Year		Fourth Year	
Economics 200	— 3 units	Commerce 490	— 3 units
Commerce 331	— 3 units	Commerce 371	— 3 units
Commerce 352	— 3 units	Commerce 492	— 3 units
Commerce 361	— 3 units	*Electives	— 9 units
Commerce 381	— 3 units		
Economics 304	— 3 units		

Total 18 units

Total 18 units

*Of these 9 units, six must be taken in the area of specialization.

(c) The credit obtained by graduate students in the prescribed courses of the Third Year may be used in partial fulfilment of the requirements for admission to the M.B.A. degree programme (Faculty of Graduate Studies). Permission to transfer will be granted only to a student who has obtained first class standing in two of the six courses, has obtained a second class average in the other four, and who completes 6 units in the Summer School with second class standing.

2. Option 13 (Hospital Administration);

A limited number of graduates of approved universities will be allowed to register for a special programme leading to the degree of

B.Com. and the Diploma in Hospital Administration. (See option 13, page 300). On admission they will register for 18 units of approved courses. They will spend the following summer as trainees in supervised employment at the Vancouver General Hospital. A joint screening committee of the Faculty and Hospital will select from graduates and undergraduates registered in this option those who will be allowed to proceed to the final academic year in the option. Those not selected will be transferred to another option.

Those chosen will register for the prescribed programme of a second academic year, on completion of which they will enter the Hospital for an internship period of 17 months. During this period they must submit an acceptable graduating essay (Commerce 490).

The degree of B.Com. and the Diploma in Hospital Administration will be given to students who have obtained satisfactory standing in both the University and Hospital courses.

The Degree of B.Com. Combined with the Degree of LL.B.

Completion of the pre-Commerce year, of the first three years in the Commerce and Law option in the Faculty of Commerce and Business Administration, and of three complete years in the Faculty of Law at this University, are required for the combined degrees of B.Com., LL.B. Students must comply with the admission requirements of the Faculty of Law. Courses in Commerce may not be taken concurrently with work in Law. The B.Com. degree will be awarded on completion of the Second Year in Law.

Regulations Regarding Commerce Courses

(1) 18 units constitute a full course in each of the four years of the B.Com. programme.

(2) Without the special permission of the Dean no student may take fewer than 18 units in each Winter Session.

(3) No student may take more than 18 units in each Winter Session without permission of the Dean.

(4) Not later than the end of the First Year in Commerce, students are expected to choose their field of concentration and thereafter follow the prescribed course of studies. Transfers from one option to another may be made at the end of the Second Year, with the approval of the Dean.

(5) Students may be required to undertake field work in the business community.

(6) A small charge may be made for mimeographed material supplied by the Faculty for use in classes.

(7) A graduating essay is required, embodying the results of some independent investigation. The topic must be selected with the approval of the Dean. Before April 1st of the Third Year the counsellor for the essay must be chosen, and the essay topic approved.

(8) Students are advised to plan summer work, for at least part of their course, in the field of their option.

(9) Attention of all First Year commerce students is drawn to the Physical Education requirements (see page 151).

(10) All Second Year students, with the exception of those in Option 10, are required to attend and complete, to the satisfaction of the Dean, a course in public speaking provided by the Faculty of Commerce and Business Administration.

Examinations

(1) Examinations are held in December and in April. December examinations are held in all subjects of the First and Second Years, and are obligatory for all students. December examinations in subjects of the Third and Fourth Years, excepting those subjects that are completed before Christmas, are optional with the Dean.

(2) University Health Service: Attention of students is drawn to pages 56-58.

Standing and Credit

(1) Candidates, in order to pass, must obtain at least 50 per cent in each subject; in a course which comprises both lecture and laboratory work they will be required to pass in *both* the written examinations and laboratory work before standing in the course is granted. The grades are as follows: First Class, an average of 80 per cent or over; Second Class, 65 to 79 per cent; Passed, 50 to 64 per cent.

(2) Students may not enter the Second Year with a deficiency except by permission of the Dean.

(3) Students may enter the Third or higher Years of Commerce conditioned in not more than one subject.

(4) In view of the regulation that no student may take more than 18 units in any one year, students who enter Commerce with a deficiency will have to take a course in Summer School.

(5) Standing at graduation is determined by the average of the marks obtained in all courses of the Third and Fourth Years.

Supplementals

(1) If a student's general standing in the final examinations of any year is sufficiently high, the Faculty may grant him supplemental examinations in the subject or subjects in which he has failed. Notice will be sent to all students to whom supplementals have been granted.

(2) Students who have failed in more than two courses of a required year's work will not be allowed to write supplemental examinations, are considered to have failed in the work of the year, and will not receive credit for any of the courses passed in that year.

(3) Supplemental examinations, covering the work of both the first and second terms, will be held in August or September in respect of Winter Session examinations, and in July in respect of Summer School examinations.

Re-readings

See page 66.

Unsatisfactory Standing

(1) A student who twice fails, as defined in the section on "Supplementals", paragraph 2, may, upon the recommendation of the Faculty, be required by the Senate to withdraw from the Faculty of Commerce and Business Administration.

(2) Any student whose academic record, as determined by the tests and examinations of the first term, is found to be unsatisfactory may, upon the recommendation of the Faculty, be required by the Senate to discontinue attendance at the University for the remainder of the session.

Professional Associations

1. B.C. Institute of Chartered Accountants:

(a) Graduates with the degree of B.Com. (any option) are exempted by the Institute from the Primary Examination of the Institute, and the period of articulated service is reduced to thirty-six months. They are eligible

to write the Intermediate Uniform Examination in the autumn of the year following the year of graduation.

(b) Outstanding graduates with the degree of B.Com., accounting option, may be allowed, on the recommendation of the Faculty, to write the Intermediate Uniform Examination of the Institute in the autumn of the year of graduation. The period of articulated service remains at thirty-six months, but if the candidate is successful in the Intermediate Examination, he may write the Final Uniform Examination of the Institute one year earlier than those graduates referred to in (a) above.

(c) See Combined Programme for C.A. and Degree of B.Com.

2. Certified General Accountants Association of B.C.:

(a) Graduates of the five-year B.Com. course will be granted exemption from the First and Second Year examinations of the Association and the period of required practical experience will be reduced to thirty-six months.

(b) Graduates with the degree of B.Com., accounting option, will be granted exemption from the First, Second and Third Year examinations of the Association. The period of required practical experience will remain at thirty-six months.

3. Provincial Department of Education of B.C.:

Graduates of the Commerce and Teaching option (option 10) will be recommended to the Provincial Department of Education of British Columbia for the Academic Certificate.

Diploma Courses

The Faculty organizes and operates programmes leading to University Diplomas in a number of professional and technical fields, as set out below. Each programme requires detailed study over a period of several years, regular attendance at classes (or correspondence lessons, where specified), completion of assignments, and annual examinations in the subject matter of the year.

Admission requirements vary from programme to programme. Registration is limited to residents of this Province. Requests for information should be addressed to the appropriate course coordinator in the Faculty list in the first part of this Calendar.

1. **Certified General Accountants.** A five-year programme, designed to meet the academic requirements for the C.G.A. Certificate of British Columbia. Completion of this course is the only approved qualifying programme for admission to this professional group. Lectures or Correspondence. Admission: University Entrance or High School Graduation.
2. **Industrial and Cost Accountants.** A three or four-year programme designed to meet the academic requirements for the R.I.A. Certificate. Lectures or Correspondence.
3. **Municipal Administration.** A four-year course for persons employed in Municipal Administration. Correspondence lessons and Spring Institute. Junior Diploma on completion of First and Second Years; Senior Diploma on completion of Third and Fourth Years.
4. **School Business Administration.** A four-year course for persons employed in School Business Administration. Correspondence lessons and Spring Institute. Junior Diploma on completion of First and Second Years; Senior Diploma on completion of Third and Fourth Years.
5. **Sales Management.** A three-year programme. Lecture courses in Vancouver and Victoria.
6. **Advertising.** A three-year programme. Lecture course.

7. **National Office Managers.** A three-year programme, designed to meet the academic requirements for the C.O.A. Certificate of British Columbia. Lectures.
8. **Executive Development.** A three-year programme. Lecture courses in marketing, industrial organization and finance.

OPTION REQUIREMENTS

Pre-Commerce

Students who have completed First Year Arts or its equivalent with standing in 15 units, including English 100 and 101 and Mathematics 100 or 101, will be admitted to any option other than 8, 9, 11, 12 or 13. Students who contemplate admission to options 8, 9, 11, 12 or 13 must have obtained standing in two first year sciences, English 100 and 101, Mathematics 101 and one elective. All students must satisfy the Physical Education requirements.

First Year Commerce

Option No.	
1 to 14	Com. 151; Com. 190; Eng. 200; Econ. 200; Phys. Ed.
1, 4, 9	Math. 201; 3 units of electives.
2, 3, 5, 6,	
7, 14	6 units of electives.
8*	3 units of Science; 3 units of electives.
10**	Com. 90, 101; Educ. 102.
11	For. 252; 3 units of electives.
12***	Agric. 100; 6 units of electives.
1 to 14	Electives may be selected from: Math. 200 level course; Geog. 201; Econ. 201; Psych. 100 or 202; For. 252; Hist. 101 or 102; Phil. 100; Pol. Sc. 200; Language; Science; Anthropology; Sociology.

*Math. 205 should be chosen by those who propose to take Biology, Botany, or Zoology as a major. Math. 202 should be elected by students who propose to take Chemistry or Physics as a major.

**Students should seek advice at registration as to the sequence of courses in the electives taken.

***Bacteriology 100 is prerequisite to Dairying 200.

Second Year Commerce

Option No.	
1 to 14	Com. 252 (or 253); 261; 281; Econ. (300 level course); Econ. 304* or Math. 205; Pub. Sp.**
1 to 7, 13, 14	3 units of electives.
8	3 units of Science or Mathematics.
9	Math. 202.
10***	Educ. 401; Eng. 400 or Language; Com. 201.
11	For. 300.
12	Soil Science 200 and 212.
1 to 14	Electives may be selected from any 200, 300, or 400 level course for which the student has completed the required prerequisites.

*Econ. 304 is prescribed for options 1, 4, and 6; not required in Option 10.

**See Regulation 10, page 292; not required in Option 10.

***Econ. 300 to be taken in Third Year in Option 10.

Accounting**Option 1**

This option should be selected by those students who plan to proceed to further professional training in accounting or to enter accounting or allied fields in commerce, industry or government.

Third Year	Fourth Year
Commerce 331, 353, 354, 356, 371, 372	Commerce 432, 450, 454, 455, 490, 492
3 units of electives* outside Commerce (page 301).	3 units of electives* (page 301).

Marketing**Option 2**

This option has been organized for students intending a career in marketing and specialized training in (a) retailing, (b) wholesaling and industrial marketing, (c) advertising, (d) foreign trade, (e) market research.

Third Year	Fourth Year
Commerce 311, 320, 321, 331, 371	Commerce 459, 465, 467, 490, 492
12 units of electives* in Third and Fourth Years of which at least 6 units must be from Commerce 362, 363, 366, or 464 (page 301).	

Production**Option 3**

This option should be selected by those students interested in a career in industrial administration requiring specialized training in industrial engineering, production planning and control, quality control, and personnel management principles and techniques.

Third Year	Fourth Year
Commerce 320, 331, 354, 371, 383	Commerce 483, 484, 490, 492
Mechanical Engineering 152	Mechanical Engineering 357
Mechanical Engineering 356 or Commerce 382	Commerce 321 or 322
Commerce 321 or 322	6 units of electives* (page 301).

Finance**Option 4**

This option is designed for students who are planning to work in the field of investments, life or general insurance, or finance. Students who are interested in financial administration, either governmental or private, will be able to select courses directed towards these fields of specialization.

Third Year	Fourth Year
Commerce 331, 371, 372, 374, 375	Commerce 471, 474, 490, 492
Economics 403	6 units of electives* (page 301).
3 units of electives* (page 301).	

Transportation and Utilities**Option 5**

This option is designed for students interested in the development of rail, highway, air, water, pipeline, and other transportation agencies; traffic management; rate-making; marketing; public control of utilities.

Third Year	Fourth Year
Commerce 331, 341, 343, 371	Commerce 444, 445, 464, 490, 492
Economics 404	3 units of electives* (page 301).
3 units of electives* (page 301).	

Commerce and Economics**Option 6**

Commerce students who wish to read economics intensively are advised to select this option. No specific employment outlets can be suggested except civil service. Students who contemplate graduate work are advised to take the language elective for the first two years.

Third Year	Fourth Year
Commerce 331, 371	Commerce 456, 490, 492, 494
9 units from Economics 301, 302, 306, 402, 403	6 units of electives* (page 301).
3 units of electives* other than Economics (page 301).	

Commerce and Public Administration

Option 7

Students who contemplate trying for entrance to the civil service should find this option of value. Those who intend to proceed to graduate work are reminded that Second Year standing in a foreign language is an entrance requirement for the graduate school.

Third Year	Fourth Year
Commerce 320, 321, 331, 371 Economics 403 Political Science 300, 310	Commerce 490, 492 Political Science 400, 420 Law 317 6 units of electives* (page 301).

Commerce and Science

Option 8

This option is provided for Commerce students who wish to combine a major in one or two of the following sciences with the basic business courses of the Faculty of Commerce: physics, chemistry, biology, geology, geography, mathematics, zoology. The choice of courses in science must be arranged with the department concerned, and the standards required for entrance to Third and Fourth year courses will be determined by that department.

Third Year	Fourth Year
Commerce 331, 371 2 Science courses** 6 units from 300 or 400 level courses in Commerce, Economics, or Science	Commerce 490, 492 2 Science courses** 6 units from 300 or 400 level courses in Commerce, Economics, or Science

**An additional course in Mathematics may be taken in the Second, Third, or Fourth Year in lieu of one of the sciences.

Commerce and Actuarial Science

Option 9

This option is provided for Commerce students who wish to prepare for the examinations of the Society of Actuaries.

Third Year	Fourth Year
Commerce 331, 371, 372 Mathematics 300 6 units from any 300 or 400 level courses in Commerce, Economics, or Mathematics	Commerce 490, 492, 474 Mathematics 301, 405 6 units from any 300 or 400 level courses in Commerce, Economics, or Mathematics

Commerce and Teaching

Option 10

(1) Students are not required to offer a teaching major, other than Commerce. They will be expected, however, to take a sequence of Arts and Science courses in one subject in the First and Second Years. This programme will be arranged on registration in First Year Commerce.

(2) Students must present evidence satisfactory to the Provincial Department of Education of proficiency in typing and shorthand before the Academic Certificate will be given. Instruction will be provided in the Faculty of Commerce throughout the Winter Sessions in typing, shorthand, and secretarial practice.

(3) Practice Teaching will be carried on throughout the last two years. Arrangements are in the hands of the Faculty and College of Education of the University, and may be varied from year to year. Students must be prepared to spend approximately two weeks after the April Examinations in practice teaching outside Vancouver.

No supplementals are provided in Practice Teaching. Students who fail will be required to repeat a part or all of the Practice Teaching.

Third Year	Fourth Year
Commerce 331, 371 or 376, 391, 492	Commerce 490
Economics 300	15 units of Education
3 units of Education	
Practicum—2 weeks	

Commerce and Forestry

Option 11

This option is intended for students who wish to combine a basic training in business practices and techniques with an introduction to production, marketing and management problems in forestry. The goal is not to train technical forestry staff, but to give students in Commerce practice in applying the principles of their business courses to the operations of a major industry.

Third Year	Fourth Year
Commerce 331, 371, 458	Commerce 490, 492
Forestry 370, 371, 380	Forestry 473, 474, 475, 476, 477
3 units from any 300 level course in Commerce	3 units from any 300 or 400 level course in Commerce

Commerce and Agriculture

Option 12

This option provides Commerce students with the basic courses in business and gives them a sequence of two courses in two fields of agricultural production and marketing. It is designed for students who wish to train for administrative work in agriculture. Graduates will not be technical specialists but will have gained experience in applying the principles of business to agricultural problems.

Third Year	Fourth Year
Commerce 331, 354, 371	**Commerce 464, 490, 492
6 units of Agriculture	***6 units of Agriculture
3 units from Commerce or	3 units from any 300 or 400 level
Economics course 300 level	course in Commerce

**The essay will be in the field of Agriculture.

***Course to be in the same electives as in Third Year.

Commerce and Hospital Administration

Option 13

This option is designed for a limited number of Commerce students who wish to qualify as assistants to hospital administrators. It is a joint programme of the University and the Vancouver General Hospital. Students will be screened jointly by the University and the Hospital authorities and advised whether the Hospital is prepared to accept them as trainees before admission to the Fourth Year. The hospital internship covers a period of seventeen months at the end of the Fourth Year. Students not accepted as trainees will be transferred to another option.

Third Year	Fourth Year
Commerce 320, 321, 331, 371	Commerce 382, 492, 594
Nursing 454, 461	Social Work 568, 582
Electives—to be arranged	Electives—to be arranged

Fifth Year

Hospital Instruction and Practice, for seventeen (17) months period.

Commerce 490—Graduating Essay—on a problem arising from the hospital work, and independent collection and organization of data. No attendance at university lectures is required.

The degree of B.Com. and the Diploma in Hospital Administration will be given at the completion of the total period of training if satisfactory standing is obtained in both the University and the Hospital courses.

Commerce and Law

Option 14

This option has been designed for students who plan to take a double degree in Commerce and Law. Admission to the Third Year programme will be limited to those who are definitely proceeding to Law, and who give evidence of competency to handle this professional course. Students who have completed the Second Year, but who wish to change their course or are not allowed to proceed, may transfer to Marketing, Finance, Commerce and Economics, or Commerce and Public Administration, with no penalty. The degree of B.Com. is not awarded until the student has completed the courses required for the First and Second Years in the Faculty of Law.

Third Year	Fourth Year
Commerce 371, 456, 492, 494 Political Science 310 6 units of electives*	Fifth Year Courses prescribed for First and Second years in the Faculty of Law of the University of British Columbia. (See page 292 and admission requirements for Faculty of Law.)

*Electives may be selected from 300 or 400 level courses in Commerce, Economics, Geography, History, Political Science, Psychology, Mathematics, or Science. Home Economics 211 is an elective in option 2.

COURSES IN COMMERCE

Business Techniques

311. (3) Market Analysis and Research.—Techniques, methods and applications of market analysis. Sources of market data; quantitative market analysis; consumer surveys. Field work required entailing schedule construction, sampling, interviewing, analysis of results. Text-book: Brown, *Marketing and Distribution Research* (3rd ed. 1955). [2-2; 2-2]

Industrial Relations

320. (1½) Industrial Relations.—The influence of work environment and management practices on employee motivation and morale. Text-book: to be announced. [3-0; 0-0]

321. (1½) Personnel Management.—The practices, policies, and techniques of the personnel manager. Text-book: to be announced. [0-0; 3-0]

322. (1½) Labour Relations.— Union-management relations and the regulating legislation. Text-book: to be announced. [0-0; 3-0]

Commercial Law

331. (3) Commercial Law.—Introduction to the law of contracts, with particular reference to contracts for the sale of goods (Sale of Goods Act) and related law of personal property; negotiable instruments (Bills of Exchange Act); elementary principles of agency, partnership (Partnership Act) and company law (B. C. Companies Act); examination of selected legal and commercial documents. Case book: Carrothers, *U.B.C. Cases and*

Materials on Commercial Law. References: Anger, *Canadian Commercial Law*; Anson, *Contracts*; Sutton & Shannon, *Contracts*. [3-0; 3-0]

432. (1½) Statute Law.—Examination of selected statutes. The course is designed to complement Commerce 331, to meet the needs of students in the accounting or finance fields. [0-0; 3-0]

Transportation and Utilities

341. (3) Transportation Practices and Policies (Traffic Management).—A study of the principles of transportation and the functions of the traffic manager. Detailed examination of various regulations, documents, and rate structures of the different modes of transport. Major report required. Text-book: Currie, *Economics of Canadian Transportation*, University of Toronto Press (1954). [3-0; 3-0]

343. (3) Public Utility Problems. — Economics, rate-making and regulations applied to hydro, pipeline, and natural gas developments and operations. Text-book: to be announced. [3-0; 3-0]

444. (1½) Commercial Air Transportation.—History and development of commercial air transportation. A study of the economics of air transport with special emphasis on traffic and management problems. Assigned readings. Prerequisite: Commerce 341. [3-0; 0-0]

445. (1½) Motor Highway Transport Problems.—Principles of motor transport, legislation, classification, and tariffs. Assigned readings. Text-book: Taff, *Commercial Motor Transportation*, 1950. Prerequisite: Commerce 341. [0-0; 3-0]

Accounting

151. (3) Fundamentals of Accounting.—An introductory course on fundamental bookkeeping procedure, preparation of financial statements, and uses which may be made of accounting data in operating a business enterprise. Text-book: Finney and Miller, *Principles of Accounting, Introductory*; Thomas, *Practice Set*. [3-0; 3-0]

252. (3) Intermediate Accounting.—Principles and practices of valuation and presentation of financial statements; analytical procedures, reports, ratios and measurements in statement presentation; elements of cost accounting and consolidation. A terminal course. Text-book: Karrenbrock and Simons, *Intermediate Accounting, Standard Volume*. [3-0; 3-0]

253. (3) Intermediate Accounting.—A study of accounting principles, postulates and practices with reference to a business organization; legal forms of organizations of the business unit; analytical procedures, reports, ratios and measurements in statement presentation for students in the accounting option. Text-book: Finney and Miller, *Principles of Accounting, Intermediate*. [3-0; 3-0]

352. (3) Managerial Accounting.—The use of figure data in making decisions and in appraising actual operating results of business enterprises. The course will include a study of fundamental accounting principles, basic statistical techniques, cost accounting, budgeting. Cases will be employed to illustrate the application of these techniques. (Open to graduate students only.) Text-book: to be announced. [2-2; 2-2]

353. (1½) Advanced Accounting.—Partnership organization and dissolution; instalment and consignment sales; branch accounts; consolidations. Text-book: Finney and Miller, *Principles of Accounting—Advanced*. [3-0; 0-0]

354. (3) Cost Accounting.—Principles and methods of accounting for managerial control of costs including the use of standards. Text-book: Matz, Curry, Frank, *Cost Accounting*. [3-0; 3-0]

356. (1½) Accounting Systems. — The installation and operation of accounting systems in business organizations with particular emphasis on internal control. Text-book: Neuner and Neuner, *Accounting Systems*. [0-0; 3-0]

358. (2) Pharmacy Accounting.—Accounting systems suitable for druggists' use; inventory records; departmental accounting; branch accounting; computation of losses and gains; elementary tax problems. Text-book: to be announced. [2-0; 2-0]

359. (2) Accounting and Food Control.—An introduction to general accounting procedures, followed by application to particular problems encountered by the dietitian. Case material used to illustrate general business procedure for food administration, including construction and use of supplementary records and forms for controlling food costs. (For Home Economics students.) Text-book: to be announced. [2-0; 2-0]

450. (1½) Accounting Problems.—A review of the principles and practices of accounting by means of test problems. [0-0; 3-0]

454. (3) Controls.—A study of the position, function and methods of operation of controls in administration and organization. Techniques used to effect control over delegated authority; budgeting, sales controls, production controls, asset control and other control techniques. Text-book: to be announced. Prerequisite: Commerce 354. [3-0; 3-0]

455. (3) Auditing.—Legal and professional responsibilities of the auditor; accepted auditing standards and procedures; preparation and presentation of reports and statements. Students will be required to complete a practice set. The course will contain a number of lectures given by practitioners in the field. Text-book: Kohler, *Auditing*. Reference: Palen, *Report Writing for Accountants*. [2-2; 2-2]

456. (1½) Business Taxation.—A study of the principle income, sales, property and other taxes as they affect business enterprise in Canada. [0-0; 3-0]

457. (2) Accounting and Finance.—This course will give a foundation in basic accounting principles. It is intended to prepare students in technical fields to use accounting data in business administration. Elements of business finance will be discussed including standard types employed in industry. Text-book: Noble & Niswonger, *Accounting Principles*; Ashley and Smyth, *Corporation Finance in Canada*. [2-0; 2-0]

458. (3) Forestry Cost Accounting.—Principles of cost accounting and their use in the forest industry. Text-book: Hadley, *Cost Accounting*, and supplementary case data, to be announced. [3-0; 3-0]

459. (1½) Distribution Cost Analysis.—The nature, principles and application of distribution cost and analysis, including marginal analysis and standards, in decisions on marketing policies and methods. Text-book: Longman and Schiff, *Practical Distribution Cost Analysis*. [3-0; 0-0]

Marketing

261. (3) Marketing.—A study of the basic considerations affecting the marketing of goods and services. A survey of marketing principles and practices. Laboratory work and written reports. Text-book: Phillips and Duncan, *Marketing Principles and Methods* (third edition, 1956). [2-2; 2-2]

361. (3) Merchandising and Distribution.—For Graduate Students only. A study of the methods used in the marketing of goods and services. Techniques of merchandising, selection of channels of distribution, sales promotion and advertising, pricing. Text-book: Phillips, *Marketing by Manufacturers* (1951). [2-2; 2-2]

362. (3) Advertising.—Technical aspects of advertising; media selection; advertising strategy; campaign planning; organization. Economic and professional aspects of advertising. Discussion of business cases, field trips, projects. Text-book: Frey, *Advertising*, 1952. [2-2; 2-2]

363. (3) Retail Store Management.—Retail institutions, their location, layout, systems, receiving, marking, checking, organization, and policies, merchandise planning, pricing, and inventory control. Retail sales promotion and salesmanship. Retail credit, retail mathematics, retail services.

The assistant buyers' role in retailing. Supervised field trips. Text-book: Duncan & Phillips, *Retailing Principles and Methods*, (1951 Edition); Bernard P. Corbman, *Mathematics of Retail Merchandising*, (1952 Edition). [3-0; 3-0]

366. (3) Wholesale and Industrial Marketing.—Principles, practices and problems involved in wholesale and industrial marketing by Canadian industries. Assigned readings. [3-0; 3-0]

369. (3) Drug Store Retailing.—Principles and practices involved in the organization and operation of the chain and independent drug store. Retail mathematics, credit, advertising, display, selling, records-keeping, public relations, personnel training. Text-book: Chute & Hall, *The Pharmacist in Retail Distribution*. [3-0; 3-0]

464. (3) Foreign Trade Problems.—Export and import procedure and practices. Organization for importing, channels of distribution, foreign trade promotion, financing shipments, insurance and shipping. Practical problems of the exporter, as well as those arising from governmental regulations. Current problems in Canada's foreign trade. Text-book: Rosenthal, *Technique of Foreign Trade*. [3-0; 3-0]

465. (1½) Business Research.—Principles and practices of business research; critical study of basic sources of information; investigation of basic factors affecting the size, quality and growth of the Canadian market. Oral and written reports. Assigned readings. [0-0; 3-0]

467. (3) Marketing Management.—Problems in the field of marketing; specifically in the areas of product planning; distribution decisions; consumer analysis; market research; organizing, training, compensating, motivating a sales force; product pricing; sales forecasting, sales budgeting, sales quotas, sales potentials, sales territories; and distribution cost controls. Text-book: Tosdal, *Problems in Marketing*. [3-0; 3-0]

Finance

371. (3) Business Finance.—Problems of financing business concerns, including promotion, types of organizations, provision of long-term and short-term capital, dividend policy, expansion and combination, involvements, public policy toward corporations. Case book: Hunt and Williams, *Case Problems in Finance* (Revised Edition). Text-book: Guthmann and Dougall, *Corporate Financial Policy*, (Second Edition). Assigned readings. Prerequisites: Commerce 151 and Economics 200. [3-0; 3-0]

372. (3) Insurance.—Nature of risk and uncertainty; methods of meeting risk; the insurance mechanism; legal problems of insurance; various types of contacts and carriers; purchase of insurance by individuals. [3-0; 3-0]

374. (1½) Real Estate.—Principles underlying the utilization of land; determining factors in the location and development of residential, commercial, industrial, rural, and financial districts; appraisals. [3-0; 0-0]

375. (1½) Estate Planning.—A study of techniques. Income tax and succession duty laws are examined against the background of a number of cases designed to illustrate current estate planning practice. The value of life insurance and alternative investments is considered and several forms of property interests are discussed in detail. Text-book: Loffmark, *Cases and Materials on Estate Planning*. [0-0; 3-0]

471. (3) Case Problems in Finance.—Management and control of corporate funds. Financial budgeting for current and capital needs. [3-0; 3-0]

474. (3) Investments.—Investment principles and practices. Analytical techniques in selection of securities; security price movements, managed and fixed investment trusts. Written and oral reports. Extensive references. Text-book: Graham and Dodd, *Security Analysis*. [3-0; 3-0]

Production

281. (3) Fundamentals of Production.—A study of the problems encountered and the techniques used in establishing and operating a manufacturing plant. Text-book: Moore, *Manufacturing Management*. [3-0; 3-0]

381. (3) Industrial Organization.—A survey of the management functions involved in establishing and operating a business with particular reference to manufacturing. Special reading assignments and written reports. Text-book: Moore, *Manufacturing Management*. [3-0; 3-0]

382. (1½) Procurement and Materials Control.—Principles and practices employed in the purchase, handling and storage of materials in industry. Assigned readings. Text-book: Lewis, *Procurement—Principles and Cases*. (Revised Edition.) [3-0; 0-0]

383. (3) Production Techniques.—A detailed study of methods analysis, time study, plant layout and quality control techniques. Laboratory problems. Text-book: Ireson & Grant, *Handbook of Industrial Engineering and Management*; Laboratory Manual. [2-2; 2-2]

481. (2) Industrial Management.—A survey of industrial management principles, problems, practices, and procedures designed especially for students in Forestry and Agriculture. Text-book: Moore, *Manufacturing Management*. [2-0; 2-0]

483. (1½) Production Control Systems.—Data processing systems for planning, scheduling, dispatching and controlling manufacturing operations. Text-book: to be announced. [3-0; 0-0]

484. (2) Production Management.—Field work problems and laboratory exercises in organizing and operating a manufacturing plant. Text-book: Ireson & Grant, *Handbook of Industrial Engineering and Management*. [2-0; 2-0]

Management and Policy

190. (3) Fundamentals of Business.—Introduction to the basic concepts and techniques of business functions and organization. Text-book: to be announced. [3-0; 3-0]

490. (3) Essay.—Students will be required to submit an essay on some business topic chosen in consultation with the Dean of the Faculty or members of the Staff. Two typewritten copies of the essay, on 8½ x 11 paper, must be filed not later than March 15th for spring graduation, and August 31st for autumn graduation. See Regulation 7, page 292. [3-0; 3-0]

492. (3) Policy and Administration.—Case diagnosis and remedial measures. In this course the student is expected to apply the principles and techniques acquired in the basic courses to comprehensive problems. Extensive references. Verbal and written reports. Text-books: MacPhee, *Administration*; Smith, *Policy Formulation and Administration*; Glover and Hower, *The Administrator*. [3-0; 3-0]

494. (1½) Government and Business.—An examination of federal and provincial regulation of the economic system. Critical analysis of combines investigation legislation, price maintenance, loss leaders, patent policy, industrial and corporate concentration, measurement and maintenance of competition. Text-book: cases and materials, to be announced. [0-0; 3-0]

594. (3) Introduction to Hospital Administration.—History, development and functions of a hospital; elements of hospital organization and administration; scientific management; hospital's role in community health programme; insurance plans and services; technical requirements of departmental personnel. Open only to students in the Hospital Administration option. [2-2; 2-2]

Commerce Courses in Teacher Training

(Open to students for the B.Ed. degree and option 10 only)

91. (3) Typewriting Techniques, Practice and Methods.—Basic typewriting skills. Techniques of classroom instruction and management of typewriting classes in secondary schools. Text-books: Lessenberry, *Twentieth Century Typewriting* (6th ed.); Lamb, *Your First Year of Teaching Typewriting*; *Methods of Teaching Typewriting* (Mon. No. 71). [1-4; 1-4]

101. (3) Shorthand Techniques, Practice and Methods.—Theory of Pitman shorthand. Development of skill to a minimum standard of 75 words per minute. Methods of instruction for secondary schools. Text-books: *Basic Course in Pitman Shorthand*; *Progressive Skill Development*; *Shorthand Dictation and Transcription*. [1-4; 1-4]

201. (3) Secretarial Practice.—The development of advanced typewriting, shorthand and transcription skills, office routines, business forms, reports, correspondence, filing, business machines. The training of office workers. Text-books: to be announced. [2-2; 2-2]

376. (3) Personal and Business Finance.—An examination of the instruments of business and personal finance and a study of the methods of presenting these topics to high school students. Forms and instruments of business finance, life insurance, banking, investments, general insurance, real estate. Special project assignments. Field trips. Text-book: to be announced. [3-0; 3-0]

391. (3) Office Management.—Office organization, planning and production problems, layout, equipment, work analysis and simplification, office services. Personnel management. Design and control of office forms. Office manuals. Budgetary control. Problems and cases. Text-book: to be announced. [2-2; 2-2]

Courses Primarily for Graduate Students

520. (1½) Seminar in Human Relations.—Modern theories for the relationships between individuals and groups in industry.

522. (1½) Seminar in Labour Relations.—An evaluation and analysis of specific labour-management situations.

540. (1½) Seminar in Transportation.—Current transportation problems.

549. (3-6) Master's Thesis.—A comprehensive treatment of some theoretical or institutional problem.

551. (1) Seminar in Accounting History.—An examination of the more important aspects of accounting theory.

552. (1) Seminar in Income Determination.—An examination of the essential characteristics of business income, and the various unsettled issues in its calculation.

553. (1) Seminar in Accounting Standards.—An examination of the accounting standards recommended by professional accounting bodies in Canada, the United States and the United Kingdom—a comparison of the recommendations and a study of their impact on accounting.

554. (1) Seminar in the Controllorship Function.—The place of the controller in the business enterprise and his responsibility for financial planning and control.

551. (1) Seminar in Data Processing.—The processing of business data, manual, tabulating and electronic data-processing systems.

561. (1) Seminar in Pricing.—Pricing policies and practices in business enterprise. Governmental controls. Economic aspects.

565. (1) Seminar in Sales Forecasting.—Principles of, and quantitative practices in, sales forecasting.

566. (1) Seminar in Quantitative Market Analysis.—Quantitative techniques for analyzing the size and quality of markets; trading area analysis.

576. (1) Seminar in Investment Management.—Policies and practices of institutional investors. Quantitative analysis of security and real estate investments. Market behaviour.

577. (1) Seminar in Financial Management.—Policies and practices of corporate financial management. Capital expenditures. Regulatory influences.

580. (1½) Seminar in Production.—Readings and research in new techniques in manufacturing and production control.

591. (1½) Seminar in Business Policy.—A study of policy making in business, government and social fields.

592. (1½) Seminar in Business Administration. — An examination of present-day thinking and research in the field of business administration.

1957-58

**THE
FACULTY and COLLEGE
OF
EDUCATION**

1957 - 1958

1957-58

THE FACULTY AND COLLEGE OF EDUCATION

The Faculty and College of Education offers programmes leading to an undergraduate degree in Education, awarded by the University, and to teaching certificates, given by the Department of Education of the Province of British Columbia, in the fields of elementary and secondary teacher education. The degree granted is Bachelor of Education (B.Ed.). Graduate programmes leading to Master's degrees are offered by the Faculty of Education (see page 332) in the Faculty of Graduate Studies.

Undergraduate Certificate and Degree Programmes

A. In the Elementary Teaching Field

(1) A four-year programme from High School Graduation (University Programme), leading to the degree of B.Ed. in the elementary teaching field and meeting the course requirements for the Interim Professional Conditional Teaching Certificate.

(2) A two-year intra-mural programme for students with High School Graduation (University Programme) standing, covering the course requirements for the Interim Elementary Basic Teaching Certificate. Successful candidates will be granted credit for the first two years of the programme (1) above.

(3) A one-year intra-mural programme for students entering with full First Year University or Grade XIII (Senior Matriculation) standing, covering the course requirements for the Interim Elementary Basic Certificate. Successful candidates will be granted credit for the Second Year of programme (1) above.

(4) To meet the present demand for teachers, an emergency one-year programme for students with High School Graduation (University Programme) standing, leading to an Elementary Conditional Certificate valid for four years. During the four-year period, successful candidates must complete, by Winter or Summer Sessions, the remaining courses of programme (2) above.

B. In the Secondary Teaching Field

(1) A five-year programme from High School Graduation (University Programme), leading to the degree of B.Ed. in the secondary teaching field and meeting the course requirements for the Professional Basic Teaching Certificate.

(2) Programmes enabling elementary teachers with the first two years of credit toward the degree of B.Ed. in the elementary field to complete, by Winter or Summer Sessions, the remaining three years of training leading to the Professional Basic Teaching Certificate and the degree of B.Ed. in the secondary field.

(3) A one-year teacher-training programme enabling graduates with an acceptable bachelor's degree from a faculty other than Education, to meet the requirements for the Interim Professional Basic Teaching Certificate.

(4) A programme enabling those who have completed programme (3) above or its equivalent to proceed to the degree of B.Ed.

Teaching Certificates

Since sole authority to issue teaching certificates rests with the Provincial Department of Education, Victoria, B.C., a degree or diploma from

the University is not a licence to teach. Candidates who successfully complete any of the above programmes, however, will be recommended by the University to the Department for the appropriate teaching certificate.

Admission Requirements

Applicants for admission to the Faculty and College of Education programmes must meet the general requirements of the University (see pages 62-66). The University reserves the right however, to reject applicants for admission to the Faculty and College on the grounds of physical or health disabilities, or for other reasons.

Special additional requirements for admission to the one-year courses are listed below:

For the One-Year Emergency Programme, A (4) Above:

Candidates should normally have obtained a minimum average of approximately 65%, or the equivalent C+ in letter grades, in the final examinations for High School Graduation (University Programme) of British Columbia or the equivalent.

For the one-year programme A(3) above candidates who have passed Grade XIII (Senior Matriculation) examinations of British Columbia or the equivalent will be admitted provided they have a minimum average of approximately 65%, or the equivalent C+ in letter grades, in the final examinations for Grade XII or XIII.

Exceptions.—Others who do not meet these requirements may request consideration of their cases by the Committee on Admissions, Standing, and Courses, by applying in writing to the Registrar. Applications of this type must be received by the Registrar prior to September 1st.

For the One-Year Programme for Graduates, B (3) above:

For admission to this programme candidates must fulfil the requirements of *either* (a) *or* (b), as follows:

(a) they must be graduates of a recognized university, have completed courses meeting the requirements listed in Section (1) below under "Preparatory Courses", and have obtained an average of at least 65% in those courses of the Third and Fourth Years which make up their teaching majors, *or*

(b) they must be granted permission to register by the Committee on Admissions, Standing, and Courses. Students whose undergraduate records do not meet requirements (a) above may request consideration of their cases by the Committee by applying in writing to the Registrar. Applications must be in the hands of the Registrar before September 1st. A personal interview may be required.

Preparatory Courses

University graduates, for admission to Programme B (3) above, should have fulfilled *one* of the following conditions:

1. They must have obtained in Arts and Science at least 9 units of credit in the academic courses normally offered in the Third or Fourth Year in each of *two* of the following subjects: Art, Biology (including Botany and Zoology), Chemistry, English, French, Geography, German, History (or International Studies), Latin (or Latin and Greek), Mathematics, Music, Psychology, Physics, Russian, Spanish. Candidates will be considered to have fulfilled the requirements of one 9-unit teaching major who offer 6 units of Third and Fourth Year credit in either History or Geography plus a total of 6 units chosen from courses approved by the Faculty and College in one or more of Anthropology, Economics, Political Science, Slavonic Studies, Sociology, Geography (where the first 6 units are in History), and History (where the first 6 units are in Geography).

2. They must have completed an Honours Course in any one of the subjects listed above. An Honours Course in Psychology, however, is acceptable only if the student also has a 9-unit major in a teaching subject.

3. They must have obtained credit in Mathematics 101, Physics 100 or 101, Chemistry 101, Biology 100 or Biology 105 or Botany 105 or Zoology 105, plus a 9-unit major in one of these subjects and a further 9 units selected at will in the other three subject fields.

4. They must have obtained a B.A.Sc. degree which included courses meeting the requirements of 3. above.

5. They must have obtained a B.S.A. degree which included Mathematics 101, Physics 100 or 101, Chemistry 101, Biology 100 or Botany 105 or Zoology 105, and a further 9 units in one or more of these subjects.

6. They must have obtained a B.H.E. degree from this University or its equivalent from a recognized university.

7. They must have obtained a B.P.E. degree from this University or its equivalent from a recognized university, including in the Third and Fourth Years at least 9 units in one of the subjects listed in 1. above.

8. They must have obtained a B.Com. from this University in accordance with option 10, page 299, or its equivalent, and present satisfactory evidence of proficiency in typing and shorthand.

9. They must have obtained a 9-unit major in music, a 9-unit major in one of the subjects listed in 1. above, and the A.R.C.T. or its equivalent.

Admission with Advanced Standing

(a) Students with full Senior Matriculation or First Year Arts and Science will be admitted to the Second Year of either programme leading to a degree in Education.

(b) Students from other universities and from other countries are referred to page 63.

(c) Students who are completing work for a degree in another faculty may transfer to the Faculty and College of Education. Credit will be given for those courses already completed which meet the requirements of the programme in Education selected. Consideration in granting credit will also be given for other courses taken.

(d) Students transferring from the degree programme in the elementary field to the degree programme in the secondary field, or from one major to another within a programme, will be given credit for those courses already completed which meet the requirements of the newly selected programme.

(e) Elementary Teacher Training taken prior to September 1956, will be recognized and evaluated toward a degree in Education on the following basis:

- (i) for full Senior Matriculation of the Province of British Columbia or the equivalent of full Senior Matriculation as recognized for the Interim Elementary Basic Certificate, one year in Education;
- (ii) for Normal School (British Columbia), one year in Education;
- (iii) for the combination of (i) and (ii), i.e. for the Interim Elementary Basic Certificate, two years in Education;
- (iv) For courses credited by the Provincial Department of Education toward the Permanent E-B Certificate degree, credit will be accepted, *ipso facto*, toward the First and Second years; courses not so used will, in general, be accepted for credit above Second Year, subject to the following terms. Insofar as the programme for the degree calls for optional courses in Education (usually six to nine units), Summer School of Education courses will be accepted without any attempt to equate them to courses offered by the Faculty and Col-

lege. In order to be acceptable, courses in excess of the optional units allowed by the programme must be comparable in content and unit value to the prescribed course or courses in Education in the student's programme. Courses to the value of at least $3\frac{3}{4}$ units taken in the Summer School of Education will be accepted as the equivalent of 3 units for purposes of credit. However, work completed prior to 1936 will not be accepted. In the four-year elementary programme at least 18 units must be completed in the Faculty and College of Education, and in the five-year secondary programme the usual requirement is at least 30 units. Special cases will be considered if application is made.

(f) University graduates holding a Secondary Basic Certificate issued by the Department of Education, B.C., prior to December 31st, 1956, will be permitted to complete the B.Ed. degree by completing an additional 15 units of work in Education, or with the prior permission of the Committee on Admissions, Standing, and Courses, 12 units of work in Education plus 3 units of work regularly carrying Third Year or higher credit in a subject other than Education. Students who have completed the Teacher Training Course at the University of British Columbia, or its equivalent at a recognized university, will be granted 6 units of credit toward the B.Ed. degree.

University graduates holding the Professional Basic Certificate issued after December 31st, 1956, must complete the programme outlined on the top of page 321.

(g) Candidates for the B.Ed degree in the elementary field who already hold the Elementary Basic Certificate, must follow the programme outlined on page 321.

(h) A student who has completed courses at another university may submit to the Registrar a transcript of his record to be evaluated toward the requirements for a degree in Education at the University of British Columbia. Once registered in the Faculty and College, however, the candidate may expect credit for courses subsequently taken elsewhere only when prior permission has been obtained from the Committee on Admissions, Standing, and Courses. In every case, candidates must complete the Final Year of the degree course concerned in the University of British Columbia.

Inquiries Regarding Admission

Students who plan to enroll in the Faculty and College of Education for the first time and who are unable, prior to registration, to come to the University for an interview, should write to the Registrar, the University of British Columbia, Vancouver 8, B.C. Needless delay will be avoided if the following information is provided:

- (a) name in full;
- (b) official transcripts of high school and university records;
- (c) a "transfer of credits" statement from the Registrar, Department of Education, Victoria, B.C., if applicant holds a B.C. Teacher's certificate.
- (d) statement as to the particular course or programme in Education desired, and, where this involves the secondary programme or the upper years of the elementary programme for the B.Ed. degree, a statement of the subject or subjects preferred for majors or for honours.

Registration

Registration of qualified students in the Faculty and College of Education is governed by the general regulations of the University (see pages 62-71).

Special Regulation for the One-Year and Two-Year Elementary Programmes

In accordance with previous practice and by agreement between the University and the Department of Education, students who are taking the one-year programme or the two-year basic programme leading to *elementary school certification*, and whose homes are on the coast or lower mainland from Hope, B.C., south and west, are expected to register in the Faculty and College of Education at the University of British Columbia. Those students who are taking the one-year programme or the two-year basic programme leading to *elementary school certification*, and whose homes are on Vancouver Island, the Gulf Islands, the Northern Coast, or in the interior of British Columbia, are similarly expected to register at Victoria College, Victoria. Any inquiries about the above arrangements should be directed to the Registrar, the University of British Columbia.

This regulation does not apply (1) to certificated teachers completing the work of the Second Year in Education by Summer Sessions; or (2) to students enrolling in the programmes for secondary teacher training.

Fees and Expenses

Fees paid by students in the Faculty and College of Education are comparable to those in other faculties of the University. The tuition and student fees are \$240 in each year of the course (see page 67).

For expenses of board and room see pages 58-60.

Students should allow from \$50 to \$75 for books and equipment and a similar amount to cover travelling and living expenses which may be incurred in practice teaching within or outside Vancouver.

Financial Assistance

Where scholarship warrants and financial need is proven to the satisfaction of the Provincial Bursary-Loan Committee, considerable financial assistance in the form of loans or bursaries for students either at the University or Victoria College may be granted by the Department of Education of the Province of British Columbia. See later section of Calendar.

For other scholarships, bursaries and loans available to those proposing to attend the University of British Columbia in Vancouver, see later section of Calendar. Correspondence should be addressed to the Dean of Administrative and Inter-Faculty Affairs.

Examinations and Advancement

In general, the regulations of the Faculty of Arts and Science respecting examinations, standing and credit, supplemental examinations, re-readings and unsatisfactory standing apply in the Faculty and College of Education (see pages 82-83).

Special regulation governing graduation in the Five-Year Bachelor of Education degree programme:

To be eligible for the Bachelor of Education degree and for recommendation to the Department of Education for a Professional Basic Certificate, the candidate must have earned:

(1) a mark of at least 50% in each of the courses comprising the degree programme;

(2) an average of not less than 60% in those subjects of the programme which constitute his majors. This average of 60% cannot be attained by re-writing for higher standing. Candidates who fail to meet this stan-

dard on completion of the regular programme may acquire it by taking additional courses approved by the Committee on Admissions, Standing, and Courses in the deficient subject area or areas. Courses taken in this way for the purpose of improving standing may not be used for credit toward another degree or certificate in Education.

Programmes at Victoria College

The following may be taken at Victoria College:

- (1) The first two years of the five-year Bachelor of Education degree programme.
- (2) The first two years of the four-year Bachelor of Education degree programme at the conclusion of which the candidate is also eligible for the Interim Elementary Basic Teaching Certificate.
- (3) The one-year emergency programme for students holding High School Graduation (University Entrance) leading to the Elementary Conditional Teaching Certificate.
- (4) The one-year programme for qualified students holding Grade XIII standing (Senior Matriculation) leading to the Interim Elementary Basic Teaching Certificate.

Programmes of Study for the Education and Training of Teachers

Functions of the Faculty and College

The College of Education has four main functions. (a) It provides through courses offered by Arts and Science, Commerce, Physical Education, Home Economics, Agriculture, etc. a general cultural education to promote the growth and development of teachers as persons. (b) It provides, also through these faculties and schools, specialized information in particular subject-fields in order to promote a scholarly outlook and a disciplined mind. (c) It provides special information within the College about children, schools, and society so that teachers acquire a sound sociological, historical, psychological, and philosophical basis for their profession. (d) It provides instruction in the art and skill of the teacher as well as opportunities to practise the art in schools. The first three functions might strictly be called Teacher Education. The fourth function is often called Teacher Training. The last two functions only are the special work of the College proper.

Put in somewhat oversimplified terms, the College proper trains future teachers to study diligently whom they teach, what they teach, why they teach, and how they teach, but above all, the Faculty and College is concerned with the personal qualities of those who will teach the children of the Province. It matters most what sort of person the future teacher is, and, therefore, it is of prime importance that all trainees shall be actively and totally involved in a full university life. To this end the College relies heavily on other faculties and the extra-curricular life of the campus.

At the same time future teachers must have close contact with children in schools and, therefore, the Faculty and College relies very heavily on the goodwill of all teachers, especially those in the Greater Vancouver region.

It would be true to say that the College is the liason between school and University, between practical skills and theoretical scholarship, between applied science and independent research. While the University inculcates in the student a love of a subject the College is concerned with putting that love to practical use in educating the future generation.

Education in school involves the art and skill of making sure that useful and valuable knowledge promotes the growth of personal excellence in mind, body and spirit of the future citizens of Canada.

The Counselling Plan

Teaching is a very personal individualistic activity during which the special aptitudes, abilities, temperament, sensitivities and skills of each teacher are cultivated in order that they may have an optimum beneficial effect on children. Each future teacher is fortunately a unique individual who will contribute in a special way to the rich variety of stimuli that children will meet. Each teacher has, therefore, to be trained individually even though he or she may be educated in groups. It is necessary, therefore, for professors in the Faculty and College to know the students in their charge very well as individuals. For this reason all students during their last year are divided into small counselling groups, each under the supervision of a professor. Students receive from their group counsellors a great deal of individual tuition both in the College and in special classrooms of the city schools where practice teaching is undertaken. In addition, these small counselling groups meet in seminars or attend as a group of observers at demonstration and discussion lessons in schools. These discussion lessons may be given by the professor, by one of the students in the counselling group, or by the regular class teacher.

The Organization of Courses

The education and training of a teacher as understood by the Faculty and College takes four or five years of University study. Elementary School teachers need four and Secondary School teachers need five years. The two programmes are, however, similar in at least two respects. The general education for both is the same because both types of teachers must be cultured individuals with a broad understanding of our Canadian heritage, a well-developed philosophy of life, and a mind well trained in the art and skills of critical thinking. The professional education of both types of teacher is also similar in quality and quantity. The main and only real difference between secondary and elementary teacher education is in the amount and kind of special education. Whereas an Honours degree in Mathematics is desirable for a high school specialist, it may be more desirable for an elementary teacher to devote less time to Mathematics and more time to Art, Music, Physical Education and to special problems in the elementary school.

Basically, all teachers need the equivalent of the first two years of an Arts and Science programme, and so in Education all students are directed to certain specific courses in that Faculty. All students also need senior courses in Arts and Science or, in another faculty, and provision is made for these in senior years. Rather special emphasis is placed on English language and literature, for it is felt that all teachers need much more than an ordinary skill in English usage.

Parrallel with Arts and Science and similar courses, teachers are required to take professional education courses. Ideally the plan would be to have a large proportion of Arts and Science work in the early years and an increasing amount of professional work in the later years. Because of the shortage of teachers and certain other exigencies this plan is not entirely possible at the present time. In addition, several modifications of the basic degree programmes have also been made to accommodate the special problem of the transition period between the old one-year training plan and the present four or five-year teacher education plan.

The Bachelor of Education (Elementary) Degree Programme:

This is the standard programme designed for the training of elementary school teachers. It consists of a total of 69 units. Should a Fifth Year be

added it will consist of 15 further units decided by consultation with the Director of Elementary Education.

Upon successful completion of the first two years of this programme, the candidate will be recommended for the British Columbia Interim Elementary Basic Teaching Certificate. Upon successful completion of the remaining two years, the candidate will be awarded the degree of B.Ed. and recommended for the British Columbia Professional Conditional Certificate.

First Year		Units
English 100, 101.....		3
*History 102 or 203.....		3
Geography 101 or another laboratory science such as Biology 105.....		3
Fine Arts 101, or the first year of a language other than English, or first year Mathematics.....		3
Education 102 (includes Practice Teaching).....		3
Compulsory Physical Education.....		0
*History 101 will be accepted in lieu of History 102 if taken prior to registration in the Faculty and College of Education. For the years 1957 and 1958, in recognition of the B.C. Centenary, History 203 will be accepted as an alternative to History 102.		

Second Year		Units
Education 100.....		0
English 200.....		3
Education 201.....		3
Education 203 or 204.....		6
Education 205.....		3
Education 206.....		1½
Education 208.....		1½
(No compulsory Physical Education for those taking Education 205.)		

Third Year		Units
English 201 or second year of a language other than English.....		3
Geography 303.....		3
Psychology 301.....		3
English 400.....		3
*Major Courses.....		6
*See "Teaching Majors for Elementary Teachers", page 332.		

Fourth Year		Units
Mathematics 303 or Education 461.....		3
Drama 321, or the second or third year of a language, or Fine Arts 300, or Music 200 or 300.....		3
Education 400.....		3
*Major Courses.....		9
*See "Teaching Majors for Elementary Teachers", page 332.		

The programme above is planned so that, for the next four or five years at least, students may leave the University after the Second Year to teach in schools. The Department of Education will grant a teaching certificate to those who complete the first two years successfully, but the certificate will not be permanent until further courses in Third and Fourth year are completed; and the University will, of course, not award a degree until all four years are successfully accomplished. The plan, however, does allow teachers to complete the Third and Fourth years by Summer Session attendance or by extra-session courses during the winter.

All students seeking professional courses in the first two years must attend full-time during the day for the normal University Winter Session.

Students from other faculties and departments may transfer to the Faculty and College of Education in September of any year in the programme outlined above, and adequate provision is made for substitution of courses for those prescribed above. At least one full year of professional work must be taken, however, on campus during the Winter Session in the College of Education. All the prescribed professional courses must eventually be completed before the degree will be awarded.

The Bachelor of Education (Secondary) Degree Programme (five years):

This is the standard programme designed for the training of secondary school teachers. It consists of a total of 78 units. Every student is required either to major in two subjects ordinarily taught in high school or to take an Honours Course in one such subject. In each major, in addition to prerequisite courses, at least 15 units must be taken, 9 of which must be from senior years. A candidate who elects to take an Honours Course in one teaching field must be prepared to complete 84 units for the degree.

First Year

	Units
English 100, 101	3
*History 102	3
Two of Mathematics 101, first year science course, first year language other than English	6
Fine Arts 101 or Philosophy 100 or Psychology 100	3
Compulsory Physical Education	0
*History 101, if taken before registration in the Faculty and College of Education, will be accepted in lieu of History 102.	

Second Year

	Units
Education 202	3
English 200	3
Nine or 12 units in Arts and Science to complete any omitted from First Year Education and to commence work in two major courses* (including prerequisites)	9 or 12

*For details, see "Teaching Majors for Secondary Teachers", page 328.

Third Year

	Units
Education 301	3
Majors or Honours, and prerequisites (see pages 328-332)	12 or 15

Fourth Year

	Units
English 400	3
Education 410	3
Majors or Honours or electives (see page 328)	9 or 12
Two weeks in May—practice teaching	0

Fifth Year

	Units
Education 100	0
Education 206	1½
Education 208	1½
Education 332	3
Education 400	3
Education 404	3
One of Education 305, 307, 411, 412, 461, 490, or Drama 205 and 206	3

The Bachelor of Education (Secondary) programme is designed to give a full five-year course before a student goes out to teach. It is, however,

possible for those who have obtained some initial training and teaching experience in the elementary service to transfer to the Secondary Degree Programme through winter or summer attendance.

Special Programmes

1. Emergency One-Year Programme (Elementary):

This programme, for those with sufficiently high Grade XII standing, leads to the Elementary Conditional Certificate, which is valid for four years only (see special requirements, page 312). Students enrolling in this course will be registered as First Year Education students (Emergency Programme).

	Units
Education 100	0
Education 102 or 203	3
Education 201	3
Education 203 or 204	6
Education 205	3
English 100, 101	3

(No compulsory Physical Education for those taking Education 205.)

Additional courses to meet the requirements for the Elementary Basic Certificate are:

	Units
*Biology 105 or Geography 101	3
**History 102	3
Fine Arts 101	3
English 200	3
Education 206	1½
Education 208	1½

*Another first year laboratory science is acceptable but not preferred.

**History 101 if taken prior to registration in the Faculty and College of Education is acceptable.

2. One-Year Programme (Elementary):

This programme is for those with First Year University or Grade XIII standing. Students enrolling in it will be registered as Second Year Education students (by transfer). Full credit will be given for their standing as First Year in Education.

	Units
Education 100	0
Education 102	3
Education 201	3
Education 203 or 204	6
Education 205	3
English 200	3

(No compulsory Physical Education for those taking Education 205.)

3. One-Year Programme (Secondary) for Graduates:

Although the requirements for the Interim Professional Basic Certificate are satisfied by this course, a further 6 units are needed to satisfy the requirements for the Permanent Professional Basic Certificate.

	Units
Education 100	0
Education 206	1½
Education 208	1½
Education 301	3
Education 400	3
Education 404	3
Education 410	3

Should candidates, after completing the above programme, wish to continue toward the B.Ed. degree, the following additional courses will be required:

	Units
Education 332	3
One of Education 305, 307, 411, 412, 414, 461, 490	3
English 400	3
Approved electives	6

4. Two-year Programme for Teachers Holding a Normal School Diploma and the Elementary Basic Teaching Certificate and Proceeding to the B.Ed. Degree (Elementary Field):

Academic Courses	Units
English 200	3
*One of English 201, first year language other than English, or Mathematics 101	3
One of Biology 105, Geography 101 or another science	3
English 400	3

*Any one of these courses which have previously been taken for E-B credit may be replaced by academic or professional electives. If the student has not previously taken a history course, History 101 or 102 is strongly recommended.

Professional Courses	Units
Psychology 301	3
Education 400	3
Education 461 or Mathematics 303	3

Major Requirements

Students may choose one major totalling not more than 15 units from the list headed "Teaching Majors for Elementary Teachers" page 332.

Total	36
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5. Three-Year Programme for Teachers Holding a Normal School Diploma and the Elementary Basic Teaching Certificate and Proceeding to the B.Ed. Degree (Secondary Field):

(Note: This programme is not suitable for students who will complete the requirements for the Elementary Basic Certificate through the Faculty and College of Education.)

A. General	Units
English 200	3
*Two of First Year language other than English, Mathematics 101, first year science	6
One of English 400, second year language other than English	3

*Any one of these courses which have previously been taken for E-B credit may be replaced by academic or professional electives. If the student has not previously taken a history course, History 101 or 102 is strongly recommended.

B. Special Subject Fields**

**Major Field A including prerequisites	18
Major Field B including prerequisites	18

**Should prerequisites have been met for the major fields, this 18 unit requirement may be reduced but the total requirement for the Third, Fourth and Fifth years will not be less than 48 units.

C. Professional Subjects

Education 404	3
One of Education 400, 332, or 461	3
Total	54

6. Programme for Students Transferring from Second or Third Year of Another Faculty:

Students transferring from Second or Third Year of another faculty will be given credit, where possible, for all courses of these years. They will be required to take the Special Programme numbered 2 (above) substituting, if necessary, one of the senior courses for English 200. Second Year students will transfer to Third Year Education, conditioned standing; Third Year students to Fourth Year Education, conditioned standing.

Students with conditioned standing may resolve their deficiencies by taking courses in Summer Session.

7. Programme in Elementary Education for Graduates of other Faculties:

Graduates of other faculties interested in teaching in the Elementary or Junior High Grades may qualify for the Interim Professional Basic Teaching Certificate by taking the Special Programme (No. 2), substituting for English one of the Third or Fourth Year Education courses. Their Interim Certificates will be valid for four years, during which time they will be required to take a further 6 units of senior Education courses to fulfil the requirements for the Permanent Professional Basic Certificate.

Undergraduate Courses in Education**100. Practical Teaching Projects and Seminar.**

For both elementary and secondary teachers this course consists of a regular programme of guided practice teaching in schools together with individual counselling and group seminar work both in school and college. All students are required to present a completed practice teaching work book together with two essays to their Faculty Adviser as part of their examination in this course. No student can be awarded a degree or certificate who does not make a passing grade in this course. It is the key course in the whole Education programme even though no units are awarded.

For this course students are organized into small counselling or advisory groups under a Faculty Adviser. The adviser is responsible for giving individual guidance concerning all matters connected with the training programme, but in particular those matters concerned with the preparation and conduct of lessons in school. The adviser along with other supervisors will visit each member of his group during the practice teaching periods, and will also ask other appropriate advisers to help in guiding the development of each student's art and skill as a teacher.

All students will commence practice on Thursday of each week for the elementary programme and on Wednesday for the secondary programme, as soon after the beginning of the fall term as they can be allotted a school. All students will be placed in charge of a particular sponsor teacher in the school allotted. The sponsor teacher will also act as an adviser and help in the preparation and conduct of lessons as well as with the compilation of a proper practice teaching work book. All students will continue to attend each Wednesday or Thursday, in the school allotted, for five consecutive weeks from October 2nd or 3rd if possible, until and including October 30th or 31st. During the week commencing November 4th, all professional Education lectures (not Arts and Science lectures) will be cancelled, and all students in Education 100 will attend in their allotted schools for a full week (November 4th-8th), returning to University only for Arts and Science lectures. After November 8th no further

practice teaching will be required during the fall term. Students will, however, not be entirely free on Wednesdays and Thursdays after November 8th, for the Faculty Adviser may organize special demonstration lessons and visits on these days.

During the second term a similar programme will be in force but all students will be allotted to different schools with a new sponsor teacher. All students will again attend each Wednesday or Thursday at an appointed school beginning on January 15th or 16th and continue for five weeks until and including February 12th or 13th. Commencing on February 17th, for two weeks all professional Education courses (not Arts and Science courses) will be cancelled and all students will be required to attend their school for two consecutive weeks, returning to University for Arts and Science lectures only. No further practice teaching will be required from students after February 28th until April 28th, when a three-week consecutive period of uninterrupted practice will commence in various schools of the Province. Until this final three weeks all practice teaching will be in the Greater Vancouver region, but in the April practicum students may teach in other parts of the Province.

The same programme will be followed by both elementary and secondary school teachers with the exception that, for the one day a week practice, secondary teachers will attend school on Wednesday and elementary teachers on Thursday of each week.

It will be noted that all students taking this practical programme must (a) attend the seminar allotted to them each week excluding the weeks of continuous practice, during which they will discuss their practice teaching and may be required to present projects and essays for group discussion; (b) attend a private counselling session by appointment with their adviser either weekly or bi-weekly; (c) write and present before March 31st two essays approved by their Adviser; and (d) complete and present to the Adviser by May 17th a practice teaching work book.

102. (3) Introduction to Education for Elementary Teachers.—This course, when taken by those registered for the First Year continuing programme, Bachelor of Education (Elementary), consists of three lectures a week (Monday a.m., Wednesday a.m., and Friday a.m.) and two hours practical work a week (Tuesday a.m.). Both lectures and practical work are carried out with small groups of 20 or fewer students. During the first term the practical work often involves the whole group at once and may be conducted at the University in the preparation of lessons and other work, or may be by visits to schools where demonstration and discussion lessons will be observed. The lessons may be given by the Faculty instructor, the regular class teacher or by one of the University students in the group. During the second term students will be separately in schools during each Tuesday morning and will undertake actual practice teaching individually.

For those students who are taking the one-year teacher training course only, the full one day a week practice teaching assignment (Education 100) will count as laboratory practice and the Tuesday a.m. laboratory class will be omitted. The demonstrations in Education 100 will be conducted by the instructor in charge of small counselling or seminar groups connected with Education 100. The lecture courses will be the same as for the continuing group but conducted with larger groups.

The course content, adjusted to the needs and maturity of the students taking the course, includes: nature, aims and purposes of education; the characteristics of good teaching and teachers; the preparation of various types of lessons; techniques of questioning; maintenance of discipline; classroom organization; making reports and keeping records; school law

and the administrative organization of British Columbia Schools. Text-book: Oliver, *Effective Teaching*. [3-2; 3-2]

150. (3) Introduction to Industrial Arts.

201. (3) Educational Psychology for Elementary Teachers.—This course has three hours a week of lectures on Monday, Wednesday, and Friday mornings. It is a basic course in educational psychology designed to give students an understanding of the growth, learning, and guidance of elementary school pupils. It includes a study of elementary statistics, and their applications in research and in school situations. Practical work on tests and measurements will be required together with directed observation in schools. Text-book: Garrison and Gray, *Educational Psychology*. [3-0; 3-0]

202. (3) Introduction to Education for Secondary Teachers.—This course consists of three lectures a week (Tuesday a.m., Thursday a.m. and Friday p.m.) and two hours laboratory work on Tuesday p.m. Both lectures and laboratory work are carried out with small groups of 20 or fewer students. During the first term the laboratory work often involves the whole group at once and may be conducted at the University in the preparation of lessons and other work, or may be by visits to schools where demonstration and discussion lessons will be observed. During the second term students will be separately in school each Tuesday afternoon, undertaking individual practice teaching.

The course content includes: the nature, aims and purposes of education; the characteristics of good teaching and teachers; the preparation of various types of lessons; techniques of questioning; maintenance of discipline; classroom organization; making reports and keeping records; school law and the administrative organization of British Columbia Schools. [3-2; 3-2]

Note: the following courses 203, 204, and 205 (Methods of Teaching in Elementary schools) all deal with the methods of teaching specific subjects or grades. They involve much more than simple techniques of teaching particular lessons. In each course the instructor deals with the aims, purposes and philosophy of the subject concerned, and then with its special function in the total school programme. Some reference is made to the historical development of the subject and the growth of its teaching in school. The curriculum prescribed by the Province is discussed and compared with other curricula. Some reference is made to recent research on methods of teaching. The courses are workshop in character and a good deal of practical work is involved in preparing typical lessons and in the use and arrangement of equipment, furniture and materials. Passing reference is made to the use of audio-visual media only; a general course, 208, is given in this. The relation of psychology to curricula, methods, materials, class management and discipline is stressed.

Elementary teachers are required to take all the courses set out in Education 203 or 204 and in Education 205.

203. (3) Methods of Teaching in the Elementary School.—Designed to meet the needs of those intending to teach mainly in the primary grades, it will also prepare for teaching in the intermediate and junior high school grades. Three and one-half hours a week will be devoted to methods and demonstrations in the primary field. Four and one-half hours a week will be given to the teaching of elementary and junior high school subjects, one hour to each of reading and the language arts, social studies, arithmetic, science, and one-half hour to health. [8-0; 8-0]

204. (3) Methods of Teaching in the Elementary School.—Designed to meet the needs of those intending to teach mainly in the intermediate and junior high school grades, and to give some instruction in the teaching of primary grades. Two hours a week will be devoted to reading

and the language arts, one and one-half hours to social studies, one hour to primary work and one-half hour to health. [8-0; 8-0]

205. (3) Methods of Teaching in the Elementary Schools.—In this course two consecutive hours per week will be devoted to art and to physical education, and one hour per week to music. [5-0; 5-0]

206. (1½) Speech Training and Voice Production.—This course of one and one-half hours a week is not designed to correct speech defects or to train students to deal with deviate speech habits in children. It is not a speech therapy course. It is designed to help those with normal speech to make better use of their voices in school. A great deal of the strain and fatigue suffered by teachers is due to inefficient use or misuse of the voice. Clear articulate precise speech is the main stock-in-trade of every teacher. This course is concerned with the physiology and mechanics of good voice production and the art and skill of efficient and effective class instruction and public speaking. A good deal of practical work using tape recorders will be carried on. For those with speech impediments and irritating voice habits special remedial classes will be held. Toward the end the course will also provide some instruction in the training of good speech with children and in speech therapy.

208. (1½) Audio-Visual Techniques in Education.—A course of one and one-half hours per week. Although all methods courses refer to audio-visual materials specially suitable for class instruction in a particular subject, insufficient time is provided to study and arrange for practice with many different types of apparatus or a great variety of media. The general theory of the audio-visual appeal to children, and the best methods of using materials to stimulate thought and incite further enquiry, are given special attention. The development of interest and motivation as well as attempts to retain a sense of reality in education are discussed in detail. Practical work is also very important both in the handling of apparatus and in the construction of materials. Text-book: Edgar Dale, *Audio-Visual Methods in Teaching* (revised), (Dryden Press).

301. (3) Educational Psychology for Secondary Teachers.—This course is planned similarly to Education 202 when taken by Third Year students, but is conducted similarly to Education 201 when taken by the post graduate one-year group. The lectures are similar to those in Education 201 but occur on Tuesday and Thursday mornings and on Friday afternoons. For Third Year students the practical work takes place on Tuesday afternoons mainly in schools, but for the post graduate one-year group the Education 100 course becomes the practical part of Education 301. Work similar to that referred to in Education 201 is required. The course content, which is also somewhat similar although adjusted to the needs of more mature students entering the secondary education field, is as follows: the learner, the learning process, and the learning situation; the adjustment of learning situation to individual differences; and the evaluation of instruction. Psychological testing. [3-2; 3-2]

305. (3) Art Education.—A study of the growth and development of art education in Canada; discussion and use of various art media; the function and purpose of art in school and society; practical studio activities; modern methods and curricula in art education, grades I-XII.

307. (3) Music Education.—A study of modern methods, materials and objectives pertaining to the teaching of music in elementary and high school grades. Philosophy and history of music teaching in Canada. Fall: elementary grades; Spring: junior and senior high school grades.

309. (3) General Science for Elementary Teachers.—General Science as a systematic study of our environment and man's relation to it would cover such topics as living things, matter, energy, earth science, the universe, and conservation of resources, with special emphasis upon changes that

have occurred in the environment and the extent of man's control thereof. Particular care will be given to the methods and techniques of science, the improvisation and acquisition of necessary equipment, utilization of community resources, intra and extra classroom activities. [3-2; 3-2]

330. (3) The British Columbia School System.—This course is primarily designed for teachers from outside British Columbia who are seeking permanent British Columbia certification and who wish to become familiar with the organization and administration of the education curriculum and school law and regulations. This course is accepted by the Department of Education as fulfilling its requirement for permanent certification for teachers with certificates from other Provinces.

332. (3) Psychology of Adolescence.—This course is designed to increase the teacher's understanding of the physiological, psychological, social and educational aspects of adolescence. The approach will be mainly analytical and theoretical, but the implications of theory for educational practice will be stressed. Review of research in adolescence and extended reading in adolescence will be required. Text-book: Garrison, K. C., *Psychology of Adolescence*.

333. (3) Special Problems in Pre-School Education.—A methods course designed specially for those who are majoring in pre-school and nursery education. Educational and emotional needs of young children are used as a basis for a discussion of the planning and organization of a nursery school and kindergarten classrooms and playgrounds.

336. (3) Modern Theories of Pre-School Education.—A theory course intended for teachers and administrators interested in pre-school and primary education. It will review the progress and present practices in the application of new knowledge to the development of organized educational programmes for young children prior to and during enrollment in the elementary school. Text-book: Gans Slendler, *Teaching Young Children*. [3-0; 3-0]

350. (3) Technology of Woodworking I.

351. (3) Technology of Metalworking I.

352. (3) Mechanical Drawing.

354. (3) Welding.

365. (3) Oral French for Elementary Teachers.—A course designed to meet the needs of those planning to teach French in the elementary school and for those who need additional work in teaching by the direct method in secondary schools.

390. (3) Librarianship: Sources of Information.—A professional basic course in the use of books and libraries, stressing the methods of gathering information. The student will be introduced to the most commonly used reference and information sources and given practice in their evaluation and use. Special emphasis will be given to the resources and methods for locating educational information and to the techniques of teaching the use of school libraries.

400. (3) Survey of Educational Thought.—A combined course in the history and philosophy of education. A threefold classification of educational theories or philosophies is used to provide a framework for the course. Each school of educational thought in turn is studied through representative educators chosen from each of the principal periods in the history of education and in the writings of one or more contemporary leaders of educational thought. The influence of educational theories upon actual classroom practice will also be considered.

404. (3) Methods of Teaching Specific Secondary School Subjects.—The methods of teaching various school subjects follows a plan similar to that indicated in Education 203, 204 and 205, but the course naturally stresses the curricula and methods suitable to the secondary school. Con-

siderably more stress is laid on the philosophy and function of each subject in the total school programme, and on the findings of research or improving instructional techniques and style. Every student is required to take at least four hours work in methods, and preferably six. The following subjects, with number of hours per week allotted, indicate the range of options available to students:

English (2 hours), French (2 hours), Latin (1 hour), German (1 hour), Spanish (1 hour), History (1 hour), Geography (1 hour), Mathematics (2 hours), Science (2 hours), Art (2 hours), Health and Physical Development (1 hour), Physical Education (2 hours), Music (1 hour), Commerce (2 hours), Industrial Arts (2 hours), Home Economics (2 hours), Agriculture (2 hours), Drama (2 hours).

405. (3) Special Problems in Teaching the Primary Grades.—Discussion of the trends and problems dealing with personality development, classroom management, the language arts, arithmetic, science, social studies, music and art, in the kindergarten and primary grades. Review of research.

406. (3) Special Problems in Teaching Intermediate Grades.—This course is designed for a more advanced study of the intermediate grade pupils and curriculum. Current research findings on capabilities of children with special emphasis on the tool subjects such as reading. Intermediate grade organization for pupil progress according to individual learning rates. Evolution of learning and appraisal of new curriculum practices.

407. (3) Special Problems in Teaching the Mentally and Physically Handicapped.—A course designed to give teachers an understanding of the characteristics and learning abilities of mentally and physically handicapped children. It will include definition, diagnosis, classification, educational research, the organization of classes, curriculum, and methods of instruction at elementary and secondary levels. Attention will be given to procedures for guidance and evaluation. Text-book: Christine Ingram, *Education of the Slow-Learning Child*.

408. (3) Special Problems in Teaching the Mentally Superior.—The objective of this course is to give teachers an understanding of the characteristics, needs and abilities of mentally superior and specially talented children. Emphasis will be placed upon identification, classification, educational research, planning suitable educational programmes at both elementary and secondary levels and methods of teaching. Text-book: Paul Witty, *The Gifted Child*, (1951).

410. (3) An Introduction to School Administration.—The functions and duties of inspectors, supervisors, counsellors and principals in the modern school. The development of good harmonious working relations with pupils, teachers, parents, the Department of Education and trustees is emphasized. The organization of a school time table, the development of a school council, the promotion of an orderly programme of extra-curricular and co-curricular activities are discussed in detail.

411. (3) Guidance and Counselling Services in Schools.—A survey of the function and purpose of guidance, and some of the methods employed. A detailed study of the various services and materials available to teachers in British Columbia.

412. (3) Introduction to Adult Education.—A survey of present agencies practising adult education in this society, and of the people and parties involved. The conditions under which adult education has developed in this society and the relevant research in the social sciences will be considered. Text-book: J. R. Kidd, *Adult Education in the Canadian University (CAAE 1956)*, H. Grattan, *For Search of Knowledge (New York Assoc. Press, 1953)*.

415. (3) Review of Research in the Teaching of Reading.—An essential course for those who intend to specialize in elementary education. Both

primary and intermediate grades will be considered as will some remedial techniques.

450. (3) **Technology of Woodworking II.**

451. (3) **Technology of Metalworking II.**

452. (3) **Curriculum in Industrial Arts Education.**

453. (3) **Auto Mechanics.**

461. (3) **Diagnostic and Remedial Teaching.**—Educational objectives appropriate to different levels of pupil abilities and interests. Definitions of achievement. Interpretation of informal and standardized test scores in educational diagnosis. Estimates of actual and optimum levels of individual achievement. Individual differences in abilities, personality and experience as factors affecting performance. Methods of encouraging the optimum achievement of individuals. Methods and practice materials for the remedial teaching of reading, mathematics, spelling and English in the elementary and secondary school. Text-book: Brueckner & Bond, *The Diagnosis and Treatment of Learning Difficulties*.

490. (3) **The Library in the School.**—The objectives, functions and administration of libraries in elementary and secondary schools. The course is designed to offer the prospective teacher-librarian basic instruction in planning and equipping the school library, in performing the various technical operations, and in making the library an educational force in the school.

491. (3) **The Acquisition and Organization of Library Materials.**—The principles and methods of building and organizing school library collections. The course aims to develop the ability to select and acquire a wide variety of library materials and to catalogue and classify them in accordance with the needs of the school programme. Practice in classification and cataloguing will be given in laboratory periods. [2-2; 2-2]

Teaching Majors for Secondary Teachers

Candidates for the Professional Basic Certificate must major in two, or complete an Honours equivalent in one, of the following subject areas. Arrangements for an Honours Course in a teaching subject are indicated on page 331. Courses carrying fewer than 3 units of credit are indicated by a smaller number in brackets following the course number, e.g., Horticulture 200 (1½). Only with the prior permission of the Director of Secondary Education may exceptions in any of the following course requirements for majors be granted.

1. Agriculture

Prerequisites: Mathematics 101, Chemistry 101, Physics 100 or 101, Botany 105, Zoology 105.

Subject Courses:

Second Year—Agriculture 100 (1).

Senior Years—Animal Science 200 (1½), Horticulture 200 (1½), Soil Science 200 (1½), Agricultural Mechanics 200 (1½), Dairying 200 (1½), Poultry Science 200 (1½), Agricultural Economics 200 (1½), Agriculture 300 (1).

Note: The requirements of Agriculture 300 are completed by participation in the one-week field trip just prior to the registration week of the Fourth or Fifth Year.

2. Art

Prerequisite: Fine Arts 101.

Subject Courses: Fine Arts 300, 301, 302 and one of the following groups: Fine Arts 401, 402; Fine Arts 303, 403; Fine Arts 305, 307, 405, 407.

3. Art (Double Major)

Prerequisite: Fine Arts 101.

Subject Courses: Fine Arts 300, 301, 302, 401, 402, 404, 406, and one of the following groups: Fine Arts 303, 403, 413; Fine Arts 305, 405, 415; Fine Arts 307, 407, 417.

4. Biological Sciences

Subject Courses:

First and Second Years—Botany 105, Zoology 105.

Senior Years—*one* of Botany 330 (2), Biology 304, Biology 400, Zoology 309, Zoology 412; *one* of Botany 205, Zoology 202, Zoology 203; *one* of Botany 425, Biology 320, Zoology 204, Zoology 306, Biology 332-3.

Not more than 7 units may be taken in any one of Botany, Biology or Zoology.

Additional recommended courses: Mathematics 101, Chemistry 101, Physics 100 or 101, Physics 203, Chemistry 203.

5. Commerce (Secretarial Major)

First and Second Years: Commerce 90, 101.

Senior Years: Commerce 151, 201, 376, 391.

6. Commerce (Business Major)

First and Second Years: Commerce 90, 151.

Senior Years: Economics 200, Commerce 331, 376, 391.

7. Commerce (Double Major)

First and Second Years: Commerce 90, 101, 151, Economics 200.

Senior Years: Commerce 201, 252, 331, 376, 391, English 400.

8. Chemistry

Prerequisites: Mathematics 101, 202.

Subject Courses:

First and Second Years—Chemistry 101, 205.

Senior Years—Chemistry 300, 304, 411 (1), and 420 (2).

Additional recommended courses: Two of Botany 105, Zoology 105, Biology 105, and Physics 203.

9. Drama

First and Second Years: Drama 205 (1½), Drama 206 (1½).

Senior Years: English 421 and *two* of English 411, 412 or 413, 420, 422, Drama 321.

Additional required courses: *two* of English 400, Linguistics 319, additional English course (preferably 406).

Two years of a language other than English may be required.

10. English

Subject Courses:

First and Second Years—English 100-101, 200.

Senior Years—English 400; *one* of English 430, 431; *one* of English 406, 412, 427; *one* of English 429, 433, 434, 435.

Note: Two years of a language other than English may be required. Exceptions to the choice of courses above may be made with prior permission of the Director of Secondary Education.

11. French

First and Second Years: French 120 (or 110), 220 (or 210).

Senior Years: French 302, and *two* of French 300, 301, 303, 400, 401, 402, 404, 405.

Note: Election of an additional course in French is strongly advised and election of one course in Latin, Greek, another modern language, or linguistics, is recommended.

12. Geography

Prerequisites: History 101 or 102 (whichever has not been taken previously).

Subject Courses:

First and Second Years—Geography 101, *one* of Geography 201, 207.

Senior Years—Geography 303, 409, plus one additional senior course in Geography.

Additional recommended courses: History 201, Classical Studies 331, History 304.

13. German

For students wishing to major in German and a second language other than English, French is strongly recommended.

First and Second Years: German 120 (or 110 or 130), German 200.

Senior Years: German 300, 302, plus one additional senior German course.

14. History

First and Second Years: History 101, 102.

Senior Years: History 201; *one* of History 203, 304, Classical Studies 331; *one* of History 311, 313, 415, 419, 426.

Additional required course: Geography 303.

Note: Election of one additional course in Geography (409), Anthropology, Political Science, Sociology, or Economics, is strongly advised.

15. Home Economics

First and Second Years—Home Economics 101 (1½), 106, 105.

Senior Years—Home Economics 403 (1½), 300, and 3 units chosen from Home Economics 203 (1½), 410 (1½), 420 (1½) or 421.

16. Industrial Arts

Prerequisites: Mathematics 101, Physics 100 or 101.

First and Second Years: Education 150, Mechanical Engineering 152, 352.

Senior Years: Education 350, 351, 451, 452.

17. Industrial Arts (Double Major)

Prerequisites: Mathematics 101, Physics 100 or 101.

First and Second Years: Education 150, Mechanical Engineering 152, 352.

Senior Years: Education 350, 351, 352, 354, 450, 451, 452, 453.

18. Latin

First and Second Years: Latin 120 (or 110), 220 (or 210).

Senior Years: Latin 303, 310 (1½), and *two* of 304, 405, 406.

Note: Election of Classical Studies 331 is strongly advised and Greek 90 is recommended.

19. Librarianship

English 201; Education 390, 490, 491; *one* of English 402, 435; History 201; Education 332, 531.

20. Mathematics

First and Second Years: Mathematics 101, 202.

Senior Years: Mathematics 306, 308, and *one* of 201, 300, 303, 310.

21. Music

Prerequisite: Fine Arts 101 and previous musical training satisfactory to the Department of Music.

First and Second Years: Music 201, 301.

Senior Years: *three* of Music 302, 303, 401, 403 or other music course approved by the Director of Secondary Education.

22. Music (Double Major)

While no courses are as yet prescribed for a double major in Music it is intended that such courses will be available in the future. In the meantime the Faculty is prepared to give credit to those persons who have the equivalent of a double major obtained through work taken elsewhere. The applicants will be judged on the transcript submitted to the Registrar.

23. Physical Education

First and Second Years: Physical Education 105, 205 (1½), 262 (1½).

Senior Years: Physical Education 363 (1½), 462 (1½), 470 (1½), 460 (1½), 305 and 405.

24. Physics

Prerequisite: Mathematics 101, 202.

Subject Courses:

First and Second Years—Physics 100 or 101, 203.

Senior Years: Physics 303, 308, 400.

Additional recommended courses: Chemistry 101; *two* of Botany 105, Zoology 105, Biology 105; Chemistry 205.

25. Spanish

For students wishing to major in Spanish and a second language other than English, French is strongly recommended.

First and Second Years: Spanish 120 (or 110), 201.

Senior Years: Spanish 304 and *two* other Spanish courses numbered 300 or above.

Note: Election of an additional Spanish course is strongly advised, and election of one of Latin, Greek, another modern language, or linguistics, course is recommended.

Single Honours Courses

Students who have the required standing at the Second Year of the Bachelor of Education programme may specialize in one of the following subject areas:

Biology	History	Agriculture
Botany	Latin	Commerce
Chemistry	Mathematics	Home Economics
English	Physics	Physical Education
French	Spanish	
Geography	Zoology	
German		

Specialization in a single course requires the completion of 84 units of work in the five years of the Bachelor of Education programme.

Programmes for subjects listed in the first two columns above are governed by the regulations for the Honours Curriculum of the Faculty

of Arts and Science listed on page 79. Further details will be found under the subject heading in the section dealing with courses in Arts and Science, pages 84-147.

Details for specialization in the subjects listed in the third column must be worked out with the heads of the faculty or school concerned.

Teaching Majors for Elementary Teachers

Students must choose one major from the following list during their Third and Fourth Years:

1. Exceptional Children:

Education 407 and 408, and *three* of Education 305, 307, 411, 415, 461, 530, 552.

2. Fine Arts:

Fine Arts 300 and 302; Education 305, and *one* of the following 6 unit groups: Fine Arts 401 and 402; Fine Arts 303 and 403; Fine Arts 305 and 405; Fine Arts 307 and 407.

3. Health and Physical Education:

Physical Education 105, 205, 262, 363, 462, 460 (or 470), and *one* of Education 552, 308; Physical Education 305, 405.

4. Intermediate Division:

Education 406 and Education 415 and any 9 units chosen from the following: English 201 (compulsory if not already taken), Education 305, 307, 365, 407, 408, 461 (compulsory if not already taken), 511.

(Other electives may be added to this list.)

5. Kindergarten-Primary Division:

Education 405 and any 12 units chosen from the following: English 201, Psychology 301, Education 305, 307, 333, 336, 407, 408, 461 (compulsory if not already taken).

6. Librarianship:

English 201, Education 390, 490, 491 and 3 units from English 402, 435, History 201, Education 531, 332.

7. Music:

Prerequisite: Fine Arts 101.

Music 201, 302 or 303, *one* of Music 300, 301, 401, 402, and Education 307.

8. Combined Major:

6 units in one academic subject and 9 units of professional courses.

Students taking any of the above majors by regular attendance during winter session will have the opportunity to observe and practice with an appropriate teacher in the school system.

Graduate Work in the Faculty of Education

The University offers through the Faculty of Graduate Studies two graduate degrees in Education—the Master of Arts (in Education) and the Master of Education. The instruction and guidance of candidates is given by the Faculty of Education, but admission requirements and standards are set by the Faculty of Graduate Studies.

Admission to all courses leading to either master's degree requires pre-registration with the Faculty of Graduate Studies and full approval from the Dean of the Faculty of Education. Courses taken prior to this registration and without the approval of the Dean are not acceptable as credit towards a master's degree. Those who wish to embark on a course for a master's degree and have met the following requirements should apply for registration and seek an interview with the Dean, or a person appointed by him, to gain approval for a planned sequence of courses. Throughout the time that a candidate is working towards the master's degree he will be under the guidance of a properly appointed adviser to whom the candidate must make a regular report on his progress.

Requirements for Admission to M.A. in Education and M.Ed.

The following five categories of persons are admissible to the master's degree courses provided they have first obtained approval from the Dean and are properly registered in the Faculty of Graduate Studies.

1. Those with B.A. (or its equivalent in another faculty) and post-graduate training (one year) must have:
 - (a) A permanent P.B. or S.B. certificate.
 - (b) Second Class or higher standing in the postgraduate Education year.
 - (c) First Class standing in at least 6 units of Education courses numbered 300 or above taken *subsequently* to the postgraduate year.
2. Those with B.A. (or its equivalent in another faculty) and Normal School (one year) must have:
 - (a) A permanent P.B. or S.B. certificate.
 - (b) First Class standing in at least 6 units of Education courses numbered 300 or above taken *subsequently* to Normal School.
 - (c) Second Class or higher standing in at least 3 further units in Education in a course numbered 300 or above taken *subsequently* to Normal School.
3. Those with B.Ed. (Secondary) must have:
 - (a) A permanent P.B. certificate.
 - (b) Second Class or higher standing in the Fourth and Fifth years.
 - (c) First Class standing in at least 6 units of Education courses normally taken in Fourth and Fifth Years.
4. Those with B.Ed. (Elementary) must have:
 - (a) A permanent P.C. certificate.
 - (b) Second Class or higher standing in Third and Fourth years.
 - (c) At least 15 additional units of Arts and Science or Education work beyond the B.Ed. (Elementary) level with 6 of them at First Class level.
5. Those with a first university degree with a standing sufficient for admission to a master's degree course at this University but with no teacher training must have:
 - (a) Sufficient experience in adult or pre-school education to satisfy the Faculties of Graduate Studies and Education that teacher training requirements may be waived.
 - (b) First Class standing in at least 6 units of graduate work in Education taken *subsequently* to the first university degree.

The M.A. in Education requires a minimum of 18 units and involves specialization in one particular graduate field of Education with the presentation of a research thesis. At least 3 units must be taken in an academic subject outside the Faculty of Education. Education 581 must be taken by all candidates and Education 582 may also be required.

The M.Ed. makes provision for a more general acquaintance at an advanced level with several fields of education. At least 3 units of further study in an academic subject outside the Faculty of Education is also required. The degree does not involve particular specialization nor does it entail experimental research followed by a thesis. Instead the amount of course work is increased to at least 21 units and each 3 unit course in Education requires the submission of a prescribed course paper. This type of wider study of the various fields of education is designed for those who are interested in becoming principals and vice-principals of schools, inspectors and superintendents of school districts, or for those who wish to become "master" teachers. It is not suitable for those who wish to do specialized research in Education. In the M.Ed. programme it is possible with approval to take as many as 9 units of advanced work in an academic field. It is also possible and sometimes desirable to substitute a thesis for 3 units of course work for the M.Ed. degree.

Transfer of Credits

In normal circumstances all courses for the two master's degrees must be taken at the University of British Columbia and preferably by full time attendance during a Winter Session. Graduate Courses taken at another university are not normally acceptable as credit towards these degrees unless permission prior to undertaking the course has been given.

Major Fields of Specialization in Graduate Education

Educational Psychology including Counselling and Health Education
Educational Test Measurements and Statistics

History of Education	Preschool Education
Philosophy of Education	Elementary Education
Sociology of Education	Secondary Education
School Administration	Adult Education

Comparative Education

Curriculum and Methods of Teaching

For a Master of Arts degree a student is required to take a course in the Methods of Research in Education, and at least 9 units of advanced work in the major field in which the thesis will be written.

For a Master of Education degree a student must take at least 12 units in advanced professional work with 3 units selected from each of four different major fields in Education.

- (a) In addition a student may then elect to take 9 units of advanced work from one specific academic field. The subjects admissible are: Agriculture, Art, Biology, Botany, Chemistry, Commerce, English, French, Geography, German, History, Home Economics, Latin, Mathematics, Music, Physics, Physical Education, Spanish, Zoology;
- (b) or alternatively a student may select 6 more units (three of which could be a thesis) from one of the major professional educational fields already chosen, and 3 units from an academic field outside the Faculty of Education.

Graduate Courses

The following courses are those applicable to the master's degrees in Education. Almost all of them have a prescribed course paper associated therewith if taken for master's degree credit. On occasion, courses at the 500 level may be taken for undergraduate credit when approved by the Directors of Elementary or Secondary Education. In such cases no course paper is required. It is also possible for those working towards a master's degree to take certain courses numbered 300 and 400 for graduate credit

provided prior approval is given by the Dean or the graduate student's adviser, and provided a course paper is written in addition to the normal requirements for undergraduate courses.

507. (3) Review of Research in Methods and Organization in Specified Series of Grades.—This course attempts to bring the findings of psychological and experimental research to the aid of those concerned with the integration and planning of curricula and methods for certain growth stages regardless of grade barriers. The overall function and purpose of the educational organization and procedures is discussed in detail so that a coherent continuing scheme can be developed in various school systems. There are four divisions in the course:— the primary grades; the intermediate grades; the junior high grades; and the senior high grades. Three units will be given for each section when given. No student may, however, count more than 3 units towards a master's degree even though two or more lecture courses on the separate divisions may have been taken.

508. (3 or 6) Review of Research in Methods of Teaching Specific School Subjects.—Three units will be given for each course in an individual subject. No more than 6 units may be credited towards a master's degree. Each course reviews the philosophy, purpose and function of the subject in school. Studies are made of recent research on curriculum organization, on particular methods of teaching, on the use of material aids, on factual comprehension and attitude testing. Prerequisite: Education 204 or 404.

514. (3) The Philosophy of Adult Education.—A consideration of the major contemporary philosophers of adult education, Bryson, Livingston, Lindeman, Whitehead, Tory and others, and of the moral, social and political issues confronting adult education in the present day. Texts: to be announced. Prerequisite: Education 412.

515. (3) Historical and Comparative Foundations of Adult Education.—The historical background of adult education in this and other societies with close attention to the conditions under which it arises and the expectations for the future. The gathering of relevant research material will be a large part of this course. Text-book: Gratten, *In Quest of Knowledge; Report of meeting of Reconstruction Adult Education Committee*. Prerequisite: Education 412.

516. (3) Communications and the Mass Media.—Introduction to aspects of the major information facilities and the context for adult learning they create. Consideration of the type of learning resulting from each of the major media, by means of various experiments. Text-books: *Royal Commission on National Development in Arts, Letters and Sciences, 1949-1951; Communication and the Communication Arts*, Bureau of Publications, Teachers College, Columbia University, 1956.

517. (3) Health Education in Schools.—Designed for students who are interested in the philosophy, the administration and the teaching of health in schools. Time will be devoted to the several aspects of school medical service, the healthful school environment, both physical and emotional, and the methods and materials of teaching in schools from Grade 1 through High School. Text-book: *Health Education*, 1948 edition, American Medical Association and National Education Association, ed. Charles Wilson; (obtainable from the National Education Association, Washington, D.C.).

518. (3) Psychology of Adult Learning.—A basic course in learning theory with special attention to developmental and social psychology and the context of adult learning. Text-book: Newcomb and Hartly, *Reading in Social Psychology*.

519. (3) History of Canadian Education.—The historical growth of public education in Canada from the French regime to the present. The development both of our provincial public school systems and of Canadian educational thought and practice.

520. (3) History of Education.—Development of educational theory from the time of ancient Greece to the present day.

521. (3) Philosophy of Education.—Current trends in educational philosophy; social implications of current educational theories. Prerequisite: Education 400.

523. (3) Comparative Education. — Philosophy, organisation, and methods of education in selected foreign countries compared with the Canadian system.

530. (3) Psychology of Learning.—The study of intraserial phenomena, maturation, effect, frequency, transfer, retention, practice and material effects in learning. Theories of learning, and results of research in learning. The relationship of theories to methodology and curricular practices. Prerequisite: Education 201 or 301.

531. (3) Psychology of Childhood.—Mental, social, emotional, and physical characteristics of pre-school and elementary school pupils; their interests and problems; implications for organization and administration of school systems.

533. (3) Psychology of Exceptional Children.—Physical, mental, social, and emotional characteristics of exceptional children (gifted, backward, crippled, hard-of-hearing, etc.).

535. (3) Evaluation.—Basic principles; tests and other instruments for measuring instruction.

536. (3) Individual Tests.—Administration, scoring, interpreting, and values of Revised Stanford Binet, Wechsler-Bellevue, etc.; nature of intelligence; constancy of the IQ, etc.

537. (3) Standardized Group Tests.—Group tests of achievement, intelligence, personality, interests, aptitudes, and attitudes.

540. (3) Research in Audio-Visual Education for Schools.—A study of recent research on the effects of various types of audio-visual material on learners, followed by a review of experimental work on techniques of using the audio-visual media.

552. (3) Mental Hygiene in the School.—Principles of mental hygiene and their relation to classroom and broader educational problems.

556. (3) Administration of School Systems.—A study of research projects on school administration procedures. Public relations. School finance. Prerequisite: Education 410.

557. (3) Administration and Supervision of the Elementary School.—The work of the principal, supervisors and inspectors in the improvement of instruction and administration. Prerequisite: Education 410.

558. (3) Administration and Supervision of the Secondary School.—The work of the principal, supervisors and inspectors in the improvement of instruction and administration. Prerequisite: Education 410.

564. (3) Research Problems in Curriculum Organization.—Theories of curriculum organization and a review of recent research. The work of the curriculum director. Prerequisite: Education 204 or 404.

565. (3) Special Course in Subject Matter field.—Courses in various subject matter fields designed to bring teachers up to date in new advances and recent findings in each field.

566. (3) Principles of Secondary Education.—Modern developments in Canada and other countries. Recent thought on classroom procedures, provisions for individual differences, discipline etc. Attention is given to the place of various school subjects in total education. Remedial education.

567. (3) Principles of Elementary Education.—Modern developments in Canada and other countries. Recent thought on classroom procedures, provisions for individual differences, discipline, etc. Attention is given to the place of various school subjects in total education. Remedial education.

568. (3) Special Education of the Physically Handicapped.—A course for specialists in the education of the deaf, blind, hospitalised, spastic, etc. It is primarily concerned with the recent research in methods of instruction. Prerequisite: Education 407.

570. (3) Educational Sociology.—Individual and social aims, the community and education, education and internationalism, social problems of administration and control.

575. (3) Educational Classics and Their Authors.—Studies in the educational writings of such great educational theorists as Plato, Aristotle, Quintilian, Castiglione, Luther, Erasmus, Ignatius of Loyola, Elyot, Bacon, Comenius, Milton, Locke, Rousseau, Pestalozzi, Herbart, Froebel, Spencer, Dewey.

578. (3) Theories of Guidance and Counselling.—Objectives; gathering and using information concerning students; counselling; articulation of different forms; contributions of teachers, principal, and specialists; analysis of typical guidance programmes. Review of recent thought and experiment on counselling.

579. (3) Research on Guidance Services.—A study of the present resources and services together with techniques of assessing and using the available material. This course is workshop in character and requires some experimental investigations.

580. (3) Problems in Education.—Investigation and report of a problem.

581. (1½) Methods of Educational Research.—Scientific method in education; discovering problems; types of research; standards in thesis writing; critical study of published research.

582. (1½) Educational Statistics.—Frequency distribution; measures of central tendency; measures of variability; normal probability curve and its applications; sampling; reliability; correlation, its meaning and application; partial and multiple correlation.

583. (3) Advanced Seminar in Adult Education.—A seminar devoted to the discussion of various projects in research or organization being carried out by students. Consideration will be given to major projects in other parts of Canada for which material is available. Prerequisite: Education 514 or 515 or 518. Text-books: *Saskatchewan Royal Commission on Agriculture and Rural Life*, Volume 1, 1953; *Farm and Radio Forum*; *UNESCO*; and others.

584. (3) Advanced Educational Statistics.—Review of descriptive statistics; further methods of correlation; advanced sampling theory; testing statistical hypothesis: Chi square analysis of variance and covariance; introduction to design of experiment. Prerequisite: Education 582.

599. (3) Master's Thesis.

1957-58

**THE
FACULTY
OF
GRADUATE STUDIES**

1957 - 1958

1957-58

FACULTY OF GRADUATE STUDIES

The degrees offered in the Faculty of Graduate Studies are Master of Arts (M.A.), Master of Science (M.Sc.), Master of Applied Science (M.A.Sc.), Master of Science in Agriculture (M.S.A.), Master of Forestry (M.F.), Master of Business Administration (M.B.A.), Master of Education (M.Ed.), and Doctor of Philosophy (Ph.D.). A diploma in Criminology is also offered.

COURSES LEADING TO THE MASTER'S DEGREE

Admission

1. Students registering as graduates must hold either a Bachelor's degree from this University or its equivalent. Students completing their courses for the B.A. or B.Sc. degree or for the B.S.A. degree may, if they lack not more than 6 units, register in courses open to graduate students provided that they keep within an over-all maximum of 18 units. They will receive credit for such courses towards a higher degree only after registering as candidates for such a degree.
2. A graduate of another university applying for permission to enter as a graduate student is required to submit with his application to the Registrar, on or before September 1st, an official statement of his graduation, together with a certificate of the standing gained in the several subjects of his course. The Executive Committee of the Faculty of Graduate Studies will determine the standing of such a student in this University.
3. Graduate students must register in the same registration period as undergraduates.
4. The Master's degree is offered in various approved fields, and in each field the degree conferred will be that which, in the view of the Faculty, describes most appropriately the character of the work done.
 - (a) If the field of study lies wholly within a single department the Master's course must be chosen in consultation with that department and approved by its head.
 - (b) If the field of study involves work in more than one department the candidate's course must be approved by the head of each department concerned.
 - (c) If the field of study is one which does not fit into the present departmental structure of the University the candidate's course must be approved by the interdepartmental committee which will supervise his work. The course so chosen must also be approved by the Executive Committee of the Faculty of Graduate Studies.
5. Candidates for the *Master's degree must hold a Bachelor's degree with
 - (a) Honours in the field of the proposed Master's course with First Class standing in at least two (6 units) of the Third and Fourth Year courses in that field, or
 - (b) First Class standing in at least two (6 units) of the courses and at least Second Class standing in each of the remaining courses of Third and Fourth Year work prescribed by the department or departments concerned as prerequisite to the Master's course.

*For prerequisites for the M.A. in Education or the M.Ed., see pages 345 and 353.

The prerequisites for courses of study arranged in accordance with paragraph 4 (c) will comprise a Bachelor's degree with First Class standing in at least two of the courses and at least Second Class standing in each of the remaining courses of the Third and Fourth Year work prescribed by the interdepartmental committee in charge of the special field of study as prerequisite to a Master's course in that field.

6. Graduate students who do not meet the full requirements of Section 5 may be permitted to make up any deficiencies and to proceed concurrently in a Master's course provided that they keep within an over-all maximum of 18 units (or the equivalent in the departments of Applied Science and Forestry), in any one Winter Session, but may receive credit for such courses only if they become candidates for the Master's degree in accordance with Section 5.

7. In determining whether standing received by a student in an undergraduate course meets the requirements for admission to candidacy the Faculty will consider the mark obtained by the student in his first final examination on that course, unless the student has obtained permission from the Executive Committee, after consultation with the department concerned, to write a supplemental examination or to repeat the course in order to improve his standing.

8. Candidates for the Master's degree, if they have not obtained credit for French 210, German 200, or Russian 200 must satisfy the head of the department in which their graduate work will be done that they have a working knowledge of one of these languages or of some other language suitable for the work of the department concerned. This rule shall not restrict the right of any department to require a reading knowledge of an additional language or languages, or to require a higher standard of competence in one or more of the languages offered by a candidate.

Course

9. Candidates for the Master's degree are required

- (a) to spend at least one Winter Session in resident graduate study, or
- (b) in certain departments of the Faculty of Arts and Science only, to do two or more years of work under University supervision, during which not more than 6 units of credit may be counted for reading courses.
- (c) to register for each session during which they plan to use university laboratory or library facilities;
- (d) to register in the session in which they propose to complete their degree programmes.

10. Graduate students who are assistants receiving sessional remuneration exceeding \$1000 will not be allowed to come up for final examination in less than a full calendar year of supervised study after registration as graduate students. Graduate students who are assistants receiving sessional remuneration not exceeding \$1000 may be permitted to qualify for the Master's degree after one Winter Session of University attendance provided that in the summer vacation they have done research work in the nature and extent satisfactory to the department or departments concerned. Such students must be registered as graduate students and must have received the approval of the head of the department concerned and the Executive Committee of the Graduate Faculty before entering upon the research in question.

11. The Master's course will require a thesis (except the M.Ed.) counting from 3 to 6 units and courses numbered 300 or above so that the

total number of units, including the thesis, is at least 18 (or the equivalent in the departments of the Faculties of Applied Science and Forestry). The course will normally include at least 6 units of courses numbered 500 or above. If the degree is to be taken in a single department, at least 3 and not more than 6 units must be taken in related fields outside the department.

12. Except as provided in Sections 1 and 6, no credit towards the Master's degree will be given for work done prior to registration as a candidate for that degree.

13. A student whose work is considered to be unsatisfactory may, upon recommendation of the faculty, be required by Senate to withdraw from the Faculty.

Examinations and Thesis

14. A student taking courses in the Faculty of Graduate Studies to fulfil prerequisites or for credit towards a degree will receive credit in each course in which he obtains 65%. For regulations regarding re-readings see page 66.

15. Candidates for the Master's degree must submit in its final form three typewritten copies of the thesis, with a certificate signed by two members of the department or departments concerned stating that the required standards of a Master's thesis have been met, an abstract approved by the department or departments concerned, and a biographical note. The date of submission of the thesis to the department concerned is the last day of lectures in the second term for a Spring Congregation and October 1st for an Autumn Congregation. (See circular entitled *Instructions for the Preparation of Graduate Thesis*.)

16. A general examination in the field of the Master's course will be held at the discretion of the department or departments concerned. Examinations may be written or oral, or partly written and partly oral.

17. Each graduate student who wishes to become a candidate for the Master's degree must, on or before October 4th, file in the Registrar's office an official Memorandum signed by the head of the department concerned, or by the chairman of the interdepartmental committee in charge of the field of study in which the candidate's work lies, showing the prerequisites, if any, that remain to be completed and the courses required for the degree. The form for this purpose should be obtained from the Registrar's office at the time of registration. Subsequent changes in the student's programme must be entered on this form and initialled by the head of the department or committee chairman. Candidacy for the degree will not be approved by the Executive Committee until all prerequisites have been completed.

18. At a Spring or Autumn Congregation only those candidates will be eligible for the Master's degree whose applications have been completed and submitted on or before October 15th of the preceding year. The applications of students who expect to receive the Bachelor's degree at an Autumn Congregation and the Master's degree in the following year will not be finally approved until the Bachelor's degree is conferred.

Supplementals

19. In courses leading to the Master's degree supplementals will be granted,

(a) if, in the Winter Session, a candidate has obtained a final mark of not less than 50 per cent. and has obtained at least 9 units of credit in that Session; but no such candidate will be granted supplementals in more than 2 courses and then only in subjects whose total value does not exceed 6 units.

(b) if, in the Summer Session, a candidate has obtained a final mark of not less than 50 per cent. and has obtained at least 3 units of credit in that Session.

20. No candidate will be granted more than one supplemental in respect of the same course; but, with the permission of the Executive Committee the course may be repeated, or a permissible course may be taken in its place.

21. A supplemental must be written at the regular supplemental examination period following the examination in which the candidate failed to obtain adequate standing.

THE DEGREE OF MASTER OF ARTS

The following special requirements are prescribed by the departments.

Anthropology

Prerequisites: Honours; or 15 units in Anthropology chosen from courses offered in the Third and Fourth Years.

M.A. Course: Thesis, counting at least 3 units, Anthropology 540, and other courses to complete the requirements of section 11 above.

Bacteriology and Immunology

Prerequisites: Honours; or a major plus 3 units in the Department, chosen from courses offered in the Third and Fourth Years.

M.A. Course: Thesis, counting at least 5 units, and courses to complete the requirements of section 11 above.

The number of M.A. students who can be accepted in any one year is limited.

Biology

Prerequisites: Honours; or a major in Biology and 6 additional units in courses approved by the Department.

M.A. Course: Thesis, counting at least 5 units, and courses to complete the requirements of section 11 above.

Botany

Prerequisites: Honours; or a major in Botany and 6 additional units in courses approved by the Department.

M.A. Course: Thesis, counting at least 5 units, and courses to complete the requirements of section 11 above.

Classics

Prerequisites: Honours; or 15 units (or their equivalent) of advanced work in Classics approved by the Department.

M.A. Course: Thesis, counting at least 3 units, and courses to complete the requirements of section 11 above. The thesis may be written in the field of Greek Language and Literature, or Latin Language and Literature, or Greek History or Roman History.

Criminology

Prerequisites: Honours in Criminology and 6 units in Psychology; or a major in Criminology, 6 units in Psychology and Social Work 499.

M.A. Course: Criminology 534, 535, 537, 538, 549, and courses in a Social Science, Psychology, Social Work, Law 104 or Law 110 to complete the requirements of Section 11 above.

Economics

Prerequisites: Honours; or a major in Economics, and 6 units in advanced courses in Economics, Political Science, or Sociology.

M.A. Course: Economics 500, 540, and 549, and sufficient additional advanced courses to complete the requirements of section 11 above.

Education

Prerequisites: The following five categories of students are admissible to the course for the Master's degree provided they have first obtained approval from the Dean of Education and are properly registered in the Faculty of Graduate Studies:

1. Those with B.A. and postgraduate training (one year) who present:
 - (a) A permanent P.B. or S.B. certificate;
 - (b) Second Class standing or higher in the postgraduate Education year;
 - (c) First Class standing in at least 6 units of Education courses numbered 300 or above taken *subsequently* to the postgraduate year.
2. Those with B.A. and Normal School (one year) who present:
 - (a) A permanent P.B. or S.B. certificate;
 - (b) First Class standing in at least 6 units of Education courses numbered 300 or above taken *subsequently* to Normal School;
 - (c) Second Class or higher standing in at least 3 further units of Education in a course numbered 300 or above taken *subsequently* to Normal School.
3. Those with B.Ed. (Sec.) who present:
 - (a) A permanent P.B. certificate;
 - (b) Second Class or higher standing in the Fourth and Fifth Years;
 - (c) First Class standing in at least 6 units of Education courses normally taken in Fourth and Fifth Years.
4. Those with B.Ed. (Elem.) who present:
 - (a) A permanent P.C. certificate;
 - (b) Second Class or higher standing in the Third and Fourth Years;
 - (c) At least 15 additional units of work in Arts and Science or Education beyond the B.Ed. (Elem.) with First Class standing in 6 units.
5. Those with a first university degree of a quality that would admit them to one of the Master's degrees of this University but with no teacher training who present:
 - (a) Special experience in adult education or pre-school education, or the equivalent to teacher training, that is acceptable to the Faculty of Graduate Studies and the Faculty of Education;
 - (b) First Class standing in at least 6 units of professional Education taken *subsequently* to the first university degree.

Requirements: Thesis, counting at least 3 units, and courses to complete the requirements of section 11 above. Attendance at Education 581 is compulsory and, when necessary, Education 582 or its equivalent will be required. At least 3 units of graduate work in an academic field outside the Faculty of Education will be required.

English

Prerequisites: Honours, or at least 15 units in the Department chosen from courses offered in the Third and Fourth Years.

M.A. Course: Thesis, counting 3 units, and other courses to complete the requirements of section 11 above, chosen in consultation with the Department. Candidates must take an examination in the history of English literature and demonstrate an adequate reading knowledge of the foreign language offered.

French

Prerequisites: Honours; or a major and 3 additional units in the Department chosen from courses in the Third and Fourth Years.

M.A. Course: Thesis, counting at least 3 units, and courses to complete the requirements of section 11 above.

Genetics

Genetics is not treated as a department, but as a field of study. Instruction is offered cooperatively by the Departments of Biology and Botany, Poultry Science and Zoology, the Divisions of Animal and Plant Science, and the Faculty of Forestry.

The following courses will be accepted for M.A. credit: appropriate graduate courses in the departments and faculties mentioned; certain courses numbered 400 and above in genetics, and related subjects as approved in particular cases.

Geography

Prerequisites: Honours; or a major and 6 additional units in Geography.

M.A. Course: Thesis, counting at least 3 units, and courses to complete the requirements of section 11 above. All graduates must attend the Geography graduate seminar.

German

Prerequisites: Honours; or a major and 3 additional units in the Department chosen from courses in the Third and Fourth Years.

M.A. Course: Thesis, counting 3 units, 6 units selected from German 500, 501, and 502, and other courses to complete the requirements of section 11 above.

A comprehensive written and oral examination on the history of German literature is required of all candidates.

Greek

Prerequisites: an amount of preparation in Greek adjudged adequate by the Department as a basis for graduate study.

Normally, the thesis will be written on a Greek subject and the degree will be taken in Classics (see page 344).

History

Prerequisites: Honours; or one of History 101, 102, 201, or an equivalent course in Senior Matriculation, plus 15 units to be chosen from the Third and Fourth Year courses in History, and the Third and Fourth Year Honours seminars.

M.A. Course: Thesis, counting at least 3 units, and courses to complete the requirements of section 11 above.

All candidates must attend an M.A. seminar, counting 3 units.

International Studies

Prerequisites: Honours; or one of History 101 (or an equivalent course in Senior Matriculation), Economics 200, plus 18 units to be chosen from courses accepted for credit in International Studies among which must be included International Studies 400 or 405 or 410.

M.A. Course: Thesis, counting at least 3 units, and courses to complete the requirements of section 11 above.

Latin

Prerequisites: Honours; or an amount of preparation in Latin adjudged adequate by the Department as a basis for graduate study.

M.A. Course: Thesis, counting at least 3 units, and courses to complete the requirements of section 11 above. A knowledge of Greek will be required. (See also under Classics, page 344).

Mathematics

Prerequisites: Honours, or a major including Mathematics 300, 410 plus 9 additional units including Mathematics 402, 404, 441.

M.A. Course: Thesis, counting at least 3 units, and courses to complete the requirements of section 11 above.

Pharmacology

Prerequisites: An M.D. degree; or a Bachelor's degree with Honours (or equivalent scholastic standing) in Bacteriology, Biochemistry, Biology, Chemistry, Pharmacy, Physiology, or Zoology. Credit must have been obtained for Chemistry 300 and Physics 100 or 101. Chemistry 304 and Physics 220 and 420 are also recommended.

M.A. Course: If not already taken, Physiology 400 or 410 and 411; Biochemistry 400 or 410; Pharmacology 425 and 426; thesis, counting 6 units, and courses in related fields selected in consultation with the Department to complete the requirements of section 11 above.

The number of M.A. students who can be accepted in any one year is limited.

Philosophy

Prerequisites: Honours; or Philosophy 202, 210, 310, 302 or 304, 415.

M.A. Course: Thesis, counting at least 3 units, Philosophy 410 if not previously taken, and courses to complete the requirements of section 11 above. Greek 407 may count as a Philosophy course.

Physics

Prerequisites: Honours in Physics, Mathematics, or Physics and Mathematics; Physics 200, 300, 304, 308, 401, 402 and Mathematics 402.

M.A. Course: Thesis, counting at least 3 units, Physics 500 or 504, 501, 502, 503, and courses to complete the requirements of section 11 above.

Physiology

Prerequisites: An M.D. degree; or a Bachelor's degree with Honours in Physiology or related fields in Agriculture, or in Bacteriology, Biology, Botany, Biochemistry, Chemistry or Zoology; or the courses accepted as prerequisites for the Master's degree in one of these subjects.

M.A. Course: Physiology 410, 411 and Biochemistry 400 or 410, if not already taken; thesis, counting 6 units, and courses in related fields selected in consultation with the Department, to complete the requirements of section 11 above.

The number of M.A. students who can be accepted in any one year is limited.

Planning

Prerequisites: See page 363.

M.A. Course in Community and Regional Planning. See page 364.

Political Science

Prerequisites: Honours in Political Science, or in Economics, or in Economics in combination with some other subject, or a major in Political Science and 6 additional units in Economics or Political Science.

Three units in Political Science or 3 units in Economics or 3 units in each may be replaced by an equivalent number of units chosen from History 309, 310, 311, 312, 419, 420, International Studies 400, and Slavonic Studies 308, 330, and 412.

M.A. Course: Political Science 540 and 549, and other courses to complete the requirements of section 11 above.

The courses listed in the preceding paragraph may, with the approval of the Department, be counted as courses in Political Science.

Psychology

Prerequisites: (1) Honours, or (2) a major in psychology and 6 additional units in psychology or cognate fields.

M.A. Course: Thesis counting at least 3 units and courses to complete the requirements of section 11 above.

M.A. in Clinical Psychology: Because of the professional character of clinical psychology, the requirements for the M.A. in this field involve two years of study.

Prerequisites: Honours (including Psychology 401); or a major, including Psychology 401, Psychology 410, Biology 304; or the equivalent. Candidates must also satisfy the Department, by examination, of competence in the fields essential to clinical psychology.

Course: Psychology 530, 540, 3 to 6 units outside the Department and additional units in Psychology selected in consultation with the Department to complete the 30 units necessary.

Slavonic Studies

Prerequisites: Honours; or Russian 100, 200, Russian 203 or Polish 110, and 12 additional units chosen from courses in the Department.

M.A. Course: Thesis, counting at least 3 units, and courses to complete the requirements of section 11 above.

Sociology

Prerequisites: Honours; or a major in Sociology and 6 units of Third and Fourth Year work in a Social Science or Psychology.

M.A. Course: Sociology 540 and 549, and sufficient other advanced courses to complete the requirements of section 11 above.

Spanish

Prerequisites: Honours; or a major and 3 additional units in the Department, chosen from courses in the Third and Fourth Years.

M.A. Course: Thesis, counting at least 3 units, and courses to complete the requirements of section 11 above.

Zoology

Prerequisites: Honours; or Zoology 105, Botany 105, Chemistry 101, Physics 100 or 101, Mathematics 205 or Plant Science 421, and 15 additional units in Zoology.

M.A. course: Thesis, counting 6 units, and courses to complete the requirements of section 11 above.

The number of M.A. students who can be accepted in any one year is limited.

THE DEGREE OF MASTER OF SCIENCE

The following special requirements are prescribed by the departments.

Agricultural Microbiology

Prerequisites: Honours in Agricultural Microbiology; or Chemistry 300, Biochemistry 410, and 12 units of approved courses in Soil Science, Bacteriology, and Dairying.

M.Sc. Course: Thesis, counting 6 units; 6 units selected from Soil Science 512, Dairying 501 and 502; other courses in related fields selected in consultation with the departments or divisions concerned to complete the requirements of section 11 above.

Anatomy (Human)

Prerequisites: An M.D. degree or equivalent, or a B.A. degree with Honours in Zoology, or the courses accepted as prerequisite for the Master's degree in Zoology.

M.Sc. Course: Thesis, counting 6 units, and courses in related fields selected in consultation with the Department to complete the requirements of section 11 above.

Bacteriology and Immunology

Prerequisites: Honours; or a major plus 3 units in the Department, chosen from courses offered in the Third and Fourth Years. Courses taken outside the Department should have been mainly in science subjects.

M.Sc. Course: Thesis, counting at least 5 units, and science courses to complete the requirements of Section 11 above.

The number of M.Sc. students who can be accepted in any one year is limited.

Biochemistry

Prerequisites: An M.D. degree; or a Bachelor's degree with Honours in Biochemistry or related fields in Agriculture, or in Bacteriology, Biology, Botany, Chemistry, Physiology or Zoology; or the courses accepted as prerequisites for the Master's degree in one of these subjects.

M.Sc. Course: Biochemistry 400 or 410, if not already taken; thesis, counting 6 units, and courses in related fields selected in consultation with the Department, to complete the requirements of section 11 above.

Chemistry

Prerequisites: Honours in Chemistry.

M.Sc. Course: Thesis, counting normally 6 units, Chemistry 548 and courses to complete the requirements of section 11 above.

Geology

Prerequisites: Honours; or Geology 200, 301, 302, and 18 additional units in Geology.

M.Sc. Course: Thesis, counting at least 3 units, Geology 545, and courses to complete the requirements of section 11 above.

Metallurgy

Metal Physics

Prerequisites: Honours in Physics or equivalent. (See Section 5.)

M.Sc. Course: Thesis counting normally 6 units; 3 units selected from courses numbered 500 in Metallurgy; Physics 500 and 501 are required

courses; other courses in related fields selected in consultation with the departments to complete the requirements of section 11 above. For descriptions of courses see page 199.

Metal Chemistry

Prerequisites: Honours in Chemistry or equivalent. (See Section 5.)

M.Sc. Course: Thesis counting normally 6 units; at least 3 units from courses numbered 500 in Metallurgy, and at least 3 units from courses numbered 500 in Chemistry; other courses in related fields selected in consultation with the departments to complete the requirements of section 11 above. For descriptions of courses see page 199.

Neurology

Prerequisites: An M.D. degree, or a Bachelor's degree with Honours in one of the related fields in Agriculture, Bacteriology, Biology, Botany, Biochemistry, Chemistry, Physics, Psychology, or Zoology; or the courses accepted as prerequisites for the Master's degree in one of these fields.

M.Sc. Course: Thesis, counting 6 units, and courses in related fields selected in consultation with the Department to complete the requirements of section 11 above.

It is recommended that students intending to take this degree complete basic work in Chemistry, Physics, Psychology, and Physiology in their undergraduate work.

Physics

Prerequisites: Honours in Physics and Mathematics, Physics, Mathematics, or Bachelor's degree with at least Second Class standing in Engineering or Applied Science; Physics 200 (or Physics 155 and 156), 300 (or Physics 250), 304, 308, 401, 402 and Mathematics 402.

M.Sc. Course: Thesis, counting at least 3 units, Physics 500, 501, 502, 503 and courses to complete the requirements of section 11 above.

Planning

Prerequisites: See page 363.

M.Sc. Course in Community and Regional Planning: See page 364.

THE DEGREE OF MASTER OF APPLIED SCIENCE

Chemical Engineering

Prerequisites: B.A.Sc. in Chemical Engineering and the completion of the requirements of section 5 (b) above.

M.A.Sc. Course: Thesis, 6 units, Chemical Engineering 598, 550, and other courses to complete the requirements of section 11 above.

Civil Engineering

Prerequisites: Graduation in Civil Engineering and the completion of the requirements of section 5 (b) above.

M.A.Sc. Course: Thesis, counting normally 6 units, at least one course (or 3 units) chosen from graduate courses in the Department, and other courses to complete the requirements of section 11 above.

Electrical Engineering

Prerequisites: Graduation in Electrical Engineering or Engineering Physics and the completion of the requirements of section 5 (b) above.

M.A.Sc. Course: Thesis, counting normally 6 units, at least one course (or 3 units) chosen from graduate courses in the Department, and other courses to complete the requirements of section 11 above.

Engineering Physics

Prerequisites: Graduation in Engineering Physics or Electrical Engineering and the completion of the requirements of section 5 (b) above.

M.A.Sc. Course: Thesis, counting at least 3 units, at least 6 units chosen from graduate courses in the Department and other courses to complete the requirements of section 11 above.

Forest Engineering

Prerequisites: Graduation in Forest Engineering and the completion of the requirements of section 5 (b) above.

M.A.Sc. Course: Thesis, counting normally 6 units, at least 3 units chosen from graduate courses in the Department, at least 3 units chosen from the 300, 400, or 500 series in another department of Applied Science, and other courses to complete the requirements of section 11 above.

Geological Engineering

Prerequisites: Graduation in Geological Engineering and the completion of the requirements of section 5 (b) above.

M.A.Sc. Courses: Thesis, counting at least 3 units, Geology 545, the required courses in the chosen option, and other courses to complete the requirements of section 11 above.

Options

Economic Geology: Geology 526 and 3 units chosen from Geology 520, 523, 524 or 525.

Mineralography: Geology 524 and 3 units chosen from Geology 523, 525, 526.

Mineralogy: Geology 523 and 3 units chosen from Geology 520, 524, 525, 526.

Palaeontology: Geology 521 or 531 and 3 units chosen from Geology 520, Biology 400, Zoology 105, 202 or 203, Oceanography courses.

Petrology: Geology 525 and 3 units chosen from Geology 523, 524, 526.

Stratigraphy: Geology 520 and 3 units chosen from Geology 521 or 531, 525, Soil Science 415, Oceanography courses.

Mechanical Engineering

Prerequisites: Graduation in Mechanical Engineering and the completion of the requirements of section 5 (b) above.

M.A.Sc. Course: Thesis, counting normally 6 units, at least one course (or 3 units) chosen from graduate courses in the Department, and other courses to complete the requirements of section 11 above.

Metallurgical Engineering

Prerequisites: Graduation in Metallurgical, Chemical, Mechanical Engineering, or Engineering Physics, and the completion of the requirements of section 5 (b) above.

M.A.Sc. Course: Thesis, counting normally 6 units, at least 3 units chosen from courses numbered 500 in Metallurgy, and other courses to complete the requirements of section 11 above.

Mining Engineering

Prerequisites: Graduation in Mining or Geological Engineering and the completion of requirements of section 5 (b) above.

M.A.Sc. Course: Thesis, counting normally 6 units, at least 3 units chosen from graduate courses in the Department, and other courses to complete the requirements of section 11 above.

THE DEGREE OF MASTER OF FORESTRY

Forestry

Prerequisites: Bachelor's degree equivalent to the B.S.F., or B.A.Sc. in Forest Engineering, of the University of British Columbia, and the completion of the requirements of section 5 (b) above.

The prerequisites in the case of each applicant to be determined by the Faculty in relation to the field of the proposed thesis.

M.F. Course: Thesis, counting at least 3 units, at least 3 units chosen from graduate courses in the Faculty, including Forestry 553, and other courses to complete the requirements of section 11 above.

THE DEGREE OF MASTER OF SCIENCE IN AGRICULTURE

Agricultural Economics

Prerequisites: Honours in Agricultural Economics or Economics; or at least 9 units in Agricultural Economics together with 6 units of Third and Fourth Year work in Economics or Political Science.

M.S.A. Course: Thesis, counting at least 5 units, and courses to complete the requirements of section 11 above.

Agricultural Mechanics

Prerequisites: Honours; or Second Class standing in at least 12 units in the Department chosen from courses offered in the Third and Fourth Years.

M.S.A. Course: Thesis, counting 6 units, and courses to complete the requirements of section 11 above.

Agronomy

Prerequisites: Honours; or completion of required undergraduate courses in the option selected for graduate study.

M.S.A. Course: Thesis, counting at least 5 units, research and other courses to complete the requirements of section 11 above.

Animal Husbandry

Prerequisites: Honours; or at least 12 units in Animal Husbandry chosen from courses offered in the Third and Fourth Years.

M.S.A. Course: Thesis, counting at least 5 units, and courses to complete the requirements of section 11 above.

Dairying

Prerequisites: Honours; or at least 12 units in Dairying chosen from courses offered in the Third and Fourth Years.

M.S.A. Course: Thesis, counting at least 5 units, and courses to complete the requirements of section 11 above.

Horticulture

Prerequisites: Honours; or completion of required undergraduate courses in the option selected for graduate study.

M.S.A. Course: Thesis, counting at least 5 units, research and other courses to complete the requirements of section 11 above.

Poultry Science

Prerequisites: Honours; or completion of required undergraduate courses in the option selected for graduate study.

M.S.A. Course: Thesis, counting at least 5 units, research and other courses to complete the requirements of section 11 above.

Soil Science

Prerequisites: Honours; or completion of required undergraduate courses in the option selected for graduate study.

M.S.A. Course: Thesis, counting at least 5 units, research and other courses to complete the requirements of section 11 above.

THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION

Prerequisites: Bachelor's degree in Commerce, Arts, Science, Law, Engineering, Forestry, Agriculture, or Pharmacy from an approved University; First Class standing in at least two (6 units) of the courses and Second Class standing in at least one-half of the remaining courses of the last two year's programme leading to the Bachelor's degree.

Degree Programme

(a) A student with a Bachelor's degree other than Commerce will require 36 units to complete the requirements of the Master's degree. The student will be required to complete 18 units of prerequisites in the following courses with not less than second class standing before acceptance as a candidate for the M.B.A. degree: Commerce 331, 352, 361, 371, 381, Principles of Economics (if the student has taken an economics course, a Commerce 300 course will be substituted in consultation with the dean).

(b) A student with a Bachelor's degree in Commerce from an approved university may be granted exemptions from all or part of prerequisite courses. The undergraduate programme of the student will be evaluated by the Dean and a suitable programme arranged.

(c) The Master's year will consist of the following: Commerce 549 (Master's Thesis); Commerce 492; 6 units of 500 level Commerce courses and 6 units of courses numbered 300 or above to be selected in consultation with the candidate's committee.

THE DEGREE OF MASTER OF EDUCATION

Prerequisites: The following five categories of students are admissible to the course for the Master's degree provided they have first obtained approval from the Dean of Education and are properly registered in the Faculty of Graduate Studies:

1. Those with B.A. and postgraduate training (one year) who present:
 - (a) A permanent P.B. or S.B. certificate.
 - (b) Second Class standing or higher in the postgraduate Education year;
 - (c) First Class standing in at least 6 units of Education courses numbered 300 or above taken *subsequently* to the postgraduate year;

2. Those with B.A. and Normal School (one year) who present:
 - (a) A permanent P.B. or S.B. certificate;
 - (b) First Class standing in at least 6 units of Education courses numbered 300 or above taken *subsequently* to Normal School;
 - (c) Second Class or higher standing in at least 3 further units of Education in a course numbered 300 or above taken *subsequently* to Normal School.
3. Those with B.Ed. (Sec.) who present:
 - (a) A permanent P.B. certificate;
 - (b) Second Class or higher standing in the Fourth and Fifth Years;
 - (c) First Class standing in at least 6 units of Education courses normally taken in Fourth and Fifth Years.
4. Those with B.Ed. (Elem.) who present:
 - (a) A permanent P.C. certificate;
 - (b) Second Class or higher standing in the Third and Fourth Years;
 - (c) At least 15 additional units of work in Arts or Education beyond the B.Ed. (Elem.) with First Class standing in 6 units.
5. Those with a first university degree of a quality that would admit them to one of the Master's degrees of this University but with no teacher training who present:
 - (a) Special experience in adult education or pre-school education, or the equivalent to teacher training, that is acceptable to the Faculties of Graduate Studies and Education;
 - (b) First Class standing in at least 6 units of professional Education taken *subsequently* to the first university degree.

The Master of Education makes provision for a general acquaintance at an advanced level with several fields of education. It also requires at least 3 units of work in an academic subject outside the Faculty of Education. It does not involve particular specialisation nor does it entail experimental research followed by a thesis. Instead the amount of course work is increased to at least 21 units and each 3 unit course in Education requires a course paper. This type of wider study of the various fields of education is designed for those who are interested in becoming principals and vice-principals of schools, inspectors and superintendents of school districts, or for those who simply wish to become "master" teachers. It is not suitable for those who wish to do specialised research in Education.

In the course for the Master of Education it is possible with approval to take as many as 9 units of advanced work in an academic field. It is also possible and sometimes desirable to substitute a thesis for 3 units of course work.

COURSES LEADING TO THE DEGREE OF Ph.D.

Admission

1. To become a candidate for the Ph.D. degree graduate students must complete *Application for Admission* or *Application for Re-registration* forms, which may be obtained from the Registrar's office, and file them with the Registrar. Such applications should be submitted before March 1st and will not be accepted after September 1st.
2. Candidates for the Ph.D. degree must satisfy the Executive Committee of the Faculty of Graduate Studies that they are competent to proceed to the course of study proposed and must hold either
 - (a) a Master's degree (or the equivalent), or
 - (b) a Bachelor's degree with Honours (or the equivalent), in which case additional work will be required.

3. Candidates must satisfy the Executive Committee of the Faculty of Graduate Studies of their ability to read technical material in two, at least, of the French, German and Russian languages; provided that the department concerned may accept some other language in substitution for one of the required languages if the character of the candidate's proposed work justifies this substitution. This rule shall not restrict the right of any department to require a reading knowledge of additional languages, or to require a higher standard of one or more of the languages offered by a candidate.

The Executive Committee may, however, accept candidates who do not satisfy this rule on the understanding that they will put themselves in a position to do so by the spring subsequent to their registration at latest. In the event of their failing to do so any further postponement will require the express consent of the Executive Committee.

4. As the number of candidates that can be accommodated is limited, students, no matter how well qualified, can be accepted only if there is a vacancy in the specific field in which they propose to major.

5. A candidate may not assume teaching duties for which he receives sessional remuneration exceeding \$1000 without the permission of the Executive Committee of the Faculty of Graduate Studies.

6. The Executive Committee of the Faculty of Graduate Studies may require students who have taken all (or the greater part) of their previous work at the University of British Columbia to broaden their experience by spending at least one year at another research institution before receiving their Ph.D. degree.

Courses of Study

7. Candidates for the Ph.D. degree normally will be required to spend three Winter Sessions at the University, though candidates qualified under 2 (a) may have this time reduced in exceptional cases by the Executive Committee of the Faculty of Graduate Studies.

8. The work of each candidate will be supervised by a Candidate's Committee consisting of not less than three members, at least one of whom may be chosen from a department other than that in which the candidate is writing his thesis. This Committee will assist the candidate to plan his work, supervise his research, and direct the preparation of his thesis.

9. Upon registration an applicant must outline his proposed programme of study on forms obtainable in the Registrar's office. The programme must be approved both by the Candidate's Committee and by the Executive Committee of the Faculty of Graduate Studies. Work for the Ph.D. degree will consist of seminars, assigned readings, consultations, and such formal courses as may be deemed essential for the fulfilment of the requirements for the degree. A major part of a candidate's work will consist of a thesis embodying the results of original and independent research. The Executive Committee of the Faculty of Graduate Studies may require the thesis to be submitted to an outside examiner or examiners, and may also require its publication in whole or in part as a condition of granting the Ph.D. degree.

10. Candidates will normally be required to take courses totalling not less than 6 units in their major field and at least 6 units in related subjects, but they may be required to take any additional courses that, in the opinion of the department concerned, are necessary to complete their knowledge of their chosen field of study.

11. Unless, in the opinion of the Executive Committee of the Faculty of Graduate Studies, the delay has been justified by circumstances that

are altogether exceptional, candidates who have not received their degree at the end of six Winter Sessions will be required to withdraw.

Examinations and Thesis

12. The progress of all Ph.D. candidates will be reviewed in the spring of each year, and the Executive Committee of the Faculty of Graduate Studies may require any candidate to withdraw if his work has not been satisfactory. If a candidate for the degree of Ph.D fails to obtain 65 per cent in any course, the Executive Committee of the Faculty will deal with the matter after consultation with the department concerned.

13. The examinations required will be determined by the department concerned, with the approval of the Executive Committee of the Faculty of Graduate Studies. Generally speaking these will consist of the following: (a) course examinations, in which candidates are required to secure at least Second Class standing; (b) examinations to test the candidate's ability to read the foreign languages required for his programme of study (see regulation 3 on page 306); (c) a comprehensive examination, which normally will be held when the candidate has completed all course work required, and which is intended to test his grasp upon his chosen field of study as a whole; and (d) an oral examination on his thesis.

14. At the end of the first year, i.e., in April, candidates will be required to write examinations in at least 3 units of work in their major field and at least 3 units of the related subjects. Examinations in the remainder of the formal course work must be written before a candidate takes the oral examination on his thesis.

15. A candidate's thesis must be presented in the form prescribed in the leaflet entitled *Preparation of Graduate Theses*, copies of which may be obtained from the Registrar.

At present Ph.D. courses are offered only as follows:

Anatomy

1. Facilities are available for original investigation in descriptive anatomy, histology and endocrinology leading to the degree of Ph.D.
2. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the Department provided credit has not already been obtained for such courses.
 - (b) Certain advanced courses in related subjects as approved in particular cases on the recommendation of the departments concerned.

Bacteriology and Immunology

1. The Department offers opportunities for Ph.D. work in fundamental or applied aspects of bacteriology, immunology, and virology.
2. Courses in cognate subjects will be selected in consultation with the departments.
3. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the Department provided credit has not already been obtained for such courses.
 - (b) Certain courses numbered 400 or above in related subjects as approved in particular cases on the recommendation of the departments concerned.

Biochemistry

1. Facilities are available for original investigations in certain fields of biochemistry leading to the degree of Ph.D.

2. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the Department provided credit has not already been obtained for such courses.
 - (b) Certain courses numbered 400 or above in related subjects as approved in particular cases on the recommendation of the departments concerned.

Biology and Botany

1. The Department offers opportunities for advanced study in most major fields of botany. Specialization is also possible in certain fields of general physiology. The Department should be consulted for details.
2. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the department concerned with the major field provided that credit has not already been obtained for such courses.
 - (b) Certain courses numbered 400 or above in related subjects as approved in particular cases on the recommendation of the departments concerned.

Chemistry

1. The Department offers facilities for research studies leading to the Ph.D. degree in any of the following fields:

Chemical Kinetics.—Electron transfer processes, oxidation reactions, photochemistry, thermal reactions, free radical reactions, homogenous and heterogeneous catalysis, isotopic exchange reactions.

Spectroscopy and Molecular Structure.—Electronic structure of molecules, high resolution nuclear magnetic resonance, molecular complexes.

Mass Spectrometry.—The ionization and dissociation of molecules and free radicals by electron impact, isotope studies.

Electrochemistry.—Conduction in non-aqueous solvents, polarography.

Physical-Inorganic Chemistry. — Structure of metal complexes, lamellar compounds. Separation of Lanthanides.

Chemical Oceanography.—Trace metals and constitution of sea water.

Natural Products. — Wood chemistry, carbohydrates, stereochemistry.

Physical Organic Chemistry.—Reaction mechanism, organic oxidation reactions in solution.

Polymer Chemistry.—Synthetic high polymers, physical properties of polymers.
2. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the Department provided credit has not already been obtained for such courses.
 - (b) Certain courses numbered 400 or above in related subjects as approved in particular cases on the recommendation of the departments concerned.

Dairying and Soil Science

1. A course leading to the Ph.D. degree is offered in the major field of agricultural microbiology only.
2. Related subjects:

Courses in cognate subjects will be selected in consultation with the departments.

3. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the fields provided credit has not already been obtained for such courses.
 - (b) Certain courses numbered 400 or above in related subjects as approved in particular cases on the recommendation of the departments or divisions concerned.

Electrical Engineering

1. Courses are at present offered in:
 - (a) **Electrical Power:** A.C. machinery, electric power systems.
 - (b) **Communications and Control:** applied electromagnetic theory, net work theory, servomechanisms, electronics.
2. Related Subjects.

These may include Physics, Mathematics, or others with approval of the departments concerned.
3. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the Department provided that credit has not already been obtained for such courses.
 - (b) Certain courses numbered 400 or above in related subjects as approved in particular cases on the recommendation of the departments concerned.

Forestry in cooperation with Biology and Botany

1. Courses are offered in five major fields:
 - (a) **Forest Ecology.**
 - (b) **Forest Genetics.**
 - (c) **Forest Pathology.**
 - (d) **Wood Anatomy and Properties.**
 - (e) **Tree Physiology.**
2. Related subjects:

These may include Agronomy, Biology, Botany, Chemistry, Forestry, Geography, Geology, Horticulture, Mathematics, Physics, Soil Science, Zoology.
3. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the department concerned provided that credit has not already been obtained for such courses.
 - (b) Certain courses numbered 400 or above in related subjects as approved in particular cases on the recommendation of the departments concerned.

Forestry in cooperation with Zoology

1. Courses are offered in two major fields:
 - (a) **Forest Entomology.**
 - (b) **Wildlife Biology.**
2. Related subjects:

These may include Agronomy, Biology, Botany, Chemistry, Forestry, Geography, Geology, Horticulture, Mathematics, Physics, Soil Science, Zoology.

3. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 and above) offered in the department concerned with the major field, provided that credit has not already been obtained for such courses.
 - (b) Certain courses numbered 400 or above in related subjects as approved in particular cases on the recommendation of the departments concerned.

Genetics

1. Genetics is not treated as a department, but as a field of study. Instruction is offered cooperatively by the Departments of Biology and Botany, Poultry Science and Zoology, the Divisions of Animal and Plant Science, and the Faculty of Forestry.
2. The following courses will be accepted for Ph.D. credit:
 - (a) Appropriate graduate courses in the departments and faculties mentioned.
 - (b) Certain courses numbered 400 and above in genetics and related subjects as approved in particular cases.

Geology

Courses in geology and related fields will be selected in consultation with the candidate's committee.

Generally, the candidate will select one of two broad programmes:

- (a) Economic geology, mineralogy, petrology and structural geology.
- (b) Palaeontology, stratigraphy, and sedimentation.

All candidates, however, must attain reasonable competence in all of these fields.

The Ph.D. thesis will, generally, require as a basis field work that may require several months to complete.

The following courses will be accepted for Ph.D. credit:

- (a) Graduate courses (numbered 500 or above) offered in the department provided credit has not already been obtained for such courses.
- (b) Certain courses numbered 400 or above in related subjects as approved in particular cases on the recommendation of the departments concerned.

Mathematics

1. Courses are at present offered in
 - (a) Algebra.
 - (b) Applied Mathematics.
 - (c) Analysis.
2. Related subjects:

These may include Physics, Electrical Engineering, Philosophy.

3. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the Department provided that credit has not already been obtained for such courses.
 - (b) Certain courses numbered 400 or above in related subjects as approved in particular cases on the recommendation of the departments concerned.

Metallurgy

The Department offers opportunities for Ph.D. work in the following fields:

Metal Chemistry: Required courses include 500 courses in Chemistry, Mathematics, Physics and Metallurgy, although certain 400 courses in

Mathematics and Physics will be accepted. Research projects will be concerned with reactions of metals and metal compounds, including those which are associated with the treatment of minerals, the production and purification of metals, and with electrolytic and corrosion processes.

Metal Physics: Required courses include 500 courses in Physics, Mathematics and Metallurgy. Certain 400 courses will be accepted in Chemistry. Research projects will be concerned with metal structure, alloy theories, ferromagnetism, transformations in the solid state, surface phenomena, electrical and temperature effects, theories of deformation, and other physical phenomena in metals.

Related Courses: Courses in Physics, Chemistry, Mathematics, Geology or Electrical Engineering, to be selected in consultation with the department.

Pharmacology

1. Facilities are available for original investigation in certain fields of pharmacodynamics, leading to the degree of Ph.D.
2. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the Department provided credit has not already been obtained for such courses.
 - (b) Certain advanced courses in related subjects as approved in particular cases on the recommendation of the departments concerned.

Philosophy

1. Courses are offered leading to the Ph.D. in the fields of epistemology, value theory, and contemporary philosophy.
2. Related subjects:

Natural Sciences, Social Sciences, English, History, or other cognate courses, selected in consultation with the Department.
3. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the Department provided that credit has not already been obtained for such courses.
 - (b) Certain courses, numbered 400 or above, in related subjects as approved in particular cases on the recommendation of the departments concerned.

Physics

1. The Department offers opportunities for Ph.D. work in the following major fields: nuclear physics, spectroscopy, low temperatures, electronics and radio-physics, theoretical physics and biophysics.
 - (a) For work in **Nuclear Physics** there is considerable equipment, including a 4 Mev Van de Graaff Generator, and such ancillary apparatus as beta-ray spectrometers, magnets, scalars, and Geiger counters.
 - (b) In **Spectroscopy**, the Department has the following: vacuum grating, 21' grating, quartz spectographs, Perkin-Elmer infra-red spectrometer, Moll-microphotometer, measuring micrometers, and also wave guides, sources, and detectors for micro-wave work.
 - (c) **Low Temperatures**, a Collins-type helium cryostat.
 - (d) Some equipment such as Tiselius Electrophoresis apparatus, Beckmann Spectrophotometer, and Polarograph is available for work in **Biophysics** and it is expected that, with the establishment of the Medical School, further facilities will be provided.

- (e) In **Electronics and Radio-Physics** facilities are available for the study of semi-conductors, noise, gaseous discharges, tubes, antennas, and circuit theory.
 - (f) A leaflet describing in detail the facilities for research is available upon request.
2. Related Subjects:
- These may include Mathematics, Chemistry, Electrical Engineering and Metallurgy.
3. The following courses will be accepted for Ph.D. credit:
- (a) Graduate courses (numbered 500 or above) offered in the Department provided that credit has not already been obtained for such courses.
 - (b) Certain courses numbered 400 or above in related subjects as approved in particular cases on the recommendation of the departments concerned.

Physiology

- 1. The Department offers opportunities for advanced study leading to the Ph.D. degree in the field of mammalian physiology.
- 2. Studies in cognate fields will be selected in consultation with the candidate's committee.
- 3. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the Department or in related fields of physiology, provided that credit has not already been obtained for such courses.
 - (b) Certain courses numbered 400 or above in related subjects as approved in particular cases on the recommendation of the departments concerned.

Psychology

- 1. Courses are offered leading to a Ph.D. in the general field of psychology and in clinical psychology.

After a candidate has been accepted in the field of clinical psychology, he must spend at least one year of study in a clinical situation under professional supervision acceptable to the Department.
- 2. Related subjects:

Anthropology, Biology, Sociology, Social Work, or other cognate courses, selected in consultation with the Department.
- 3. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the Department provided that credit has not already been obtained for such courses.
 - (b) Certain courses, numbered 400 or above, in related subjects as approved in particular cases on the recommendation of the departments concerned.

Romance Studies

- 1. Courses are offered leading to a Ph.D. degree in the fields of:
 - (a) French literature: recurrent themes, aesthetics and criticism;
 - (b) French Canadian Literature.
- 2. Studies in cognate fields will be selected in consultation with the candidate's committee.

3. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 and above) offered in the Department provided that credit has not already been obtained for such courses.
 - (b) Certain courses, numbered 400 or above, in related subjects as approved in particular cases on the recommendation of the departments concerned.

Social Sciences

Courses may be arranged in Canadian History, Economics and Anthropology to meet the needs of students who have adequate reasons for desiring to do their work at the University of British Columbia in Canadian History, in Economics, or in Anthropology, provided that the subject chosen for the candidate's thesis is one which the department concerned is in a position to supervise and to supplement by appropriate courses.

Zoology

1. The Department offers opportunities for advanced study toward the Ph.D. degree in the major fields of Zoology.
2. Studies in cognate fields will be selected in consultation with the candidate's committee.
3. The following courses will be accepted for Ph.D. credit:
 - (a) Graduate courses (numbered 500 or above) offered in the Department provided that credit has not already been obtained for such courses.
 - (b) Certain courses numbered 400 or above in this or related subjects as approved in particular cases on the recommendation of the departments concerned.
4. A candidate who has not previously spent a study period at a marine biological station will be required to do so before the completion of his Ph.D. course.

COURSES IN COMMUNITY AND REGIONAL PLANNING

With the support of the Central Mortgage and Housing Corporation, Ottawa, the University offers courses in Community and Regional Planning, within the Faculty of Graduate Studies, leading to a Master's Degree. This degree will be either that of Master of Arts or of Master of Science, whichever best describes the prerequisites offered by the candidate and the courses chosen. This programme of courses allows the training of planning personnel and provides facilities and background for research in the planning problems of Western Canada.

The programme is directed by a Committee on Community and Regional Planning and is under the supervision of its Secretary.

Committee on Community and Regional Planning

Chairman

GORDON MERRITT SHRUM, O.B.E., M.M., E.D., M.A., Ph.D. (Toronto), F.R.S.C., Dean of the Faculty of Graduate Studies.

Members

N. A. M. MACKENZIE, C.M.G., M.M. and Bar, Q.C., B.A., LL.B. (Dalhousie), LL.M., (Harvard), LL.D. (Mount Allison, New Brunswick, Toronto, Ottawa, Bristol, Alberta, Glasgow, St. Francis Xavier, McGill, Sydney, Rochester), D.C.L. (Whitman), D.Sc.Soc. (Laval), F.R.S.C., President of the University of British Columbia, ex-officio.

WALTER H. GAGE, M.A. (Brit. Col.), Dean of Administrative and Inter-Faculty Affairs, ex-officio.

HENRY C. GUNNING, B.A.Sc. (Brit. Col.), S.M., Ph.D. (Mass. Inst. of Tech.), F.G.S.A., F.R.S.C., Dean of the Faculty of Applied Science.

FRED LASSERRE, B.Arch. (Toronto), M.R.A.I.C., Professor and Director, School of Architecture.

LEONARD C. MARSH, B.Sc. (Econ.) (London), M.A., Ph.D. (McGill), Professor, School of Social Work, and Special Lecturer, School of Architecture.

J. FRED MUIR, B.Sc. (Manitoba), M.E.I.C., Professor and Head of Civil Engineering.

J. LEWIS ROBINSON, B.A. (Western Ont.), M.A. (Syracuse), Ph.D. (Clark), Professor and Chairman, Geography Division, Department of Geology and Geography.

HARRY B. HAWTHORN, M.Sc., B.A. (New Zealand), Ph.D. (Yale), F.R.S.C., Professor of Anthropology and Head of the Department of Anthropology, Criminology and Sociology.

Staff

H. PETER OBERLANDER, B.Arch. (McGill), M.C.P., Ph.D. (Harvard), A.R.I.B.A., A.M.T.P.I., M.R.A.I.C., Associate Professor of Planning and Design (Secretary).

IRA M. ROBINSON, A.B. (Wesleyan), M.A. (Chicago), Assistant Professor of Planning.

In addition to the above Committee, an Advisory Council has been established to advise the Committee from time to time on curriculum and general teaching problems; it also provides a valuable link with current practices in Community Planning and its teaching.

Advisory Council

Chairman

GORDON MERRITT SHRUM, Dean of the Faculty of Graduate Studies.

Members

MR. J. H. DOUGHTY-DAVIES, Provincial Department of Municipal Affairs.

MR. J. OLIVER, Commissioner of Works.

MR. G. SUTTON BROWN, Director of Planning, City of Vancouver.

MR. P. R. U. STRATTON, Town Planning Commission, City of Vancouver.

MR. G. E. BAYNES, Community Planning Association of Canada, B.C. Division.

MR. P. M. THORNTON, The Architectural Institute of B.C.

MR. E. W. RICHARDSON, The Association of Professional Engineers of B.C.

All members of the University Committee, as well as the B.C. Regional Supervisor of Central Mortgage and Housing Corporation, are ex-officio members of the Council.

Prerequisites and Curriculum

Prerequisites: a Bachelor's Degree in Agriculture, Architecture, Arts, Commerce, Engineering, Forestry, Law or Social Work, adequate in respect of courses and standing to admit the candidate to a course leading to a Master's degree in his previous field of undergraduate study, provided that he has taken three of the following courses or their equivalents: Anthropology 300, 400; Architecture 150, 460; Civil Engineering 465, 470; Economics 304, 307, 320; Geography 301, 304, 306; Law 317; Political Science 310, 400, 420; Sociology 325, 420, 425; Soil Science 200, 314.

If a candidate in addition to his prerequisites has taken courses equivalent to those described for the Master's degree he may be given credit not to exceed 12 units for those courses.

If a candidate's qualifications are not adequate he may be allowed to make up deficiencies concurrently with his Master's course provided that he does not register for more than 18 units in any one Winter Session. For the purpose of making good these deficiencies courses chosen from the above list may be accepted in lieu of the courses required in the previous fields of undergraduate study.

M.A. and M.Sc. Courses

The candidate for a Master's Degree must satisfactorily complete a programme of study approved by the University Committee. This programme consists of a minimum of 30 units of course work including the following: Planning 500, 501, 502, 520, 521, 522, and at least four additional courses in fields allied to Community and Regional Planning such as Agricultural Economics, Architecture, Economics, Engineering, Geography, Political Science, and Sociology. These must be courses numbered 300 and above.

The candidate who satisfactorily completes this programme of study will receive either a Master of Arts degree or a Master of Science degree, depending upon his previous training and the elective courses taken concurrently with his Master's course. In either case the Master's thesis will consist of an extensive field study project during the second term of Planning 520.

Planning 500. (6) Community Planning Workshop.—This course forms the core of the planning training and is organized as a Planning Workshop. Students work individually and collaboratively. During the first term simple, short planning problems dealing with survey methods and various elements of land use planning including housing, industry, shopping centres, recreation, and traffic are examined as case studies in the planning process. During the second term an existing community or a New Town is comprehensively studied. The students conduct a survey of existing social, economic and physical conditions, determine the needs of the area in terms of physical development, and prepare a planning programme for the community. Mr. Robinson and Mr. Oberlander. [1-17; 1-17]

Planning 501. (1½) Housing.—The social and welfare aspects of housing; development of housing policy in Canada and elsewhere; demand and supply factors; urban redevelopment; public housing administration. Mr. Marsh. [3-0; 0-0]

Planning 502. (1½) Planning Analysis.—Use of the scientific method in planning decision-making. Sampling and other survey methods. Methods and techniques of analysis, prognosis, and programming in population, economic base, and land use studies. Mr. Robinson. [0-0; 3-0]

Planning 503. (3) Planning Engineering.—An introduction to the civil engineering aspects of community and regional planning; public services and utilities (sewerage, water supply, drainage), traffic and transportation, surveying and maps. This is a special course for students with no previous engineering knowledge. [2-2; 2-2]

Planning 520. (6) Regional Planning Workshop.—During the first term, students work collaboratively on problems in regional planning and resource development. In the second term, students work individually on some extensive planning project of their own choosing; the report on this project is submitted in lieu of a thesis. Mr. Oberlander and Mr. Robinson. [1-17; 1-17]

Planning 521. (1½) Regional Planning Theory, Methods and Techniques.—The principles, problems, methods and techniques of planning for areas larger than a city; metropolitan regional planning, resource

development programmes for the so-called "underdeveloped" areas of the world and for river basins in advanced countries and regions. Theory of regions, principles of regional economic development, techniques of resource analysis and regional planning; financing regional planning and development. Mr. Robinson. [3-0; 0-0]

Planning 522. (1½) Local and Regional Planning Administration.—Planning as a function of Government; methods and techniques of implementing a comprehensive development plan through land use controls, by-laws and administrative procedures; problems of governmental jurisdiction; regional authorities and commissions. Mr. Oberlander. [0-0; 3-0]

DIPLOMA COURSE IN CRIMINOLOGY

The Diploma Course in Criminology has been designed to meet the needs of students intending to enter employment in the field of corrections, and who are not proceeding to the degree of M.A. in Criminology. If the Diploma course is taken by students holding this degree, the Diploma course will be modified so as to avoid overlapping.

Applicants for the Diploma Course will be considered by a Faculty Selection Committee, and permission to enter the course is contingent upon the approval of the applicant by that Committee.

The curriculum is built around a nucleus of academic instruction in applied criminology and modern correctional programmes. Field training in varied agencies and institutions runs a course parallel to that of the classroom work. This core of work in the graduate specialty may be supplemented by courses chosen from allied fields, on the basis of the students' educational background and employment objective.

The curriculum emphasizes the field of corrections rather than any specific discipline operative within that field. Students are helped to relate various specialized contributions to the field as a whole, while stress is placed upon the continuity of function which connects diversified programmes for dealing with the offender.

Supervisory Committee on Criminology

Appointed by the President

Chairman

HARRY B. HAWTHORN, M.Sc., B.A. (New Zealand), Ph.D. (Yale), F.R.S.C., Head of the Department of Anthropology, Criminology, and Sociology.

Members

F. H. SOWARD, B.A. (Toronto), B.Litt. (Oxon), Associate Dean of the Faculty of Graduate Studies.

A. W. R. CARROTHERS, B.A., LL.B. (Brit. Col.), LL.M. (Harvard), Faculty of Law.

WILLIAM G. DIXON, B.A. (Brit. Col.), A.M. (Chicago), School of Social Work.

EDRO SIGNORI, B.A. (Alta.), M.A., Ph.D. (Toronto), Department of Psychology.

E. G. B. STEVENS, M.A. (Brit. Col.), Honorary Lecturer in Criminology.

G. J. ARCHER, Chief Constable, Vancouver Police Department, Honorary Lecturer in Criminology.

ELMER K. NELSON, JR., A.B., LL.B., M.A. (Wyoming), Associate Professor of Criminology. (On leave.)

D. GIBBONS, B.A., Ph.D. (University of Washington), Assistant Professor of Criminology. (Secretary.)

Prerequisites

A major in Criminology, Social Work 499, and 3 units in Psychology.

Incomplete prerequisites may be completed concurrently with courses leading to the Diploma provided that the student does not register for more than 18 units in any one Winter Session.

The Diploma Course

15 units including Criminology 534, 535, 537, 539, and additional units to be chosen in consultation with the Department.

Field Work

The field work (Criminology 539) is designed to give the student a more extended and closely guided experience in some of the correctional settings employed in the M.A. programme in Criminology (Criminology 538). In both cases the purpose is to acquaint the student with the broad range of agencies and institutions which make up the correctional process, and to interpret to him the function of each organization as related to the basic goals of protecting the public and rehabilitating the offender. In line with this purpose, the student spends a few working days in orientation contacts with each of the following: a police organization; the office of the Public Prosecutor; an adult probation department; a juvenile probation department, juvenile court and detention home; and correctional institutions which vary in size, programme and degree of custodial security.

The field work experience of each student will be followed closely by members of the University staff, and grades in the two courses will be based upon this continuing evaluation, coupled with the assessments of the organizations involved.

INSTITUTE OF FISHERIES OF THE UNIVERSITY OF BRITISH COLUMBIA

An Institute of Fisheries has been established within the Faculty of Graduate Studies. The objective is to give, at the graduate level, broad and advanced instruction in various fields relating to the best use and management of the fisheries resources. The Institute represents the co-operative efforts of various faculties, departments, schools and institutes within the University such as Biology, Economics, Law, Commerce, Engineering, Nutrition, Technology, etc. An opportunity is offered to students to acquire a broad understanding of the fishing industry in its biological, economic, and sociological relations, as well as to attain a high competency in a particular field. Special emphasis is placed upon research. For research in fisheries biology, physiology, and ichthyology the Institute has extensive facilities, including a museum collection of fishes.

A student desiring to undertake graduate work in Fisheries should discuss his programme with the head of the department in which he is majoring who will then submit the programme to the following Committee for review.

Committee on Fisheries

Chairman

P. A. LARKIN, M.A. (Sask.), D.Phil. (Oxon), Associate Professor in the Department of Zoology and Director of the Institute of Fisheries.

Members

N. A. M. MACKENZIE, C.M.G., M.M. and Bar, Q.C., B.A., LL.B. (Dalhousie), LL.M. (Harvard), LL.D. (Dalhousie, Mt. Allison, New Brunswick, Toronto, Ottawa, Bristol, Alberta, Glasgow, St. Francis Xavier, McGill,

Sydney, Rochester), D.C.L. (Whitman), D.Sc.Soc. (Laval), F.R.S.C., President of the University of British Columbia.

G. M. SHRUM, O.B.E., M.M., E.D., M.A., Ph.D. (Toronto), F.R.S.C., Dean of the Faculty of Graduate Studies.

GEORGE F. CURTIS, Q.C., LL.B. (Sask.), B.A., B.C.L. (Oxon), LL.D. (Dalhousie, Sask.), Professor and Dean of the Faculty of Law.

GEOFFREY C. ANDREW, B.A. (Dalhousie), M.A. (Oxon), Dean and Deputy to the President.

S. N. F. CHANT, O.B.E., M.A. (Toronto), Dean of the Faculty of Arts and Science.

JACOB BIELY, M.S.A. (Brit. Col.), M.A. (Kansas State College), Professor and Chairman of the Department of Poultry Science.

W. A. CLEMENS, M.A. (Toronto), Ph.D. (Cornell), F.R.S.C., Director of the Institute of Oceanography.

I. MCT. COWAN, B.A. (Brit. Col.), Ph.D. (California), F.R.S.C., Professor and Head of the Department of Zoology.

J. K. FRIESEN, B.A. (Man.), M.A., Ed.D. (Columbia), Director of University Extension.

W. S. HOAR, B.A. (New Brunswick), M.A. (Western Ontario), Ph.D. (Boston), F.R.S.C., Professor of Zoology and Fisheries.

C. C. LINDSEY, B.A. (Toronto), M.A. (Brit. Col.), D.Phil. (Cantab.), Honorary Lecturer in the Department of Zoology.

E. D. MACPHEE, M.M., M.A., B.Ed. (Edinburgh), Dean of the Faculty of Commerce and Business Administration.

E. S. PRETIUS, B.A.Sc. (Brit. Col.), M.Sc. (Iowa), Assoc.M.Am.Soc.C.E., Professor, Department of Civil Engineering

M. A. NEWMAN, B.Sc. (Chicago), M.A. (California), Honorary Lecturer in the Department of Zoology.

Staff

P. A. LARKIN, M.A. (Sask.), D.Phil. (Oxon), Director.

W. S. HOAR, B.A. (New Brunswick), M.A. (Western Ontario), Ph.D. (Boston), F.R.S.C., Professor.

G. F. CURTIS, Q.C., LL.B. (Sask.), B.A., B.C.L. (Oxon), LL.D. (Dalhousie, Sask.), Professor.

E. S. PRETIUS, B.A.Sc. (Brit. Col.), M.Sc. (Iowa), Assoc.M.Soc.C.E., Professor.

H. B. HAWTHORN, M.Sc., B.A. (New Zealand), Ph.D. (Yale), F.R.S.C., Professor.

A. D. SCOTT, B.Com., B.A. (Brit. Col.), M.A. (Harvard), Ph.D. (London), Assistant Professor.

C. C. LINDSEY, B.A. (Toronto), M.A. (Brit. Col.), Ph.D. (Cantab), Curator.

H. L. A. TARR, B.S.A., M.S.A. (Brit. Col.), Ph.D. (McGill and Cambridge), Honorary Lecturer.

M. A. NEWMAN, B.Sc. (Chicago), M.A. (California), Honorary Lecturer.

The following courses are available and others may be arranged to meet the needs of individual students:

Fisheries 500. (1) Fisheries Law.—A seminar course on the law governing fisheries and fisheries problems, with special reference to international aspects. Mr. Curtis. [1-0; 1-0]

Fisheries 501. (1) Hydraulics.—A seminar course designed to acquaint the student with some hydraulic problems related to fisheries conservation. Mr. Pretious. [1-0; 1-0]

Fisheries 502. (1) Anthropology.—A seminar course on the introduction of new techniques and knowledge in fisheries and related fields to non-industrialized societies, including a study of the cultural backgrounds in relation to the technical programmes of international organizations. Mr. Hawthorn. [1-0; 1-0]

Fisheries 503. (1) Economics.—A seminar course on the economics of natural resources with special reference to fisheries. Mr. Scott. [1-0; 1-0]

Zoology 510. (3) Fisheries Biology and Management.—Quantitative treatment of population problems pertinent to commercial and game fishes: techniques of management of fish stocks. Prerequisites: Zoology 403, Mathematics 205 or equivalent. Mr. Hoar and Mr. Larkin. [3-0; 3-0]

Zoology 513. (3) Ichthyology.—Seminars on subjects related to the evolution of fishes, and directed research in the fish museum. Prerequisite: Zoology 403. Mr. Lindsey. [1-4; 1-4]

Zoology 514. (2) Limnology.—Physical, chemical and biological factors of lakes and streams in relation to productivity. Text-books: Welsh, *Limnology*; Pennak, *Freshwater Invertebrates of the United States*. Prerequisites: Zoology 301, 403. Mr. Larkin. [1-3; 1-3]

Zoology 515. (1½) Technology of Marine Products.—A course on the principles involved in the technological processes used in the utilization of marine organisms. Instruction given at the Pacific Fisheries Experimental Station. Mr. Tarr. [0-4; 2-2]

Zoology 516. (1) Seminar in Fisheries Biology.—A review of the significant current literature and research problems. Mr. Larkin. [1-0; 1-0]

Other courses which may be required or recommended include: Oceanography 500, 509, 511; Zoology 501, 504, 508.

INSTITUTE OF OCEANOGRAPHY OF THE UNIVERSITY OF BRITISH COLUMBIA

The Institute of Oceanography was established at the University of British Columbia in the fall of 1949. It is supported in part by the Defence Research Board and by the Joint Committee on Oceanography, the latter body representing the interests of the Royal Canadian Navy, the National Research Council, the Fisheries Research Board and the Hydrographic Service.

The increasing interest in the problems of the sea has created a demand in Canada for trained scientists to undertake oceanographic investigations. The Institute represents the cooperative effort of the Departments of Biology and Botany, Chemistry, Geology and Geography, Physics and Zoology to train graduate students in one or more of these branches in the principles and techniques of oceanographic research.

The Institute is further charged with the responsibility for fundamental research in oceanography. Its location is particularly suited to this purpose. The fjords of British Columbia present special features which facilitate the study of water properties under restricted conditions. The large volume of fresh water discharged into the Gulf of Georgia from the Fraser river represents an estuarine condition which is amenable to detailed study. The strong tidal currents typical of many channels along the coast provide opportunities for the investigation of turbulent mixing. Easy access to the open ocean is obtained through the Strait of Juan de Fuca.

The wide ranges of salinity and concentration of plant nutrients present special problems in the chemistry of seawater and establish a variety of

environmental conditions reflected in the diversified fauna and flora of the region.

The interrelations between populations of marine organisms, especially fish, and their environmental conditions offer problems of particular significance on the Pacific Coast of Canada.

The importance of the sea in the economy of the Pacific Coast forecasts an increasing industrial application of oceanography.

Opportunity for investigation, observation and collection at sea is available to the staff and students of the Institute through the facilities and research ships of the Pacific Oceanographic Group and the Pacific Naval Laboratory.

The Institute is directed by a Committee on Oceanography representing the cooperating departments and supporting organizations. The Committee reviews the qualifications of candidates entering the field of oceanography and passes on the professional competence of graduating oceanographers.

A student desiring to specialize in Oceanography should discuss his programme with the head of the department in which he is majoring, who will then submit the programme to the Committee for review.

Committee on Oceanography

Chairman

W. A. CLEMENS, M.A. (Toronto), Ph.D. (Cornell), F.R.S.C., Special Lecturer in the Department of Zoology and Director of the Institute of Oceanography.

Members

N. A. M. MACKENZIE, C.M.G., M.M. and Bar, Q.C., B.A., LL.B. (Dalhousie), LL.M. (Harvard), LL.D. (Dalhousie, Mount Allison, New Brunswick, Toronto, Ottawa, Bristol, Alberta, Glasgow, St. Francis Xavier, McGill, Sydney, Rochester), D.C.L. (Whitman), D.Sc.Soc. (Laval), F.R.S.C., President of the University of British Columbia.

GORDON MERRITT SHRUM, O.B.E., M.M., E.D., M.A., Ph.D. (Toronto), F.R.S.C., Professor and Head of the Department of Physics, and Dean of the Faculty of Graduate Studies.

G. C. ANDREW, B.A. (Dalhousie), M.A. (Oxon.), Dean and Deputy to the President.

S. N. F. CHANT, O.B.E., M.A. (Toronto), Dean of the Faculty of Arts and Science.

IAN McTAGGART COWAN, B.A. (Brit. Col.), Ph.D. (California), F.R.S.C., Professor and Head of the Department of Zoology.

W. L. FORD, M.A. (Brit. Col.), Ph.D. (Northwestern), Superintendent, Pacific Naval Laboratory, Esquimalt, B.C.

HENRY C. GUNNING, B.A.Sc. (Brit. Col.), M.S., Ph.D. (Mass. Inst. of Technology), F.G.S.A., F.R.S.C.; Dean of the Faculty of Applied Science; R. W. Brock Professor and Head of the Department of Geology and Geography.

P. A. LARKIN, M.A. (Sask.), D.Phil. (Oxon.), Associate Professor of Zoology and Director of the Institute of Fisheries.

C. A. McDOWELL, M.Sc., D.Sc. (Belfast), F.R.I.C., Professor and Head of the Department of Chemistry.

T. M. C. TAYLOR, B.A. (Brit. Col.), Ph.D. (Toronto), Professor and Head of the Department of Biology and Botany.

JOHN P. TULLY, M.B.E., B.Sc. (Man.), Ph.D. (Wash.), A.I.C., F.C.I.C., Oceanographer-in-charge, Pacific Biological Station, Nanaimo, B.C.

Staff

- W. A. CLEMENS, M.A. (Toronto), Ph.D. (Cornell), F.R.S.C., Director.
 G. L. PICKARD, M.B.E., M.A., D.Phil. (Oxon.), Professor.
 R. F. SCAGEL, M.A. (Brit. Col.), Ph.D. (California), Assistant Professor.
 W. H. MATHEWS, M.A.Sc. (Brit. Col.), Ph.D. (Calif.), F.G.S.A., Associate Professor.
 R. W. STEWART, M.Sc. (Queen's), Ph.D. (Cantab.), Associate Professor.
 J. P. TULLY, M.B.E., B.Sc. (Man.), Ph.D. (Wash.), A.I.C., F.C.I.C., Honorary Lecturer.

Courses are offered in the following fields:

General Oceanography

Oceanography 500. (1) Introduction to Synoptic Oceanography.—Survey of oceanic circulation, distribution of temperature and salinity, energy budget. Text-book: Sverdrup, Johnson and Fleming, *The Oceans*. Mr. Pickard. [2-0; 0-0]

Oceanography 501. (1) Advanced Synoptic Oceanography.—Detailed study of the water masses of the oceans, enclosed basins, estuaries. Distribution of dissolved substances. Prerequisites: Oceanography 500, Physics 536. Mr. Pickard. [0-0; 1-2]

Oceanography 503. (1) Oceanographic Methods.—Observation and collection at sea; processing and analysis of data. Cruises to be arranged. Staff. [0-3; 0-3]

Oceanography 504. (1) Seminar.—A review of significant current literature and research problems. Mr. Clemens and Staff. [1-0; 1-0]

Oceanography 505. (1) Special Advanced Courses.—A special advanced course may be arranged for a student upon approval of the Director of the Institute.

Biological Oceanography

Biology 513. (2) Marine Benthonic Organisms and their Environment.—Oceanographic factors as related to the distribution of populations of marine benthonic organisms. Prerequisites: Botany 105, Zoology 105, Zoology 511. Desirable antecedents: Botany 411, and Zoology 301 and 501. Offered in 1958-59 and alternate years. Mr. Scagel. [2-4; 0-0]

Botany 512. (2) Marine Phytoplankton.—Collection, identification and quantitative analysis of marine phytoplankton in relation to oceanographic factors. Prerequisites: Botany 411 and Zoology 511. Offered in 1958-59 and alternate years. Mr. Scagel. [0-0; 2-4]

Zoology 511. (1) Introduction to Biological Oceanography.—Physical and chemical conditions related to the biology of the sea. Prerequisites: Oceanography 500, Physics 536. Mr. Scagel and Mr. Clemens. [0-0; 2-0]

Zoology 512. (2) Marine Zooplankton.—Oceanographic factors in relation to the distribution of marine zooplankton. Prerequisite: Zoology 511. Mr. Scagel. [1-3; 1-3]

Chemical Oceanography

Chemistry 509. (1) Introduction to Chemical Oceanography.—The composition of sea water, factors affecting its variation, standard methods for its determination. [2-0; 0-0]

Chemistry 510. (1) Advanced Chemical Oceanography.—An intensive study of the composition and analysis of sea water. [0-0; 2-0]

Geological Oceanography

Geology 520. (3) Sedimentation.—Principles of sedimentation. Prerequisite: Geology 411 must precede or accompany, except with the permission of the Department. Mr. Matthews. [2-2; 2-2]

Physical Oceanography

Physics 536. (1) Introduction to Dynamic Oceanography.—A survey of the physical properties of sea water, hydrostatics, continuity, geostrophic and wind driven currents, waves and tides, eddy diffusion. Mr. Pickard and Mr. Stewart. [2-0; 0-0]

Physics 537. (1) Advanced Dynamic Oceanography.—A more intensive study of the dynamics of ocean currents. Text-book: Proudman, *Dynamical Oceanography*. Prerequisite: Physics 536. Mr. Pickard. [0-0; 2-0]

Physics 538. (1) Fluid Mechanics.—The flow of real and ideal fluids, emphasizing the influence of turbulence and the application to ocean currents. Mr. Pickard and Mr. Stewart. [1-0; 1-0]

Physics 539. (1) Waves and Tides.—Surface and internal waves, tides of the oceans, tidal currents. Mr. Pickard. [1-0; 1-0]

Physics 540. (2) Turbulence.—A discussion of turbulent fluid motion, presenting both the empirical aspects and the development of statistical theories, including the spectrum of turbulence and similarity and equilibrium hypotheses. Mr. Stewart. [2-0; 2-0]

1957-58

**SCHOLARSHIPS,
BURSARIES, LOAN FUNDS,
and LECTURESHIPS**

1957-58

1957 - 1958

1957-58

MEDALS, FELLOWSHIPS, SCHOLARSHIPS, PRIZES, BURSARIES AND LOANS

GENERAL REGULATIONS

1. All awards of medals, scholarships, fellowships, prizes, and bursaries are made by Senate, on the recommendation of the Joint Faculty Committee on Prizes, Scholarships, and Bursaries and the faculties concerned, unless otherwise provided for by special resolution of Senate. Awards, when announced by the University, are final.

2. Medals, scholarships, fellowships, prizes, bursaries, and loans are open to Winter Session students only, unless otherwise stated, and marks obtained in Summer Session courses are not taken into account in awarding them.

3. If the award of a medal, scholarship, fellowship, or prize is based on an examination, no award will be made to a candidate who obtains less than 75 per cent. of the possible marks.

4. To be eligible for a general proficiency scholarship a student must take the full year's course, which must include the required courses for the year in which he is registered. Where credit has already been obtained in a required subject, however, another course may be substituted, with permission of the faculty concerned.

The standing of students taking more than the required number of units will be determined on the basis of the required number of units to be chosen in a manner most advantageous to the students.

5. Except in cases approved by Senate, no student may enjoy the proceeds of more than one scholarship in the same academic year, and the scholarships thus relinquished will be awarded to the candidates next in order of merit.

6. A winner, if he so desires, may retain the honour of winning an award but resign the monetary value. Any funds thus made available will be used for additional awards or loan funds.

7. Scholarships, fellowships, and bursaries under the jurisdiction of the University are payable in two instalments, one at the beginning of each term. Payments will be made only to those who continue their studies to the satisfaction of the faculty concerned and the Committee, and may be withheld for unsatisfactory attendance, conduct, or progress. A scholarship may be reserved for one year, provided the student shows satisfactory reasons for postponing attendance. Except in the case of a Pharmacy student from Senior Matriculation who has enrolled for the required year of practical training, and for whom a scholarship may be held over for one year, postponement of University Entrance and Senior Matriculation Scholarships will be granted on medical grounds only. Application for postponement should be made to the Dean of Administrative and Inter-Faculty affairs.

8. In awarding bursaries consideration will be given to the financial need of applicants.

9. If invested funds do not provide the necessary revenue for any endowed scholarship, fellowship, prize or bursary, payment of the award will be reduced or withheld.

10. The University does not guarantee the payment of any prizes, bursaries, scholarships, or fellowships other than those from the funds of the University. With respect to prizes, bursaries, scholarships, or fellow-

ships based upon the gifts of individuals or associations other than the University, no award will be made unless the funds required have been actually received from the private donor or donors.

11. The Senate of the University of British Columbia reserves the right to change the terms governing an award, so that they may better meet new conditions, may more fully carry out the intentions of the donor, or maintain the usefulness of the benefaction. The right so reserved shall be exercised by a resolution of the Senate duly confirmed by the Board of Governors, provided always that a year's notice shall be given in Senate of any proposed change and that the donor or his representatives, if living, shall be consulted about the proposed change.

12. All inquiries regarding fellowships, scholarships, prizes, bursaries, and loans should be addressed to the Dean of Administrative and Inter-Faculty Affairs.

13. Cheques in repayment of loans should be made payable to "The University of British Columbia" and forwarded to the office of the Accountant.

FOR HEADS OF THE GRADUATING CLASSES

The Governor-General's Gold Medal—A gold medal, presented by His Excellency the Governor-General of Canada, will be awarded to the student standing at the head of the graduating classes in Arts and Science (B.A. and B.Sc. programmes). Honours and General Course students are eligible.

The Wilfrid Sadler Memorial Gold Medal—A gold medal, given by Sigma Tau Upsilon Honorary Agricultural Fraternity in memory of Professor Wilfrid Sadler, Professor and Head of the Department of Dairying, 1918-33, will be awarded to the student standing at the head of the graduating class for the B.S.A. degree.

The Association of Professional Engineers Gold Medal—A gold medal, given by the Association of Professional Engineers of the Province of British Columbia, will be awarded to the student in the graduating year of Applied Science (B.A.Sc. course) whose record, in the opinion of the Faculty, is the most outstanding.

The Kiwanis Club Gold Medal and Prize—A gold medal and a cash prize of \$75, given by the Kiwanis Club of Vancouver, B. C., will be awarded to the student standing at the head of the graduating class for the B.Com. degree.

The University Medal for Arts and Science—This medal will be awarded to the student standing at the head of the graduating class in the degree course, B.A. or B.Sc., which does not include the winner of the Governor-General's Medal.

The Law Society Gold Medal and Prize—A gold medal, presented by the Law Society of British Columbia, will be awarded to the student obtaining the highest aggregate marks in the Final Year in the Faculty of Law. This award will be accompanied by a cash grant equivalent to the individual's Call and Admission Fee.

The Hamber Gold Medal and Prize—A gold medal and a cash prize of \$250, presented by the Honourable Eric W. Hamber, C.M.G., B.A., LL.D., Chancellor of this University from 1944 to 1951 and Chancellor Emeritus since 1951, will be awarded annually to the student graduating in the Faculty of Medicine with the most outstanding record throughout the medical course.

The Horner Gold Medal for Pharmacy—A gold medal, known as the "Horner Gold Medal" and given by Frank W. Horner Limited of Montreal,

will be awarded annually to the student standing at the head of the graduating class in Pharmacy.

The British Columbia Parent-Teacher Federation Prize—A prize of \$100, the gift of the British Columbia Parent-Teacher Federation, will be awarded to the student standing at the head of the graduating class for the B.H.E. degree.

The Canadian Association for Health, Physical Education, and Recreation Prize—A special prize, given by the Canadian Association for Health, Physical Education, and Recreation, B.C. Lower Mainland Branch, will be awarded to the student standing at the head of the graduating class for the B.P.E. degree.

The Helen L. Balfour Prize — A prize of \$175, made possible by a bequest from the late Helen L. Balfour, will be awarded annually to the student obtaining highest standing in the Final Year for the degree of B.S.N.

The Canadian Institute of Forestry Medal—A gold medal, the gift of the Canadian Institute of Forestry, will be awarded to the student in the graduating class in Forestry (B.S.F. or B.A.Sc. course) who, in the opinion of the Faculty of Forestry, has made the best all-round record in professional forestry in all years at University, and who has demonstrated a high quality of character, leadership, sportsmanship, and scholarship.

The H. R. MacMillan Prize in Forestry—A prize of \$100, the gift of H. R. MacMillan, Esq., C.B.E., D.Sc., will be awarded to the student standing at the head of the graduating class for the degree of B.S.F.

The Dr. Maxwell A. Cameron Memorial Medals and Prizes—To commemorate the distinguished life and work of Dr. Maxwell A. Cameron (1907-1951), first Director of the School of Education at this University and author of the Cameron Report on Education, the British Columbia Teachers' Federation annually donates two awards, each consisting of a silver medal and a prize of \$50. They will be awarded, one in the secondary teaching field and the other in the elementary teaching field, to those students in the Final Year of the B.Ed. course with a first class in practice teaching who achieve highest standing in general proficiency.

FOR GRADUATE STUDY AND RESEARCH

Graduate students proceeding to Social Work or Teacher Training should consult pages 423 and 406 respectively.

Fellowships and scholarships for graduate study are normally awarded only on application. Application forms, available at the office of the Dean of Administrative and Inter-Faculty Affairs, must be completed and returned not later than March 15th, or by the date given in the description. Unless otherwise specified in the description, awards are tenable only at this University and in the Winter Session.

For other awards available for graduate study, students are referred to pages 458-463.

The Alan Boag Scholarship—As on page 386.

The Anne Westbrook Scholarship—This scholarship of \$200, given by the Faculty Women's Club of the University of B. C., is open to a student of the graduating class of this University who is proceeding in the following year to graduate study in this or any other approved university.

The Brissenden Scholarship—As on page 396.

The Britannia Mining and Smelting Company Limited Scholarship—For research in mineralography the Britannia Mining and Smelting Company Limited offers a scholarship of \$250, open to graduates in Geological, Mining, or Metallurgical Engineering in the Faculty of Applied Science.

A portion of the scholarship not to exceed \$50 may be used for special equipment for the research problem. The topic of research is to be chosen after consultation with the Department of Geology and Geography of the University of British Columbia and the Britannia Mining and Smelting Company. Recipients must be qualified to undertake the research work in respect of scholarship, research ability, personality, and health. Applications should be received by March 15th. If no award is made in the spring, however, the scholarship will be available to an applicant in the fall.

The British Columbia Electric Company Limited Fellowship in Agriculture—This fellowship of \$800, the gift of the British Columbia Electric Company Limited, will be available for a student proceeding to a graduate degree in Agriculture at this University. The recipient of this award will be chosen on the basis of scholastic record and promise of ability in research by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries, in consultation with the research committee of the Dean of Agriculture.

The British Columbia Electric Company Limited Graduate Scholarship in Engineering—The British Columbia Electric Company Limited offers annually a scholarship of \$500 for graduate study and research related to Civil, Electrical, or Mechanical Engineering. An additional amount of \$100 is available for special equipment and supplies required in the research. This scholarship is open to graduates in Civil, Electrical, or Mechanical Engineering who are proceeding to further study at this University. The topic of research must be approved by the head of the department, in consultation with the donors.

The British Columbia Electric Company Limited Graduate Scholarships—Scholarships to the total of \$1000, the gift of the British Columbia Electric Company Limited, are available annually for graduates in Arts and Science, Commerce, Law, and Social Work who are proceeding to further work in any of these fields at this University. Recipients will be chosen by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries from recommendations submitted by departments, schools, or faculties concerned. Selection will be made on the basis of scholastic standing and ability in research.

The British Columbia Electric Company Limited Scholarship in Planning—Two scholarships of \$500 each, the gift of the British Columbia Electric Company Limited, are offered annually to graduates proceeding to a Master's Degree in Community and Regional Planning. Of these awards, one will normally be available in the First Year of the course and the other in the Second Year. To be eligible, applicants must have high academic standing. In the selection of winners, consideration will also be given to aptitude for and interest in a career in the field, character, and personal qualities.

The British Columbia Sugar Refining Company Limited Scholarships—Scholarships to the total of \$2500, the gift of the British Columbia Sugar Refining Company Limited, are available annually for students in Agriculture, Bacteriology, Botany and Biology, Chemistry, Fisheries, Home Economics, and Zoology. Winners of these awards will be selected by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries from recommendations submitted by the departments concerned. Selection will be made on the basis of scholastic standing and promise of ability in research.

The British Columbia Teachers' Federation Graduate Scholarship—A scholarship of \$300, the gift of the British Columbia Teachers' Federation, is offered annually to teachers in British Columbia who are taking leave of absence to pursue post-graduate study at this University in Education or in a subject field. The programme of study must be satisfactory to the Federation and the University. Applications, on forms obtainable from

the Dean of Administrative and Inter-Faculty Affairs, must be received at the University by March 15th.

The British Columbia Telephone Company Scholarship in Community and Regional Planning—A scholarship of \$600, the gift of the British Columbia Telephone Company, will be awarded to a student beginning or continuing studies in Community and Regional Planning at the University of British Columbia. In making the award, consideration will be given not only to scholastic standing, but also to interest, ability, and aptitude for research and investigation in problems of planning. Recipients will be recommended to Senate by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries, after consultation with the staff in charge of the course.

The British Columbia Telephone Company Scholarships in Engineering and Physics—Three scholarships to the total of \$1900, the gift of the British Columbia Telephone Company, are available for graduates in Electrical Engineering, Mechanical Engineering and Engineering Physics in the Faculty of Applied Science and Honours graduates in Physics (including Mathematics and Physics) in the Faculty of Arts and Science. Awards will be made on the basis of scholastic standing and promise of ability in research to students undertaking an approved programme of graduate study and research at the University of British Columbia. Recipients of these scholarships will be recommended to Senate by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries, after consultation with the heads of the departments concerned.

The Burroughs Wellcome Fellowship in Anaesthesiology and Applied Pharmacology—This fellowship of \$1000, the gift of Burroughs Wellcome and Company, Montreal, is available for postgraduate study and research in Anaesthesiology. The award will be made on the recommendation of the Faculty of Medicine.

The California Standard Company Graduate Fellowship—This fellowship of \$750, the gift of The California Standard Company, will be awarded annually to an outstanding student of the University of British Columbia who is beginning first year graduate work at this University. The award will be available for study in fields related to the oil industry such as Geology, Geophysics or related branches of Physics, Mathematics and Physics, Engineering Physics, and Engineering (Petroleum, Mining, Mechanical, Geological, Civil, Electrical, Chemical). Recipients must be qualified to undertake graduate work in respect of scholarship, research ability, character, and health, and have special interest in the problems of the oil industry.

The Canadian Life Insurance Medical Fellowship—A fellowship of \$5000, the gift of the Canadian Life Insurance Officers' Association, was made available in the session 1956-57 for special investigation and research in the field of heart disease.

The Canadian Industries Limited Fellowship—A fellowship of \$1700, plus a maintenance grant of \$300 to the University, the gift of Canadian Industries Limited, is available to a student proceeding toward a doctorate degree in the field of Chemistry or Metallurgy. The recipient, who will be selected on the basis of scholarship and research ability, will be expected to pursue investigation in one of the fields mentioned above. The topic of research will be chosen by the department concerned. Full details of the award are available at the office of the Dean of Administrative and Inter-Faculty Affairs.

The Canadian Forest Industries Entomological Scholarships—As on page 414.

The Canadian Pulp and Paper Association, Western Division, Fellowships—The Canadian Pulp and Paper Association, Western Division, Vancouver, offers two fellowships of \$500 each, renewable annually, and tenable at

any approved forest school, to students who are graduates of the University of British Columbia in Forestry, Forest Entomology, or Forest Pathology, or of other approved forest schools, and are resident in British Columbia. Winners of these awards must have high scholastic standing and ability to do research. During tenure of the fellowships they are expected to undertake graduate study and pursue investigation of some problem approved by the Faculty of Forestry of the University of British Columbia. In consideration of worthy cases, these fellowships may be supplemented at the discretion of the Executive Committee of the Canadian Pulp and Paper Association, Western Division.

The Cariboo Gold Quartz Mining Company Scholarship—A scholarship of \$100, given by the Cariboo Gold Quartz Mining Company, for research in mineralography, is available in the session 1957-58. The terms of award are as follows: This scholarship will be awarded to a graduate in Geological, Mining, or Metallurgical Engineering in the Faculty of Applied Science. A portion of the scholarship not to exceed \$20 may be used for special equipment for the research problem. The topic of research is to be chosen after consultation with the Department of Geology and Geography and the Cariboo Gold Quartz Mining Company. Recipients must be qualified to undertake the research work in respect of scholarship, research ability, personality and health. Applications should be received by March 15th. If no award is made in the spring, however, the scholarship will be available to an applicant in the fall.

The Class of Agriculture '21 Graduate Scholarship—On the occasion of the thirty-fifth anniversary of graduation, the Class of Agriculture '21 established a scholarship for graduate study and research in agriculture leading to a higher degree. In awarding this scholarship consideration will be given academic standing, character, and promise of ability in investigation and research.

The Cominco Fellowship—The Consolidated Mining and Smelting Company of Canada, Limited, offers annually a fellowship of \$1000 for research in some field of pure or applied science preferably related to the mining, metallurgical or chemical industry in which The Consolidated Mining and Smelting Company of Canada, Limited, is interested. An additional sum of \$500 will be available to the University for special equipment, supplies, and other expenses incidental to the investigation to be carried out under the fellowship. The fellowship is open to graduates in the Faculty of Arts and Science, Applied Science, or Agriculture of this or any approved university, provided that in the Faculty of Arts and Science their undergraduate work has been in the field of sciences. The topic of research will be chosen after consultation with the department concerned and the donors. Copies of the full terms of award, which must be read by all applicants, may be obtained at the office of the Dean of Administrative and Inter-Faculty Affairs. Applications must be received not later than April 15th.

Crown Zellerbach Canada Limited Graduate Scholarship in Economics and Political Science—A scholarship of \$500, the gift of Crown Zellerbach Canada Limited, will be awarded to a graduate student who is beginning or continuing studies, at this University, toward a Master's degree in the field of Economics or Political Science or a combination of these fields. In awarding this scholarship consideration will be given to academic standing, personal qualities, and research ability.

The Don Buckland Memorial Scholarship in Forest Pathology—As a memorial to Dr. Donald C. Buckland and in tribute to his distinguished career, his many friends have established a fund, the annual income of \$65 from which will be awarded annually as a scholarship for study in forest pathology at this University. Preference will be given to a graduate

forester who has demonstrated research ability and whose studies will be materially furthered by financial support.

The Dr. A. W. D. (Bill) Knox Memorial Award—This fund was established by friends in memory of Dr. Bill Knox, a young B.C. surgeon tragically deceased on the threshold of his career. Awards will be made to assist worthy candidates in post-graduate surgical study.

The Dr. Evelyn Fenwick Farris Graduate Scholarship in Education—A scholarship of \$200, the gift of the University Women's Club of Vancouver, is offered annually to women students beginning or continuing graduate studies at this University in the winter session toward an advanced degree in Education. This scholarship will be awarded to the applicant who has completed all the undergraduate prerequisites for the graduate programme and who, in the opinion of the Dean of Education and his colleagues, is best qualified in terms of her personal qualities, academic record, experience in teaching or allied fields, and promise in research. In special cases, the winner may be permitted to use the scholarship for approved graduate study in the field of Education at another university. Applications, on forms available at the office of the Dean of Administrative and Inter-Faculty Affairs, must be submitted not later than March. 15th.

The Dr. F. J. Nicholson Scholarships—Out of the proceeds of a fund donated by the late Dr. Francis John Nicholson, the following scholarships will be awarded annually for the purpose of enabling students to do graduate study in the University of British Columbia or in any other approved university: (1) One scholarship of the value of \$500 for graduate work in Chemistry. Applicants must be Honours graduates in Chemistry of the Faculty of Arts and Science, with the degree of B.A., B.Sc., M.A., or M.Sc., or graduates in Chemical Engineering of the Faculty of Applied Science, with the degree of B.A.Sc. or M.A.Sc. (2) One scholarship of the value of \$500 for graduate work in Geology. Applicants must be graduates of the Faculty of Applied Science in Geological or Mining Engineering, with the degree of B.A.Sc. or M.A.Sc.

Normally the scholarships will be payable in two instalments of \$250 each to provide for two years of graduate work. The payment of the second instalment will be subject to approval by the University of British Columbia of the first year's graduate work. In exceptional circumstances the full sum of \$500 may be made available for work to be completed in a single year.

Recipients must be qualified to undertake graduate and research work in respect of scholarship, ability, character, and health. These scholarships will be granted with due consideration for the financial status of the candidate. The spirit of the endowment is to aid those to whom financial help is necessary or of material assistance.

Applicants must be graduates of the University of British Columbia, have British citizenship, and be not more than 30 years of age on the last day of the final examinations. Preference will be given in making awards to native-born British Columbians.

The Edith Ashton Memorial Scholarship—A scholarship of \$250, given by Mrs. Daniel M. Armstead in memory of Edith Ashton, will be offered in the Department of Biology and Botany. This scholarship will be awarded to an outstanding graduate student whose topic of research is in the field of marine and freshwater botany or some field approved by the Head of the Department.

The Fisheries Association of B.C. Scholarships—As on page 388.

The Frances Willard Prizes—As on page 388.

The Gault Brothers Limited Graduate Scholarship in Commerce—This scholarship of \$700, established in 1949 by Gault Brothers Limited to

commemorate its Fiftieth Year in British Columbia, will be awarded annually to a graduate in Commerce of the University of British Columbia, and will be available for a year's graduate study, in the field of business administration, at any approved institution. Selection of the winner will be made by the Scholarship Committee and the Faculty of Commerce and Business Administration of the University of British Columbia. Full details of the award may be obtained from the Dean of Administrative and Inter-Faculty Affairs.

The General Construction Company Limited Scholarship (donated through the Vancouver Men's Canadian Club)—A scholarship of \$300, portion of a gift of \$500 from the General Construction Company Limited, will be available for graduates in Civil Engineering of the University of British Columbia to undertake graduate study in engineering at this or any approved university. Recipients must be qualified to undertake graduate work in respect of scholarship, ability, character, and health. If, in the opinion of the Department of Civil Engineering, no applicant is sufficiently qualified the sum will be used to provide scholarships or bursaries for students completing the Third Year of Civil Engineering, and proceeding to the Fourth Year.

The Graduate Scholarships in Slavonic Studies—Through the generosity of Walter C. Koerner, Esq., a number of awards have been established in the field of Slavonic Studies in honour of Dr. William J. Rose, distinguished Canadian scholar and teacher, and Emeritus Professor of Polish Language and Literature, University of London. Included are an annual teaching fellowship of \$1000 and two annual scholarships of \$300 each for students beginning or continuing graduate studies in Slavonic Studies at this University. These awards will be made to students who have high academic standing and have shown special aptitude for research.

The Harold S. Foley Jr. Memorial Resident-Fellowship in Paediatrics—This resident-fellowship of \$3600, provided by a contribution of \$1800 from the Harold S. Foley Jr. Memorial Fund and of \$1800 from St. Paul's Hospital, is available for a one-year period of post-graduate medical study (commencing July 1st 1957) in the Department of Paediatrics at St. Paul's Hospital, Vancouver, B.C. It is open to a graduate of any recognized medical school who has shown distinction in his academic training and gives promise of achievement in the field of diseases in children. Nomination of the recipient will be made by a Committee consisting of a representative from the Board of Management of St. Paul's Hospital, the Professor of Paediatrics of the University of British Columbia, the Head of the Department of Paediatrics of St. Paul's Hospital, and a representative of Mr. Harold S. Foley. This nomination will be submitted to the Senate of the University for approval through the Joint Faculty Committee on Prizes, Scholarships, and Bursaries.

The H. C. LePatourel Fellowship in Hospital Pharmacy—This fellowship of \$500, provided annually from the estate of the late H. C. LePatourel, is open to graduates of the Faculty of Pharmacy who intend to further their practical training through one year of hospital pharmacy internship. The award will be made by the Faculty, after consultation with the hospital concerned, to a student who not only has a good academic record but has shown interest and promise in the field of hospital pharmacy.

The John and Annie Southcott Memorial Scholarship — A scholarship of \$100, provided annually from the estate of the late Mrs. Thomas H. Kirk, will be awarded to that student who, possessing exceptional aptitude for research, either intends to pursue, or is already pursuing some approved investigation in the field of British Columbia history. The scholarship will

normally be awarded to a Fourth Year student or to a graduate proceeding to a higher degree, but may be awarded to a student of the Third Year.

The Lefevre Gold Medal and Scholarship—Out of funds provided by the late Mrs. Lefevre in memory of her husband, Dr. J. M. Lefevre, a gold medal and scholarship will be awarded annually to the student standing highest in general proficiency and research ability in one of the following courses: (a) Honours in Chemistry in the Faculty of Arts and Science; (b) Chemical Engineering in the Faculty of Applied Science. The award will be based upon the work of the last two years in these courses. The value of the scholarship is approximately \$125. The winning of this scholarship will not preclude the holder from enjoying the proceeds of a further award.

The Leon J. Koerner Graduate Fellowship in Forest History—A fellowship of \$1000, the gift of Mr. Leon J. Koerner, will be awarded to a qualified graduate student to undertake, under direction, studies relating directly to the history of the forest industry in British Columbia. Additional funds may be made available to cover expenses for travel necessitated by the study.

The Leon Koerner Graduate Scholarship—A scholarship of \$500, given by Mr. Leon J. Koerner, will be offered yearly in the Department of Biology and Botany. This award, which may be used in part for the provision of field or laboratory equipment or for publication of research, will be given to an outstanding graduate student of plant ecology who proposes to pursue research especially on problems of forest ecology of British Columbia. In special cases the award may be divided between two students.

The Louis Lipsey Toohill Scholarships—As on page 419.

The Macmillan Company of Canada Prizes in Creative Writing—As on page 389.

The M. H. Rutledge Memorial Scholarship—As on page 393.

The Morris Belkin Prize—As on page 398.

The Mr. and Mrs. P. A. Woodward's Foundation Fellowship in Cancer Research—An annual fellowship of \$5000, gift of the Mr. and Mrs. P. A. Woodward's Foundation, has been made available in the Faculty of Medicine. The award will be used for cancer research in the Department of Biochemistry.

The Native Daughters of British Columbia Scholarship—A scholarship of \$100 is given by the Native Daughters of British Columbia to a Canadian-born graduate student for research work in the early history of British Columbia, such work to be carried on in the Provincial Archives in Victoria, B. C.

The Northern Electric Fellowship—A fellowship of \$1200, the gift of Northern Electric Company Limited, Montreal, is available for graduate study at the University of British Columbia in the fields of Electrical, Mechanical, Chemical Engineering or Engineering Physics. The accepted candidate must be a Canadian citizen and a graduate of a recognized university.

The Pacific Pine Co. Ltd. Scholarship in Forestry—A scholarship of \$300, gift of Pacific Pine Co. Ltd., New Westminster, is available for a student engaging in graduate study and research in Forestry at the University of British Columbia. It will be awarded on the recommendation of the Faculty of Forestry to a student who has a good scholastic record, and has shown special interest in and aptitude for the field of forest products. In making the award, consideration will be given to promise of ability in investigation and research work.

The Poulenc Fellowship in Applied Physiology—This fellowship of \$500, established by Poulenc Limited, Montreal, is available for individuals

interested in anaesthesiology and related fields in Medicine who will engage in postgraduate training in physiology. The award will be made on the recommendation of the Faculty of Medicine. Further information may be obtained from the office of the Dean of Medicine.

The Powell River Company Limited Scholarship—For research in wood chemistry, or on a subject with application to the pulp and paper industry, the Powell River Company Limited offers annually a scholarship of \$700, open to Honours graduates in Chemistry in the Faculty of Arts and Science, or graduates in Chemical Engineering in the Faculty of Applied Science. A portion of the scholarship, not to exceed \$100, may be used for special equipment for the research problem. The topic of research shall be chosen after consultation with the Department of Chemistry or Chemical Engineering of the University and the Powell River Company. Recipients must be qualified to undertake graduate and research work in respect of scholarship, research ability, personality, and health.

Furthermore, if special aptitude is shown in carrying out this work, an equal amount may be offered for further graduate study and research in wood chemistry or a subject with application to the pulp and paper industry, in this or any other approved university.

The Richard Claxton Palmer Scholarship—This scholarship of \$240 is endowed by colleagues and other friends of the late Richard Claxton Palmer, B.S.A., M.S.A., D.Sc., Superintendent of the Experimental Station at Summerland and one time member of the Senate of this University, as a memorial to his private friendships, his public service, and his contributions in the field of science. It is offered to a graduate of the Faculty of Agriculture of the University of British Columbia who is proceeding to graduate study in this or any other approved university. Applicants should show evidence of scholarship and of ability to carry on investigation or research; in making the award, preference will be shown to a candidate engaged in continuing studies in horticulture or related fields of agriculture.

The Savage Shoes Limited Fellowship—A fellowship of \$1500, the gift of the Savage Shoes Limited, is available annually in the Faculty of Medicine for postgraduate study. The award will be made for special studies and investigation on problems of children's foot health. Selection of the winner will be made on the recommendation of the Department of Paediatrics in consultation with the Dean of the Faculty of Medicine.

Scholarships for French Canada Studies—From part of a grant to the University from the Carnegie Corporation of New York, two scholarships of \$500 each are available, one in the Department of Romance Studies and the other in the Department of History. These scholarships, tenable at this University, are open to graduate students working in the French Canada field.

Shell Oil Fellowship for Research—The Shell Oil Company of Canada, Limited, presents an annual fellowship tenable at the University of British Columbia. This fellowship is available to any science or engineering graduate of any approved Canadian university who intends to follow a career in Canada, or any science or engineering graduate of any approved university who has had at least one year of post-graduate study at a Canadian university and who has previously made clear his intention to follow a career in Canada. It is open to a student who plans to pursue research studies in Canada leading to a Master's or Doctor's degree in Chemistry, Chemical Engineering, Geology, Geophysics, Mechanical Engineering, or Physics. The fellowship, which is normally tenable for one year, is valued at \$1800 per annum, of which \$1200 will be paid to the student for his living expenses and fees for the normal academic year. Where the holder may be occupied in his post-graduate work for a full calendar year a further \$600 may be made available on the recommendation

of the director of the research project for the remaining four months, either totally or on a pro-rated basis as necessary. Full details of the award may be obtained from the Dean of Administrative and Inter-Faculty Affairs, to whom applications must be submitted.

The Standard Oil Company of British Columbia Limited Fellowship—For research in petroleum engineering the Standard Oil Company of British Columbia Limited offers a fellowship of \$950 open to Honours graduates in Chemistry in the Faculty of Arts and Science or graduates in Chemical Engineering in the Faculty of Applied Science. An additional amount, not to exceed \$150, may be granted for special equipment for the research problem. The topic of research shall be chosen after consultation with the Department of Chemistry or Chemical Engineering of the University and Standard of B. C. Recipients must be qualified to undertake graduate and research work in respect of scholarship, research ability, personality, and health.

The T. E. and M. E. Ladner Memorial Scholarship—As on page 390.

The Thomas and Evelyn Hebb Memorial Scholarship—As on page 390.

The United Nations Prize—As on page 391.

United Fishermen and Allied Workers' Union Scholarship in Fisheries—This scholarship of \$200, the gift of the United Fishermen and Allied Workers' Union, will be awarded annually to a student who is beginning or continuing postgraduate studies and research in the field of Fisheries. The award will be made to a student who not only has a good academic record, but has shown interest and promise in this field. In making the award consideration will be given to the financial circumstances of those who are eligible. The award will be made on the recommendation of the Head of the Department of Zoology and the Director of the Institute of Fisheries.

University Graduate Scholarship—A scholarship of \$200 may be awarded to a student of the graduating class who shows special aptitude for graduate studies and who is proceeding in the following year to graduate study in this or any other approved university.

The Vancouver B'nai B'rith Hillel Foundation Scholarships—Vancouver B'nai B'rith Hillel Foundation will award two scholarships of the value of \$125 each in the session 1957-58. The terms of the award are as follows: These scholarships will be awarded to outstanding graduates of any of the three faculties—Arts and Science, Agriculture, and Applied Science. The winners shall indicate satisfactory plans for graduate study at the University of British Columbia or at any other university approved by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries. Only one scholarship shall be available in any one faculty in one year.

The Vancouver Women's Canadian Club Scholarship in Canadian History—As on page 400.

University Assistantships and Fellowships

University assistantships and fellowships, involving part-time duties, are available in a number of departments for students taking graduate work. These include:

(1) **Graduate Assistantships**, which are open to students proceeding to studies beyond the level of a Bachelor's degree. The sessional value of a graduate assistantship ranges upward from \$400, depending upon the duties involved.

(2) **University Teaching Fellowships**, which are open to students who have spent at least one academic year in graduate study and who have

outstanding scholastic records. Duties are mainly teaching or laboratory instruction. The minimum sessional value is \$700.

(3) **University Research Fellowships**, which are open to students who have obtained at least a Master's degree or have completed equivalent graduate study, have outstanding scholastic records, and have given evidence of ability in research. These fellowships will be available for students engaging in research approved by the department concerned. The minimum sessional value is \$700.

All inquiries regarding the above assistantships and fellowships should be addressed to the head of the department concerned. Awards of fellowships are subject to approval by Senate, through the Joint Faculty Committee on Prizes, Scholarships, and Bursaries.

(4) **Residence Fellowships**. Junior Dons will be appointed annually to positions at the Women's Residences or Acadia Camp. While some of these positions may be given to junior members of Faculty, students enrolled in the Faculty of Graduate Studies or taking professional training on the campus are also eligible for appointment, particularly if they have had experience in dealing with young people. Requests for application forms should be made to the Dean of Women. In exchange for the duties of Junior Don, the fellowship entitles the holder to a suite in the Women's Residence, valued at approximately \$300 for the session. The award does not include meals which must be paid for by the student.

FOR UNDERGRADUATES, SOCIAL WORK, AND TEACHER TRAINING

1. Scholarships and prizes are listed in the following order: General, Agriculture, Architecture, Arts and Science, Commerce and Business Administration, Education and Teacher Training, Engineering, Forestry, Home Economics, Law, Medicine, Nursing, Pharmacy, Physical Education, Social Work, High School Graduation and Grade XIII, Extension and Miscellaneous, and Summer Session.

2. Awards listed under Arts and Science include not only those open to students taking courses leading to a B.A. or B.Sc. degree, but also those open to students taking preparatory courses for entrance to Architecture, Commerce, Engineering, Forestry, Law, Medicine, Nursing, and Pharmacy.

3. Attention of all students is drawn to the general awards described on page 386, to the Rhodes Scholarship, and other awards listed on pages 457-467. Attention of students in the graduating years is called to the awards listed on pages 377-385 and 457-463.

4. Unless directed to do so in the Calendar description, students are not expected to make application for the awards given below.

5. Scholarships are normally tenable only at this University and in the regular Winter Session. Winners are required to continue in a full year's programme.

General

The Alan Boag Scholarship—A scholarship of \$250, the gift of the trustees of a fund established by the late Alan Boag, is available for a student who is taking his major work in Commerce, History, Economics, International Studies, Law, Political Science, or Sociology and is proceeding to a further year of study at the University of British Columbia. This scholarship, which is open to graduates, or to undergraduates who have completed at least two years at the University, will be awarded for the best essay or report on some aspect of socialism. In making the award special consideration will be given for originality in analysis and treatment. The award

will be made on the recommendation of the Head of the Department of Economics and the Director of International Studies. If no essay reaches the required standard, the award will be withheld. Students intending to compete for this scholarship must obtain the approval of their essay subject from the department concerned. Essays must be submitted not later than March 31st.

The Alaska Pine & Cellulose Limited Special Scholarship—A scholarship of \$500, the gift of Alaska Pine & Cellulose Limited, is offered annually to sons and daughters of employees of the Company in attendance at the University. The award will normally be made to the student obtaining the highest standing in the first year of University work and proceeding to further undergraduate study. If, in the opinion of the University, however, no student in the first year obtains sufficiently high standing, the scholarship will be similarly offered to an eligible student in the second, third, fourth, and higher years, in that order. Candidates who are eligible for this award should submit their names and details of family service with the Company to the Dean of Administrative and Inter-Faculty Affairs not later than the last day of lectures.

The Bill Rea Television Scholarship to Northwestern University—This scholarship of \$600, the gift of Mr. Bill Rea, is normally offered to a student in the graduating year in any faculty and is tenable at Northwestern University, Evanston, Illinois, in the special summer course in television. To be eligible, an applicant must have satisfactory academic standing and indicate an aptitude for, and desire to follow a career in, work related to radio and television. In making this award, consideration will be given to character, personal qualities, promise, and outside interests and achievement. Applications must be submitted to the Dean of Administration and Inter-Faculty Affairs not later than February 15th.

The British Columbia Electric Company Limited Proficiency Scholarships—Five scholarships of \$200 each, the gift of the British Columbia Electric Company Limited, will be awarded annually to students of the University or Victoria College who are proceeding to further undergraduate work in any faculty of this University. These awards will be made, on the basis of proficiency, to students with outstanding records of scholastic achievement.

The British Columbia Electric Company Limited Special Scholarships—Five scholarships of \$200 each are offered annually by the British Columbia Electric Company Limited to sons and daughters of employees of the Company who are beginning or continuing their undergraduate studies in any faculty at the University. Winners of scholarships, however, whose homes are in Victoria or its vicinity may, if they wish, attend Victoria College. These scholarships will be awarded on the recommendation of the Joint Faculty Committee on Prizes, Scholarships, and Bursaries to applicants who have outstanding records of scholastic achievement and are deserving of financial assistance. Application must be made to the Dean of Administrative and Inter-Faculty Affairs not later than August 1st. Applications should state particulars of family service with the Company.

The British Columbia Hotels Association Scholarships — Four scholarships of \$250 each, the gift of the British Columbia Hotels Association, are offered to students who are residents of British Columbia and who are beginning or continuing studies in the Second or Third Year of University work. Selection of the winners will be made by the University on the basis of scholastic standing, personal qualities, and interest and participation in student and community affairs. In making the awards financial circumstances of the candidates will also be considered.

The Canadian Women's Press Club (Vancouver Branch) Scholarship—This scholarship of \$250, the gift of the Vancouver Branch of the Canadian

Women's Press Club, is offered for award in May to a woman student who intends to continue or resume her studies as an undergraduate at this University in the fall. It will be awarded to a student who plans to follow a career in any of the fields of journalism (i.e., newspaper, magazine, radio, etc.). Applicants will be considered on the basis of their general academic standing, interest and ability in the field, competence and originality in writing, and personal qualities essential to a successful career in journalism. If no suitable candidate makes application, the award may be withheld. Application forms and further details may be obtained from the office of the Dean of Administrative and Inter-Faculty Affairs. Applications must be submitted by February 15th.

Department of Mathematics Book Prizes—These prizes are awarded for special achievement or proficiency in Mathematics.

The Dilworth Prize in English—A book prize, to the value of approximately \$25, the gift of Dr. Ira Dilworth, will be awarded annually to the student who obtains the highest standing in Second Year English (English 200).

The Fisheries Association of B.C. Scholarships—Four scholarships of \$300 each, the gift of the Fisheries Association of B.C., are offered to students in the field of fisheries. Normally these awards will be available to undergraduates proceeding from the Second to the Third Year and to students proceeding from the Third to the Fourth Year. They may be given, however, to students beginning or continuing graduate study at this University. Awards will be made on the basis of interest, promise and ability in the field of fisheries; character and personal qualities; and academic standing. To be eligible a candidate must be intending to pursue a career in some area of fisheries. Winners will be selected by a committee consisting of the Head of the Department of Zoology, the Director of the Institute of Fisheries and the Chairman of the Scholarship Committee in consultation with a Committee of the Association.

Frances Willard Prizes—A first prize of \$50 and a second of \$25, given by the Woman's Christian Temperance Union of British Columbia, will be awarded to Third or Fourth Year undergraduates or to graduate students for essays on subjects to be approved by the department concerned in consultation with a committee of the Woman's Christian Temperance Union. The awards will be made for the session 1957-58 on recommendation of a Committee headed by Dr. W. G. Black, Department of Psychology, who should be consulted about suitable essay topics. Essays must be submitted by April 10th, 1958. If in any year no students reach the required standard the awards will be withheld.

The Gilbert Tucker Memorial Prize—An annual prize of \$25 is offered by Dr. and Mrs. Sydney M. Friedman in memory of Gilbert Tucker (1898-1955), who served this University as scholar, historian and teacher. It will be awarded to the leading student enrolled in History 404 (The French in North America).

The Hewitt Bostock Memorial Lecture Prize—A prize of \$75 will be awarded for the best essay on the lecture given under the terms of the Hewitt Bostock Lectureship. The award is open to students in any year and faculty.

The Jean Craig Smith Scholarship—The Jean Craig Smith Scholarship of \$400, provided by the income on a bequest from the late Jean McIntosh Smith, is awarded annually to a student in attendance at the University of British Columbia in any year and faculty. Selection of the winner will be made by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries on the basis of academic ability, character and personal qualities, participation in community and student affairs, and evidence of leadership.

The John J. Herb Scholarship—In honour of John J. Herb, founder of the Company and Chairman of its Board, and in commemoration of his lifelong interest in helping others, especially young people, Westminster Paper Company offers annually a two-year scholarship of \$500 per annum. This scholarship will be awarded to a candidate who, in September, will enter the first of the two final years of a course leading to an undergraduate degree in any field. To be eligible, an applicant must have given evidence of exceptional qualities of character and leadership and have demonstrated outstanding scholastic ability and attainments. Renewal of the award for the final year will be conditional upon maintenance of high standing and leadership in the previous year. As the award will be made in the second term, applicants who wish to be considered or those who desire to nominate candidates should consult the Dean of Administrative and Inter-Faculty Affairs before February 15th.

The Kapoor Singh Scholarships—Through the generosity of Mr. Kapoor Singh Siddoo, the amount of \$500 is offered annually for scholarships of \$250 each, to two students in attendance at this University. Of these scholarships, one will be available to an East Indian student, either from India or living in Canada, or to a Canadian of East Indian origin, and the other to the student body at large. The awards will be made to worthy students who (a) are deserving of assistance; (b) have high academic standing (with First Class Honours); and (c) have good character. If, in any year, no East Indian student can qualify, the scholarship money, or the residue thereof, will be placed in a trust fund and will be granted in the succeeding year or years to one or more East Indian students in the amount of \$250 or more.

The Macmillan Company of Canada Prizes in Creative Writing—Two prizes of \$50 each, the gift of the Macmillan Company of Canada, Publishers, will be awarded for the best original short story and the best original poem, respectively, written by an undergraduate or graduate student while enrolled in the University. The awards will be made on the recommendation of the Head of the English Department and the instructor in English 401, in consultation with the Committee on Prizes and Scholarships. Entries must be submitted to the Department of English by April 1st.

The Mallinckrodt Chemical Works Limited Prize—As on page 397.

The Mary Stewart MacInnes Memorial Scholarship—A scholarship of \$200, established by W. H. MacInnes, Esq., of Vancouver, in memory of his mother, Mary Stewart MacInnes (1841-1936), is offered annually to a student in the Faculty of Arts and Science, Applied Science, Agriculture, or Forestry, who is completing the third of the first three years of University work. In choosing the winner, consideration will be given, not only to scholastic standing but also to achievement in the field of student government and in athletics, and either to participation in military or other training or service units on the campus or to special interest in German studies.

The Maurice Taylor Scholarship in Music—This scholarship of \$250, established by a bequest from Elizabeth Brydone Taylor and initiated by her husband, the late Maurice Taylor, will be awarded annually to a student specializing or majoring in music at this University. The award will be made, on the recommendation of the Joint Faculty Committee on Prizes, Scholarships and Bursaries, to a student with high standing who shows continuing promise of ability and interest in the field of music.

The Nancy Ryckman Scholarship—Out of the proceeds of a fund bequeathed to the University by the late Nancy E. Ryckman, a scholarship of \$225 will be awarded annually to a student beginning or continuing a course of study at the University. This scholarship will be available only for students who have completed Senior Matriculation and who attended

school in East Kootenay, British Columbia, for three years, of which two years must have been immediately prior to entrance to the University. It is the expressed wish of the donor that the scholarship be awarded to young men or women who require aid in obtaining a university education, and that, in making the award, consideration be given to character and intellectual promise. Applications, on forms available at the office of the Dean of Administrative and Inter-Faculty Affairs, must be received not later than August 1st.

The Pacific Northwest Personnel Management Association Scholarship—A scholarship of \$250, offered by the Vancouver Chapter of the Pacific Northwest Personnel Management Association, is available to undergraduates interested in a career in industrial relations and who will, in the fall, register in the final undergraduate year. Students desiring to compete are required to submit letters of application, with supporting documents, to the Dean of Administrative and Inter-Faculty Affairs, from whose office full details should be obtained before application is made. Completed applications must be received before February 15th. Final selection of the winner will be made by the Vancouver Chapter from among applicants recommended as eligible and suitable by the Scholarship Committee of the University. The name of the winner will be announced in June.

The Players' Club Alumni Scholarship—A scholarship of \$50, the gift of the Players' Club Alumni of the University of British Columbia, is available annually for award to an active member of the Players' Club. The winner, who will be selected on the basis of outstanding work and interest in any phase of theatrical activity, must enroll in the current Summer School of the Theatre. In making the award, preference will be given to a member of the graduating class. The award will be made by Senate on the recommendation of the Honorary President of the Players' Club, the Director of its spring production, and the Executive of the Players' Club Alumni. Applications must be submitted to the Honorary President of the undergraduate club before April 15th. If no suitable applicant is found, the award will not be made.

The Ruth E. Cameron Memorial Scholarship—As on page 429.

The Seattle Branch, U.B.C. Alumni, Scholarship—This scholarship in the amount of approximately \$240, gift of the Seattle Branch of the Alumni Association of the University of British Columbia, is available for a student whose home is in Seattle or its vicinity and who is beginning or continuing studies at this University. Selection will be made by the University on the basis of personal qualities, academic standing, and promise. Preference will be given, however, to candidates nominated by the Seattle Branch of the Alumni. The award will normally be made early in August.

The T. E. and M. E. Ladner Memorial Scholarship—An annual scholarship of \$400, derived from a capital sum as a permanent memorial endowment, and given by Mr. Leon J. Ladner, Q.C., and family in memory of his parents, Thomas Ellis and Minnie E. Ladner, is offered to a student whose home is in the Delta Municipality of the Lower Fraser Valley. To be eligible for this scholarship an applicant must have high scholastic standing. In making the award, however, consideration will be given to character and financial need. The scholarship is open to students who are eligible for entrance to and will attend the University or are in any year of any faculty. If, in any year, no applicant can meet the scholastic requirements of the University, the award may be withheld. In such case, two awards will be made in a subsequent year. Applications, on forms available at the office of the Dean of Administrative and Inter-Faculty Affairs, must be received not later than August 1st.

The Thomas and Evelyn Hebb Memorial Scholarship—In recognition of the part played in the development of this University by Professor Thomas

Carlyle Hebb, until his death, and by his wife, Evelyn Hebb, herself a distinguished scholar, and in commemoration of their interest in the progress of students, their son and daughters have endowed a scholarship of the value of \$350 per annum, open to students of any faculty who are specializing in Physics. The award will be made, on the recommendation of the Department of Physics, to a student in the upper undergraduate years or in the graduate school who has an outstanding academic record, desires to proceed with further work at this University, and shows promise of continuing ability in his chosen field. If the award is made at the undergraduate level, it may be divided between two candidates of equal merit.

The Tri-Services University Training Scholarships—Four scholarships of \$150 each, established by the Tri-Services Committee, are offered to students enrolled in the University Naval Training Division, the Canadian Officers' Training Corps, and the R.C.A.F. Reserve University Squadron on the campus. Of these scholarships one will be available to the members of each of the three units and one to the combined membership. To be eligible for the awards candidates must have completed at least the first phase of their practical and theoretical training with the units concerned and be proceeding with their University studies. Winners will be selected by the Scholarship Committee of the University, in consultation with the Commanding Officers of the units, on the basis of academic proficiency and on qualities of leadership as exhibited in the training programmes. Financial circumstances of candidates may, however, also be considered. The awards will be announced as soon as possible after the final examinations in April. If no candidate is considered to be sufficiently well qualified the awards may be withheld.

U.B.C. Branch No. 72 of the Canadian Legion, B.E.S.L., Scholarship Fund—This fund was established in September, 1951, by the University of British Columbia Branch No. 72 of the Canadian Legion of the British Empire Service League, in recognition and appreciation of the University's contribution to the education and rehabilitation of veterans of World War II. It is maintained by the net profits resulting from the operation, under the supervision of Branch 142, of concession rights in the War Memorial Gymnasium, a project undertaken by those veterans who studied at the University in the years following 1945. The fund, which is administered by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries, is used to provide scholarships, prizes, bursaries, and loans for former members of the armed forces, the children of those who served, and students generally.

The United Empire Loyalists' Association Medal—The Vancouver Branch of the United Empire Loyalists' Association of Canada offers a silver medal and a cash prize of \$35, for the best essay received during the session 1957-58 on any topic dealing with the history of the United Empire Loyalists and their influence on the development of Canada. The competition is open to all undergraduates of the University, but preference is given to students enrolled in a Canadian History course.

The United Nations Prize—A prize of \$50, made possible by a gift of \$1000 from the late Annie Bruce Jamieson, B.A., LL.D., is offered annually to the student on the campus who, during the session, makes the most significant contribution toward furthering an understanding of the aims and objects of the United Nations. The award will be made on the recommendation of interested members of the Faculty. If, in any year, no student qualifies, the award may be withheld.

The Vancouver Log Towing Company Limited Scholarships—Several scholarships to the total of \$750, the gift of The Vancouver Log Towing Company Limited, are offered annually to undergraduates pursuing studies in any year or faculty. Although the winners will be selected by the University

Scholarship Committee on the basis of academic standing, achievement, promise, and character, special consideration will be given to those who are deserving of financial assistance. The names of the winners will be announced prior to the opening of the session in September.

The Vancouver Secondary Women Teachers Scholarship—This scholarship of \$150, the gift of the Vancouver Secondary Women Teachers, is offered to a woman student who is entering her final year and who proposes to take, in the session 1958-59, the one-year Teacher Training Course for graduates leading to a Secondary Teaching Certificate at the University, to prepare for teaching at the secondary level. The award will be made on the basis of academic ability, interest in and aptitude for teaching, and qualities of leadership. Applications on special forms must be submitted to the Dean of Administrative and Inter-Faculty Affairs not later than June 30th.

The Victoria Daily Times Prize—A prize of \$100, offered annually by the Victoria Daily Times, is available in competition to students proceeding to a degree. The prize will be awarded for the best piece of writing published, or prepared for publication, during the year for the mass-media field, including the student paper on the campus. In judging the submissions the Selection Committee will consider, not only content, style, originality, and creativeness but also promise of development. Nominations or applications for the award must be received by the Dean of Administrative and Inter-Faculty Affairs not later than March 1st, and must be accompanied by the material which the Selection Committee is to consider.

The William Eugene MacInnes Memorial Scholarship—A scholarship of \$200, established by Mr. and Mrs. W. H. MacInnes of Vancouver, in memory of their son, William Eugene MacInnes (1912-1934), a graduate of this University, in a combined course of Arts and Science and Mining Engineering, is available annually for a student in Arts and Science or Applied Science who is completing the third of the first three years of University work. In choosing the winner, consideration will be given, not only to scholastic standing, but also to achievement in student government and in athletics, and to participation in military or other training or service units on the campus.

In Agriculture

The British Columbia Fruit Growers' Association Golden Jubilee (1939) Scholarship—This scholarship, of the annual value of \$125, donated by the British Columbia Fruit Growers' Association, will be awarded to a student taking the horticultural options of the Third Year. To qualify for this scholarship candidates must obtain scholarship standing, not only in horticultural subjects, but also in the work of the year, and must be proceeding to the horticultural course of the Fourth Years — the year in which the scholarship shall be enjoyed.

Country Freight Lines Scholarship—As on page 401.

The David Thom Scholarship—A scholarship in Agriculture of \$100 will be awarded to a student proceeding to a higher year in that Faculty, the award to be based on the work of the Second Year.

The Dr. D. A. McKee Memorial Prize—A cash prize of \$35, established from the income of a trust fund donated by the late Mrs. D. A. McKee in memory of her husband, will be awarded annually to the student with the highest standing in the Third Year of Agriculture who is proceeding to the Fourth Year.

The Entomological Society of British Columbia Book Prize—As on page 396.

The Gillmor and Roderick Morrison Memorial Scholarship—This scholarship, of annual value of \$70, was established and endowed by Mr. and Mrs. A. B. Morrison as a memorial to their sons, Gillmor Innis Morrison, who attended the University both as a graduate and undergraduate and who received the degree of B.S.A. in 1939, and Roderick Norman Morrison, who attended the University during the session 1929-30. This scholarship will be awarded annually to a student in the Faculty of Agriculture who has shown proficiency in the Third Year in the field of genetics and is continuing his studies in the Final Year.

Imperial Order Daughters of the Empire Scott Memorial Scholarship—As on page 397.

The Jim Wallace Credit Union Service Awards (donated annually by the B.C. Credit Union League)—These two awards of \$250 each are offered to undergraduates completing the Third Year of Commerce or Agriculture and proceeding to the Fourth Year. The awards will be made in consultation with the B.C. Credit Union League. They will be awarded to students who have good academic standing and have shown evidence of interest in, or knowledge of, the Credit Union and Co-operative movements. Selection of the winners will be made in February.

The M. H. Rutledge Memorial Scholarship—This scholarship of \$100, given by Mr. and Mrs. J. M. Pearce as a memorial to the late M. H. Rutledge, Esq. (1883-1951), who in 1908 established Derreen Poultry Farm Ltd., Sardis, B. C., is offered annually in the Faculty of Agriculture. The award will be made to the student in the field of Poultry Science who is considered to be the most outstanding and is continuing his studies in that field.

The Nabob Scholarships in Food Technology—Two scholarships of \$500 each, given annually by Nabob Foods Division of Kelly, Douglas & Co. Limited, Vancouver, will be awarded to students in the Faculty of Agriculture. One of these scholarships will be open to students entering the Third or the Fourth Year of the course in Food Technology and the other will be open to students completing the Fourth Year of the course in Food Technology and proceeding to the Fifth Year. To be eligible for these scholarships the recipients must have high standing and indicate special interest in the field. They will be selected on the basis of scholarship research ability and personal qualities. If no student qualifies for one of these awards they may both be given to students in the same year of the course. During the summers between successive years of their undergraduate course the winners will be offered the opportunity of employment with the Company. Without obligation to either the Company or the winners, permanent employment may be offered on graduation to those who have enjoyed the awards. Students interested in being considered for these awards should consult the Dean of Administrative and Inter-Faculty Affairs not later than February 15th. Dependents or relatives of employees of the Company are specially invited to apply.

University Great War Scholarships—As on page 399.

University Scholarship in Agriculture—A scholarship in Agriculture of \$200 will be awarded to a student proceeding to a higher year, the award to be based on the work of the First Year.

In Architecture

American Fabricators Ltd., Scholarship in Architecture—A scholarship of \$150, the gift of American Fabricators Ltd., Vancouver, is offered annually to students in the Fourth Year of Architecture who are proceeding to the Final Year. The award will be made to an outstanding student, who, because of his record, ability, personal qualities, and promise, is deserving of recognition. Selection will be made by the School of Architecture.

The Architectural Institute of British Columbia Scholarship—A scholarship of \$250, the gift of the Architectural Institute of British Columbia, will be available to a student entering First Year Architecture. The award will be made to the student entering with the highest marks as determined by the average on the written examinations of senior matriculation in British Columbia or First Year Arts and Science at the University of British Columbia (including Victoria College). To students of the Institute other assistance may be available from the Institute to assist them to attend the First Year in Architecture at the University of British Columbia.

The Atlas Asbestos Company Limited Prize Award—This prize of \$200, the gift of Atlas Asbestos Company Limited, is offered annually in Third Year Architecture. It will be awarded for the best solution to a regular design problem in which asbestos cement products would normally be used. The problem will be selected after consultation with the donors.

The Architectural Institute of British Columbia Prizes—Prizes to the total of \$200, given annually by the Architectural Institute of British Columbia, are available for leading students in the three senior years of Architecture. These prizes, which consist of books and an award of merit, will be awarded to the student in each year showing outstanding ability in architectural design and obtaining high academic standing. If, in any year, no student obtains a sufficiently high standing, the awards may be withheld.

The British Columbia Cement Company Limited Scholarship in Architecture—A scholarship of \$500, donated annually by British Columbia Cement Company Limited, is offered to students in Architecture. It will be awarded to a student who is continuing his undergraduate studies at this University in Architecture, has an outstanding academic record, and in the opinion of the staff, shows unusual promise and ability. In the event that two candidates are considered to be of equal merit, the scholarship may be divided to provide two awards of \$250 each.

British Columbia Lumber Manufacturers Association Prizes in Architecture—Prizes to the total of \$250, the gift of the British Columbia Lumber Manufacturers Association, are available annually in the School of Architecture as follows: (a) for the best set of wood construction details and working drawings in connection with a design project in Second Year Architecture, a prize of \$50; (b) for a special design project in the Fourth and Fifth Years of Architecture in which the use of wood as a building and design medium would predominate, a prize of \$100 will be awarded for the best solution in each year.

The Canadian Pittsburgh Industries Scholarship—A scholarship to the value of \$250 will be awarded annually by Canadian Pittsburgh Industries Ltd., to a student in the Fourth Year of Architecture. The award will be made to the student submitting the best solution of an architectural problem proposed by the Staff of the School of Architecture in conjunction with the Company. The award will be made on the recommendation of the School.

The Charles J. Thompson Prizes—Two prizes of \$50 each, made possible through a gift of \$1000 by Mr. Charles J. Thompson, are offered annually to students in Architecture. Of these prizes, one will be awarded to the Second Year student obtaining highest standing in the course in the History of Architecture. The other will be similarly awarded to the student in the Third Year. To be eligible for an award the student must obtain a minimum mark of 75% in the course and an aggregate in all the subjects of the year of not less than 70%.

The McCarter, Nairne & Partners Scholarship—A scholarship to the value of \$250, provided by a gift of \$2500 from McCarter, Nairne & Partners, Architects, will be awarded annually to the student in Third Year Architecture obtaining the highest standing.

Northwest Plaster Bureau Scholarship—A scholarship of \$250 is offered by the Northwest Plaster Bureau to the student in the Fifth Year, who is considered by the faculty of the School of Architecture to be outstanding in his or her progress towards the profession of Architecture and devotion to good practices in building design and construction, and who indicates that he or she proposes to continue in the profession of Architecture after graduation.

The Powell River Company Limited Prize—From the proceeds of a grant made in 1953 by the Powell River Company Limited for work on a town planning project, an annual prize of \$25 is available for a student who excels in some aspect of planning.

The Royal Architectural Institute of Canada Medal—This medal is available for a student in the graduating class for the degree of Bachelor of Architecture. The award will be made only to a student who, in the opinion of the School, has attained a high proficiency in the courses and shows those qualities of character and ability which promise outstanding achievement in the profession. In the determination of standing for this award, the work taken in the final three years will be considered. The award will not necessarily be made every year.

The Schlage Lock Company Scholarship—A scholarship to the value of \$250, the gift of Schlage Lock Company of Canada, will be awarded annually to a student in the School of Architecture. The award will be made to the student obtaining highest standing in the Second Year and proceeding to the Third Year.

In Arts and Science

The Ahepa Prize—A prize of \$100, given by the Gladstone Chapter No. 6, C.J., Vancouver, B. C., Order of Ahepa (sixth chapter established under Canadian Jurisdiction of the Anglo Hellenic Educational Progressive Association, the entire membership of which consists of Canadian citizens of Greek descent), will be awarded to the student of the Final Year who has shown the greatest promise in Greek studies. If possible, the award will be made to an Honours student, but if there is no outstanding Honours student the prize may be given to a student in the General Course.

The Aluminum Company of Canada, Limited, Scholarships — As on page 408.

The Andrew H. Hutchinson Scholarship in Biology and Botany—A scholarship of \$150 per annum was endowed (through the University Development Fund) by Alumni, the Vancouver Rotary Club and friends of Dr. Andrew H. Hutchinson, upon the occasion of his retirement as Head of the Department of Biology and Botany (1916-1953), in recognition of his years of devoted service to his students, to his Department and to the University. The award will be made in the fall to a promising student who has entered the Third Year (or, exceptionally, the Fourth Year) with First Class standing in biological subjects and is registered for Honours or major studies in the Department of Biology and Botany. The recipient will be selected in consultation with the Department of Biology and Botany.

The Architectural Institute of British Columbia Scholarship—As on page 394.

The Armstead Prize in Biology and Botany—A prize of \$50, the gift of Mrs. Daniel M. Armstead, will be awarded to a graduating student in an Honours Course of the Department of Biology and Botany. The winner will be recommended on the basis of scholastic achievement and promise of ability in research.

The Beverley Cayley Scholarship—A scholarship of \$100, in memory of Beverley Cayley, Arts '18, given under the terms of the will of his mother, the late Mrs. Cayley, will be awarded to the male student standing highest in English 100 and 101 in the First Year of the Faculty of Arts and Science.

The Brissenden Scholarship—A scholarship of \$250, given by P. R. Brissenden, Esq., Q.C., is offered to a student of the University of British Columbia, graduate or undergraduate, who has shown promise as a creative writer and who is returning to the University in the session 1958-59.

The Burbidge Scholarships (donated through the Men's Canadian Club of Vancouver)—Two scholarships of \$125 each, the gift of Mr. P. W. Burbidge, will be awarded for general proficiency in an Honours Course in Physics, or in Mathematics and Physics. These awards will be made to the two students obtaining highest standing in the examinations of the Third Year and proceeding to the Final Year.

The California Standard Company Undergraduate Scholarships—Three scholarships of \$375 each, the gift of The California Standard Company, are available annually for outstanding students at the University of British Columbia proceeding to the year designated. The awards will be made one in each of the following fields: (1) Geophysics, Physics, Mathematics and Physics, Engineering Physics, Electrical Engineering (tenable in the penultimate year); (2) Geology and Geological Engineering (tenable in the Final Year); (3) Petroleum Engineering, Mining Engineering, Civil Engineering, Chemical Engineering, Mechanical Engineering (tenable in the Final Year). In making the awards, consideration will be given not only to scholarship, potential ability for research, character and personality, but also to interest in problems related to the oil industry. Recipients will be chosen on the recommendation of the heads of the departments concerned.

The Canadian Forestry Association (B. C. Branch) Scholarship—As on page 426.

The Chemical Institute of Canada Book Prizes—Two book prizes of the value of \$25 each, the gift of the Chemical Institute of Canada, are offered to students entering the Final Year. Of these prizes, one will be awarded to the student obtaining highest standing in Chemistry in the Third Year of the Faculty of Arts and Science and the other to the student obtaining highest standing in the Third Year of Chemical Engineering.

The Daniel Buchanan Scholarship in Mathematics—As a memorial to Daniel Buchanan, Dean of the Faculty of Arts and Science (1928-1948), and Head of the Department of Mathematics (1920-1948), and in recognition of his teaching and research in Mathematics, Alumni and friends (through the Alumni-U.B.C. Fund), together with members of the Department of Mathematics, have established a scholarship fund. From this fund a scholarship of \$100 is offered annually to the student who gains the highest standing in the Third Year of an Honours Course in Mathematics and proceeds to the Final Year in that course.

The David Bolocan Memorial Prize—A prize of \$25, given by Mr. and Mrs. J. L. Bolocan, will be awarded to the student in the Final Year of the Faculty of Arts and Science who is regarded by the Department of Philosophy and Psychology as the outstanding student in that department in the graduating year.

The Dr. Isabel MacInnes Prize—In honour of Dr. Isabel MacInnes and in recognition of her qualities as a teacher and of her services to the University, a prize of \$75 is offered to a student in German 110, 120 or 130. The award will be made on the basis of standing and progress in the course.

The Entomological Society of British Columbia Book Prize—A book prize, the gift of the Entomological Society of British Columbia, will be

awarded to an undergraduate who distinguishes himself in entomology. The award will be made on the recommendation of the Department of Zoology.

The Francis Midforth Painter Memorial Prize—This prize will be awarded to a student in the Final Year whose work in the History Seminar has been outstanding.

The Frank F. Smith Scholarship for Theology—A scholarship of \$300, gift of Mr. Frank F. Smith of Vancouver, will be awarded to a student in the graduating class for the B.A. degree who is continuing his studies at Union College of British Columbia in preparation for the ministry of the United Church of Canada. Selection of the winner will be made by the University, in consultation with the Principal and Staff of Union College. In selecting the winner, consideration will be given to academic standing, personal qualities and character, and promise.

The German Government Book Prizes—These book prizes, the gift of the Federal Republic of Germany through its Consulate in Vancouver, are available for students in the upper years showing proficiency in German.

The Gwynne-Vaughan Memorial Scholarship—A scholarship of \$100, given by Mrs. S. J. Bateman of Chilliwack as a memorial to her parents, Mr. and Mrs. D. E. Gwynne-Vaughan, will be awarded annually to a promising and deserving student who is continuing studies in Second or Third Year at this University and who proposes, either before or after graduation, to proceed to work in theology at the Anglican Theological College of British Columbia. In awarding this scholarship, consideration will be given not only to academic achievement but also to personal qualities and character.

The Hudson's Bay Company Service Awards—As on page 402.

The Hudson's Bay Company (Victoria Store) Service Award—As on page 402.

The Imperial Order Daughters of the Empire Scott Memorial Scholarship—This scholarship of \$100, derived from an endowment founded by the Imperial Order Daughters of the Empire of the City of Vancouver, in memory of Captain Robert Falcon Scott, R.N., the Antarctic explorer, who sacrificed his life in the cause of science, will be awarded to a student who combines high standing in Biology 332 with promise of service in the Empire.

The John and Annie Southcott Memorial Scholarship—As on page 382.

The KVOS-TV Scholarships—A scholarship or scholarships to the total of \$200, the gift of KVOS-TV, are offered in the Faculty of Arts and Science. These scholarships will be awarded to students in the field of the humanities or the social sciences, with preference being given to those who have a special interest in journalism, communication, or related areas of study.

The Lefevre Gold Medal—As on page 383.

MacMillan & Bloedel Scholarships for Forestry and Forest Engineering—These scholarships of \$400 each, the gift of MacMillan & Bloedel Limited, are offered to students in Arts and Science who are preparing to enter Forestry or Forest Engineering in the following session. Of these scholarships, two will be available for Forestry and one for Forest Engineering. Awards will be made on the basis of academic standing, personal qualities, and interest in the field. Preference will be given to candidates whose homes are in or near Alberni, Campbell River, Chemainus, Duncan, Ladysmith, Nanaimo, Parksville-Qualicum, or Port Alberni. Students who wish to be considered for these scholarships should apply to the Dean of Administrative and Inter-Faculty Affairs in December or early January.

The Mallinckrodt Chemical Works Limited Prize—A cash prize of \$25, the gift of Mallinckrodt Chemical Works Limited, will be awarded

annually to the student in the Third Year, who in the opinion of the Department of Chemistry is most outstanding with respect to achievement and promise in the fields of inorganic and analytical chemistry. The award will be made on the recommendation of the Department.

The McGill Graduates' Scholarship—A scholarship of \$100, founded by the McGill Graduates Society of British Columbia, will be awarded to the student standing highest in English and French of the Second Year in Arts and Science and proceeding to a higher year.

Mobil Oil of Canada, Ltd. Scholarship in Geology—A scholarship of \$400 will be awarded to an undergraduate student in the field of geology who is expected to complete his undergraduate work during the period of the award. In making the award consideration will be given not only to scholastic attainment but also to character, ability to co-operate with associates, breadth of interest, initiative, and willingness to assume responsibility. In addition to the amount paid to the winner an additional \$400 will be paid to the Department of Geology to assist in the teaching programme.

The Morris Belkin Prize—A cash prize of \$100, the gift of Morris Belkin, Esq., is available for students specializing in psychology and registered in graduate studies or the senior undergraduate year. It will be awarded for the best essay submitted in courses given by the Department on an approved subject in the field of Freudian Psychology. Further details may be obtained from members of the Department, on whose recommendation the award will be made. If no essay reaches a sufficiently high standard, the award may be withheld.

The Plimsoll Club Scholarship in Economic Geography (donated by the Canadian Transport Company Limited)—This scholarship of \$100 is available for Third Year students in Arts and Science who are taking Honours or majors in Geography, or for Third Year students in Commerce (Foreign Trade option) with elective subjects in Geography. The award will be made to a student who has obtained high standing in Geography 201 (Economic Geography) in his Second Year, and the highest aggregate standing in the Third Year of Arts and Science or of Commerce in six units chosen from Geography 303 (World Geography), Geography 306 (Natural Resources and World Affairs), Geography 207 (Human and Political Geography), Geography 406 (Geography of Asia), Geography 408 (Geography of Europe), and Geography 409 (Geography of Canada and the United States).

The Polish Friendship "Zgoda" Society Prize—This prize of \$100, gift of the Polish Friendship "Zgoda" Society, will be awarded to a student who has an outstanding record of achievement in the course Polish 110. Preference will be given to a student who took the course without any previous knowledge of Polish.

The Prize of the Minister of Switzerland—This book prize was awarded in the session 1956-57 to an outstanding student of French Language and Literature.

The R. J. Pop Scholarship in Wildlife Biology—A scholarship of \$150, given annually by Mr. R. J. Pop, will be awarded to the outstanding student in the Honours Course in Zoology, Third or Fourth Year. If no undergraduate student presents work of sufficient merit, the award may be made to a graduate student proceeding toward a higher degree in wildlife biology.

Royal Institution Scholarship in Arts and Science—A scholarship of \$200 will be awarded to the student taking first place in the examinations of the First Year in Arts and Science, and proceeding to a higher year in any faculty.

The Shaw Memorial Scholarship—This scholarship of \$100, founded by friends of the late James Curtis Shaw, Principal of Vancouver College, and afterwards of McGill University College, Vancouver, will be awarded upon

the results of the examinations of the Second Year in Arts and Science to the undergraduate student standing highest in any two of three courses, English 200, Latin 210 or 220, Greek 90 or Greek 101 or Greek 202, and proceeding to a higher year.

The Slavonic Studies Graduation Prize—This prize of \$100, the gift of Walter C. Koerner, Esq., in honour of Dr. William J. Rose, will be awarded annually to the student in the graduating class obtaining highest standing in Slavonic Studies.

The Terminal City Club Memorial Scholarship—This scholarship of \$100, founded by the members of the Terminal City Club as a memorial to those members of the Club who lost their lives in the Great War, will be awarded to the student standing highest in English 200 and Economics 100 or 200 in the Second Year in Arts and Science, and proceeding to a higher year.

Timber Management Service Award—As on page 404.

The Truck Loggers' Association Scholarships—As on page 429.

The Undergraduate Scholarships in Slavonic Studies—Through the generosity of Walter C. Koerner, Esq., several scholarships have been established in honour of Dr. William J. Rose, distinguished Canadian scholar and teacher, and Emeritus Professor of Polish Language and Literature, University of London. Included in the awards offered are:

(1) an annual scholarship of \$300 for a student with high over-all standing who has shown special distinction in the course Slavonics 311 (Central Europe) and is continuing his studies in this and related fields;

(2) an annual scholarship of \$250 for the student obtaining the highest standing in the Third or Fourth Year of an Honours Course in Polish, Russian or Slavonic Studies and proceeding to the Final Year of the course;

(3) two annual scholarships of \$250 each for students in the Second Year who have high over-all academic standing, have shown special linguistic aptitude in one or more of the courses Polish 210 or Russian 200 or 203, and are continuing in the Third Year in Slavonic language studies.

The University Essay Prize—A book prize of the value of \$25 will be awarded to a student in the final undergraduate year for the best essay presented in any of the courses regularly given by the Department of English.

University Great War Scholarships—Two scholarships of \$200 each may be awarded, on the basis of the work of the First Year in Arts and Science or Agriculture, to ex-servicemen, their dependents, and the children of deceased ex-servicemen, proceeding to a higher year in any faculty. Applications, on forms available at the office of the Dean of Administrative and Inter-Faculty Affairs, must be received not later than March 15th.

University Scholarships for Trois-Pistoles—Two scholarships of \$185 each, given by the University of British Columbia, will be available annually to enable students to attend the French Summer School at Trois-Pistoles. The winners will be chosen in consultation with the Department of French.

University Scholarships in Arts and Science—Two scholarships in Arts and Science of \$200 each will be awarded to students on the basis of standing in the Third Year. They will be awarded to the students with highest standing in the B.A. and B.Sc. programmes respectively.

Two scholarships in Arts and Science of \$200 each will be awarded on the basis of the work of the Second Year to students proceeding to a higher year.

Two scholarships of \$200 each will be awarded to the students taking the second and third places respectively in the examinations of the First Year and proceeding to a higher year in any faculty.

The Vancouver Province Scholarship (donated through the Men's Canadian Club of Vancouver)—A scholarship of \$250, given by The Vancouver Province for the promotion of the study of government, will be awarded to a student taking an Honours Course in Political Science (or a combined Honours Course in Political Science and some other subject). The award will be made to the student who completes the Third or Fourth Year with highest standing in Political Science 300 and is proceeding to the Final Year of the Honours Course.

The Vancouver Women's Canadian Club Scholarship—A scholarship of \$100, the proceeds of a fund created by the Vancouver Women's Canadian Club, will be awarded to the undergraduate obtaining first place in Canadian History (History 102, 404, 420, 426).

In Commerce and Business Administration

The A. P. Gardner & Co. Commerce Entrance Scholarship — As on page 424.

The Better Business Bureau Prizes—Two prizes of \$50 each are offered annually in the Faculty of Commerce and Business Administration for the best essays submitted by Third or Fourth Year students on assigned topics related to ethics in business. If, in any year, no essay reaches the desired standard, the awards may be withheld. A list of essay topics may be obtained from the office of the Dean of the Faculty. The winning essays will be made available to the Better Business Bureau.

The British Columbia Bond Dealers' Association Scholarship—A scholarship of \$150, the gift of the British Columbia Bond Dealers' Association, will be awarded annually to a student in the finance option completing Second Year Commerce and proceeding to the Third Year. The award will be made to a student who has high scholastic standing and has shown an aptitude for work in the field of this option.

The British Pacific Scholarship in Accident and Health Insurance—A scholarship of \$100, the gift of the British Pacific Insurance Company of Vancouver, will be awarded to a student who has completed Commerce 375 and is proceeding to the Fourth Year. The award will be made on the basis of high standing in this course, character and ability, and interest in the field. The holder of the scholarship will be required to investigate some phases of accident and health insurance as a graduating essay (Commerce 490).

Canadian Forest Products Limited, Pacific Veneer and Plywood Division, Service Award—A service award, offered by Pacific Veneer and Plywood Division, New Westminster, was offered to students in Commerce in the session 1956-57. The winner of this award was not only given employment by the Company during the summer 1956, but also his University fees for the following session. Selection of the winner was made on the basis of standing, personal qualities, interest in, and aptitude for, work in the fields of operation of the Company.

The Clarkson, Gordon & Co. Research Assistant Award—An award of \$250 is offered annually by Clarkson, Gordon & Co., Chartered Accountants, to a student entering the Fourth Year of the accounting option. The award will be made on the recommendation of the Faculty of Commerce and Business Administration, consideration being given to character, industry, and the general academic record of the student. During the tenure of this award, the student will be required to render assistance to members of the accounting staff on research being carried on by them.

The Clarkson Prize in Accounting—A prize of \$100, the gift of Clarkson, Gordon & Co., Chartered Accountants, will be awarded annually to the student in the accounting option who obtains the highest mark in Com-

merce 252 (Intermediate Accounting). To be eligible for this award, the student must also obtain above average standing in his other courses.

Country Freight Lines Scholarship—A scholarship of \$300, the gift of Country Freight Lines Ltd., is offered annually in the field of transportation or agriculture. It is available to students from the Okanagan proceeding to the Second, Third, or Fourth Year of Commerce or of Agriculture. The award will be made to a student deserving of financial assistance, who is selected on the basis of academic standing, personal qualities, and ability and promise in one of the fields for which the scholarship is offered.

The Deeks-McBride Ltd. Commerce Scholarship—A scholarship of \$300, gift of Deeks-McBride Ltd., is available to students in Commerce. The winner will be selected by the Faculty on the basis of proficiency in studies, character and personal qualities, and ability and promise in the general field of Commerce. Without any obligation either to the winner or the Company, the student selected to receive this award may be offered summer employment with Deeks-McBride Ltd.

The Elmer Johnston Memorial Scholarship—A scholarship of \$150, donated by the Automotive Transport Association of British Columbia, will be awarded annually to the student in Commerce who obtains the highest standing in the course on Transportation Practices and Policies (Commerce 341) and is proceeding to the course in Motor Highway Transport Problems (Commerce 445).

The Finning Tractor & Equipment Co. Ltd. Scholarships—As on page 411.

The Gault Brothers Limited Scholarships in Commerce—Commemorating its Fiftieth Year in British Columbia, Gault Brothers Limited, in 1949, established a number of scholarships for students in Commerce. In accordance with the terms of the gift, six scholarships of \$300 each will be awarded annually, three to students entering the Third Year and three to those entering the Fourth Year. These awards will be made to students who have completed the previous year's work with high aggregate standing, have shown marked ability in at least one of the fields of marketing, manufacturing and finance, and who intend, on graduation, to follow a career in this field. In the selection of winners, consideration will also be given to personal qualities and character. Third Year holders of the scholarships who maintain their standing to the satisfaction of the School of Commerce will be eligible for the scholarships in the Fourth Year. Selection will be made in consultation with the Faculty of Commerce and Business Administration.

Gill Interprovincial Lines and Southern Freightways Corporation Scholarship—A scholarship of \$250, gift of Gill Interprovincial Lines Ltd. and Southern Freightways Corporation Ltd., is offered annually to students in Commerce and Business Administration. This scholarship is open to students who are completing the Third Year and are proceeding to the Final Year, who have outstanding academic records, and are specializing in finance, or economics and political science. The winner will be selected by the Faculty on the basis of academic standing, personal qualities and promise. During the Final Year the recipient will be required to undertake study, investigation or research in an area related to the field of highway transportation.

Greater Vancouver Tourist Association Service Award—A service award of \$100, the gift of the Greater Vancouver Tourist Association, is available to a student in Commerce who is proceeding to his Final Year. The award will be made on the basis of good academic standing, character and ability, and interest in the tourist industry. The student who is selected will be expected to write his graduating essay on a topic related to the tourist industry chosen in consultation with the Greater Vancouver Tourist Association.

The Hudson's Bay Company Service Awards—Two service awards, offered annually by the Hudson's Bay Company (Vancouver), are open to students intending a career in the department-store field. They are open, in competition, to students completing Second Year Commerce or, in appropriate options, Second Year Arts and Science, and proceeding to a higher year. To be eligible for these awards, applicants must qualify in respect of academic standing, ability, aptitude and personality, and consider possible employment with the Company on graduation. By the terms of an award, winners will be given their tuition fees for each of the Third and Fourth Years and guaranteed employment with the Company in the summer periods, the Christmas vacations, and at other times, such as Saturdays. Subject to satisfactory performance, they will, on graduation, be given an opportunity for an executive career with the Company. Further information may be obtained from the offices of the Dean of Administrative and Inter-Faculty Affairs and the Dean of Commerce and Business Administration. Inquiry should be made not later than February 15th.

The Hudson's Bay Company (Victoria Store) Service Award—A service award offered by the Hudson's Bay Company (Victoria Store) is open to students in Third Year Commerce or in Third Year Arts and Science (in an appropriate option). Preference will be given to Victoria students. This award is available to student intending a career in the department store field. The winner will be given summer employment in Victoria with the Company at the conclusion of the University session and during his Fourth Year the Company will pay his University fees. Subject to satisfactory performance he will be given the opportunity on graduation for an executive career with the Company. Selection will be made on the basis of academic standing, ability, aptitude in the field of the award and personal qualities. Interested students should consult the Faculty of Commerce and Business Administration or the Dean of Administrative and Inter-Faculty Affairs not later than February 15th.

The J. Ewart Collins Memorial Scholarship—This scholarship of \$100 has been established as a memorial to the late J. Ewart Collins, C.A., by the firm of Collins & Collins, Chartered Accountants, of which he was senior partner. The award, which is available annually to a student in Third Year Commerce, will be made to the student who obtains the highest standing in Commerce 353 (Advanced Accounting) and registers in the Fourth Year for Commerce 455 (Auditing).

The Jim Wallace Credit Union Service Awards (donated annually by the B.C. Credit Union League)—As on page 393.

The Kiwanis Club Scholarship—A scholarship of \$200, the gift of the Kiwanis Club of Vancouver, B. C., will be awarded to the student obtaining highest standing in the Third Year of Commerce and proceeding to the Final Year of that course. The winning of this award does not preclude the holder from enjoying the proceeds of other awards.

The Morrison Steel & Wire Co. Ltd. Service Award—A service award of \$300, donated by Morrison Steel & Wire Co. Ltd., is available for students in Commerce. The winner of this award will be selected by the Faculty of Commerce and Business Administration on the basis, not only of academic standing, but also on personal qualities, character, and promise in the field of Commerce. During tenure of the award, the winner will be required to undertake, in addition to his formal courses, a programme of training duties arranged by the Faculty of Commerce and Business Administration.

The Morrow Scholarship in Commerce—In honour of Professor Ellis Henry Morrow, from 1938 to 1950 Head of the Department of Commerce, and in recognition of his service to the University and the community, a fund of \$2000 has been established by the generosity of Walter and Leon

Koerner. The annual proceeds of this fund, at present approximately \$70, will be given as a scholarship to the outstanding student enrolled in Commerce 281.

The N. Leo Klein Memorial Scholarship—A scholarship of \$125, in memory of N. Leo Klein, given by the late I. J. Klein, Vancouver, B.C., will be awarded to the student obtaining first place in the examinations of the Second Year of the course in Commerce and proceeding to the next year in that course.

The Osler, Hammond & Nanton Scholarship—This scholarship of \$150, the gift of Osler, Hammond & Nanton Limited, will be available annually for a student in the Faculty of Commerce who is taking the finance option and is entering the Final Year of the course leading to the degree of B.Com. The award will be made on the recommendation of the Faculty of Commerce and Business Administration. In selecting the winner, consideration will be given not only to over-all academic standing and to special ability in the field of investment theory, but also to industry, character and personal qualities.

The Peat, Marwick, Mitchell & Co. Scholarship—A scholarship of \$300, the gift of Peat, Marwick, Mitchell & Co., will be awarded to a student with high standing in the Second Year of the accounting option in Commerce who is proceeding to the Third Year, and who plans to enter articles (on graduation) with a practicing firm of chartered accountants. In making the award, consideration will be given to ability, character and the general academic record of the student.

The Peat, Marwick, Mitchell & Co. Service Award—A service award will be offered annually by the firm of Peat, Marwick, Mitchell & Co., Chartered Accountants, to students intending to enter the profession of public accounting. It will be open, in competition, to students completing Third Year Commerce and proceeding to Fourth Year. To be eligible for this award applicants must qualify in respect of academic standing, ability, aptitude and personality, and consider possible employment with the firm on graduation. By the terms of the award, the winner will be granted his tuition fees for his Fourth Year, and guaranteed employment with the firm during the summer period.

The Plimsoll Club Scholarship in Commerce (donated by the North Pacific Shipping Company Ltd.)—This scholarship of \$250 will be available for a student who has completed the Third Year of the course leading to the degree of B.Com. and is proceeding to the Final Year. Selection of the winner will be made on the basis of character, industry, ability and proficiency in all phases of the course work.

The Plimsoll Club Scholarship in Economic Geography—As on page 398.

The Plimsoll Club Scholarship in International Trade Problems (donated by the Empire Shipping Company Limited)—This scholarship of \$250 will be awarded to the student in Second or Third Year Commerce who has obtained high standing in the work of the year and the highest standing in Economics 310 (International Trade). During the year in which he holds the scholarship he must continue in foreign trade or transportation options and include one of the courses Commerce 341 (Traffic Management) or Commerce 464 (Foreign Trade Problems).

The Price Waterhouse & Co. Scholarship—A scholarship of \$250, the gift of Price Waterhouse & Co., will be awarded to a student in the accounting option in Commerce who is at the end of his Third Year, who is proceeding to his Final Year, and who plans to enter articles with a practicing firm of chartered accountants. The award will be made to a student with high standing in the Third Year examinations whose academic record, ability, and other qualifications are considered to be outstanding.

Riddell, Stead, Graham & Hutchison Service Award—This service award will be given to a student in Third Year Commerce who is proceeding to the Fourth Year and who intends on graduation to enter articles with a practicing firm of chartered accountants. The student will be given employment with Riddell, Stead, Graham & Hutchison for the summer and, in addition, his tuition fees will be paid in his Final Year Commerce. The award will be made to the student whose personality, ability, academic record and other characteristics, are, in the opinion of the Faculty of Commerce and Business Administration, those needed by a successful chartered accountant. Interested students should apply to the Dean of the Faculty of Commerce and Business Administration before March 15th.

The Sidney Roofing & Paper Co. Ltd. Scholarship—A scholarship of \$250, the gift of the Sidney Roofing & Paper Co. Ltd. of Victoria, is offered annually to undergraduates. In successive years the award will alternate between Commerce and Engineering. The winner will be selected by the University Scholarship Committee on the basis of academic standing, achievement, promise and character. Consideration will be given to those who are deserving of financial assistance.

The Straits Towing Limited Commerce Scholarship—A scholarship of \$300, gift of Straits Towing Limited, is available to students in Commerce. The winner will be selected by the Faculty of Commerce and Business Administration on the basis of proficiency in studies, character and personal qualities, and ability and promise in the general field of Commerce. Without any obligation either to the winner or the Company, the student selected to receive this award may be offered summer employment with the Straits Towing Limited, either ashore or afloat.

Timber Management Limited Service Award—Timber Management Limited, Vancouver, offers annually a service award to students in Second year Arts and Science, Commerce, Forest Engineering, and Forestry who are interested in a career in the fields of operation of the Company. The winner of this award, who will be selected on the basis of academic standing, personal qualities, character, and promise and ability in these fields, will receive \$250 during each of his Third and Fourth Years at the University. He will also be given summer employment with Timber Management Limited and/or Timber Sales & Distributors Ltd., Lumby Planing Mills Ltd., Merritt Forest Products Co. Ltd., or other companies for which Timber Management is providing services, in the summers between his Second and Third Years and his Third and Fourth Years. Applications, on forms available at the office of the Dean of Administrative and Inter-Faculty Affairs, must be received not later than February 15th.

The Trans-Canada Investment Corporation Scholarship—A scholarship of \$150, the gift of the Trans-Canada Investment Corporation Limited, will be awarded to a Third Year student in Commerce who has a high academic standing in the course in business finance. The winner of this scholarship must proceed to a further year's study in Commerce at this University. In selecting the winner, consideration will be given to ability and character.

The Transportation and Customs Bureau of the Vancouver Board of Trade Awards—Cash awards to the total of \$300, the gift of the Transportation and Customs Bureau of the Vancouver Board of Trade, are donated for the best essays, submitted by students enrolled in the Faculty of Commerce and Business Administration in the course on Traffic Management (Commerce 341), on selected topics. Two awards of \$75 each, two of \$50 each, and two of \$25 each, will be made.

The Vancouver Sales Executives Club Scholarship—A scholarship of \$300, the gift of the Vancouver Sales Executives Club, is available annually for a student in the Fourth Year of the marketing option. The award will be made on the recommendation of the Faculty, consideration being

given to character, industry and the general academic record of the student. During the tenure of this scholarship, the student will be required to undertake, along with his courses, certain training duties in the Faculty related to the field of marketing. Due consideration will be given to the financial need of the student selected.

The Vancouver Stock Exchange Scholarship—This scholarship of \$250, the gift of the Vancouver Stock Exchange, is available annually for a student in the finance option in the course leading to the degree of B.Com. It will be awarded on the recommendation of the Faculty to a Third Year student proceeding to the Final Year. During the Final Year the student will be required to undertake, along with his courses, certain training duties in the Faculty related to the field of commerce.

Westminster Paper Company Scholarship in Commerce—Westminster Paper Company, New Westminster, offers annually several scholarships, known as Westminster Paper Company Awards at the University of British Columbia. One of these awards, a two-year scholarship of \$400 per annum, is available to Second Year students who, in September, will enter Third Year Commerce and who propose, on graduation, to enter business or industry. In selecting the winner consideration will be given, not only to academic standing, but also to personal qualities and character, interest and participation in extra-curricular activities, and physical vigour, i.e. those qualities associated with Rhodes Scholarships. Summer employment, acceptance of which is optional with the winner, will be offered by the Company to the successful candidate. The award will be made in the second term. Renewal of the award for the Final Year will be conditional upon a maintenance of high standing and of interest and participation in extra-curricular activities. Those interested in applying or nominating candidates should consult the Dean of Administrative and Inter-Faculty Affairs before February 15th.

Western Daily Newspaper Advertising Managers' Association Scholarship—A scholarship of \$200, the gift of the Western Daily Newspaper Advertising Managers' Association, is available annually to students in Third Year Commerce. The award will be made to the student who shows the greatest aptitude in the advertising field and who is proceeding to studies in advertising in the Fourth Year. The award will be made on the basis of proficiency in those courses involving studies in the field of the award. To be eligible for this award the student must also obtain high standing in his other courses.

The Winspear, Hamilton, Anderson & Company Scholarship in Accounting—A scholarship of \$300, the gift of Winspear, Hamilton, Anderson & Company, is offered annually to students in the accounting option who are proceeding to the degree of B.Com. This scholarship will be awarded in May to a student who, in the fall, will enter the Third Year. The award will be made on the recommendation of the Faculty of Commerce to a student of outstanding merit.

The Woodward Scholarships (donated through the Men's Canadian Club of Vancouver) — Two scholarships, established by the late Honourable W. C. Woodward will be available as follows:

1. The sum of \$125 will be awarded to the student in Second Year Commerce who obtains highest standing in Commerce 261 and is proceeding to the Third Year.
2. The sum of \$125 will be awarded to the student in Third Year Commerce who obtains highest standing in Commerce 362 and is proceeding to the Fourth Year.

To be eligible for either of these awards, the student must also obtain high standing in his other courses.

In Education and Teacher Training

The British Columbia Teachers' Federation Scholarships in Teacher Training—The following scholarships, the gift of the British Columbia Teachers' Federation, are offered annually to students proceeding to a degree or certificate in the field of elementary or secondary school teaching:

- (1) two scholarships of \$250 each, available to students continuing in the College of Education, either in Vancouver or Victoria, from Senior Matriculation or First Year University;
- (2) two scholarships of \$250 each, available to students continuing in the Third Year in the College of Education. Students from Victoria College are eligible for these awards;
- (3) two scholarships of \$250 each, available to students continuing in the Fourth Year in the College of Education;
- (4) two scholarships of \$250 each, available to students continuing in the Fifth Year of the Programme for the degree of B.Ed. in the secondary teaching field or entering the one-year teacher training programme for graduates.

All awards will be made on the basis of academic standing, personal qualities, and aptitude for and interest in teaching. Except in the case of the scholarships (1) and, in the case of graduates from other faculties, the scholarships (4), only those students who have achieved First Class standing in practice teaching will be eligible. Applications, on forms available from the Dean of Administrative and Inter-Faculty Affairs, must be submitted to the University not later than June 30th.

The Canadian Society of Exploration Geophysicists Matriculation Scholarship in Education—As on page 426.

The Delta Kappa Gamma Society Scholarship—A scholarship of \$200, the gift of the British Columbia Chapter of Delta Kappa Gamma, an international honorary association of women educators, is available in the College of Education. It will be awarded to a woman student who has Senior Matriculation or First Year University standing, or the equivalent, and who is proceeding to a degree or certificate in the teaching field. The award will be made on the basis of academic standing, personal qualities, and aptitude for and interest in teaching. Applications, on forms available from the Dean of Administrative and Inter-Faculty Affairs, must be submitted to the University not later than June 30th.

The Dr. H. B. King Memorial Scholarship in Education—This scholarship of \$150 has been established by the British Columbia School Inspectors' Association as a memorial to Dr. H. B. King, who from 1939 to 1945 was Chief Inspector of Schools for British Columbia. For many years prior to 1939 Dr. King also served the Province of British Columbia with distinction and devotion as a teacher and principal, and as technical adviser with the Department of Education. This scholarship will be awarded to a student who is proceeding to a degree or certificate in the teaching field and is taking a full course in the Second Year at the College of Education (Vancouver or Victoria). The award will be made on the basis of academic standing, personal qualities, interest and participation in school and community affairs, aptitude for teaching, and other factors. Applications, on forms obtainable from the Dean of Administrative and Inter-Faculty Affairs must be submitted to the University not later than June 30th.

The Dr. Hugh MacCorkindale Scholarship in Teacher Training—In honour of Dr. Hugh N. MacCorkindale and in recognition of his distinguished services as a teacher and administrator in the Vancouver School System from 1914 to 1954, the Vancouver Secondary School Teachers'

Association has established an annual scholarship of \$100. This scholarship is available to students entering the Teacher Training Course for graduates leading to a British Columbia Secondary Teaching Certificate. In selecting the winner, consideration will be given to scholastic standing, personal qualities, and aptitude for and interest in teaching. The winner will be selected from those nominated by members of the teaching profession or University Staff and those applying personally. Applications, on forms available from the Dean of Administrative and Inter-Faculty Affairs, must be received at the University by June 30th.

Du Pont Company of Canada (1956) Limited Scholarship—A scholarship of \$1500, the gift of Du Pont of Canada, is available annually to a graduate from an Honours Course in science, or from a course in which science has been a major subject, who enrolls for the following academic year for training as a secondary school science teacher at the University of British Columbia. If the student is a married man the scholarship will be increased by \$600. Application forms may be obtained from the Dean of Administrative and Inter-Faculty Affairs.

Elizabeth Dobbins Memorial Scholarship—A scholarship of \$150, the gift of the Vancouver Elementary School Teachers' Association, is available for students with Grade XII, Grade XIII, or First Year University standing who are proceeding to a degree or certificate in the teaching field in the Faculty of Education in the University of British Columbia, and who are residents of Vancouver and are graduates of a Vancouver high school. Winners will be selected on the basis of scholarship, character, and interest in and aptitude for teaching. Applications on forms available from the Dean of Administrative and Inter-Faculty Affairs must be submitted to the University not later than June 30th.

The Macmillan Company of Canada Prizes in Creative Writing—As on page 389.

Owen J. Thomas Scholarship—A scholarship of \$150, the gift of the Vancouver Elementary School Teachers' Association, is available for students with Grade XII, Grade XIII, or First Year University standing who are proceeding to a degree or certificate in the teaching field in the Faculty of Education in the University of British Columbia, and who are residents of Vancouver and are graduates of a Vancouver high school. Winners will be selected on the basis of scholarship, character, and interest in and aptitude for teaching. Applications on forms available from the Dean of Administrative and Inter-Faculty Affairs must be submitted to the University not later than June 30th.

The Owen J. Thomas Scholarship in Teacher Training—As a tribute to Owen J. Thomas, who from 1911 to 1956 has given devoted service and inspirational leadership to the teachers of this Province, the Vancouver Secondary School Teachers' Association offers a scholarship of \$100 for students entering the Teacher Training Course for graduates leading to a British Columbia Secondary Teaching Certificate. In making the award, consideration will be given to academic standing, personal qualities, and interest in teaching as a career. Financial circumstances may also be a factor. Candidates may apply or be nominated by members of the teaching profession or University Staff. Application forms, which may be obtained from the office of the Dean of Administrative and Inter-Faculty Affairs, must be submitted to the University by June 30th.

The Players' Club Alumni Scholarship—As on page 390.

The Saul Grant Scholarship—This scholarship of \$100, established as a memorial to Saul Grant by the Vancouver Section of the National Council of Jewish Women of Canada, will be awarded to a student in First Year Education proceeding to a degree or certificate in the teaching field. To be eligible for this award a student must not only have high academic standing, but also possess those qualities of character and personality which

are necessary for success in teaching elementary and secondary school children.

The United Nations Prize—As on page 391.

The Vancouver Secondary School Teachers' Association Scholarship for Teacher Training—A scholarship of \$100, the gift of the Vancouver Secondary School Teachers' Association, is available for students entering the Teacher Training Course for graduates leading to a British Columbia Secondary Teaching Certificate. In making the award, consideration will be given to academic standing, personal qualities, and interest in teaching as a career. Financial circumstances may also be a factor. Candidates may apply or be nominated by members of the teaching profession or University Staff. Application forms, which may be obtained from the office of the Dean of Administrative and Inter-Faculty Affairs, must be submitted to the University by June 30th.

The Vancouver Secondary Women Teachers Scholarship—As on page 392.

The West Vancouver Parent-Teacher Council and Association Scholarship—A scholarship of \$150, given by the Parent Teacher Council and the Parent Teacher Associations of West Vancouver, was made available in December, 1956, to students in First Year Education resident in West Vancouver. It was awarded to the student with the highest standing in December as determined by the Christmas tests and examinations.

In Engineering

The Alaska Pine & Cellulose Limited Scholarship in Chemical Engineering—This scholarship of \$500, offered annually by Alaska Pine & Cellulose Limited, is available to students in Third Year Chemical Engineering who are proceeding to the Final Year. The award will be made to the student whose academic and practical work of the year is, in the opinion of the Faculty, the most outstanding. Other factors being equal, however, preference will be given to the son or daughter of an employee of the Company.

The Alaska Pine & Cellulose Limited Scholarship in Mechanical Engineering—This scholarship of \$500, offered annually by Alaska Pine & Cellulose Limited, is available to students in Third Year Mechanical Engineering who are proceeding to Final Year. The award will be made to the student whose record in the academic and practical work of the year is, in the opinion of the Faculty, the most outstanding. Other factors being equal, however, preference will be given to the son or daughter of an employee of the Company.

The Aluminum Company of Canada, Limited, Scholarships — Two scholarships are offered annually by the Aluminum Company of Canada, Limited, to undergraduates in Honours Courses in the Faculties of Applied Science (Engineering) and Arts and Science, or to those in other Faculties specializing in subjects related to the industrial field of the Company. Each scholarship has the value of \$400 and is supplemented by a general grant of \$200 to the University. The winners will be selected by the University on the basis of academic standing, character and ability. Because it is the desire of the Company to assist worthy and deserving students, financial circumstances will also be a factor. The awards are available to Third and Fourth Year students.

The American Institute of Chemical Engineers Award—This award, donated by the American Institute of Chemical Engineers, is given in the Final Year to the Chemical Engineering student, who, during the First and Second Years of Engineering, has received the highest scholastic rating in his courses. The award consists of a student membership in the A.I.Ch.E., a membership pin and certificate, and a subscription to Chemical Engineering Progress.

American Society for Metals, B. C. Chapter, Scholarship—A scholarship of \$100, gift of the B. C. Chapter of the American Society for Metals, is offered to students in Metallurgy or Engineering Physics (Metallurgy option) proceeding from the Third to the Fourth Year. The award will be made, on the recommendation of the Department, to a student of high academic standing who shows ability and promise in the field of metallurgy.

The American Society for Metals Foundation for Education and Research Scholarship—This scholarship of \$400, the gift of the American Society for Metals Foundation for Education and Research, will be awarded in the fall of 1957 to a student entering the Third Year of the course in Engineering Physics, Metallurgy Option. The winner will be chosen on the basis of academic standing, ability, and promise.

The Association of Professional Engineers' Prizes—Five book prizes, each of the value of \$25, are offered by the Association of Professional Engineers of the Province for competition by those students in the Third Year of the Faculty of Applied Science who are enrolled as engineering pupils in the Association. These prizes are awarded for the best summer essay in each of any five branches of engineering to be selected by the Faculty. The successful essays may be made available by the Faculty to the Council and members of the Association.

The B'nai B'rith Chapter No. 77 Scholarship—A scholarship of \$50, given by the Women's Chapter No. 77 of the B'nai B'rith, will be awarded to the student in the Third Year of Applied Science standing highest in the class of Chemical Engineering or Chemistry and proceeding to the Fourth Year.

The Boulton-Bosustow Memorial Scholarship (donated through the Men's Canadian Club of Vancouver)—A scholarship of \$250, given by Mr. Austin C. Taylor in memory of his associates, William W. Boulton and Richard Bosustow, will be awarded annually to a student completing the Third Year in Mining or Metallurgical Engineering and proceeding to the Fourth Year in either of these fields. The winner of this scholarship will be chosen on the basis of ability and general proficiency in the courses in Mining and Metallurgy.

The British Columbia Cement Company Limited Chemical Engineering Scholarship—A scholarship of \$250, donated annually by British Columbia Cement Company Limited, is offered to students in Engineering. It will be awarded to a student who is completing Second or Third Year and is continuing in Chemical Engineering at this University. The award will be made to a student who has an outstanding academic record and who, in the opinion of the Faculty, shows unusual promise and ability. The winner must be enrolled as an engineering pupil with the Association of Professional Engineers of British Columbia.

The British Columbia Cement Company Limited Civil Engineering Scholarship—A scholarship of \$250, donated annually by British Columbia Cement Company Limited, is offered to students in Engineering. It will be awarded to a student who is completing Second or Third Year and is continuing in Civil Engineering at this University. The award will be made to a student who has an outstanding academic record and who, in the opinion of the Faculty, shows unusual promise and ability. The winner must be enrolled as an engineering pupil with the Association of Professional Engineers of British Columbia.

The British Columbia Electric Company Limited Undergraduate Engineering Scholarships—Three scholarships given by the British Columbia Electric Company Limited will be available as follows:

- (1) the sum of \$200 will be awarded to the undergraduate standing highest in the Civil Engineering course of the Third Year in Applied Science, and proceeding to the Fourth Year of that course;

- (2) the sum of \$200 will be awarded to the undergraduate student standing highest in the Electrical Engineering course of the Third Year in Applied Science, and proceeding to the Fourth Year of that course;
- (3) the sum of \$200 will be awarded to the undergraduate student standing highest in the Mechanical Engineering course of the Third Year in Applied Science, and proceeding to the Fourth Year of that course.

The British Columbia Lumberman Awards—As on page 414.

British Columbia Lumber Manufacturers Association Prizes in Engineering—Prizes of the value of \$100, \$50, and \$25, given by the British Columbia Lumber Manufacturers Association, will be awarded to the students enrolled in the course Structural Design 1 (C.E.370) who submit the designs, judged to be the best, of a wooden roof truss. The awards will be made upon the recommendation of the Dean of the Faculty of Applied Science in collaboration with the instructor in charge of the course and with the donor. Students intending to compete must notify the instructor of the course by January 15th.

British Columbia Transformer Co. Ltd. Scholarship in Electrical Engineering—A scholarship of \$250, the gift of British Columbia Transformer Co. Ltd., is offered to students proceeding to their final or next to final year in the field of Electrical Engineering. The award will be made to a student with high academic standing. In selecting the winner, however, consideration will also be given to personal qualities and character and to demonstrated aptitude in both the theoretical and practical aspects of engineering.

Bunston Ltd. Scholarship in Electrical Engineering—A scholarship of \$300, the gift of Bunston Ltd., is offered to a student who has completed the Third Year of Electrical Engineering and is entering the Final Year. The award will be made to a student who has high academic standing and who has shown aptitude and interest in the practical and theoretical aspects of the courses. In selecting the winner preference will be given to a student who has a particular interest in the power engineering field.

The California Standard Company Undergraduate Scholarships—As on page 396.

The Canadian Forest Industries Entomological Scholarships—As on page 414.

The Canadian Forest Products Ltd. Prizes—Two prizes of \$100 each, the gift of Canadian Forest Products Ltd., will be awarded to students graduating in Forestry with the degree of B.A.Sc. The awards will be made on the basis of general proficiency in the work of the final two years. In the event that candidates in the Fourth Year do not qualify, the prizes may be awarded to students in the First or Second Year who have obtained high standing in the final examinations.

The Canadian Forest Products Ltd. Scholarships—Two scholarships of \$150 each, the gift of Canadian Forest Products Ltd., will be awarded to the students obtaining highest standing in the Third Year of the Forest Engineering course and proceeding to the Fourth Year. In the event that students entering the Fourth Year cannot qualify, the scholarships may be awarded on the basis of proficiency to students proceeding to the First, Second, or Third Year of Forest Engineering.

The Canadian Institute of Mining and Metallurgy, B. C. Section, Prizes—Three book prizes to the value of approximately \$25 each, the gift of the B. C. Section of The Canadian Institute of Mining and Metallurgy, are offered annually to students registered in the Third Year of Applied Science and enrolled in Geology, Mining, or Metallurgy. These prizes, one in each of the above fields, will be awarded to members of the G. M. Dawson Club

for the best essays written during the summer between the Second and Third Years.

The Chemical Institute of Canada Book Prize—As on page 396.

Dow Chemical of Canada Limited Scholarship in Chemical Engineering—A scholarship of \$500, gift of Dow Chemical of Canada Limited, will be available annually to a student entering the Final Year of Chemical Engineering. It will be awarded to a student who has a sincere interest in the chemical industry, has demonstrated leadership in extra-curricular activities, and is academically well qualified. Consideration will also be given to personal qualities and character. Winners of this award may not hold other scholarships. Additional to the scholarship, a grant of \$250 will also be made by the Company to the Department of Chemical Engineering to help defray the costs of equipment, supplies, and administration.

The Dunsmuir Scholarship — A scholarship of \$160, founded by the Hon. James Dunsmuir, will be awarded to the undergraduate student standing highest in the Mining Engineering course of the Third Year in Applied Science, and proceeding to the Fourth Year.

The Engineering Institute of Canada Prize—The Engineering Institute of Canada offers an annual prize of \$25 to each of twelve Canadian universities, of which the University of British Columbia is one. The prize will be awarded to a student of the Third Year in Applied Science on the basis of the marks made in his academic work in that year and his activities in the student engineering organization or in the local branch of a recognized engineering society.

Engineering Institute of Canada (Vancouver Branch) Walter Moberly Memorial Prize—A book prize of the value of \$25, given by the Vancouver Branch of the Engineering Institute of Canada, will be awarded for the best engineering thesis submitted by any Fourth Year student in the Faculty of Applied Science. This prize is given in memory of the late Walter Moberly, pioneer engineer, explorer, and discoverer of the Yellowhead Pass through the Rocky Mountains, whose work in railway location so greatly influenced the development of the Province of British Columbia.

The Finning Tractor & Equipment Co. Ltd. Scholarships—Six scholarships of \$250 each, the gift of the Finning Tractor & Equipment Co. Ltd., are offered to Third or Fourth Year students. Of these scholarships, one will be awarded in each of Commerce, Forestry, Civil Engineering, Mining and Metallurgy, Forestry Engineering, and Mechanical Engineering. At least one of the awards will be given each year to an out-of-town student. In making the awards, consideration will be given not only to the ability, both academic and practical, but also to the financial circumstances of applicants. The awards will be made by the Scholarship Committee in consultation with the departments concerned. Names of the winners will be announced as soon as possible after August 1st.

The General Construction Company Limited Scholarship (donated through the Men's Canadian Club of Vancouver)—A scholarship of \$200, portion of a gift of \$500 from the General Construction Company Limited, will be awarded to a student who completes the Second Year of Applied Science (Engineering) and is proceeding to the Third Year. The award will be for proficiency in the work of the First and Second Years.

The G. M. Dawson Scholarship—A scholarship of \$50 will be awarded to the undergraduate student standing highest in the Geological Engineering course, in geological subjects, in the Third Year of the Faculty of Applied Science, and proceeding to the Fourth Year.

The Heavy Construction Association of B. C. Graduation Prize—A prize of \$50, gift of the Heavy Construction Association of B. C., will be awarded to a student graduating in Civil Engineering. Provided for the

purpose of stimulating interest in the field of highway engineering, this award will be made to the student obtaining highest standing in C.E. 470 (Highway Engineering).

The Heavy Construction Association of B. C. Scholarship—A scholarship of \$250, gift of the Heavy Construction Association of B. C., is available annually to students who have completed Second or Third Year Applied Science and are proceeding to the next year in Civil Engineering. In order to be eligible candidates must not only have high scholastic standing but also have been engaged during the summer in highway engineering or heavy construction work. Selection of the winner will be made on the basis of confidential reports submitted to the University by summer employers, on academic records in subjects basic to highway engineering and heavy construction work, and on ability, experience, and interest in these fields. Students who write their summer essays on topics related to the above fields will be given special consideration. Applications on special forms must be received by the Dean of Administrative and Inter-Faculty Affairs not later than September 30th.

The H. R. MacMillan Prize in Forest Engineering—A prize of \$100, the gift of H. R. MacMillan, Esq., C.B.E., D.Sc., will be awarded to the student graduating with highest standing in the course for the B.A.Sc. degree in Forest Engineering.

The H. R. MacMillan Scholarships in Forestry and Forest Engineering—As on page 415.

The Ingledow Scholarships in Engineering—Two scholarships of \$100 each, the gift of Dr. T. Ingledow, P.Eng., are offered annually to students in the B.A.Sc. course. One of these scholarships will be awarded in the spring to a student completing the Second Year and the other in the fall to a student entering the First Year. They will be awarded to students of outstanding merit and promise. The winner of the Second Year scholarship must be an engineering pupil of the Association of Professional Engineers of British Columbia, and the winner of the First Year scholarship will be required to enroll before receiving the award.

The John Inglis Co. Limited Scholarships (donated through the Men's Canadian Club of Vancouver) — Two scholarships of \$125 each, the gift of the John Inglis Company Limited, Toronto, will be awarded annually. Of these awards, one will be awarded to the student completing the Second Year with highest standing and proceeding to the Third Year in Mining or Metallurgical Engineering, and the other to the student completing Second Year with highest standing and proceeding to the Third Year in Mechanical Engineering. The awards will be announced in October.

Kennecott Copper Corporation Scholarship in Mining—This scholarship of \$1000, gift of Kennecott Copper Corporation, New York, will be awarded to a student entering the Third or Fourth Year of the course leading to the degree of B.A.Sc. in Mining Engineering. Selection will be based on (1) proficiency in studies; (2) enthusiasm, leadership, co-operativeness, initiative, and ambition; (3) good health and sturdy constitution; (4) financial need. Proficiency in studies is given prime importance and other factors are considered in the order listed. Intending applicants should consult the Dean of Administrative and Inter-Faculty Affairs before February 15th.

The Lambert Scholarship—A scholarship of \$300, the gift of Brigadier Noel D. Lambert, will be awarded annually to the student obtaining highest standing in the Third Year of Civil Engineering and proceeding to the Fourth Year of that course.

Lefevre Gold Medal—As on page 383.

Machine Design Prize—A prize of \$25, the gift of Mr. G. E. Plant, will be awarded to the student in the final undergraduate year of Mechanical

Engineering who, during the session, submits the best design in the course M.E. 463.

The Mobil Oil of Canada, Ltd., Scholarship in Geology—As on page 398.

Northern Commercial Company Limited Scholarship—This scholarship of \$500, the gift of Northern Commercial Company Limited, Seattle, is available for students in Engineering. The award will be made to a student with high scholastic standing. In the selection of the winner, consideration will also be given to personal qualities and character, and to demonstrated aptitude in both practical and theoretical aspects of engineering. Preference and special consideration will be given to students from the Yukon Territory.

The Plimsoll Club Scholarship in Machine Design and Theory (donated by the Canada Shipping Company Limited)—This scholarship, of the value of \$250, will be awarded to a student or students who have outstanding records in Third Year Mechanical Engineering and are proceeding to the Final Year of the course leading to the degree of B.A.Sc. The award will be made to the students obtaining the highest aggregate standing in Mechanical Engineering 352 (Mechanical Drawing), Mechanical Engineering 363 (Machine Design), and Mechanical Engineering 365 (Dynamics of Machines).

The Plimsoll Club Scholarship in Mechanical Engineering (donated by the Hon. Clarence Wallace, C.B.E.)—This scholarship of \$250 is available for students registered in the Third Year of Mechanical Engineering and proceeding to the Final Year of that course. It will be awarded to a student or students who have attained high standing in both the theoretical and practical parts of the year's work.

Royal Institution Scholarship in Applied Science—A scholarship of \$200 will be awarded for general proficiency in the work of the First Year to a student who is proceeding to the Second Year.

The R. Randolph Bruce Scholarship—Out of the proceeds of a fund bequeathed to the University of British Columbia by the late Honourable R. Randolph Bruce in memory of his term as Official Visitor, a scholarship of \$200 will be offered annually to the undergraduate student standing highest in the Metallurgical Engineering course in the Third Year in Applied Science and proceeding to the Fourth Year.

The Sidney Roofing & Paper Co. Ltd. Scholarships—As on page 404.

Timber Management Service Award—As on page 404.

The Timber Preservers Limited Prizes—Prizes of the value of \$65, \$45, and \$25, together with three merit awards of \$15 each, given by the Timber Preservers Limited, will be awarded to the students enrolled in the course of Engineering Law (C.E. 476) of the Fourth Year of Civil Engineering in the Faculty of Applied Science who submit plans and specifications, judged to be the best, of a structure of treated timber. The awards will be made upon the recommendation of the Dean of the Faculty of Applied Science, in collaboration with the instructor in charge of the course and with the donors.

University Scholarship in Applied Science—A scholarship of \$200 will be awarded to the student who obtains the highest marks in the Second Year in Engineering and who is proceeding to the Third Year.

The West Coast Electronic Manufacturers' Association Scholarship in Electrical Engineering—A scholarship of \$600, the gift of the West Coast Electronic Manufacturers' Association, was available in 1956-57 for a student who had completed the Second Year of Engineering and was proceeding to the Third Year in Electrical Engineering. The award was made to a student who had high academic standing and who showed special aptitude for, and interest in, the field.

The Western Canada Steel Ltd. Scholarship in Metallurgy—A scholarship of \$1000, the gift of Western Canada Steel Ltd., is offered annually to a student who has completed the Second Year in Applied Science and is proceeding to Metallurgical Engineering at this University. The winner of this scholarship will receive \$500 during each of the Third and Fourth Years, payment in the Fourth Year being dependent upon satisfactory standing in the previous years. Selection will be based on: (1) proficiency in studies; (2) interest in and aptitude for work in metallurgy; and (3) character and qualities of leadership. If no suitable candidate applies, the award will be withheld and two scholarships will be available in the following year. Intending applicants should consult the Dean of Administrative and Inter-Faculty Affairs before February 15th.

Westminster Paper Company Scholarships in Engineering—Westminster Paper Company, New Westminster, offers annually several scholarships, known as Westminster Paper Company Awards at the University of British Columbia. Two of these awards, each a two-year scholarship of \$400 per annum, are available to Second Year students who, in September, will enter Third Year Chemical, Electrical, or Mechanical Engineering and who propose, on graduation, to enter business or industry. In the selection of winners, consideration will be given, not only to academic standing, but also to personal qualities and character, interest and participation in extra-curricular activities, and physical vigour, i.e. those qualities associated with Rhodes Scholarships. Summer employment, acceptance of which is optional with the winner, will be offered by the Company to successful candidates. The awards will be made in the second term. Renewal of each award for the Final Year will be conditional upon a maintenance of high standing and of interest and participation in extra-curricular activities. Those interested in applying or nominating candidates should consult the Dean of Administrative and Inter-Faculty Affairs before the end of January.

In Forestry

Note: Scholarships and prizes for students in Forest Engineering are listed under "Engineering".

The Alaska Pine & Cellulose Limited Scholarship in Forestry — A scholarship of \$500, the gift of Alaska Pine & Cellulose Limited, is offered annually to students in the Third Year of the B.S.F. course who are proceeding to the Final Year. The award will be made to the student whose record in the Third and lower years of Forestry is, in the opinion of the Faculty, the most outstanding. Other factors being equal, however, preference will be given to the son or daughter of an employee of the Company.

The British Columbia Lumberman Awards—Three awards, provided by the "British Columbia Lumberman" are available to undergraduates in Forestry or Forest Engineering for the most suitable summer essay submitted, as part of curriculum requirements, in each of the fields of logging, utilization, and general forestry. The winning essays, considered on the basis of academic quality, topical importance to the forest industry, and readability, will be selected by the Faculty of Forestry in cooperation with the Publisher of the journal. The winning essays will be published in the journal and each winner will receive a Certificate of Merit, and payment for publication at double the regular rate. Names of winners will be announced in the April issue and essays will be published in the same or a later issue, at the discretion of the Publisher. If no essay is of sufficiently high quality, no award will be made.

The Canadian Forest Industries Entomological Scholarships—To encourage graduates and undergraduates in the work of forest entomology the British Columbia Loggers' Association and the British Columbia Lumber Manufacturers' Association have each donated an annual scholarship of

\$300. These scholarships are available to Forestry students registered in the Second or a higher year at the University of British Columbia. Awards will be made on the recommendation of the Faculty of Forestry. Applications, on forms available at the office of the Dean of Administrative and Inter-Faculty Affairs, should be received by March 15th, but in the event that both awards are not made in the spring, further applications will be invited in the fall. In making awards, special desire and aptitude for research in forest entomology will be governing factors. Due weight will also be given to scholastic standing and physical fitness.

The Canadian Forestry Association (B. C. Branch) Scholarship—As on page 426.

The Finning Tractor & Equipment Ltd. Scholarships—As on page 411.

The Galt Elkington Memorial Scholarship—A scholarship of \$300 has been endowed by Dr. and Mrs. Eric H. W. Elkington of Victoria in memory of their son, Galt Elkington, B.Sc., B.A. (McGill), a graduate student at the University of B. C. who lost his life by drowning in August, 1955, while employed with the B. C. Forest Service. In recognition of his special interest in Forestry, this scholarship will be awarded annually to a student in the Faculty of Forestry who is completing the Third and proceeding to the Final Year. In making the award, consideration will be given, not only to academic standing, but also to personal qualities, character, and interest and promise in the field of Forestry.

The H. R. MacMillan Scholarships in Forestry and Forest Engineering—Through the generosity of H. R. MacMillan, Esq., C.B.E., D.Sc., four scholarships to the total of \$600 will be available for students in Forestry and Forest Engineering. These awards are as follows:

- (a) a scholarship of \$200 for the student with the highest standing in Second Year Forestry and Forest Engineering;
- (b) a scholarship of \$100 for the student in Second Year Forestry with the next highest standing;
- (c) a scholarship of \$200 for the student with the highest standing in First Year Forestry and Forest Engineering;
- (d) a scholarship of \$100 for the student in First Year Forestry with the next highest standing.

These awards are available only for those who continue their course in Forestry or Forest Engineering in the following session.

Timber Management Service Award—As on page 404.

The Truck Loggers' Association Scholarships—As on page 429.

In Home Economics

The B. C. Electric Company Service Award in Home Economics—An opportunity for twelve months' experience in the Home Economics Service Centre of the B. C. Electric Company at Vancouver, with an allowance of \$100 per month and other benefits, is available annually from the B. C. Electric Company for a student graduating in Home Economics from this University. The training programme given is approved by the School of Home Economics. Selection of the recipient will be made by the Director of this School, in consultation with the Home Service Supervisor of the B. C. Electric Company. In making the choice, consideration will be given to scholarship, personality, adaptability, the candidate's ability to speak in public, and interest in extra-curricular activities.

The British Columbia Dietetic Association Scholarship in Home Economics—A scholarship of \$100, the gift of the British Columbia Dietetic Association, will be awarded annually to a student in the graduating year who has taken a dietetic major. The award will be made to a student who has high academic standing, has shown potentialities for success in

her chosen field and is proceeding to a dietetic internship in Canada, and whose plan of study is approved by the Director of the School. Applications must be received not later than March 15th.

The Dr. Alice Ravenhill Memorial Scholarship—This scholarship of \$150, established from the bequest of the late Dr. Alice Ravenhill, will be awarded to the student obtaining highest standing in the Second Year of the Home Economics Course and proceeding to the next year.

The Home Economics First Year Prize—A cash prize of \$75 will be awarded to the student obtaining the highest standing in the First Year.

The Lillian Mae Westcott Prize—This prize will be awarded annually to the senior student in Home Economics who has been outstanding in the areas of clothing and textiles throughout her course.

The Mary Graham Holland Scholarship for Home Economics—A scholarship of approximately \$300, endowed from a bequest made by the late Mrs. Mary Graham Holland, will be awarded annually to a woman student who has completed her Third Year and is entering upon the Fourth or Fifth Year of study at this University in the School of Home Economics or in any other school or faculty in which instruction in home economics is offered. This scholarship will be given to the student considered by the School of Home Economics to be the most deserving of the award.

The Singer Sewing Machine Co. Prize—A portable electric Singer Sewing Machine, the gift of the Singer Sewing Machine Co. (Vancouver), will be awarded to a high ranking student in the graduating class in Home Economics who has shown originality and skill in the field of clothing and who intends to enter the field of teaching. The prize will be awarded on the recommendation of the School of Home Economics.

The Vancouver Women's Canadian Club Scholarship in Home Economics—A scholarship of \$100, the proceeds of a fund created by the Vancouver Women's Canadian Club, will be awarded for general proficiency in the work of the Third Year of the Home Economics course to a student proceeding to the Fourth Year of that course.

In Law

The Allan S. Gregory Memorial Prize—A book prize of the value of \$50, the gift of Ladner, Downs, Ladner, Locke and Lenox, will be awarded annually to the student in Third Year Law, who, in the opinion of the Faculty, has displayed great merit in Moot Court work.

The Canada Law Book Company Prize—A book prize, the gift of the Canada Law Book Company Limited, is available annually for students in the Third Year of the Law course. The award will be made to a student obtaining high marks in the subject of Conflict of Laws.

The Canada Permanent Mortgage Corporation Prize—A prize of \$50, the gift of the Canada Permanent Mortgage Corporation, will be awarded annually to the student in the Third Year of Law obtaining the highest standing in the course on Mortgages.

The Canada Permanent Trust Company Prize—A prize of \$50, the gift of The Canada Permanent Trust Company, will be awarded to the student in the Second Year of Law obtaining the highest standing in the course on Property.

The Carswell Company Limited Prizes—The Carswell Company Limited, Law Publishers, Toronto, offers annually three book prizes of the value of \$20 each. Of these prizes, one will be awarded in each year of the Law course to the student obtaining highest standing in that year.

The H. Carl Goldenberg Book Prize—This book prize, the gift of H. Carl Goldenberg, Esq., O.B.E., Q.C., Montreal, Que., will be awarded annually to a deserving student in the Faculty of Law.

The Hon. R. L. Maitland Memorial Scholarship—A scholarship of \$175, initiated by the Primrose Club of Vancouver on behalf of friends of the late Hon. R. L. Maitland, K.C., will be awarded to the student who attains the highest standing in the Second Year of the Law course and is proceeding to the Third Year of that course.

The Ladner Prizes in Law—Prizes to the total of \$100, the gift of Leon J. Ladner, Esq., Q.C., will be awarded annually to students in the Faculty of Law. The awards will be made on the recommendation of the Faculty to students who have obtained high standing either in special fields or in the whole year's work.

The R. A. Wootton Prizes—One or more prizes to the total of \$100, the gift of R. A. Wootton, Esq., Q.C., of Victoria, are available for students completing the First or Second Year in the Faculty of Law. The awards will be made, at the discretion of the Faculty, to deserving students with high standing.

The Schultz Prize in Criminal Law—A prize of \$50, the gift of William A. Schultz, Esq., Q.C., will be awarded to the student in the First Year of Law who obtains highest standing, as determined by the final examinations, in the subject of Criminal Law.

Special Book Prize—A book prize of the value of \$25, the gift of an anonymous donor, will be awarded in May to a student in the Second Year who obtains high scholastic standing and is not the recipient of another scholarship or prize.

In Medicine

The Ayerst, McKenna & Harrison Limited Medical Scholarship—A scholarship of \$200, the gift of Ayerst, McKenna & Harrison Limited, Montreal, is offered to students in the Faculty of Medicine. In May, 1957, the scholarship will be awarded to the student obtaining highest standing in the First Year in anatomy.

Crown Zellerbach Canada Limited Scholarship in Medicine—A scholarship of \$500, the gift of Crown Zellerbach Canada Limited, will be awarded annually to a student who has completed at least the first two years in Medicine and is proceeding to his Third or Fourth Year. Selection of the winner will be made by the Faculty on the basis of academic record, character and personality, and promise in his chosen field.

The C. V. Mosby Company Prizes—Five prizes, each consisting of the choice of a book up to the value of \$20, are offered annually by C. V. Mosby Company, St. Louis, Missouri, to medical students showing excellence or promise in a field or fields of their studies. Names of winners will be announced at the end of the session.

The Dean M. M. Weaver Medal—A silver medal, awarded initially by Dean M. M. Weaver on the occasion of the graduation of the first class in Medicine and now made possible by him through a permanent endowment, will be awarded annually to a student in the graduating class whose record and progress throughout the four years have been outstanding.

The Dr. A. B. Schinbein Memorial Scholarship—This scholarship of \$250 was established by Mrs. A. B. Schinbein and Dr. John E. Schinbein in memory of Austin Birrell Schinbein, O.B.E., M.B., F.A.C.S., F.R.C.S. (Canada), who was for many years Chief Surgeon at Shaughnessy Hospital and Consulting Surgeon at Vancouver General Hospital. Dr. Schinbein was outstanding in his profession and, as a member of Senate and the Board of Governors of this University, took an active part in the establish-

ment of the Faculty of Medicine. This scholarship is awarded annually to the medical student of the Third Year obtaining the highest standing in the subject of surgery.

The Dr. Frank Porter Patterson Memorial Scholarship—This scholarship of \$150 has been established by the Primrose Club of Vancouver in memory of the late Dr. Frank Porter Patterson, Chief of Orthopaedic Surgery at the Vancouver General Hospital and one-time member of the Board of Governors of the University of British Columbia. It will be awarded to a student graduating from the Faculty of Medicine who, in the Fourth Year, has meritoriously pursued the course in surgery and displayed a special interest in orthopaedic surgery, and is proceeding to his internship.

The Dr. H. L. W. Turnbull Memorial Scholarship—In memory of Dr. H. L. W. Turnbull (1880-1950) and in testimony of his marked devotion to the study and practice of medicine as a measure of help to men and women, this scholarship has been founded by his family. The scholarship has a value of \$300 and will be awarded annually to the student in the Faculty of Medicine who completes the Second Year with the highest aggregate standing in the pre-clinical subjects and is proceeding to a higher year.

Dr. Ernest Roland Myers Scholarship Fund—This fund, a bequest from the late Dr. E. R. Myers, provides an annual scholarship of \$275 for promising and deserving students who are pursuing studies in the Faculty of Medicine and who merit financial assistance. The award will be determined at the discretion of the Joint Faculty Committee on Prizes, Scholarships and Bursaries.

The Dr. Isabel Day Memorial Scholarship—This scholarship of \$75, established in memory of Dr. Isabel Day of Vancouver, will be awarded annually to the student in the Faculty of Medicine who is considered by the Staff in Physiology to be the most outstanding in that field.

The Dr. Walter Stewart Baird Memorial Prize—This prize of \$50, the gift of Mrs. W. S. Baird and Mrs. W. C. Gibson, will be awarded annually in the Faculty of Medicine to the student presenting the best graduation dissertation.

The Dr. W. A. Whitelaw Scholarship—As a memorial to Dr. W. A. Whitelaw his family has endowed a scholarship, which is offered annually in the Final Year of the course leading to the degree of M.D. This scholarship, of the value of \$200, will be awarded to a student whose academic record throughout the course has been outstanding, who has demonstrated an interest in, and understanding of, the human value of a broad education, and whose subsequent study in the field of medicine will be materially furthered by the award.

The Hamber Scholarships in Medicine—Two scholarships of \$750 each, the gift of the Honourable Eric W. Hamber, C.M.G., B.A., LL.D., Chancellor of this University from 1944 to 1951 and Chancellor Emeritus since 1951, are offered annually to students in medicine. One of these scholarships will be awarded to the top ranking student in the Final Year who is proceeding to an internship. The other will be awarded to a top ranking student proceeding to the Final Year.

The Health Officers' Prize in Preventive Medicine and Public Health—A cash prize of approximately \$100, provided from a fund established and maintained by donations from the Health Officers of British Columbia, will be awarded annually to the student in the graduating class of Medicine who, in the opinion of the Professor of Public Health, has shown the greatest interest in and has contributed the most to Public Health and Preventive Medicine during his time as an undergraduate medical student at this University.

The Hoffman-La Roche Limited Scholarship—This scholarship of \$200, the gift of Hoffman-La Roche Limited, Montreal, will be awarded to the student in the First Year of Medicine who obtains the highest standing in Physiology.

The Horner Prize and Gold Medal—A gold medal and a cash prize of \$100, given by Frank W. Horner Limited of Montreal, will be awarded to the Fourth Year student who has obtained the highest aggregate standing in the four-year course in the subject of Medicine.

The Ingram & Bell Limited Prize—A prize, donated by Ingram & Bell Limited, Vancouver, will be awarded to a student in the graduating class of the Faculty of Medicine. This prize will be awarded to the student who, in the opinion of the Faculty, has the best overall qualifications in terms of standing, interest and participation in student affairs, character, and promise.

The Janet Hatfield Medical Scholarship—A scholarship of the annual value of \$200, the gift of Miss Janet Hatfield of Vancouver, is available for a student in the Faculty of Medicine. It will be awarded on the recommendation of the Joint Faculty Committee on Prizes, Scholarships, and Bursaries to a student who has a good academic record, has shown promise and ability in the medical field, and is worthy of financial assistance.

The Louis Lipsey Toohill Scholarships—From a fund established by a bequest from the late Louis Lipsey Toohill, two scholarships of \$500 each are available annually for students in the Faculty of Medicine. An additional scholarship for the same amount is available every third year. In accordance with the terms of the bequest the Joint Faculty Committee on Prizes, Scholarships, and Bursaries gives preference to students requiring financial assistance and showing aptitude for study related to research in cancer, arthritis and rheumatism.

The Merck & Co. Ltd. Scholarship—A scholarship of \$200, the gift of Merck & Co. Ltd. (Montreal), will be awarded annually to the student in the First Year of the Faculty of Medicine who obtains the highest standing in the subject of Biochemistry.

The M. M. Weaver Prizes in the Humanities—Three prizes to the value of \$25 each, endowed by Dr. M. M. Weaver, first Dean of Medicine at this University, will be awarded annually to the students in the Faculty of Medicine who submit the best essays in the courses on Social and Cultural Values. Of these prizes one will be available in each of the First, Second and Third Years. It is the expressed desire of the donor that the prizes be used by the winners for the purchase of books, selected in consultation with the instructors of the courses, in the humanities and related fields.

The Myron M. Weaver Scholarship—The Medical Board of the Vancouver General Hospital has established an annual scholarship of the value of \$200 as a tribute to the services, leadership and inspiration given by Dr. M. M. Weaver as first Dean of Medicine of this University. This scholarship, which serves as a recognition of Dr. Weaver's special interest in the values which the humanities and the arts can contribute to medical training and the practice of medicine, will be awarded to the student in the Second, Third, or Fourth Year of the course who in the opinion of the Faculty of Medicine has best exemplified these values and contributed to their realization within the Faculty.

The Osler Society of Vancouver Scholarship—This scholarship of \$100, the gift of the Osler Society of Vancouver, will be awarded annually to the student or students who are proceeding to the Fourth Year and who, in the opinion of the Faculty, have the most outstanding records in the study of Internal Medicine.

The Paul A. O'Leary Memorial Essay Prizes—Two prizes of \$50 each, provided anonymously, are to be awarded annually in the Faculty of

Medicine for each of two 1500-word essays on a subject—scientific, clinical, historical, literary or humanitarian—related to the skin. One prize shall be awarded to a student in First or Second Year and one prize to a student in Third or Fourth Year. Any student planning to submit an essay is requested to communicate with the office of the Dean of Medicine for further information.

The Samuel and Rebecca Nemetz Memorial Scholarship—This scholarship of \$100, the gift of Nathan T. Nemetz, Esq., Q.C., and Herman Nemetz, Esq., in memory of their parents, Samuel and Rebecca Nemetz, will be awarded annually in the Faculty of Medicine to a student in the graduating class who, in his Final Year, has shown special aptitude for medical research.

The Sandoz Prize in Pharmacology—This prize, the gift of Sandoz Pharmaceuticals, Division of Sandoz (Canada) Ltd., Montreal, and consisting of an otoscope-ophthalmoscope combination or a manometer, will be awarded annually in the Faculty of Medicine to the student obtaining the highest standing in Pharmacology.

The Sandoz Prizes in Clinical Microscopy—A copy of the "Sandoz Atlas of Haematology", the gift of Sandoz Pharmaceuticals, Division of Sandoz (Canada) Ltd., Montreal, will be awarded to each of the ten leading students in the subject of Clinical Microscopy.

The Signus Club of Vancouver Prize—A prize of \$75, donated by the Signus Club of Vancouver in honour of its founder, Mrs. William McDiarmid Holland, is offered annually in the Faculty of Medicine. It will be awarded to the graduating student who, in the opinion of the Faculty, has submitted the best graduation thesis on a subject in the field of cerebral palsy.

The Vancouver Women's Canadian Club Scholarship in Medicine—This scholarship of \$100, endowed by the Vancouver Women's Canadian Club, has been established as a memorial to the Honourable Tilly Jean Rolston, Minister of Education for the Province of British Columbia from August 1, 1952 to October 12, 1953, and first woman cabinet minister with portfolio in Canada. In establishing this award, the Vancouver Women's Canadian Club pays tribute to her fine personal qualities, her distinguished public service, and her outstanding contributions in education and other fields. This scholarship is offered annually to a student in the Faculty of Medicine who not only attains high standing but who also shows promise of ability in research.

In Nursing

Crown Zellerbach Canada Limited Scholarship in Nursing—A scholarship of \$500, the gift of Crown Zellerbach Canada Limited, will be awarded to a student who is entering the Final Year of the degree course in Nursing. Selection of the winner will be made on the recommendation of the School of Nursing. In selecting the winner consideration will be given to the records of candidates in both the academic and practical programmes, and to their promise in the profession of nursing.

The Hamber Scholarship in Nursing—A scholarship of \$300, the gift of the Honourable Eric W. Hamber, C.M.G., B.A., LL.D., Chancellor of this University from 1944 to 1951 and Chancellor Emeritus since 1951, is available annually to students entering the Final Year of the degree course in Nursing. This scholarship will be awarded to a top-ranking student who has an outstanding record in both the academic and practical programmes.

The Mary Graham Holland Scholarship in Nursing—A scholarship of approximately \$300, endowed from a bequest made by the late Mrs. Mary Graham Holland, will be awarded annually to a woman under-

graduate entering upon her Final Year in the School of Nursing at this University. The scholarship will be given to the student considered by the School to be the most deserving of the award.

The Provincial Department of Health and Welfare (Health Branch) Scholarship—The Department of Health and Welfare (Health Branch) of the Province of British Columbia offers the sum of \$100 to be given as a scholarship in Nursing. This scholarship will be awarded in September to a student proceeding to the Final Year of the degree programme who, on completion of the course, will seek employment as a public health nurse.

The University Nurses' Club Scholarship—A scholarship of \$50, gift of the University Nurses' Club, will be awarded annually to a student proceeding from the Third to the Fourth Year in Nursing. In selecting the winner, consideration will be given to academic standing, ability, promise, and financial circumstances.

University Scholarship in Nursing and Health—A scholarship of \$200 will be awarded for general proficiency in previous work of university grade (which must include a minimum of two years' work in the Province of British Columbia), to a student proceeding to the Second Year of the course in Nursing who has successfully completed all First Year requirements and has demonstrated the potentialities of a good nurse. Applications, on forms available at the office of the Dean of Administrative and Inter-Faculty Affairs, must be received not later than September 1st.

The Vancouver Chapter Registered Nurses' Award for Clinical Supervision—An award of \$250 for the purpose of furthering study in clinical supervision is available for either a degree or diploma student completing a programme of studies at the School of Nursing, University of British Columbia. In order to permit the winner to obtain further practical experience before continuing her studies, the award may be claimed within three years from the date of award. Applications on special forms must be received by the Dean of Administrative and Inter-Faculty Affairs not later than March 15th.

The Vancouver Women's Canadian Club Scholarship—A scholarship of \$100, the proceeds of a fund created by the Vancouver Women's Canadian Club, will be awarded to the student who attains the highest standing in all previous work and is entering the Final Year of her course in the School of Nursing. Postponement for one year on the recommendation of the School may be given to a student who proposes to take a year of practical studies before proceeding to the Final Year.

In Pharmacy

The B. C. Drugs Limited Scholarship—A scholarship of \$100, the gift of B. C. Drugs Limited, will be awarded annually to the student who obtains highest standing in the examinations of First Year Pharmacy and is proceeding to the Second Year.

The Burroughs Wellcome Scholarship—A scholarship of \$250, the gift of Burroughs Wellcome & Co. (Canada) Ltd., will be awarded annually to a student in the Faculty of Pharmacy who, in the opinion of the Dean of the Faculty, shows outstanding ability and is worthy of financial assistance.

The Canadian Foundation for the Advancement of Pharmacy Scholarships—Scholarships of \$100 each, the gift of the Canadian Foundation for the Advancement of Pharmacy, are available for students in Pharmacy. The number of scholarships depends upon the registration. It is expected that awards will be made in May to two students, one of whom has completed the First and the other the Second Year. Although awards will be made primarily on merit, financial need will be considered.

The Canadian Pharmaceutical Association Prize—A prize, consisting of a copy of the Canadian Formulary and of each of the active volumes of the New Products Index, is offered annually by the Canadian Pharmaceutical Association. This prize will be awarded by the Faculty of Pharmacy to a student who has been outstanding in the Second Year in the course in Compounding and Dispensing.

The Charles E. Frosst Scholarship—This scholarship, of \$125, is offered by Charles E. Frosst and Co. of Montreal for annual award to a student of special promise and ability in the Faculty of Pharmacy. Students entering the Final Year of the degree course are eligible to compete and the award is made on the basis of scholarship, leadership, and financial need.

The Civil Defence Prize—An award, giving the opportunity to attend the Civil Defence Pharmacists Indoctrination Course at the Civil Defence College, Arnprior, Ontario, with all expenses paid, will be available to a student who has shown outstanding interest in the series of Civil Defence lectures given in the Faculty.

The Cunningham Prize in Pharmacy—A cash prize of \$50, the gift of Mr. George T. Cunningham, will be awarded to the student in Pharmacy whose scholastic record in all years of the course has been the most outstanding.

The Cunningham Scholarship in Pharmacy—A general proficiency scholarship of \$100, the gift of Mr. George T. Cunningham, will be awarded annually to the student obtaining highest standing in the Second Year of Pharmacy and proceeding to the Third Year of the course.

The Dean E. L. Woods Memorial Prize (donated by the Pharmaceutical Association of the Province of British Columbia)—A cash prize of \$50, the gift of the Pharmaceutical Association of the Province of British Columbia, will be awarded annually to a student completing the Third Year. The award will be made on the recommendation of the Dean of the Faculty to the student whose record during the entire course, in both the practical and theoretical parts of the pharmaceutical subjects, is considered to be the most outstanding.

The Merck Awards—Through the generosity of Merck & Co. Limited, Montreal, two awards, each consisting of the Merck Index and the Merck Manual, are available annually for students in Pharmacy. The awards will be made to the two students obtaining the highest standing in Pharmaceutical Chemistry.

The Pharmaceutical Association of the Province of British Columbia Scholarship—A scholarship of \$100, the gift of the Pharmaceutical Association of the Province of British Columbia, will be awarded to a student entering First Year Pharmacy. The award will be made to the student with the highest entrance qualifications, as determined by his standing in the examinations of Senior Matriculation or First Year Arts and Science.

The Pharmacy Alumni Book Prizes—Three book prizes, the gift of the Pharmacy Alumni Association of the University, will be awarded annually, one in each year of the Pharmacy Course, to students selected by the Faculty of Pharmacy as outstanding all-round potential pharmacists. The awards will be made after the conclusion of the final examinations for the session.

The Poulenc Gold Medal—A gold medal, presented by Poulenc Limited, Montreal, will be awarded annually to the student graduating in Pharmacy with the highest standing in the Pharmacology course.

The Poulenc Scholarship in Pharmacy—A scholarship of \$250, the gift of Poulenc Limited, Montreal, will be awarded annually to the student

who has the most outstanding record in the biological sciences courses of the First and Second Years and who is proceeding to the Final Year in Pharmacy.

The W. Elgin Turnbull Memorial Scholarship—By a gift of his family, a scholarship in Pharmacy has been established in memory of W. Elgin Turnbull (1912-1941), who was a member of the pharmaceutical profession in British Columbia. This scholarship to the value of at least \$75 will be awarded annually on the basis of general proficiency, particularly in the practical aspects of pharmaceutical subjects of the Second Year. Preference will be given to a student showing aptitude in pharmaceutical economics and, in particular, merchandising.

In Physical Education

The Canadian Association for Health, Physical Education, and Recreation Scholarship—A scholarship of \$50, the gift of the Canadian Association for Health, Physical Education and Recreation, B. C. Lower Mainland Branch, will be awarded annually to a student completing the Physical Education course in the Second Year and proceeding to the Third Year of that course. The award will be made to the student whose achievement in the course is the most outstanding.

The Lieutenant James Douglas Hamilton Book Prize—A book prize, in memory of Lieutenant James Douglas Hamilton, a graduate in Physical Education and a former member of the C.O.T.C. of this University, who, on April 13, 1952, was killed in action in Korea, is offered by the Physical Education Alumni and Undergraduate Societies. The award is open to Third Year students in Physical Education showing academic and physical proficiency in the course.

The West Vancouver Kinsmen Club Book Prize—This prize of books to the value of \$25 is awarded to the Third Year student in the degree course in Physical Education for proficiency in physical education skills (aquatics).

In Social Work

The British Columbia Electric Company Limited Graduate Scholarships—As on page 378.

The Canadian Association of Social Workers (British Columbia Mainland Branch) Prize—A book prize of the value of \$25, the gift of the Canadian Association of Social Workers (British Columbia Mainland Branch), will be awarded annually to a student taking a Master's degree in Social Work. The award will be made on the basis not only of academic standing, but also on all-round professional activity and promise. Selection of the winner will be made on the recommendation of the School.

The Catholic Children's Aid Society Scholarship in Social Work—To commemorate its Fiftieth Anniversary, celebrated on August 25th, 1955, the Children's Aid Society of the Catholic Archdiocese of Vancouver has established an annual scholarship of \$350. This scholarship is available to a Roman Catholic student entering the First Year of Social Work at this University. In making the award, consideration will be given to academic standing, ability, personal qualities, and promise. The award will be made by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries, in consultation with the School of Social Work. Any student who wishes to be considered for the award may apply by letter addressed to the Dean of Administrative and Inter-Faculty Affairs, University of British Columbia, Vancouver 8, Canada. This letter should be submitted at the time application is made for admission to Social Work.

The Junior League of Vancouver Scholarships in Social Work—Through the generosity of The Junior League of Vancouver, British Columbia, two scholarships of \$500 each were made available in the session 1956-57 to encourage promising students to continue their training in Social Work. The awards were made by the Scholarship Committee of the University in consultation with the Director of the School of Social Work.

The Laura Holland Scholarship—The friends and associates of Laura Holland, desiring to recognize her distinguished service in the field of Social Work to British Columbia and to Canada in general, have, through a special committee, endowed a scholarship. This scholarship of \$265 will be awarded annually to the student in Social Work who is entering the Second Year and whose record in the First Year is the most outstanding. Students proceeding directly from the First Year to the Second Year or returning from a period of employment after the First Year are eligible for consideration.

The Moe and Leah Chetkow Memorial Prize—A prize of \$100, established by a bequest to the University from Moe and Leah Chetkow, will be available for a student completing the final year of lectures in the course leading to the degree of M.S.W. The award will be made on the basis of proficiency in Social Work studies and on the recommendation of the School of Social Work.

The Social Work Alumni Prize—A prize of \$25, the gift of the Social Work Alumni, is offered annually to the student presenting the best thesis in fulfilment of the requirements for a Master of Social Work degree.

The United Nations Prize—As on page 391.

The Zella Collins Scholarship Fund—This scholarship of the annual value of \$25, established by a bequest from Laura Holland in honour of Zella Collins, will be awarded annually to a student or students beginning or continuing studies in the School of Social Work at this University. The awards will be made on the recommendation of the School, to those who are deemed worthy and deserving.

High School Graduation and Grade XIII Scholarships

The Annie B. Jamieson Scholarship—Established as a memorial to Annie B. Jamieson, B.A., LL.D., a scholarship of \$150 will be awarded annually to a student entering the University from Grade XII or XIII of a Vancouver high school. Applicants should have high scholastic standing and should show evidence of those qualities of character which make for leadership in community affairs and an interest in world events. By this award it is hoped to perpetuate the spirit of public interest and public service which Miss Jamieson embodied during a pioneer period of the city's development, and especially to give recognition to her distinguished contributions as a teacher in the Vancouver Schools, and as a member of the Vancouver School Board, the Public Library Board, and the Senate and Board of Governors of the University of British Columbia. The fund supporting this scholarship was contributed by friends and associates of Miss Jamieson; it was augmented by contributions made in memory of the late Victor Osterhout, at his own request.

The A. P. Gardner & Co. Commerce Entrance Scholarship—A scholarship of \$250, the gift of A. P. Gardner & Co., Chartered Accountants, is offered annually to students whose homes are in the area of British Columbia from Clinton north to the uppermost portion of the Province and west of the straight boundary line between northern British Columbia and Alberta. The award will be available for a student entering First Year

Commerce from Senior Matriculation or First Year Arts and Science. Applicants will be considered not only on the basis of scholastic standing, aptitude, and personal qualities, but also on their financial circumstances and records of part-time and holiday employment in any phase of commerce or industry. If in any year no suitable candidate applies, the award may be withheld, in which case an additional award will be available in the following year. Students competing for this scholarship should apply to the Dean of Administrative and Inter-Faculty Affairs not later than August 1st.

The B. C. Indian Arts and Welfare Society Memorial Scholarships—Two scholarships of \$50 each, offered by the B. C. Indian Arts and Welfare Society in memory of the native Indians who gave their lives in World War II, will be awarded annually to the two native Indian students entering the University each year with the highest academic qualifications. Applicants must be legally Indian, and must apply by letter to the Dean of Administrative and Inter-Faculty affairs, University of British Columbia, not later than August 1st, enclosing a transcript of their standings in High School Graduation (University Entrance) subjects. Winners will be selected by the Scholarship Committee of the University, in consultation with the Executive of the B.C. Indian Arts and Welfare Society. Presentation of the awards will be made at the beginning of session.

The British Columbia Electric Company Limited Special Scholarships—As on page 387.

British Columbia Forest Products Limited Scholarships—British Columbia Forest Products Limited offers annually fourteen one-year scholarships of \$300 each to legal dependents of employees who, by June 15th of the year in which the award is made, have served with the Company for at least one year. They are open to students proceeding from Grade XII (High School Graduation, University Programme) or Grade XIII (Senior Matriculation) to the University of British Columbia. Residents of Vancouver Island may attend Victoria College. The scholarships will be awarded to the applicants who, in the opinion of the University, have the most outstanding scholastic records. Students intending to compete for these scholarships must apply to the Dean of Administrative and Inter-Faculty Affairs before June 30th.

Attention of students is directed to the bursaries offered by the Company (see page 437).

The British Columbia Japanese Canadian Citizens' Association Entrance Scholarship—A scholarship of \$100, the gift of the British Columbia Japanese Canadian Citizens' Association, will be available annually for a Japanese Canadian student residing in British Columbia and proceeding from Grade XII or Grade XIII to a full course of study at the University of British Columbia. The award will be made on the basis of scholastic ability, character, and promise of achievement. In making the award, consideration will be given to interest and participation in extra-curricular activities. Winner of the award will be selected by the University in consultation with the Association. Applications, on forms obtainable from the Association or from the Dean of Administrative and Inter-Faculty Affairs, University of British Columbia, Vancouver 8, B. C., must be received by the University not later than August 1st.

The British Columbia Teachers' Federation Scholarships—As on page 406.

The Burrard Dry Dock Company Limited Entrance Scholarship—Burrard Dry Dock Company Limited, North Vancouver, offers annually a scholarship of \$1000 to students proceeding from Grade XII or Grade XIII to a full course of study at the University of British Columbia in any course leading to a degree. To be eligible for consideration a candidate must be the son, daughter, or legal dependent of (a) an employee who

has served with the Company for at least three continuous years and is still so employed when the award is initially made; or (b) an employee who, having served with the Company for at least three continuous years, has retired, or has become totally disabled, or has died. Selection of the winner will be made by the University on the basis of academic standing and promise, interest and participation in school and community affairs, personal qualities, and other factors. Each scholarship will be paid in four annual instalments of \$250 each, subject to satisfactory standing and attendance at the University. Candidates must apply on special forms, which may be obtained from, and must be returned to, the Personnel Department of the Company before May 30th. The application will be forwarded by the Company to the University.

The Canadian Forestry Association (B. C. Branch) Scholarship—This scholarship of \$200 will be awarded to a student who has been active in Junior Forest Warden work, has completed First Year Arts or Grade XIII (Senior Matriculation), and is proceeding to First Year Forestry or Forest Engineering at the University of British Columbia. Students wishing to be considered for this scholarship must apply, before May 31st, to the Dean of Administrative and Inter-Faculty Affairs.

The Canadian Society of Exploration Geophysicists Matriculation Scholarship in Education—This scholarship of \$350 will be awarded to a male student on the basis of high standing in Grade XII or Grade XIII examinations in Mathematics, Physics, and Chemistry. Winners must enter, or have already entered, upon the degree course (secondary field) in Education, with teaching majors in Mathematics, Physics, and/or Chemistry. Application should be made to the Dean of Administrative and Inter-Faculty Affairs, University of British Columbia, by August 1st.

The Chris Spencer Foundation Scholarships for University Entrance—Fifteen scholarships of \$225 each, the gift of the Chris Spencer Foundation, will be awarded to the candidates selected by the University to receive the University Scholarships for University Entrance described on page 430. Through this gift each of the winners will therefore receive a total scholarship of \$400. These supplementary scholarships are subject to the same conditions and regulations as those governing the University Scholarships for University Entrance.

The Chris Spencer Foundation Special Scholarships—Two scholarships, each of the value of \$400 a year and renewable annually for a maximum of five years (to a total of \$2000), are offered to students entering the University of British Columbia or Victoria College from Grades XII or XIII and proceeding to a degree at this University. These scholarships, the gift of the Chris Spencer Foundation, are available only for students whose ordinary private domicile, home, or residence is in the Province of British Columbia. Applicants will be considered, not only on the basis of scholastic ability, but also with respect to extra-curricular activities such as outdoor sports, debating, dramatics, music, etc., and on indication, during the period of high school, of moral force of character and of instincts to lead and take an interest in classmates. Students holding these scholarships in any year of their course will be permitted to retain them for the following year only provided they obtain an average of at least 80% in the sessional examinations or rank in the upper 10% of their class (i.e., the year and faculty in which they are registered). Selection of applicants will be made by a committee representing the Foundation and the University. Applications, on forms obtainable from the office of the Dean of Administrative and Inter-Faculty Affairs, should be received by April 15th, and cannot be accepted after May 1st.

The Col. Victor Spencer Scholarships—Six scholarships of \$300 each,

the gift of Col. Victor Spencer, were provided in 1956-57 for worthy and deserving undergraduates with high standing.

Crown Zellerbach Canada Limited Scholarship No. 1—This scholarship of \$500, offered by the Crown Zellerbach Canada Limited Company, is available annually to sons and daughters (or legal dependents) of employees of Crown Zellerbach Canada Limited, The Richmond Division, Northern Pulpwood Limited, and Badwater Towing Company. Selection of the winner will be made by the Scholarship Committee of the University on the basis of scholastic standing, leadership, citizenship, character, and interest and participation in school and community affairs. The award will be made to a student with full High School Graduation (University Programme) standing who is proceeding to studies at the University of British Columbia. The application forms are available from the Personnel Department of the Company concerned. Completed application forms must be received not later than May 15th.

Crown Zellerbach Canada Limited Scholarship No. 2—This scholarship of \$500, offered by the Crown Zellerbach Canada Limited Company, is available annually to sons and daughters (or legal dependents) of employees of Canadian Western Lumber Company Limited at Fraser Mills, and Canadian Tugboat Company Limited. Selection of the winner will be made by the Scholarship Committee of the University on the basis of scholastic standing, leadership, citizenship, character, and interest and participation in school and community affairs. The award will be made to a student with full High School Graduation (University Programme) standing who is proceeding to studies at the University of British Columbia. The application forms are available from the Personnel Department of Canadian Western Lumber Company Limited at Fraser Mills. Completed application forms must be received not later than May 15th.

The Delta Kappa Gamma Scholarship—As on page 406.

The Faculty Scholarship—A scholarship of approximately \$200, provided by donations from the Faculty, is offered to sons and daughters of Faculty members who obtain high standing in the written examinations for University Entrance and who are not winners of other major awards. The selection of the winner will be made in accordance with the terms laid down for the Chris Spencer Foundation Special Scholarships. Applications must be received not later than May 31st.

General Motors of Canada Limited Scholarships—Under the General Motors of Canada Canadian Scholarship Programme, two scholarships are provided for students from high school beginning studies in Vancouver at the University of British Columbia. The programme is designed to provide young people of limited financial resources, but high scholastic ability, the opportunity to receive benefits of higher education. These scholarships are available to outstanding students selected by the University who are citizens of Canada. Winners who maintain high academic standing are eligible for renewals for three further years. The value of each award each year ranges upward from \$200 a year and is determined by the University on an individual basis. High school students in British Columbia who wish to be considered should obtain the "General Application for Scholarship" form from the Dean of Administrative and Inter-Faculty Affairs, University of British Columbia, Vancouver 8, B. C. The completed form must be returned to the University not later than May 31st. The application should include full information regarding the financial circumstances of the applicant and his family. Intending applicants in British Columbia should write the scholarship examinations conducted by the Department of Education, B. C., in June.

The Inco Scholarships—Two scholarships, the gift of The International Nickel Company of Canada, Limited, are offered annually to students

entering the freshman year at the University. Of these awards one is limited to study in the fields of geology, geophysics, mining, metallurgy, and engineering, and the other is unrestricted as to the field. Each scholarship will cover annually tuition and fees, will allow \$300 to the winner toward books and living expenses, and an unrestricted grant to the University. Awards will be made by the University to financially deserving students on the basis of academic standing and personal qualities. Renewals are subject to satisfactory progress.

The Kiwassa Club of New Westminster Scholarship—A scholarship of \$150, the gift of the Kiwassa Club of New Westminster, will be awarded annually to a woman student resident in the New Westminster area who is entering the University from Grade XII or XIII of high school. The purpose of this award is to give encouragement to a worthy student who has high standing and who needs financial assistance to begin her studies at the University. Applications must be received by the University not later than August 1st.

The Nancy Ryckman Scholarship—As on page 389.

The Owen J. Thomas Scholarship—As on page 407.

The Pacific Brewers' Agents Ltd. Scholarships—Approximately twelve scholarships of \$400 each, provided by Vancouver Breweries Ltd., Lucky Lager Brewing Co. Ltd., and Sicks' Capilano Breweries Ltd., are available annually for students who are resident in British Columbia and who are proceeding directly from Grade XII or Grade XIII to a full course of study at the University of British Columbia. Winners will be selected by the University on the basis of scholastic standing, character, and interest in school and community affairs. Preference will be given to candidates from remoter parts of the Province. To be eligible, candidates must write the full set of scholarship examinations, conducted by the Department of Education in June. Applications must be received by the Dean of Administrative and Inter-Faculty Affairs at the University by May 31st.

The Phrateres Scholarship Fund—From this fund, established and maintained by Theta Chapter of Phrateres, an international organization of college women, a scholarship will be awarded annually to an out-of-town woman student with High School Graduation (University Programme) or Grade XIII (Senior Matriculation) standing who is attending University for the first time. The award will be made to a student of high standing. In making the award, consideration may be given to financial need.

The Plimsoll Club Entrance Scholarships (donated by Pacific Coast Terminals Co. Ltd.)—Two scholarships of \$150 each, the gift of Pacific Coast Terminals Co. Ltd., New Westminster, are offered to students who have completed Grade XII or XIII and who are beginning their studies at the University of British Columbia. These awards are available for students resident in New Westminster or surrounding districts. In selecting the winner consideration will be given not only to academic standing but also to general interest and participation in school and community activities, and to the financial circumstances of those eligible. The names of the winners for these awards will be announced prior to the opening of the University session.

Royal Institution Scholarships for Grade XIII—Six general proficiency scholarships will be awarded on the results of the Grade XIII (Senior Matriculation) examinations:

- (a) \$200 to the candidate of highest standing in the Province;
- (b) \$200 to the candidate of next highest standing in the Province;
- (c) \$200 to the candidate of next highest standing in all school districts of the Province other than School Districts Nos. 39, 40, 41, 44, and 45; and

- (d) \$200 each to the three candidates of next highest standing in School Districts Nos. 1 to 82 inclusive other than Nos. 39, 40, 41, 44, 45 and 61.

These scholarships will be paid only to students in attendance at the University of British Columbia.

Except in the case of a Pharmacy student from Grade XIII enrolling for the required year of practical training, in which case a scholarship will be held over for one year, postponement of these scholarships will be granted only on medical grounds.

Winners of these scholarships must notify the Dean of Administrative and Inter-Faculty Affairs at the University before September 1st of their intention of attending the University during the following session; failing such notification, the winner's rights will lapse.

The Ruth E. Cameron Memorial Scholarship—As a memorial to Ruth E. Cameron, Chief Librarian of New Westminster and for many years a member of the Club, the University Women's Club of New Westminster awards annually a scholarship of \$250 to a woman student proceeding from Grade XII, Grade XIII, or First Year University, to the next year of her course at the University of British Columbia. To be eligible for consideration, an applicant must reside in New Westminster, Burnaby, Coquitlam, or Surrey and have attended a school in these areas for at least the last five months of the school year immediately preceding her admission to the University. In making the award, consideration will be given to the scholastic standing and financial circumstances of applicants. At the discretion of the awarding committee the scholarship may be divided to provide two awards, one of \$150 and the other of \$100. Further information and application forms may be obtained from the office of the Dean of Administrative and Inter-Faculty Affairs. Applications must be received not later than May 31st.

The T. E. and M. E. Ladner Memorial Scholarship—As on page 390.

The Truck Loggers' Association Scholarships—Through a gift of \$250 from the Truck Loggers' Association, two scholarships of equal value are available for students entering First Year Forestry or Forest Engineering. These scholarships will be awarded to students with high standing who are worthy and deserving of encouragement and assistance.

U.B.C. Alumni Association Regional Scholarships—Alumni contributions to the Annual Giving Programme of the U.B.C. Development Fund have made possible the establishment of twelve regional U.B.C. Alumni Association Scholarships of \$250 each. These scholarships are available for students proceeding from Grade XII (High School Graduation, University Programme) or Grade XIII (Senior Matriculation) to the University of British Columbia or Victoria College. One scholarship will be awarded in each of the following regions: (1) East Kootenay; (2) West Kootenay; (3) South Okanagan and Boundary; (4) North Okanagan and Thompson; (5) Skeena; (6) North Central B.C.; (7) Greater Vancouver and Howe Sound; (8) New Westminster and Fraser Valley; (9) Greater Victoria and Lower Vancouver Island; (10) Upper Vancouver Island and Powell River. Two other scholarships will be awarded at large. Winners will be selected by a special committee representing the University and the Alumni Association. Application forms may be obtained from Dean Walter H. Gage, University of B. C., Vancouver 8, B. C., and completed application forms should be received by April 15th, and cannot be accepted after May 1st. All applicants must write a full set of High School Graduation (University Programme) or Grade XIII (Senior Matriculation) examinations conducted by the Department of Education, British Columbia, in June.

Union Carbide Canada Limited Undergraduate Scholarships — These scholarships, provided by Union Carbide Canada Limited, are available for graduates of secondary schools who need or deserve financial support to begin and continue their studies at university and who are interested in future business or industrial careers. Each scholarship has the value of \$500 per annum which will be payable for each year of a complete academic course. To be eligible, an applicant must have good scholastic standing and personal reputation, and must be recommended by his school authorities. Renewal of a scholarship in any year is dependent upon maintenance of high standing. Applications for the scholarship, available for attendance at this University, must be submitted to the Dean of Administrative and Inter-Faculty Affairs, from whom full information may be obtained, not later than May 31st.

University of British Columbia Employees, Local Union No. 116, Scholarship—A scholarship of \$250, gift of the University of British Columbia Employees, Local Union No. 116, is available to sons, daughters, and legal dependents of active members having at least one year's service with the Union. This scholarship will be awarded to a student proceeding from high school to begin studies at the University in a full course leading to a degree. In the selection of the winner, consideration will be given to academic standing, character, interest and participation in school and community affairs, and financial circumstances. Applications, on forms available from the office of the Dean of Administrative and Inter-Faculty Affairs, must be submitted to the University not later than August 1st.

University Scholarships for University Entrance—Fifteen general proficiency scholarships will be awarded on the results of the High School Graduation (University Programme) examinations:

- (a) \$175 to the candidate of highest standing in the Province;
- (b) \$175 to the candidate of next highest standing in the Province; and
- (c) \$175 to the candidate of next highest standing in each of the following areas:
 1. School Districts Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10;
 2. School Districts Nos. 11, 12, 13, 14, 15, 16, 17, and 77;
 3. School Districts Nos. 18, 19, 20, 21, 22, 23, and 78;
 4. School Districts Nos. 24 to 34 inclusive, 75, 76 and 82;
 5. School Districts Nos. 35, 36, 37, 38, and 42;
 6. School District No. 39, Britannia, Gladstone, John Oliver, and Technical High Schools, and any private schools in the area;
 7. School District No. 39, Fairview, King Edward, King George, Kitsilano High Schools, and any private schools in the area;
 8. School District No. 39, Lord Byng, Magee, Prince of Wales High Schools, University Hill High School, and any private schools in the area;
 9. School Districts Nos. 40 and 41;
 10. School Districts Nos. 43, 44, 45, 46, 47, and 48;
 11. School Districts Nos. 49 to 60 inclusive, 80, and 81;
 12. School District No. 61;
 13. School Districts Nos. 62 to 74 inclusive, and 79.

These scholarships will be paid only to students in attendance at the University of British Columbia with the exception that University Entrance scholarships awarded in School Districts 61 to 66 inclusive may be paid to students in attendance at Victoria College.

Postponement of University Entrance scholarships will be granted only on medical grounds.

Winners of these scholarships must notify the Dean of Administrative and Inter-Faculty Affairs before September 1st of their intention of attending the University (or Victoria College, in the case of a winner from School Districts 61 to 66 inclusive) during the following session; failing such notification, the winner's rights will lapse.

The Vancouver Federal Employees Credit Union Harold Pocock Memorial Scholarship—A scholarship of \$250, established by the Vancouver Federal Employees Credit Union in memory of Harold Pocock, first manager and secretary of this Credit Union, is offered to sons, daughters and legal dependents of employees of the Dominion Government residing in the Vancouver area (including the City of Vancouver, the City and District of North Vancouver, and the Municipalities of West Vancouver, Burnaby and Richmond), or of persons who are eligible to become or are members of the Vancouver Federal Employees Credit Union. The scholarship will be awarded to a student completing Grade XII or XIII in high school and proceeding in the fall to the University in a full course leading to a degree. In selecting the winner, consideration will be given to academic standing, ability, and promise in future studies, character, and participation and interest in school and community affairs. Applications, on forms obtainable from the University, must be submitted by August 1st.

The Vancouver Sun Scholarships for Carriers—The Vancouver Sun offers annually two scholarships of \$400 each to students from Grade XII entering the First Year of Faculty of Arts and Science, Agriculture or Education at the University of British Columbia. The terms of the scholarships require that applicants must have been carriers of The Vancouver Sun for at least two years. The scholarships will be awarded to the two applicants who rank highest on the basis of the marks obtained in any year on the written examinations in the scholarship subjects of High School Graduation (University Programme), conducted by the Department of Education in June. The selection of the winners will be made by the University, and applications, accompanied by the service certificate of The Vancouver Sun, must be forwarded to the Dean of Administrative and Inter-Faculty Affairs not later than September 10th. Winners of these scholarships who obtain and maintain First Class standing in succeeding years of their undergraduate course will be eligible until graduation, up to a total of five payments in all, for extra grants of \$400 each year. The winning of this scholarship will not preclude the holder from enjoying the proceeds of another award.

The W. H. MacInnes Entrance Scholarships in Mathematics—Through the generosity of Mr. W. H. MacInnes of Vancouver, scholarships of \$100, \$50, and \$25 respectively are available to the three students entering the University of British Columbia in September with highest standing in Mathematics 91. To be eligible a candidate must write the scholarship examinations conducted in June by the Department of Education, Victoria, B. C. In the event of a tie the award will be made to the qualifying student with highest overall average. Winners of these awards will not be precluded from holding other awards given by the University. Announcement of the winners will be made by the University after the close of the registration period.

The Yarrows Limited Entrance Scholarship—A scholarship of \$1000 for sons, daughters, or legal dependents of employees of Yarrows Limited, Victoria, is offered annually under terms and conditions identical to those of the Burrard Dry Dock Company Limited Scholarship. If the winner so desires, however, attendance at Victoria College will be accepted in lieu of attendance at the University for the first and/or second year of University studies. Candidates must apply on special forms which may be obtained from, and must be returned to Yarrows Limited before May 30th. Selection of the winner will be made by the University in consultation with Victoria College.

Extension Courses and Miscellaneous

The Ben Hill-Tout Memorial Fund Prize—See page 468.

Freight Traffic Management Prizes—The Education Committee of the Canadian Industrial Traffic League, British Columbia, offers a prize for the highest ranking student in each year of the three-year evening course on Freight Traffic Management. The prize in each of the First and Second Years will be the tuition fee for the following year. The prize in the Third Year will be \$25.

The University Chapter, I.O.D.E., Prize in Ceramics—With the purpose of furthering study of Fine Arts at the University, a prize of \$50, the gift of the University Chapter, I.O.D.E., was offered in the Extension Classes in Ceramics for the best work done in that field during the session 1956-57. Selection of the winner was made by the Scholarship Committee of the University in consultation with the Fine Arts Committee and the Department of Extension.

Vancouver Festival Society Scholarships—As on page 433.

In Summer Session

The Dr. H. T. J. Coleman Scholarship—This scholarship of \$100 is offered annually in the Summer Session, in honour of Dr. H. T. J. Coleman, who contributed greatly to the development of the Summer School at the University. The award will be made by the Scholarship Committee to a student in the Third or higher year who has an outstanding record in one or more of the fields of psychology, philosophy, and education.

The East Asiatic Company Scholarship—A scholarship of \$50, donated by the East Asiatic Company, was made available in the Summer Session, 1956, to a student attending the classes in Lieders and Concert Literature.

The Gilbert Tucker Memorial Summer Session Prize—An annual prize of \$35 is offered by the Summer Session Association in memory of Professor Gilbert Tucker, who served this University as scholar, historian, and teacher. The award will be made to the student enrolled in a history course in Summer Session, who, in the opinion of the Department of History, is the most outstanding. It is available for students registered in the Third or a higher year who were not in attendance in the previous winter session.

The Leon and Thea Koerner Foundation Scholarships in Creative Writing—From a grant of \$500 from the Leon and Thea Koerner Foundation, scholarships in Creative Writing were offered to students in the Summer Session course, 1956, and in the regular session, 1956-57.

The Leon and Thea Koerner Foundation Summer Session Awards—From a grant made by the Leon and Thea Koerner Foundation, scholarships will be awarded to students taking work in the Summer School of the Theatre, the Summer School of Music and Arts and Crafts, 1957.

The Summer Session Association Scholarship No. 1—A scholarship of \$75, given by the Summer Session Association, will be awarded at the close of the Summer Session to the Summer Session student who in that session completes the Second Year with the highest standing. To be eligible a student must have taken his entire Second Year in the University of British Columbia Summer Session, extra-session classes, or correspondence courses and must be proceeding to a higher year in the University of British Columbia. In order that all candidates may be considered, students in the category covered by this award are asked to submit their names to the Dean of Administrative and Inter-Faculty Affairs before the last day of Summer School.

The Summer Session Association Scholarship No. 2—The sum of \$75 will be paid annually as a scholarship for study at the University of British Columbia. The scholarship is open to any Summer Session student who has completed the first two years' work, the second of which has been taken wholly by Summer Session, extra-session classes, or correspondence courses, and who is proceeding to a higher year in the University of British Columbia by means of Summer Session. This award will be made to the student who completes in that session the Second Year of his university work with the second highest standing. Only those students who have taken a full course of six units in each Summer Session will be considered eligible for this scholarship. The work of the Second Year must be completed in a maximum of four summer sessions. In order that all candidates may be considered, students in the category covered by this award are asked to submit their names to the Dean of Administrative and Inter-Faculty Affairs before the last day of Summer School.

Vancouver Festival Society Scholarships—Scholarships to the total of \$2500 in the Summer School of the Opera and the Summer School of the Theatre, have been donated to the Department of University Extension by The Vancouver Festival Society for 1957.

The White Lunch Limited Scholarship—A scholarship of \$50, donated by White Lunch Limited, was made available in the Summer Session, 1956, to a student attending the classes in Lieder and Concert Literature.

STUDENT ASSISTANCE

Students who require financial assistance to continue or begin their studies at the University of British Columbia are referred to the sections of this Calendar describing the Self-Help Programme (page 60), Bursaries (in the next section), Loans (page 452), and the Department of Education Assistance Funds (see page 434). Women students are advised to consult the Dean of Women.

BURSARIES

For the Winter Session

Applications for bursaries awarded by the University and tenable in the Winter Session must be received by the Dean of Administrative and Inter-Faculty Affairs not later than August 1st. Application forms may be obtained at the office of the Dean of Administrative and Inter-Faculty Affairs.

Unless announced otherwise in the Calendar description, bursaries are awarded only to undergraduates who are beginning or continuing a full course of study at the University of British Columbia, and in special cases, to graduates taking the one-year Teacher Training Course or Social Work at this University. To be eligible for a bursary, a student must normally show evidence of financial need and have at least Second Class standing in the full year's work most recently taken.

A student applying for a Special Bursary (described below) will automatically be considered as an applicant for any other bursary given by the University. Only one bursary application is therefore required for the session. Separate application must be made, however, for assistance from the Department of Education Assistance Fund and the Department of Education Assistance Fund for Teacher Training. Application forms for this assistance, obtainable from the Department of Education, Victoria, B. C., must be received by the Department of Education not later than August 1st.

Special Bursaries—For the session 1957-58 a Special Bursaries Fund has been made available by the Board of Governors to enable students to attend the University who would not otherwise be able to do so. To be eligible for an award from this fund a student must have attained at least Second Class standing in the examinations last written, and must give evidence of need. Applications, on forms available at the office of the Dean of Administrative and Inter-Faculty Affairs, must be received not later than August 1st.

Department of Education Assistance—In order to assist students of academic merit, who without financial aid cannot proceed with their education beyond the level of the secondary school, the Provincial Government has available money for loans, with Dominion Government participation, and for bursaries:

Loans:

A student may secure an interest-free loan under the following conditions:

1. By giving evidence of good scholarship (i.e. attach high school or university transcripts of marks).
2. By giving evidence of financial need.
3. By agreeing to repay the loan within three years of the completion of training. Should the loan not be repaid within that period interest will be chargeable at $4\frac{1}{2}\%$ per annum on the unpaid balance of the loan. If the borrower discontinues training before its completion the loan is repayable beginning immediately and with $4\frac{1}{2}\%$ interest as from the date of discontinuance. Repayment of all loans must be guaranteed by parent or guardian and one other person.

Bursaries:

A limited number of bursaries may also be granted to students. These may be granted in lieu of loans or to supplement loans in certain cases where, in the opinion of the committee, good scholarship and financial need may warrant such assistance.

Applications for loans or bursaries, on forms available from the Department of Education, Victoria, B. C., must be submitted not later than August 1st.

Department of Education Assistance for Teacher Training—In view of the fact that the Province of British Columbia needs over 1,700 new teachers annually, the Government of the Province of British Columbia has established a fund to assist men and women of good scholarship, character, aptitude and personality to train for the profession of teaching.

Loans:
An Education student may secure an interest-free loan under the following conditions:

1. By giving evidence of good scholarship (i.e. attach a copy of high school or university transcripts of marks).
2. By giving evidence of financial need.
3. By agreeing to repay the loan within three years of the completion of training. Should the loan not be repaid within that period interest will be chargeable at $4\frac{1}{2}\%$ per annum on the unpaid balance of the loan. If the borrower discontinues training before its completion the loan is repayable beginning immediately and with $4\frac{1}{2}\%$ interest as from the date of discontinuance. Repayment of all loans must be guaranteed by parent or guardian and one other person.
4. By agreeing to teach in the public school system of British Columbia for three years after graduation from teacher training.

Bursaries:

A limited number of bursaries may also be granted to Education students at the College of Education of the University and at Victoria College. These may be granted in lieu of loans, or to supplement loans in certain cases, where, in the opinion of the committee, good scholarship and financial need may warrant such assistance.

Applications for bursaries or loans, on forms available from the Department of Education, Victoria, B. C., must be submitted not later than August 1st.

The Admiral Jellicoe Chapter, I.O.D.E., Bursary—This award has been given to the University under the following terms: "A bursary of \$100, the gift of the Admiral Jellicoe Chapter, I.O.D.E., is available for sons or daughters of Canadians who made the supreme sacrifice or were disabled in the First or Second World Wars. High scholastic standing and financial need of students to be considered".

The Admiral Jellicoe Chapter, I.O.D.E. Special Bursary—A bursary of \$100, the gift of the Admiral Jellicoe Chapter, I.O.D.E., is offered in the session 1957-58 to students whose parents are Canadian or come from the British Isles. The award will be made to a student who is deserving of financial assistance and has good academic standing.

Agriculture Bursary (Anonymous) — This bursary of \$50 is offered in the session 1957-58 to assist a student in Agriculture from a rural area other than the Fraser Valley, who has completed at least the First Year.

The Albert O. Koch Bursary—This bursary of annual value \$100, the gift of Mr. and Mrs. Albert O. Koch, will be awarded to a student who has good scholastic standing and who, without financial assistance, will be unable to continue studies at the University.

The Alliance Française Bursary—A bursary of \$100, the gift of the Alliance Française, will be awarded to a student proceeding to the Third Year and specializing in French. The bursary will be awarded on the basis of merit and need.

The Allied Officers' Auxiliary Bursary—To commemorate the services and sacrifices of members of the armed forces and the merchant navies of the Allied Nations, the Allied Officers' Club Auxiliary has established a bursary of the annual value of \$90, open to students in any year and faculty. This bursary is available for a veteran of the Second World War or for the son or daughter of a veteran. The award will be made on the basis of scholastic standing and financial need.

The Alvin Cunningham Bursary—A bursary of \$200, the gift of Alvin Cunningham, is offered annually to a student entering the Second or Third Year of the course in Pharmacy. The award will be made by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries, on the recommendation of the Dean of the Faculty, to a student who has shown definite ability and has need of financial assistance.

The A. Max Charkow Bursary—A bursary of \$100, the gift of Mr. A. Max Charkow, will be awarded annually to a student in the Faculty of Agriculture who has good scholastic standing and who is deserving of financial assistance. It will be awarded to an undergraduate specializing in the field of poultry science or poultry nutrition.

The American Woman's Club Bursary—A bursary of \$250, given by the American Woman's Club of Vancouver, will be available in the session 1957-58 to assist a woman undergraduate who has completed at least one year in Arts and Science with satisfactory standing, and who cannot otherwise continue her course.

The A. Nathan Fox Bursary—This bursary of \$25, the gift of Mr. and Mrs. A. Nathan Fox of Vancouver, will be awarded in the session 1957-58

to an undergraduate in any year and faculty who has good scholastic standing and is in need of financial assistance.

The Anne S. Campbell Bursaries—The annual income from a fund bequeathed by the late Anne S. Campbell will be used to provide bursaries for undergraduates who show qualities of leadership and who need financial assistance.

The A. Rothstein Memorial Bursary—This bursary of annual value of \$100, in memory of the late Mr. A. Rothstein, will be awarded to an undergraduate in any year or faculty who has good scholastic standing and is in need of financial assistance.

B. C. Chapter of Alpha Delta Phi Fraternity Bursary—A bursary of \$50, the gift of the B. C. Chapter of Alpha Delta Phi Fraternity, is available for a male undergraduate in any year and faculty who has good academic standing and needs financial assistance to continue at University.

The B. C. Electric Veterans' Association Bursaries—Two bursaries of \$100 each, one for a man and one for a woman, are offered by the B. C. Electric Veterans' Association to students completing Grade XII (High School Graduation, University Programme) in June and proceeding in the fall to First Year studies at this University. To be eligible for consideration, an applicant must be the son or daughter of a bona-fide active service veteran. The father or mother of an applicant must be currently employed by (or have been employed by at the time of death, if now deceased), or be a pensioned employee of, the B. C. Electric Railway Company, Limited, or its associated and subsidiary companies on the Mainland. In the selection of winners, financial need, weighed against scholarship and all-round achievement, will be a major consideration. Further details may be obtained from the Dean of Administrative and Inter-Faculty Affairs, to whom application must be made before August 1st.

The B. C. Government Employees' Association Bursaries—Two bursaries of \$150 each, the gift of the B. C. Government Employees' Association, are offered annually to sons and daughters of members, or of deceased members, and to members themselves. They will be awarded, on the basis of scholastic standing and financial need, to students who are beginning or continuing their undergraduate studies at the University of British Columbia or Victoria College. Selection of the winners will be made by the University in consultation with the Association. Further details may be obtained by writing to the Dean of Administrative and Inter-Faculty Affairs.

The B. C. Society of Internal Medicine Bursary—A bursary of \$450, the gift of the B. C. Society of Internal Medicine, will be awarded annually to a student or students in the Faculty of Medicine who have good scholastic standing and need financial assistance. The award is open to dependents of deceased physicians and to students proceeding to a career in fundamental medical science, or showing aptitude for and interest in a career in internal medicine. Preference will be given to students in the Final Year.

The Best Mimeograph Co. Ltd. Bursary in Law—Best Mimeograph Co. Ltd., Vancouver, offers annually to a student in the Faculty of Law a bursary of \$150 together with a copy of each of the case books produced by the Company and required by the student in the year of the award. The award will be made to a student who is financially deserving, and has attained high standing. Preference will be given to applicants entering the Final Year.

Beta Theta Chapter of Alpha Phi Sorority Bursary—A bursary of \$50, the gift of the Beta Theta Chapter of Alpha Phi Sorority, is available annually for a woman undergraduate student in any year and faculty. The

award will be made to a student on the basis of scholastic standing and need of financial assistance.

Beta Kappa Chapter of Alpha Delta Pi Sorority Bursary—A bursary of \$50, the gift of the Beta Kappa Chapter of Alpha Delta Pi Sorority, will be awarded to a woman undergraduate who has good academic standing and is deserving of financial assistance.

The Brissenden Bursary—A bursary of \$250, the gift of P. R. Brissenden, Esq., Q.C., is offered in alternate years. It will be awarded to a student in any year and faculty whose standing is satisfactory and who could not continue his studies at the University without financial assistance. The next award will be made in August, 1957.

British Columbia Forest Products Limited Bursaries—British Columbia Forest Products Limited has made available the sum of \$2500 annually to provide bursaries for legal dependents of employees of the Company, who, by June 15th of the year in which the award is made, have had at least one year's service with the Company. These bursaries are open to undergraduates beginning or continuing a course of study at the University. Residents of Vancouver Island may attend Victoria College. To be eligible, an applicant must have good scholastic standing and financial need. Fuller information and application forms may be obtained from the Dean of Administrative and Inter-Faculty Affairs, University of British Columbia, Vancouver 8, Canada. The application form must state the name and address of the applicant's parent or legal guardian and details of his or her service with the Company. The completed application form must be received by the University not later than August 1st.

The British Columbia Institute of Agrologists Bursary—A bursary of \$125 is offered by the Institute of Agrologists to a student entering the degree course in Agriculture for the first time. This bursary will be awarded to an applicant who has a record of good scholastic standing and has need of financial assistance. In choosing the recipient, consideration will be given to farm background and participation in community activities. Winners of this bursary will be selected by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries, after consultation with the Bursary Committee of the Institute of Agrologists and the Dean of the Faculty of Agriculture. Candidates must have their applications approved by a resident Agrologist in the district where the application is made. Applications, on forms available from the Dean of Administrative and Inter-Faculty Affairs, University of British Columbia, Vancouver 8, Canada, must be received by the University not later than August 1st. The application form should contain an outline of the applicant's record in 4-H Club work or community activities and an indication of his background in farming.

The British Columbia Probation and Corrections Association Bursary—This bursary of \$50, the gift of the British Columbia Probation and Corrections Association, is available for a deserving student in the field of criminology. The award will be made to a student who is in need of financial assistance, has good scholastic standing, and is at least majoring in the field of criminology.

The British Columbia Psychological Association Bursary—A bursary of \$50, the gift of the British Columbia Psychological Association, is available for a student taking an Honours Course in Psychology. This award will be made to a student completing the Third or Fourth Year of the course and proceeding to the Final Year. To be eligible, the applicant must have good scholastic standing and be in need of financial assistance.

The British Columbia Surgical Society Bursary Fund—Through annual contributions of \$300 the British Columbia Surgical Society has established

a fund to assist promising and deserving students in the Faculty of Medicine. Students receiving assistance are asked to assume a moral obligation to reimburse the Fund on completion of their training.

The British Columbia Tuberculosis Society Christmas Seal Bursary Fund—Through a grant from the British Columbia Tuberculosis Society, a fund has been established to assist selected nurses to enter a programme of study in the School of Nursing at the University of British Columbia. Students selected to receive assistance will be required to undertake a programme emphasizing tuberculosis problems, and on completion of their training, to work with the Division of Tuberculosis Control. Grants, which may be in the form of bursaries or loans, will be made on the recommendation of the Joint Faculty Committee on Prizes, Scholarships and Bursaries in consultation with the School of Nursing. Information should be obtained from the Director of the School of Nursing.

Bursary (Anonymous)—A bursary of \$100, provided by an anonymous donor, is available in the session 1957-58 for a promising and deserving student. Without legal obligation, the recipient is expected to repay this bursary if and when circumstances permit.

Bursary in Medicine—This bursary of \$50, provided by an anonymous donor, will be used to give financial assistance to a worthy and deserving student in the Faculty of Medicine.

The Canadian Cancer Society, British Columbia Division, Bursary—This bursary of \$500, the gift of the Canadian Cancer Society, British Columbia Division, will be available for a student in the Faculty of Medicine who is worthy and deserving of financial assistance. To be eligible for this award an applicant must be a graduate of a high school in British Columbia. Those students who are assisted, although not required to undertake a legal obligation, are asked to assume a moral responsibility to reimburse the fund after completion of their medical studies.

The Canadian Foundation for the Advancement of Pharmacy Bursary—A bursary of \$250, the gift of the Canadian Foundation for the Advancement of Pharmacy, will be awarded annually to a student entering the First Year of the Pharmacy course who has a superior academic record and is deserving of financial assistance.

The Canadian Medical Association, British Columbia Division, Bursary Fund—This fund, established and maintained by annual contributions of \$1000 from the Canadian Medical Association, British Columbia Division, provides financial assistance for undergraduate students in the Faculty of Medicine. Those who are assisted are asked to accept a moral obligation to reimburse the Fund when they are able to do so.

The Canadian Officers' Training Corps (C.O.T.C.) Bursaries—Bursaries to the total of \$300, each ranging in value from \$50 to \$100, are available to members of the Corps continuing their training in the fall with the C.O.T.C. on the campus. These awards are provided to give a measure of encouragement to students deserving of assistance who have good standing, not only in their academic studies but also in the Corps programme. In selecting winners consideration will therefore be given to financial need, academic standing, and record of achievement in the C.O.T.C. Selection will be made by the University, in consultation with the Commanding Officer. Applications, on forms available from the Dean of Administrative and Inter-Faculty Affairs, must be submitted to the University not later than August 1st.

The Canadian Scottish Chapter, I.O.D.E., Bursary in Education—A bursary of \$100, the gift of the Canadian Scottish Chapter, I.O.D.E. will be awarded to a woman student in the First Year of Education. This bursary will be given to a student who needs financial assistance to begin

her studies. In considering applicants, attention will be paid to academic standing, personal qualities, character, and aptitude for teaching.

The Captain LeRoy Memorial Bursary—This bursary of the annual value of \$150 was given by the Universities Service Club in memory of their comrades who fell in the First Great War. It is named after Captain O. E. LeRoy, who commanded the overseas contingent from this University and who was killed at Passchendaele in 1917. It will be awarded to a student, or students, requiring financial assistance to enable him, or them, to attend the University. For this purpose it may be awarded to a matriculant, to a student of any year, or to a graduate student of the University proceeding to graduate work in this or any approved university. In making the award preference will be given first to returned soldiers, then to the dependents of soldiers, and finally to suitable candidates from the student body at large. Applications must contain a statement of the academic record and special circumstances of the applicant, with two supporting references, and, in the case of the preferred categories, of the war record of the soldier.

The Carr Bursary—This bursary of the annual value of \$100, donated by Ernest C. Carr, Chairman of the Milk Board of the Province of British Columbia, will be awarded to a student who completes the Third Year of his course in Agriculture and is proceeding to the Fourth Year, the Year in which the bursary shall be enjoyed. To be eligible, candidates must be majoring in Agricultural Economics or in Dairying. The bursary will be awarded to a student who submits evidence of special interest in the economics of the market milk industry and who is willing to undertake at least 1½ units of directed study in this field in his Final Year. In making the award, consideration will be given to the financial need of the applicant.

The Chilliwack Rotary Club Bursary Fund—This fund, established and maintained by the Chilliwack Rotary Club through annual donations of \$300, provides assistance in the form of bursaries, for worthy and deserving students in the Chilliwack area who are proceeding to studies at the University of British Columbia. Selection of the winners will be made by a committee of the Club, in consultation with the principals of the local high schools, and the University. In order to provide assistance for as many as possible in the future, those who receive awards will be asked to assume a moral obligation to reimburse the fund when they have graduated.

The Coquitlam Farmers' Institute Bursaries—Two bursaries of \$300 each, the gift of the Coquitlam Farmers' Institute are available annually in the Faculty of Agriculture. One award will be made to a student with good academic standing who is entering the Third Year of the General Course or the Fourth Year of the Honours Course, and the other to a student entering the Final Year. To be eligible for either award candidates must be in need of financial assistance to continue their studies.

The Coronation Bursary—This bursary of \$100, the gift of the Provincial Chapter of British Columbia, I.O.D.E., will be available in the session 1957-58. The donation will be used for a student who has good scholastic standing and is deserving of financial assistance. The award will be made after consultation with the Provincial Educational Secretary and the Provincial President, I.O.D.E.

The Coronation Chapter, I.O.D.E., Bursary—A bursary of \$75, the gift of the Coronation Chapter, I.O.D.E., will be awarded to a woman student proceeding from high school to First Year studies at the University. It will be awarded to a student who needs financial assistance and whose qualities of scholarship and character give promise of service to the Commonwealth and Empire.

The Dave Franks Bursary—This bursary of \$40, the gift of Mr. and Mrs. Dave Franks of Vancouver, will be awarded to an undergraduate in any year or faculty who has good scholastic standing and is in need of financial assistance.

The David Thom Bursaries—From the funds of the David Thom Estate a sum of \$300 is available annually for the following bursaries:

1. A sum of \$100 for the student who has passed Grade XII or Grade XIII with the highest standing and who is registered for the first time in the Faculty of Agriculture. In the awarding of this bursary, regulation 8 under General Regulations for Medals, Scholarships, Prizes, and Bursaries does not apply.
2. A sum of \$75 for a student who has satisfactorily completed the work of the First Year in Agriculture and is proceeding to a higher year in that Faculty.
3. A sum of \$75 for a student who has satisfactorily completed the work of the Third Year in Agriculture and is proceeding to the Fourth Year in that Faculty.

Delta Gamma Bursary For the Blind—A bursary of \$100, given by the Delta Gamma Fraternity, will be awarded to a blind student requiring financial assistance to enable him or her to enter the University or to proceed to further studies. The award will be made by the Senate upon recommendation of the Joint Faculty Committee on Prizes, Scholarships, and Bursaries acting in consultation with the Principal of the B. C. School for the Deaf and Blind, the Superintendent of the Canadian National Institute for the Blind of Vancouver, and an accredited representative of Delta Gamma Fraternity.

The Delta Gamma Chapter of Delta Phi Epsilon Sorority Bursary—A bursary of \$50, the gift of the Delta Gamma Chapter of Delta Phi Epsilon Sorority, is available annually for a woman undergraduate in any year and faculty. The award will be made to a student on the basis of scholastic standing and need of financial assistance.

Delta Zeta Chapter of Alpha Gamma Delta Sorority Bursary—A bursary of \$50, the gift of the Delta Zeta Chapter of Alpha Gamma Delta Sorority, is available annually for a woman undergraduate student in any year and faculty. The award will be made to a student on the basis of scholastic standing and need of financial aid.

The Donald Buckland Memorial Bursary Fund for the Blind—In memory of Donald Channing Buckland (1917-1956), a graduate of this University and a distinguished member of its Faculty, and in tribute to his scholarship, unflinching devotion to duty, and especially to his courage when a few years before his untimely death, he was himself overtaken by blindness, the Canadian National Institute for the Blind has established a fund to assist and encourage blind students. This fund will be administered by a special committee representing the Institute and the University, and will be used to assist students proceeding to studies beyond the level of secondary school. Awards will be made only to those who show evidence of ability and promise.

The Dr. A. B. Greenberg Bursary—This bursary of \$75, the gift of Dr. and Mrs. A. B. Greenberg of Vancouver, is available for a student who is beginning or continuing his studies in the Faculty of Medicine toward the M.D. degree. The award will be made to a student who has obtained high scholastic standing and who, without financial assistance, would be unable to continue his studies.

The Elizabeth Dobeson Bursary—The sum of \$200, given by the Bastion Chapter of the Imperial Order Daughters of the Empire, will be available

in the session 1957-58 to provide bursaries for student veterans, or dependents of veterans, from Nanaimo. These bursaries, which are open to students in any year and faculty, will be awarded on the basis of ability and need of financial assistance.

The Ellen Ethel McHattie Memorial Bursary—A bursary of \$300, given by Mr. C. T. McHattie in memory of his wife, Ellen Ethel McHattie, is available annually for a graduate registered in the Social Work course, or for an undergraduate in the Second, Third, or Fourth Year of Arts and Science who is planning to enter the Social Work course. To be eligible for this award, an applicant must have financial need and high scholastic standing.

The Elsie Scobee Carpenter Memorial Bursary—A bursary of \$100, given by the Vancouver Quota Club in memory of Elsie Scobee Carpenter, a beloved charter member, is available annually for a woman student who has completed at least two years in Commerce and is proceeding to further work in that course. Should no student in Commerce be able to qualify, the bursary will be available for a student whose major work is in Economics. The award will be made to a student who has high scholastic standing and is in need of financial assistance.

The Engineers' Wives' Association Bursary—This bursary of \$200, provided by a donation from the Engineers' Wives' Association, will be awarded to an undergraduate student in engineering who has good scholastic standing and who, without financial assistance, will be unable to continue his course.

The Esmond Lando Bursary—A bursary of \$100, the gift of Mr. Esmond Lando, will be available annually to a student in Commerce. The award will be made to a student with a good academic record who shows promise in his field of studies, and who, without financial assistance, would be unable to continue with his studies.

The Faculty Women's Club Bursary—A bursary of the value of \$125, given by the Faculty Women's Club of the University of British Columbia, will be awarded to a woman student who has completed the first two years of university work and is proceeding to the next year of her course. The student to whom the award is made must have scholastic ability and need of financial assistance.

The Flying Officer Reverend George Robert Pringle Memorial Bursary—A bursary of the annual value of \$250, endowed by friends and associates, in memory of the late Flying Officer Reverend George Robert Pringle, a much beloved graduate of outstanding Christian character and athletic ability who was killed on January 24th, 1943, while on active service overseas, will be awarded to a student who has completed two years at this University and has registered at the University for further study. To be eligible for this award the student must show evidence of academic ability, sterling, unselfish character, and active participation and leadership in University sport. The award will be made in the fall on the recommendation of the Joint Faculty Committee on Prizes, Scholarships, and Bursaries, in consultation with interested members of faculty.

The Fort Camp Bursary Fund—To provide assistance for needy students, the residents of Fort Camp, University of British Columbia, at a general meeting held in November, 1951, initiated a fund at the University by contributing 25 per cent of their current year's net canteen profits. The annual donation will be used to provide bursaries for students in attendance during the Winter Session.

The Frances Milburn P.E.O. Bursary—A bursary of \$225, given by the Vancouver Chapters of the P. E. O. Sisterhood in memory of the late Frances Milburn, will be available for the session 1957-58 to assist a

woman undergraduate who has completed at least one year in Arts and Science with high standing in English, and who could not otherwise continue her course. The award will be made on the recommendation of the Dean of Women.

The Fraser Valley Milk Producers' Association Entrance Bursary for Agriculture—A bursary of \$300, gift of the Fraser Valley Milk Producers' Association, is available annually to students who are entering the Faculty of Agriculture for the first time and who have graduated from any high school in the Province of British Columbia. The award will be made to a deserving and promising student. Applicants will be considered on the basis of qualities of character and leadership as indicated by their interest in, and contribution to, school and community affairs.

The Fraser Valley Milk Producers' Association Bursary in Dairy Technology—A bursary of \$500, the gift of the Fraser Valley Milk Producers' Association, is offered annually to a student entering Third Year Agriculture and specializing in dairy technology. The award will be made to a student who has a special interest in a career in the dairy industry. In addition to the bursary, the winner may be given, between the Third and Fourth Years, the opportunity of summer employment in some phase of the Association's operations. Should no Third Year applicant be considered suitable, the bursary may be offered to a student entering the Fourth Year.

The Freeman, Freeman, Silvers & Koffman Bursary in Law—This bursary of \$100, the gift of Messrs. Freeman, Freeman, Silvers & Koffman, is available annually for a student registered in the Faculty of Law. It will be awarded to a student who has good scholastic standing and is worthy and deserving of financial assistance.

Gamma Phi Beta Bursary—A bursary of \$100, the gift of the Alpha Lambda Chapter of Gamma Phi Beta Sorority, will be awarded annually to a student in any year of the Home Economics course. To be eligible for this award a student must have financial need and high scholastic standing.

Imperial Industries Teacher Training Bursaries—Five bursaries of \$400 each, the gift of Imperial Industries Limited, Vancouver, are available for students entering the Teacher Training course in the fall. In selecting the recipients for these awards consideration will be given not only to the financial circumstances of those who apply but also to their character and personal qualities, their academic standing, and their interest in and aptitude for teaching.

The Institute of Chartered Accountants of British Columbia Bursary—A bursary of \$100, the gift of the Institute of Chartered Accountants of British Columbia, will be awarded at the discretion of the Dean of Commerce and Business Administration to a student registered in the Second Year of the accounting option and proceeding to the Third Year. Selection of the winner will be made on the basis of scholastic standing and record.

The International Brotherhood of Electrical Workers (Local 213) Bursary—This bursary of \$100, the gift of the International Brotherhood of Electrical Workers, Local 213, has been donated to assist a deserving student who, without financial help, would be unable to begin or continue his University studies. In making the award, preference will be given to members of the Union or their dependents.

The Joe Satanov Bursary—This bursary of \$25, the gift of Mr. and Mrs. Joe Satanov of Vancouver, will be awarded to an undergraduate in any year or faculty who has good scholastic standing and is in need of financial assistance.

The John MacRae Memorial Bursary—A bursary of \$175 will be awarded annually from the proceeds of an endowment made by Mrs. John MacRae to commemorate the ideals of her husband, who was among the early prac-

tioners of pharmacy in this community. The award will be made to a student of good academic standing in the Faculty of Pharmacy who is in need of financial assistance and whose qualities of character indicate that he will regard his profession as a means of public service. It is the donor's hope that the recipient, without obligation, will in due course assist others in a similar manner.

The Jonathan Rogers Awards—The annual income from a fund bequeathed by the late Jonathan Rogers will be used to provide scholarships for undergraduates who require financial assistance and who have high scholastic standing. Selection of the recipients will be made by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries in accordance with the terms of the bequest.

Kappa Kappa Gamma Alumnae Bursary No. 1—A bursary of \$100, provided annually from the proceeds of an endowment fund donated by the Alumnae of Kappa Kappa Gamma, is offered annually to a woman undergraduate in any year and faculty who has good scholastic standing and has need of financial assistance. The award will be made by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries, in consultation with the Dean of Women.

Kappa Kappa Gamma Alumnae Bursary No. 2—A bursary of \$200, provided annually by the Alumnae of Kappa Kappa Gamma, is offered to a woman undergraduate in any year and faculty who has good scholastic standing and has need of financial assistance. The award will be made by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries, in consultation with the Dean of Women.

The Katznelson Bursary—This bursary of \$25, the gift of Mr. and Mrs. K. Katznelson of Vancouver, will be awarded to an undergraduate who is financially deserving and has good scholastic standing.

The Kerrisdale Chapter, I.O.D.E., Bursary—This bursary of \$75, the gift of the Kerrisdale Chapter, I.O.D.E., will be awarded to a student who has good scholastic standing and is in need of financial assistance.

The Ketchum Manufacturing Company, Limited, Bursary—A bursary of \$50, gift of the Ketchum Manufacturing Company, Limited, Ottawa, will be available in the session 1957-58 for a student in the field of Animal Husbandry. The award will be made to a worthy student who has satisfactory academic standing.

The Khaki University and Young Men's Christian Association Memorial Fund Bursaries—A sum of money given to the University by the administrators of the Khaki University of Canada provides a fund from which are awarded annually five bursaries of the value of \$100 each, known as the Khaki University and Young Men's Christian Association Memorial Bursaries. Under conditions specified by the donors these bursaries may be used for undergraduate purposes only, and in making the awards a preference is given to the sons and daughters of soldiers of the First Great War. The financial necessities of candidates are also taken into account. To be eligible for an award a soldier's dependent must obtain at least Second Class standing, i.e., 65 per cent.; for all others 75 per cent. is required. Dependents of soldiers and others who have attained the standing as stated above and who are in need of financial assistance should apply not later than August 1st. These bursaries are also open to students from Victoria College proceeding to a course of study in the University.

The Ladies Pharmaceutical Auxiliary Bursary in Pharmacy—A bursary of \$100, the gift of the Ladies Pharmaceutical Auxiliary, Vancouver, B.C., is available annually in the Faculty of Pharmacy. This bursary will be awarded to a student with a good academic record who, without financial assistance, would be unable to begin or continue his studies in the Faculty of Pharmacy.

The Lady Laurier Club Bursary—A bursary of \$100, given by the Lady Laurier Club of Vancouver, will be awarded to a woman undergraduate who has completed at least two years of her undergraduate studies and is proceeding to a higher year. The award will be made on the basis of scholastic standing and financial need.

The Lieut.-Col. C. C. Merritt, V.C., Chapter, I.O.D.E. Bursary—This bursary of \$75, the gift of the Lieut.-Col. C. C. Merritt, V.C., Chapter, I.O.D.E., will be available for a student entering the Third or Fourth Year in the Faculty of Medicine. It will be awarded to a student who needs and merits financial assistance.

The Lighthall Memorial Bursary—A bursary of \$50, given by Sigma Phi Delta Fraternity in memory of Professor A. Lighthall, a member of the Department of Civil Engineering of this University from 1920 to 1945, will be available annually for a male undergraduate in any year of the Faculty of Applied Science. The award will be made to a student who has good scholastic standing and who, without financial assistance, would be unable to continue his course.

The Lions' Ladies Club Bursary—This bursary of \$200, the gift of the Lions' Ladies Club of Vancouver, will be available for a student who is continuing with the work in the Second Year of the course in Social Work and needs financial assistance. Preference will be given to a student interested in the social problems of older citizens. The award will be made through the Joint Faculty Committee on Prizes, Scholarships, and Bursaries in consultation with the School of Social Work.

The Louis Toban Bursary—A bursary of \$100, the gift of Louis Toban, is available annually for a student entering the Second Year of the course in Pharmacy. The award will be made on the recommendation of the Dean of the Faculty to a student who has shown definite ability and has need of financial assistance.

The Max Freeman Bursary—This bursary of \$25, the gift of Mr. Max Freeman of Vancouver, will be awarded to an undergraduate who is financially deserving and has good scholastic standing.

The M. B. Cohen Memorial Bursary—This bursary of the annual value of \$25, the gift of Mrs. M. B. Cohen of Vancouver, will be awarded to an undergraduate in any year or faculty who has good scholastic standing and is in need of financial assistance.

The Medical Ball Bursary Fund—From this fund, established and maintained by students in the Faculty of Medicine from proceeds of the Annual Medical Ball, a number of bursaries will be made available every year. These bursaries are awarded to medical students at this University who are in need of financial assistance.

The Mildred Britton Brock Chapter, I.O.D.E., Bursary—A bursary of \$50, the gift of the Mildred Britton Brock Chapter, I.O.D.E., is offered to students who have completed First Year University or Senior Matriculation studies and are entering the Second Year of University work. The award will be made to a student who shows promise and needs financial assistance to continue his or her studies.

The Mildred Brock Memorial Bursary—This bursary of \$75, established by Delta Gamma Fraternity in memory of Mrs. Mildred Brock, wife of the late R. W. Brock, Dean of Applied Science, serves to pay tribute to her personal charm, high ideals, sympathetic understanding, and qualities which were an inspiration to all students. It will be available for a woman student of high scholastic standing who has completed at least two years of her undergraduate studies and is proceeding to a higher year, or, if a graduate, to the Teacher Training or Social Work Course.

Mink Breeders' Association Bursaries—Bursaries to the total of \$300, the gift of the Lower Mainland Fur Breeders' Association, may be available in the session 1957-58 in the Faculty of Agriculture for students carrying out investigational work on mink.

The M. M. Waterman Bursary—This bursary of the annual value of \$25, the gift of Mr. and Mrs. M. M. Waterman of Vancouver, will be awarded to an undergraduate in any year or faculty who has good scholastic standing and is in need of financial assistance.

The Moe Cohen Bursary—This bursary of the annual value of \$25, the gift of Mr. and Mrs. Moe Cohen of Vancouver, will be awarded to an undergraduate in any year or faculty who has good scholastic standing and is in need of financial assistance.

The McLean Bursaries—Through the generosity of The McLean Foundation, Toronto, four bursaries of \$250 each are available for the session 1957-58. These bursaries will be awarded to students entering the Second Year in Arts and Science, Agriculture, or Education, or the First Year in Applied Science, Commerce, Pharmacy, or Forestry. Preference will be given to students whose homes are in more remote parts of the Province. In making the awards, consideration will be given to scholastic ability and financial need.

The Nat Bell Bursary—A bursary of approximately \$100, given by Angela Bell in memory of her father, will be awarded annually to a student registered in any year and any faculty who has ability, character, and financial need.

The National Paper Box Limited Bursaries—Two bursaries of \$200 each, the gift of National Paper Box Limited, are available for the session 1957-58. One of these will be awarded to a student in Agriculture and the other to a student in Commerce. The awards will be made to students who have good academic records and are in need of financial assistance.

The New Westminster Rotary Club Bursary—A bursary of \$250, the gift of the Rotary Club of New Westminster, is available for an undergraduate whose home is in the New Westminster district and who is taking a full course of study in any year and faculty at the University. To be eligible for consideration applicants must have high scholastic standing and need of financial assistance. The winner of this bursary will be selected by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries.

The North Shore Medical Society Bursary—This bursary of \$100, the gift of the North Shore Medical Society, is available for a student in the Faculty of Medicine who has good academic standing and needs financial assistance to proceed with his course. It will be awarded to a student whose permanent residence is and has been for some time in the City or District of North Vancouver.

The Okanagan Commerce Bursary—From funds provided from the Alumni of the Business Management Course conducted in Vernon by the Faculty of Commerce and Business Administration, a bursary of \$250 has been made available in Commerce. The bursary will be awarded to a promising and deserving undergraduate whose home is in the Okanagan.

The Pacific Meat Company Bursary—A bursary of \$200 is offered annually by the Pacific Meat Company of Vancouver for research related to problems of the meat industry. The award is open to a student, or students, in the field of Animal Husbandry.

The Panhellenic Association and the Inter-Fraternity Council Bursary Fund—The annual income of \$35 from this fund, established in January,

1950, by the Panhellenic Association and the Inter-Fraternity Council, representing the sororities and fraternities on the campus, is used to provide a bursary for an undergraduate in need of financial assistance. The award is available for a student in any year and faculty.

The Passie Chertkow Bursary in Accounting—A bursary of \$50, the gift of Mr. Irving G. Chertkow in memory of his mother, Mrs. Passie Chertkow, will be awarded in the Faculty of Commerce and Business Administration to a student in the accounting option. The award will be made to a student who has good academic standing and is worthy and deserving of financial assistance.

The P.E.O. Sisterhood, Chapter A.M. Bursary—A bursary of \$50, the gift of the P.E.O. Sisterhood, Chapter A.M., will be awarded to a woman student in the Faculty of Education who is proceeding to a certificate or a degree in the teaching field. The award will normally be made to a student in the First Year but if she maintains satisfactory standing she will be given consideration for a renewal in successive years of her course. In selecting the winner consideration will be given to financial need, academic standing and promise in the field of teaching.

The P.E.O. Sisterhood, Chapter B, Bursary—A bursary of \$100, the gift of Chapter B of the P.E.O. Sisterhood, is available to a woman student from the New Westminster area who is beginning or continuing her studies at the University in a full course leading to a degree. The award will be made to a student who not only has good standing and shows promise but who also needs financial assistance.

The Phil Wilson Bursary in Forestry—A bursary of \$300, given by the British Columbia Loggers' Association, will be awarded to a student registered in Fourth Year Forestry or Forest Engineering. To be eligible for the award a student must have been a resident in British Columbia for the previous two years, must have a scholastic average of at least 65 per cent. in the work of the Second and Third Years at the University of British Columbia, and must give evidence of leadership, sterling character, and physical vigour. He must also have been engaged during at least two summer sessions in woods employment, logging operations, cruising, or logging engineering.

Pi Gamma Chapter of the Fraternity of Phi Gamma Delta Bursary—A bursary of \$50, the gift of the Pi Gamma Chapter of the Fraternity of Phi Gamma Delta, is available annually for a male undergraduate of good scholastic standing who is in need of financial assistance.

The Plimsoll Club Bursary (donated by the Canadian Stevedoring Company Limited)—This bursary, in the amount of \$300, is available for a student registered in any year and faculty. It will be awarded to a deserving student who has satisfactory standing but who, without financial assistance, would be unable to begin or continue his studies at the University.

The Plimsoll Bursary for Law (donated by the Anglo-Canadian Shipping Company Limited)—This bursary of \$300 is available for students registered in any year of the Law course. It will be awarded to a student or students who, by their records, show promise of success in Law, and who not only would be unable to continue their courses without financial assistance, but are also worthy and deserving of it.

The Plimsoll Club Bursary in Engineering (donated by Simson-Maxwell Ltd.)—A bursary of \$200, the gift of Simson-Maxwell Ltd., is available to the students in the Faculty of Applied Science in a course leading to a degree in Mechanical Engineering. This award is available to a student who has satisfactory standing and who, without financial assistance,

would be unable to continue his studies. The award is open to students entering the Final Year of the undergraduate course.

The Plimsoll Club Bursary in Medicine (donated by the Empire Stevedoring Company Limited)—This bursary of \$300 is available for award in the Faculty of Medicine at the University of British Columbia. It will be awarded to a worthy and promising woman student who is registered in the Faculty of Medicine and is continuing in studies leading to the degree of M.D.

The Princess Betty Chapter, I.O.D.E., Bursary—A bursary of \$100, given by the Princess Betty Chapter, I.O.D.E., will be available for a woman undergraduate entering the University of British Columbia from Grade XII. This award will be made to a student who has at least Second Class standing and who, without financial assistance, would be unable to begin her studies at the University.

The Provincial Council of British Columbia, Canadian Daughters' League, Bursaries—Two bursaries of \$100 each, the gift of the Provincial Council of British Columbia, Canadian Daughters' League, will be available annually to assist women students who could not otherwise continue their courses. The awards, which will be made on the basis of character, academic record, and scholastic ability, will be open to graduates entering the Teacher Training Course. In the event that no applicant in this course can qualify, the awards will be open to students entering Social Work.

The R.C.A.F. Chapter, I.O.D.E., Bursary in Medicine—A bursary of \$100, gift of the R.C.A.F. Chapter, I.O.D.E., will be awarded in the session 1957-58 to a student in the First Year of the Faculty of Medicine. The award will be made to a student who, without financial assistance, would have been unable to continue in the course.

The R.C.A.F. Chapter, I.O.D.E., Bursary in Nursing—This bursary of \$75, the gift of the R.C.A.F. Chapter, I.O.D.E., will be awarded in the session 1957-58 to a student taking her Final Year in the course leading to the degree of B.S.N. in the School of Nursing. The award will be made to a student who has good academic standing and is in need of financial assistance.

The R.C.A.F. Veterans' Bursary Fund—A sum of money given to the University by the Wartime Convalescent Homes, War Charity Funds, Incorporated, Vancouver Division, provides an annual fund of approximately \$375 for bursaries. These bursaries will be available for R.C.A.F. veterans of the War 1939-1945 and for their dependents. Awards will be made on the basis of scholastic standing and financial need.

The Robert S. Day and Son Limited Bursary (donated through the Vancouver Men's Canadian Club)—A bursary of \$150, the gift of Robert S. Day and Son Limited, will be available annually for a student who has completed the Third Year of Commerce with high standing, and is proceeding to the Final Year. The award will be made only to a student who has need of financial assistance.

The Rotary Memorial Bursaries—To commemorate the sacrifices and services of Rotarians and their families in the conflicts of this century, the Rotary Club of Vancouver offers annually to students at the University five bursaries of the value of \$250 each. These bursaries are open to students in any year and in any faculty. Wherever practicable, however, the bursaries will be awarded to those who have served in the Armed Forces or the Merchant Navy, or to their dependents. To be eligible for the awards, applicants are required to be of good moral character and to have a reasonable interest in extra-curricular activities and a good record of scholastic attainment. Awards will be made only to those who have limited financial ability to enter the University or proceed to a higher year.

The Royal City Chapter, I.O.D.E. Bursary—A bursary of \$50, the gift of the Royal City Chapter, I.O.D.E., is offered to students in any year and faculty. The bursary will be awarded to a student who has good academic standing and who is deserving of assistance.

The Sea Going Hacks Bursary—A bursary of \$200, given by the Sea Going Hacks, will be awarded to a student in Pharmacy who is recommended to a Committee of the Association by the University Joint Faculty Committee on Prizes, Scholarships and Bursaries in consultation with the Dean of the Faculty of Pharmacy. The award will be made on the basis of scholarship and need.

Sigma Epsilon Chapter of Zeta Psi Fraternity Bursary — A bursary of \$50, the gift of the Sigma Epsilon Chapter of Zeta Psi Fraternity, is available annually for a male undergraduate student in any year and faculty. The award will be made to a student of good scholastic standing who is in need of financial assistance.

The Sir Anthony Eden Chapter, I.O.D.E., Bursary—This bursary of \$75, the gift of the Sir Anthony Eden Chapter, I.O.D.E., is available for a First Year Student who has high standing and who, without financial assistance, would be unable to attend the University.

The Slavonic Studies Bursary—A bursary of \$250, the gift of Walter C. Koerner, in honour of Dr. William J. Rose, will be offered annually to a student specializing in any field of Polish, Russian or Slavonic Studies. The award will be made to a student who has need of financial assistance and who has attained high standing.

The Sperry Phillips Memorial Bursary—A bursary of the annual value of \$125, endowed by friends and associates of the late Sperry S. Phillips (B.S.A., U. B. C. 1923), who prior to his untimely death by accident in 1945, contributed much to the development of Junior Farmer Activities in British Columbia, will be awarded to a student entering the Faculty of Agriculture or the School of Home Economics for the first time. In making the award, consideration will be given to academic ability and Junior Farmer Club membership.

The St. Paul's Hospital Medical Staff Bursary—An annual bursary in the sum of \$300 will be granted by St. Paul's Hospital Medical Staff to a student in the Faculty of Medicine, University of British Columbia, who has shown satisfactory scholastic attainment and is deserving.

The Summerland Kiwanis Club Bursary—A bursary of \$100, the gift of the Kiwanis Club of Summerland, is available annually for a student from Summerland who is beginning or continuing studies at the University of British Columbia. The award will be made in consultation with the Club to a student who has academic promise and is in need of financial assistance.

Surrey Co-operative Association Bursary—This bursary of \$300, given by Surrey Co-operative Association, will be awarded to a student entering the Faculty of Agriculture for the first time from the trading area of the Surrey Co-operative Association. This bursary will be awarded to an applicant who has a record of good scholastic standing. Consideration will be given to his or her agricultural background and participation in community activities. Winners of this bursary will be selected by the Joint Faculty Committee on Prizes, Scholarships and Bursaries. Applications, on forms available from the Dean of Administrative and Inter-Faculty Affairs, must be received before August 1st.

The Triple Entente Chapter, I.O.D.E. Bursaries—Four bursaries of \$100 each, the gift of the Triple Entente Chapter of the I.O.D.E. are available, with preference being given veterans or veterans' sons or daughters and to

those attending University for Teacher Training. To be eligible, students must have financial need and high scholastic standing.

The Triple Entente Chapter, I.O.D.E., Bursary for Hungarian Students—A bursary of \$100, the gift of the Triple Entente Chapter, I.O.D.E., is offered in the session 1957-58 to a Hungarian refugee. It will be awarded to a promising and deserving student who is selected on the basis of academic and personal qualities.

The University District Guide Companies Bursary—This bursary of \$75, the gift of the University District Girl Guide Companies, is available to a woman undergraduate in Physical Education. The award will be made to a student who has good academic standing and is worthy of financial assistance.

University Student Assistance Fund—Through the generosity of Mr. D. A. Hamilton of Vancouver, a fund has been established to assist selected students who would otherwise be unable to begin or continue their studies at the University. In making awards, consideration will be given to character, ability, and promise. Those who are assisted, although not required to assume any legal obligation to repay, are asked to give an honourable undertaking to do so when they enter gainful employment.

University Women's Club Bursary—A bursary of \$200, given by the University Women's Club of Vancouver, will be available for a woman student of high scholastic standing in the Third Year of the Faculty of Arts and Science who is proceeding to the Fourth Year.

University Women's Club General Bursary—A bursary of \$200, given by the University Women's Club of Vancouver, will be available for a woman student registered in any year and any faculty. To be eligible for this award a student must have high scholastic standing and need of financial assistance.

The Unknown Warrior Chapter, I.O.D.E., Bursary in Public Health Nursing—A bursary of \$100, the gift of the Unknown Warrior Chapter, I.O.D.E., will be awarded to a woman student entering the Final Year of Public Health Nursing. The award will be granted to a student who has high scholastic standing and is in need of financial assistance.

The Valcartier Camp Chapter, I.O.D.E., Bursary—A bursary of \$75, given by the Valcartier Camp Chapter, I. O. D. E., will be awarded annually to a woman student who has good academic standing and is in need of financial assistance. This bursary is available for a student proceeding to her first undergraduate degree.

The Vancouver Bar Association Bursaries—Three bursaries of \$200 each, the gift of the Vancouver Bar Association, will be awarded in the session 1957-58 to students in the Faculty of Law. One bursary will be available for a student entering each of the three years of the course in Law. Awards will be based on scholastic standing and financial need.

The Vancouver Panhellenic Alumnae Bursary—A bursary of \$200, given by the Vancouver Panhellenic Alumnae Association, will be awarded to a woman student of satisfactory academic standing, who has completed at least the first two years of University work. The award will be made on the recommendation of the Dean of Women.

The Vancouver Section National Council of Jewish Women Bursary—A bursary of \$100, the gift of the Vancouver Section of the National Council of Jewish Women of Canada, will be awarded to a woman student who is a graduate registered in the Teacher Training Course. To be eligible for this award a student must have good ability and financial need.

The Vancouver Section National Council of Jewish Women Bursary for Social Work—A bursary of \$100, offered by the Vancouver Section of the

National Council of Jewish Women of Canada, will be awarded to a student in the field of Social Work. It is open to those who are beginning or continuing studies toward the degree of B.S.W. or M.S.W. at this University and propose to specialize in group work. In accordance with the principles of this gift, this bursary will be awarded to a student who not only shows promise in the field of Social Work, but also has need of financial assistance.

The Victoria Home Economics Association Bursary—This bursary of \$50, the gift of the Victoria Home Economics Association, will be awarded annually to a woman student whose home is in Victoria or some other centre on Vancouver Island, and who is entering the Second, Third, or Fourth Year in Home Economics at this University. The award will be made on the basis of financial need to a student of good academic standing.

War Memorial Bursary—This bursary of approximately \$70, provided by the income on a fund established by graduates and friends of the University through donations from G. E. Baynes, Esq., P. R. Brissenden, Esq., Hotel Grosvenor, Alfred W. McLeod Limited, and Seeley & Company Limited, will be awarded annually to a worthy and financially deserving undergraduate in any year and faculty. In making this award, preference will be given first to veterans or members of the Merchant Navy, who served in World War II, then to sons and daughters of those who served, and finally to students generally.

The W. D. Shaffer Bursary Fund—This fund was bequeathed by the late Marion Alice Shaffer, B.A., B.Com., a graduate of this University, who served with distinction as a teacher in the schools of British Columbia and won the affection of all for her generosity and courage. It was the expressed wish of the donor that the income from the fund be used, as a memorial to her brother, to provide assistance for worthy and deserving students, preferably those proceeding to a career of teaching in the public schools of British Columbia.

The Western Plywood Company Limited Bursaries—Bursaries to the total of \$250, the gift of Western Plywood Company Limited, are offered to Forestry or Forest Engineering students entering the Third or Fourth Year who, in addition to having good scholastic standing, have demonstrated a genuine interest in human relations by their extra-curricular activities or their training in the humanities at the University, or both. Candidates will be interviewed by a committee which will judge their special qualifications. Other considerations equal, the student in circumstances of greater need will be given preference. Applications must be received by the Dean of Administrative and Inter-Faculty Affairs not later than August 1st.

Westminster Medical Association Bursary — This bursary of \$400, the gift of the Westminster Medical Association, will be awarded to a student in the Faculty of Medicine for study in the session of 1957-58. The award will be made to a promising student of good ability who, without financial assistance, would be unable to begin or continue his studies in the Faculty of Medicine.

The William MacKenzie Swan Memorial Bursary—A bursary of the annual value of \$250, given by Colonel and Mrs. W. G. Swan in memory of their son, William MacKenzie Swan, an outstanding all-round undergraduate student and popular athlete, who died July 28th, 1937, as a result of injuries received in a fall from the Pattullo Bridge at New Westminster on which he was engaged as Assistant Engineer, will be awarded to a student or students registered in the Second, Third, or Fourth Year of the Faculty of Applied Science, and requiring financial assistance to enable him or them to continue studies at the University. In making the award, consideration will be given to the academic record of the applicant and to his participation in undergraduate affairs.

The W. Jack H. Dicks Bursary—A sum of \$240 will be awarded to a student who has completed at least one year of work in the Faculty of Agriculture, who is proceeding to a higher year in the Faculty, and who has given evidence of possessing those qualities necessary for community leadership.

The Women's Big Block Club Bursary—A bursary of \$75, the gift of the Women's Big Block Club, will be awarded annually to a woman student who is continuing her undergraduate course at this University. The award will be made to a student who has taken an active part in athletics on the campus, has good scholastic standing, and needs financial assistance.

World University Service Bursary Fund—This fund, created in February, 1950, by the World University Service of Canada (University of British Columbia Committee), has been established to help students from foreign countries in need of financial assistance. The fund of \$1000 annually is administered by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries.

The Worthington Memorial, I.O.D.E., Bursary—A bursary of \$400, the gift of the Worthington Memorial Chapter, I.O.D.E., will be awarded to a member of the B. C. Regiment or the Cadet Corps of the B. C. Regiment who is beginning or continuing his studies at the University. In making the award, consideration will be given not only to the financial need of those who are eligible, but also to their records with the Regiment or the Cadet Corps.

Xi Alpha Chapter of Beta Sigma Phi Sorority Bursary—A bursary of \$50, gift of the Xi Alpha Chapter of Beta Sigma Phi, an international sorority, is available annually for women students who are proceeding to the Second Year in the Faculty of Arts and Science or Agriculture, First Year Pharmacy, or the First Year in the Faculty of Applied Science. The award will be made to a student who has good scholastic standing and is in need of financial assistance. In choosing the recipient, consideration will be given to character and qualities of citizenship.

Youth Training School Bursary Fund—This fund has been established to give assistance to deserving students who were previously registered in the Federal-Provincial Youth Training School and who are now continuing their studies in the fields of Agriculture, Fisheries or Home Economics. Awards will be made by the Joint Faculty Committee on Prizes, Scholarships and Bursaries on the recommendation of the Principal of the Youth Training School and the dean of the faculty in which the student is enrolled.

For Summer Session

The Sir Charles Tupper Chapter, I.O.D.E., Bursary — A bursary of \$75, the gift of the Sir Charles Tupper Chapter, I.O.D.E., will be awarded annually to a teacher who has taught for two years in the Public Schools of British Columbia and is proceeding with Second Year work in the Summer Session. The award will be made to a student who intends to return to teaching in the fall. Applicants will be considered on the basis of financial need and success and interest in teaching. Applications, on forms available at the office of the Dean of Administrative and Inter-Faculty Affairs, must be received not later than May 31st. A copy of the last inspector's report must accompany the application.

Summer School of the Theatre Bursaries—Four bursaries, each of the amount of the tuition fee, are available for selected students attending the Summer School of the Theatre in 1957.

The Summer Session Association Extension Bursary—A bursary of \$50, the gift of the Summer Session Association, will be awarded to a student taking studies in the Summer School of the Theatre or Arts and Crafts.

University Summer Session Bursaries—Twenty bursaries of \$50 each are available in the Summer Session, 1957, for undergraduates who are taking a full course (6 units) of work in the Summer Session. They will be awarded to students who hold permanent teaching certificates in British Columbia and are actively engaged in teaching in the Province. Awards will be made on the basis of scholarship, financial need, interest in teaching, and participation in the activities of school and the community. Special consideration will be given to applicants from more remote parts of the Province. Applications, on forms available at the office of the Dean of Administrative and Inter-Faculty Affairs, must be received not later than May 31st.

Loan Funds

Inquiries relating to the following loan funds, and all applications for loans, should be addressed to the Dean of Administrative and Inter-Faculty Affairs, Room 10, Arts Building, unless the description indicates otherwise. Women students are advised to consult the Dean of Women.

Application for a loan should be made before the 15th day of the month in which it is required. Students are advised that adult guarantors satisfactory to the Accountant's office are required.

Special attention is drawn to the Department of Education Assistance on page 434.

Winter Session Loan Funds

The Alma Mater Loan Fund—This fund was established by the graduating classes of 1937 as a trust to be used for loans to undergraduates who have attained satisfactory academic standing. Loans to any one student are limited to a total of \$100. Loans, which are free of interest until May 31st of the session in which they are issued, become due in one year.

The Carl J. Culter Student Aid Fund—This is a memorial fund established by the family of Carl J. Culter (1884-1948) to help deserving students. To this fund students with satisfactory academic standing and showing promise of service to their communities may apply for loans to help them in beginning or continuing their studies at the University of British Columbia.

The Charles J. Thompson Student Aid Fund in Architecture—A fund of \$5000, to assist students in Architecture, has been established by Charles J. Thompson, A.R.I.B.A., F.R.A.I.C., a member of the firm of Sharp and Thompson which won the open competition for the building project of the University in 1912. Since that time, Mr. Thompson has contributed much of professional skill and personal interest to construction and development on the campus. The purpose of the fund is to assist promising and needy students proceeding to a degree in Architecture. Loans from the fund, which do not become repayable or bear interest until after the student's graduation, are available for undergraduates registered in the Second or higher years.

The Christmas Seal Medical Student Loan Fund—From this fund, the gift of the British Columbia Tuberculosis Society, loans are available to deserving medical students in any year of the medical course. Terms of repayment will be recommended by the Committee after a review of the financial circumstances of the applicant.

C.I.M.M., B.C. Section, Loan Fund—A fund established and maintained by the Canadian Institute of Mining and Metallurgy, B. C. Section, provides loans for students at the University of British Columbia who are members of the Dawson Club. Loans from this fund will be made to promising and deserving applicants. Application should be made to the Dean of Administrative and Inter-Faculty Affairs.

The Class of 1929 Student Assistance Fund—This fund was established by the Class of '29 in commemoration of the observance of its twenty-fifth anniversary. The fund is used to provide loans for worthy and deserving students.

Columbia Preceptory, No. 34, Knights Templar, Student Aid Fund—From this fund, established by a gift of Columbia Preceptory, No. 34, Knights Templar, Vancouver, assistance is available for members of the student body of the University. The purpose of this fund is to provide a measure of financial aid for students who, by virtue of their personal qualities, academic records, and promise, are worthy and deserving of support. In granting assistance, first preference will be given to those proceeding to a career in theology.

The Dean Clement Student Aid Fund in Agriculture—In honour of Frederick M. Clement, who served as a member of the Faculty of Agriculture from 1916 to 1949 and as Dean from 1919 to 1949, and in recognition of his contributions and achievements, the Agricultural Undergraduate Society has established a loan fund to assist undergraduates in Agriculture who, during the session, require emergency financial assistance. Loans from this fund are subject to the approval of the Dean of Agriculture. Further information may be obtained from the offices of the Dean of Women, the Dean of Agriculture, or the Dean of Administrative and Inter-Faculty Affairs. It is the hope of the Agricultural Undergraduate Society that those who have been assisted from this fund or those who have benefited from Dean Clement's guidance and instruction in past years will contribute to this undergraduate student effort.

The Dean E. L. Woods Memorial Loan Fund—In honour of the memory of Esli Longworth Woods, first Dean of the Faculty of Pharmacy at this University, the Pharmacy Alumni have established a loan fund to assist students registered in the Faculty. Loans from this fund will be available for those who are recommended by the Dean of Pharmacy. Application forms are available at the office of the Dean of Administrative and Inter-Faculty Affairs.

Dr. A. E. H. Bennett Medical Student Aid Fund—This fund, established by a bequest from the late Dr. Allan Edward Hingston Bennett, provides loans for students registered in the Faculty of Medicine. Loans from this fund are interest-free until the completion of medical training and internship. Further information is available from the Dean of Administrative and Inter-Faculty Affairs.

The E. M. Kierstead Student Aid Fund—This fund, established in memory of Professor E. M. Kierstead, a beloved professor in Acadia and McMaster Universities, has been made available to provide loans for students requiring limited financial assistance in emergency situations.

The Graduating Classes of 1952 Student Aid Fund—This fund was established from a gift made to the University by the Graduating Classes of 1952 for the purpose of assisting deserving undergraduates. Loans for limited amounts are available, without interest, for a period of one year.

The Graduating Classes of 1955 Student Aid Fund—This fund was established as a graduation gift by the Classes of 1955 for the purpose of assisting deserving students. It is administered by the Joint Faculty Committee on Prizes, Scholarships, and Bursaries.

The Graduating Classes of 1956 Student Aid Fund—This fund, established by a gift from the Graduating Classes of 1956, provides loans for deserving students. Further information may be obtained from the Dean of Administrative and Inter-Faculty Affairs.

Home Economics Loan Fund—From a fund established from gifts of anonymous donors, loans are available for undergraduates registered in

any year of the Home Economics Course. Loans are also available for graduates in Home Economics taking further work at the University in a related field or in Education. Loans to any one student will not exceed \$200, and are repayable commencing one year after the applicant discontinues attendance at the University, until which time no interest will be charged. Applicants must be recommended by the School of Home Economics.

The H. R. MacMillan Loan Fund—Through the generosity of Dr. H. R. MacMillan, C.B.E., a loan fund has been established to assist students in Forestry. Loans from this fund are to be repaid within three years from graduation, and until then no interest will be charged. Assistance to any one student is limited to \$300. Loans will be made on the basis of scholarship and financial need.

The H. R. MacMillan Special Loan Fund—This fund has been established by Dr. H. R. MacMillan, C.B.E., to provide assistance, in the form of loans, for the sons and daughters of employees of the MacMillan & Bloedel Company Limited, the British Columbia Packers Limited, or subsidiaries of these companies. Loans, which are available only for study at this University, are for limited amounts. They are repayable commencing one year after termination of studies at the University, until which time they do not bear interest. The fund may also be used to provide loans for other students.

The Medical Students' Loan Fund—This fund, initiated by a donation to the University Development Fund from Mr. W. Clarke Gibson, and increased by contributions from other donors, was established to assist worthy and deserving students in the Faculty of Medicine. The fund is administered by the Chairman of the Joint Faculty Committee on Prizes, Scholarships, Bursaries, and Loans, to whom inquiries may be directed. Loans will be made in accordance with the individual needs of applicants.

The Mount Pleasant-Cambie Kiwanis Club Medical Students' Fund—This fund, established and maintained by the Mount Pleasant-Cambie Kiwanis Club through annual contributions, provides financial assistance for worthy and deserving students who are proceeding to the M.D. degree and have completed the First Year in the Faculty of Medicine.

The Mrs. Amy E. Sauder Trust Fund—This fund, established by a donation from the estate of the late Mrs. Amy E. Sauder and from the E. L. Sauder Lumber Company Limited, provides assistance for worthy and deserving male students beginning or continuing their studies at this University.

The Nursing Students' Assistance Fund—This fund has been established to provide loans for students in the School of Nursing. It is maintained by donations from friends and contributions received through the University Development Fund.

The Pacific Coast Branch, Technical Division, Canadian Pulp and Paper Association Student Aid Fund—This fund, established by an annual grant of \$250 from the Pacific Coast Branch, Technical Division, Canadian Pulp and Paper Association, provides a fund for assistance in the form of loans to students in any year and faculty. Awards will be made on the recommendation of the Joint Faculty Committee on Prizes, Scholarships and Bursaries.

The Paul E. Murphy Student Aid Fund—From this fund, bequeathed by the late Paul E. Murphy of Ocean Park, loans may be obtained by undergraduates and graduates who have satisfactory standing and who are beginning or continuing their studies in the Winter Session at the University of British Columbia. Loans from this fund bear interest only after the recipient leaves the University, and are repayable in monthly

instalments commencing one year after the date of leaving. Loans must be secured by a promissory note signed by the recipient and two guarantors. The recipient is also required to protect the loan by a policy of life insurance, in which the University shall be beneficiary to value, in an amount adequately covering advances made from the fund, until full repayment is made. Premiums for new or existing insurance may, however, be included as part of the loan. Attention is called to the following clause in the agreement between the University and the late Paul E. Murphy:

"The donor and the University share the hope that students who have had help from this fund will themselves help others, as their means may allow, either by contributing to this fund or by establishing similar funds."

Pi Beta Phi Loan Fund—Pi Beta Phi Fraternity has established a fund at the University for the use of Social Work students in financing their training or in meeting temporary or emergency needs. Loans, which are interest-free, will be made on the recommendation of the Director of the School.

The Ronald L. Cliff Student Aid Fund—This fund was established by a bequest from Ronald Lorraine Cliff to assist promising and deserving students who are attending the University. In providing this bequest, the donor expressed the hope that those who benefit from the fund would, if and when circumstances permit, contribute to the perpetuation and maintenance of it.

The Roy Graham Memorial Loan Fund—In memory of Roy Graham, M.A.Sc. (Brit. Col.), Ph.D. (Chicago), a distinguished graduate of this University in Geological Engineering, a loan fund has been established by his family to assist worthy and deserving students in any year and faculty. Students in need of assistance may apply to the Dean of Administrative and Inter-Faculty Affairs, from whom further information may be obtained.

The Special Spring Session Students' Loan Fund—A sum of over \$2000, donated by the students of the Special Spring Session conducted in May and June, 1946, for ex-service personnel and former members of the Merchant Navy, provides a fund for loans. Loans are issued for a period of one year and without interest for that period. Thereafter the rate is 5% per annum. The promissory note requires a guarantor. The order of preference is (a) ex-service personnel and former members of the Merchant Navy; (b) dependents of those in (a); (c) the student body at large.

Student Emergency Aid Fund—This fund, established by Robert Matchett, M.S.A., and maintained by gifts from students and graduates, provides loans for students requiring limited assistance in emergency situations.

The T. Sato Loan Fund—This fund has been established by Mr. Tsutae Sato for students of Second Class standing, or better, in the Third or Fourth Years in the Faculties of Arts and Science, Agriculture, and Applied Science, or for students in the Fifth Year of a Double Course. Loans from this fund do not bear interest until May 31st of the session in which they are granted, and are repayable in one year.

University General Loan Fund—The General Loan Fund was established by the Board of Governors. This fund, available for loans of limited amount, is open to undergraduates in need of pecuniary assistance. Loans, which must be repaid by August 31st, bear interest at the rate of 5 per cent per annum commencing on May 31st of the academic year in which they are granted. They must be secured by an approved promissory note signed by the applicant and his parent or guardian.

The University Student Liberal Club Loan Fund—From this fund, sponsored by the University Student Liberal Club and maintained by donations

from members of the Liberal Party, loans are available for students interested in public affairs. Loans are repayable, without interest, within one year, but in the case of students in attendance for further work, may be renewed under the same terms.

The University Women's Club of New Westminster Loan Fund—This fund has been established by the University Women's Club of New Westminster to provide assistance, in the forms of loans (a) for women students from the areas of New Westminster, Burnaby, Coquitlam, and Surrey who are attending the University in a course of study leading to a degree and who in the following session propose to begin, or to return to, teaching in the Province; and (b) for women teachers in the above designated areas taking courses toward a degree in the University Summer Session. Further information may be obtained from the Dean of Administrative and Inter-Faculty Affairs.

The Vancouver and District Home Economics Association Loan Fund—This fund has been established by the Vancouver and District Home Economics Association to provide assistance, in limited amounts, for undergraduates in the School of Home Economics. To be eligible for a loan, an applicant must have satisfactory scholastic standing and be recommended by the School. Loans from this fund become due and payable at the end of one year, until which time they do not bear interest. In special cases, upon application, loans may be renewed for a further period.

The Vancouver Normal School Fund—This fund, given to the University when the Vancouver Normal School became a part of the University, provides assistance, in the form of loans for students in the College and Faculty of Education.

The Walter D. Frith Student Aid Fund—This fund, established by gifts from Walter D. Frith, Esq., of Vancouver, is used to provide loans for students who, without financial assistance, are unable to begin or continue their studies at the University of British Columbia. To be eligible for loans, applicants must have satisfactory scholastic standing.

The Wesbrook Memorial Loan Fund—From this fund, established by a gift of the Graduating Class of 1928 as a memorial to the late Dr. F. F. Wesbrook, President of this University from 1913 to 1918, loans are available in limited amounts for undergraduates or graduates in regular attendance in the Winter or Summer Session.

The Wheatley Memorial Loan Fund—The Association of Professional Engineers of the Province of British Columbia has established a loan fund in memory of Edward Augustus Wheatley who, as Registrar of the Association during the years 1921 to 1938, exerted a vital influence on the engineering profession, not only in this Province but throughout Canada. The fund is available to engineering pupils of the Association in attendance at the University, and all applicants for loans must be recommended by the Dean of the Faculty of Applied Science. Application should first be made to the Dean of Administrative and Inter-Faculty Affairs. Loans, which are interest-free until May 31st of the session in which they are granted, are repayable within one year.

The Worthington Memorial Loan Fund—This revolving loan fund was established by a bequest from the late Dr. G. H. Worthington, Vancouver, in memory of his sons, Lieutenant-Colonel Donald Grant Worthington and Major John Robert Worthington.

Special Funds for Women Students

Dean of Women's Fund—Through the generosity of several donors a fund has been established to assist women students who are temporarily in financial need. The fund is intended for use in emergency situations

where limited assistance is required, and is administered by the Dean of Women. Contributions have been received from the following:

The Marion McElhanney Memorial—Maintained by the Alumnae of the University of Toronto who donated \$50 during 1956.

Kappa Kappa Gamma Mothers' Club—Who donated \$100 during 1956.

Kappa Kappa Gamma Alumnae—Who are making annual contributions of \$100.

Alpha Phi Chapter of Delta Gamma Sorority—Who donated \$50 during 1956.

Judge Helen Gregory MacGill Memorial Student Aid Fund—A loan fund initiated by the Phi Delta Delta Legal Sorority has been established in memory of Judge Helen Gregory MacGill who from 1902 to 1947 worked ceaselessly for better laws and conditions for women and children in Canada. Loans from this fund, intended for use in emergency situations to assist women students in the Final Year of the Law course or the degree course in Social Work, are granted on the recommendation of the Joint Faculty Committee on Prizes, Scholarships, and Bursaries, in consultation with the Dean of Women. Assistance to any one student is limited to \$100. Loans are repayable commencing one year from the end of the session and do not bear interest until that time.

The Mary L. Bollert Loan Fund—To honour the memory of the late Mary L. Bollert, first Dean of Women at the University of British Columbia, women graduates of the University and members of Miss Bollert's family have established a loan fund to assist women students. Those in need of an emergency loan should apply to the Dean of Women, on whose recommendation payment will be made. Loans are repayable in periods up to two years and will not bear interest during the period.

Summer Session Loan Funds

The Summer Session Students' Loan Fund — The Summer Session Association of 1947 established a loan fund as a trust to be used for loans to teachers ("teachers" as defined by the Public Schools Act of British Columbia) who have attained satisfactory academic standing. Loans from this fund are to be repaid by June 30th following receipt of the loan, and until this date no interest will be charged. Loans, which may be repaid at any time during the period by assigned instalments, will be granted on the basis of scholarship and financial need, assistance to any one student being limited according to the funds available. Loans will be made on the recommendation of the Joint Faculty Committee and representatives of the Summer Session Association.

AWARDS ANNOUNCED BY THE UNIVERSITY BUT MADE BY OTHER INSTITUTIONS

The Rhodes Scholarships

The Rhodes Scholarships—The Rhodes Trustees offer annually for award in the Province of British Columbia one Rhodes Scholarship of the value of £600 a year. At most Colleges, and for most men, this sum is scarcely sufficient to meet a Rhodes Scholar's necessary expenses for term-time and vacations, and Scholars who can afford to supplement it by, say, £50 a year from their own resources are strongly advised to do so. The cost of the voyage to and from England must be borne by the Scholar.

The Scholarship is tenable ordinarily for two years at Oxford University. A third year (at Oxford or elsewhere abroad) may be authorized in proper cases.

A candidate must be an unmarried male Canadian citizen or British subject domiciled and resident for five years in Canada. He must be in his second year at least of work in a Canadian university and may apply either in the province of his residence or of his university, if these differ. A candidate for the scholarship for 1958 must have passed his 19th birthday but not have reached his 25th birthday by October 1st, 1957.

In that section of the Will in which he defined the general type of scholar he desired, Mr. Rhodes mentioned four groups of qualities, the first two of which he considered most important:

1. Literary and scholastic attainments;
2. Qualities of manhood, truth, courage, devotion to duty, sympathy, kindliness, unselfishness, and fellowship;
3. Exhibition of moral force of character and of instincts to lead and to take an interest in his fellows;
4. Physical vigour, as shown by fondness for and success in outdoor sports.

Some definite quality of distinction, whether in intellect or character, or both, is the most important requirement for a Rhodes Scholarship, and it is upon this that Committees will insist. Success in being elected to office in student organizations may or may not be evidence of leadership in the true sense of the word. Mr. Rhodes evidently regarded leadership as consisting in moral courage and in interest in one's fellow men quite as much as in the more aggressive qualities. Physical vigour is an essential qualification for a Rhodes Scholarship, but athletic prowess is of less importance than the moral qualities developed in playing outdoor games. Financial need does not give a special claim to a Scholarship.

A candidate for a Scholarship is required to make application by November 1st, 1957, and, if elected, to go to Oxford in October, 1958. Further information and application forms may be had from the Dean of Administrative and Inter-Faculty Affairs, University of British Columbia, Vancouver 8, B.C.

For Graduate Study

The Athlone Fellowships—The United Kingdom Government offers annually a limited number of fellowships to enable Canadian graduates in engineering to undertake special or advanced training in industry or in educational or research establishments in the United Kingdom. The fellowships cover the cost of travel, tuition, and maintenance, and are tenable for a period of two years. Further particulars may be obtained from the Dean of Administrative and Inter-Faculty Affairs, the Dean of Applied Science, or the Head of the Department of Mechanical Engineering. Inquiry should be made early in December.

British Columbia Library Association Bursary—A bursary of not less than \$150, given by the British Columbia Library Association, is available annually for a student intending to adopt librarianship as a profession. To be considered an applicant must be eligible for acceptance in an accredited library school. The recipient will be selected on the basis of scholarship, personality, ability to work with others, aptitude for library work, physical fitness and financial need. It is to the student's advantage to have had some library experience. Application forms and further information may be obtained from Miss Margaret Creelman, Vancouver Public Library, Vancouver 4, B.C.

British Council Scholarships—The British Council offers scholarships to overseas students, normally tenable at universities and other educational institutions in the United Kingdom. The awards are mainly for men and women who have already completed university degree courses or who have equivalent professional qualifications. Preference is given to candidates between 25 and 35 years of age. The scholarships are normally for one academic year of 10 months or for two academic years, according to the duration of the approved course of study. A full scholarship is intended to cover all expenses of maintenance and study, and includes fares, fees, personal maintenance, a grant for books and apparatus and approved travelling expenses in the United Kingdom. Inquiry should be made before the middle of October.

Canadian Federation of University Women Fellowships—The Travelling Fellowship of the Canadian Federation of University Women, of the value of \$1500, available for study or research work, is open to any woman holding a degree from a Canadian university, who is not more than 35 years of age at the time of award. In general, preference will be given to those candidates who have completed one or more years of graduate study and have a definite course of study or research in view. The award is based on evidence of character, intellectual achievement, and promise of success in the subject to which the candidate is devoting herself.

The Margaret McWilliams Fellowship, \$1500, was awarded for the first time in April, 1953. It is open to any woman holding a degree from a Canadian University who is not more than 35 years of age at the time of award, and whose domicile is in Canada although she may be studying elsewhere at the date of application. In alternate years it will be open to any non-Canadian woman holding a degree recognized by the International Federation of University Women, who wishes to carry out post-graduate study or research in a Canadian university. The award will be based on evidence of character, achievement and promise. Preference will be given to candidates who have started their graduate work and who have a definite course of study or research in view.

The Junior Fellowship of the Canadian Federation of University Women, of the value of \$1200, is open to any woman holding a degree from a Canadian university, who is not more than 25 years of age at the time of award. Preference will be given to students who have studied in only one university and who desire to continue their studies in another.

The Professional Fellowship of the Canadian Federation of University Women, of the value of \$1000, is open to any woman holding a degree from a Canadian university, who is not more than 35 years of age at the time of award. Preference will be given to candidates who have completed one or more years of professional work and who desire to spend a year at an accredited Library School, College of Education, School of Social Work or similar professional school.

The proposed place and plan of study or research must be approved by the Fellowships Committee.

Application blanks and further information may be obtained from Mrs. W. D. H. Buchanan, 5255 Côte St. Luc Road, Apt. 2, Montreal 28, Que. Applications and recommendations must be received not later than February 1st.

Central Mortgage and Housing Corporation National Fellowships in Community Planning—It is expected that fellowships of \$1200 each will be made available by the Central Mortgage and Housing Corporation, Ottawa, for the study of community planning during the academic session of 1957-58. These will be awarded for study at any of the Canadian universities offering post-graduate training in Community and Regional Planning. The

University of British Columbia is one of the universities offering instruction in this field. The purpose of these fellowships is to aid students in receiving advanced education which will enable them to enter the field of community planning and allied occupations either in a professional capacity or in public service. Candidates must be graduates of recognized universities in the social sciences, architecture or civil engineering. Their academic qualifications must meet the requirements for graduate study at the university to which application is made and all candidates for a fellowship must have been accepted as graduate students at that institution. They will be required to undertake a prescribed course of studies. The period of the fellowship is twelve months and applications must be received not later than May 15th, 1957. Inquiries and applications should be directed to the Secretary of the graduate course in Community Planning at the University of British Columbia.

C.I.L. Fellowships in Wildlife Management—Canadian Industries Limited offers several post-graduate scholarships for research in wildlife management. The value of each fellowship is \$1500, of which \$1200 is awarded to the student and \$300 to the university to defray expenses. Applications must be forwarded by March 30th to the Secretary of the Advisory Board, Mr. S. J. Smart, P.O. Box 10, Montreal, P.Q.

The Exhibition of 1851 Scholarship—Under the revised conditions for the award of the Exhibition of 1851 Scholarship in Science, the University of British Columbia is included in the list of universities from which nominations for scholarships allotted to Canada may be made. These scholarships of £450 per annum are tenable, ordinarily, for two years. Scholarship winners with special needs may receive additional money grants during the period of their tenure. The scholarships are granted only to British subjects of not more than 26 years of age who have already completed a full university course and given evidence of capacity for scientific investigation. The scholarships are open to graduates of any university who have spent not less than three years in the study of science. Detailed information may be obtained from the Dean of Administrative and Inter-Faculty Affairs. Inquiry should be made before the end of December.

French Government Book Prizes and Medals—Book prizes and medals, offered by the French Government, will be awarded to students in French on the recommendation of the Head of the Department of Romance Studies.

French Government Scholarships—Scholarships of the present value of approximately \$900 are donated by the French Government for graduate study in France. They are tenable for one year. Travelling expenses for the return to Canada and university fees are defrayed by the French Government. These scholarships are open to students of all faculties. Candidates must, however, produce satisfactory evidence that they are able to profit by instruction given in French. The awards are made by the French Embassy on the recommendation of the Head of the Department of Romance Studies in the University, from whom further information may be obtained.

The Imperial Oil Graduate Research Fellowships—Imperial Oil Limited, in 1946, established for annual competition five Graduate Research Fellowships now having a potential value of \$3750 each (\$1250 a year payable in Canadian Funds for a maximum of three years). In addition the fellowship may be supplemented by an amount of \$750 if the fellow continues his thesis work during the summer months. The fellowships are open to graduates of any approved university in Canada and are offered for research leading to a Doctor's degree in the fields of Chemistry, Physics, and/or

Engineering (2 fellowships), Geology (1 fellowship), Economics, Psychology, Sociology, or Business Administration (1 fellowship) and Humanities such as English, Ancient and Modern Languages, History, or Philosophy (1 fellowship). Nomination of students for the fellowships is made by the University—such nominations to be received by the Secretary of the Imperial Oil Scholarship Committee, Imperial Oil Limited, 56 Church Street, Toronto, not later than March 1st of each year. Nomination forms and information as to the terms of fellowships are available at the office of the Dean of Administrative and Inter-Faculty Affairs.

Imperial Order Daughters of the Empire War Memorial I Scholarship (Overseas)—This fund was established by the I.O.D.E. in order to perpetuate the memory of the men and women who gave their lives in the defence of the Empire in the First Great War. Graduate scholarships to the value of \$2000 each are offered annually, one in each province of the Dominion. The conditions under which they are awarded may be obtained from the Dean of Administrative and Inter-Faculty Affairs, or from the Educational Secretary of the Provincial Chapter, I.O.D.E., Room 203, at 402 West Pender St., Vancouver 3, B.C. *Applications must be submitted by October 15th of each year.*

Imperial Order Daughters of the Empire War Memorial II Scholarship (Overseas)—This fund was established by the I.O.D.E. in order to perpetuate the memory of the men and women who gave their lives in defence of the Empire in World War II. Three post-graduate scholarships to the value of \$2000 each are to be offered annually in Canada. In view of the fact that for many years the emphasis for advanced study has been placed on science rather than on the humanities, these scholarships provided under War Memorial II will be offered annually to carry on post-graduate work in History, Philosophy, English or French Literature. The conditions under which they are awarded may be obtained from the Dean of Administrative and Inter-Faculty Affairs, or from the Educational Secretary of the Provincial Chapter, I.O.D.E., Room 203, at 402 West Pender St., Vancouver 3, B.C. *Applications must be submitted by October 15th of each year.*

The International Nickel Graduate Research Fellowships—The International Nickel Company of Canada offers annually a number of graduate research fellowships, each with a possible tenure period of three years. In 1957 it is expected that three new awards will be made. Award of these fellowships is made by the National Conference of Canadian Universities, which will consider applications from any Canadian University qualified to confer a Master's or Doctor's degree in Geology (including Geophysics), Mining, Ore Dressing, Metallurgy (both process and physical), Chemistry (pertaining to metals), and Physics (pertaining to metals). Not more than three applications from any one university will be considered in any one year. Each fellowship is in the amount of \$2000 per annum, of which \$1500 is payable to the fellow through the University to whom the award is made and \$500 is at the disposal of the directing professor for materials and equipment necessary to the research. Universities desirous of receiving one or more of these fellowships should address their applications to the International Nickel Company of Canada, Limited, 25 King Street West, Toronto 1, Ontario, for transmission to the Conference to reach Toronto not later than February 28th.

The Mackenzie King Travelling Scholarships—These scholarships of not less than \$1500 each are available for graduates of any Canadian university who propose to engage, either in the United States or the United Kingdom, in postgraduate studies in the fields of international or industrial relations. Information may be obtained from Dean Walter H. Gage, University of

B. C., Vancouver 8, Canada. Applications for those proposing to proceed to study in the fall of 1957 must be submitted by April 15th, 1957.

National Research Council Bursaries and Studentships—The National Research Council awards annually a number of Bursaries and Studentships for graduate work. These are open to selected graduates in the sciences who have shown distinction in their undergraduate studies. The values of the awards are as follows: Bursary, \$800 and Studentship, \$1200. Students receiving any of these awards will be eligible, upon recommendation of the supervisor, for a supplementary stipend for the summer months of \$800. Also available are a limited number of Special Scholarships for graduates and Post-Doctorate Fellowships for those who have completed their work for the Ph.D. degree. These may be held either in Canada or abroad. Applications must be received in Ottawa before February 1st. Application forms and regulations governing the awards may be obtained from heads of departments, the Dean of Administrative and Inter-Faculty Affairs, or from the Awards Officer, National Research Council, Ottawa 2.

Newton Wesley Rowell Post-Graduate Fellowships in Public International Law—Applicants must be men or women who are graduates or in their graduation year of Canadian universities or law schools in which they have studied international law or subjects related thereto. They must be Canadian citizens, or British subjects resident in Canada, with a present intention of following a career in which a knowledge of public international law may be put to the benefit of the people of Canada. Holders of the fellowships may pursue any courses or studies relating to this field which have been approved by the Canadian Institute of International Affairs. For further information those interested should write to the President of the Institute, 230 Bloor St. West, Toronto. They are advised to obtain information early in December.

The Pilkington Glass Limited Travelling Scholarship in Architecture—A travelling scholarship, for the purpose of post-graduate study in England, has been made available by Pilkington Glass Limited, for competition among architectural students in Canada. This scholarship will be given to a Fifth Year student from one of the schools in Canada having a five-year course and will be of an annual value of \$1500 plus travelling expenses, cabin class, to and from England. A second and a third prize of \$100 and \$50 respectively will also be awarded. The period of the scholarship is eight months, of which the holder is required to spend six months in Britain (of which two may be spent in an office) and two months in selected travel abroad or otherwise. A report will be required on original research in a field of study made possible by the scholarship. Architectural students at the University of British Columbia are eligible to enter the competition. Further details may be obtained from the Director of the School of Architecture or from Pilkington Glass Limited, 165 Bloor Street E., Toronto, Ontario.

Prize for Essay on Conservatism—as on page 466.

Rotary Foundation Fellowships—The Board of Directors of Rotary International and the Rotary Foundation Trustees have established a limited number of Rotary Foundation Fellowships for advanced study for an indefinite period. Candidates are expected to pursue study outside their own country. These fellowships are open to students between the ages of twenty and twenty-eight. Applicants must be graduates or in their graduating year. They are advised to make application early in September to the Rotary Club in their district. Further information may be obtained from the office of the Dean of Administrative and Inter-Faculty Affairs, or the secretary of any Rotary Club.

Viscount Bennett Trust Fund—Under the terms of a deed of gift to the

Canadian Bar Association from the Right Honourable Viscount Bennett, P.C., K.C., LL.D., D.C.L., a fund known as the Viscount Bennett Trust Fund has been established. The annual income from the fund or the sum of \$2000, whichever is less, will be paid annually as a scholarship for post-graduate study at an institution of higher learning to be approved by a committee. The scholarship is open to a person of either sex who has graduated from an approved law school in Canada or who, at the time of application, is pursuing his or her final year of studies as an undergraduate student at an approved law school. The award will be made by the committee at the time of the mid-winter meeting of the Council of the Association or prior thereto. The Faculty of Law of this University has been approved by the Committee. Full information as to qualifications of applicants may be had on application to the Dean of Administrative and Inter-Faculty Affairs or from the Dean of the Faculty of Law. Applications must be in the hands of the Secretary-Treasurer, The Canadian Bar Association, 77 Metcalfe St., Ottawa, Ontario, by December 31st.

For Undergraduates

Canadian Legion (British Columbia Command) Scholarships—The Canadian Legion (British Columbia Command), British Empire Service League, offers annually a number of scholarships for students proceeding from high school to University. These scholarships are awarded on the basis of academic standing, financial need, and participation and achievement in student and community affairs. Preference is given to sons and daughters of veterans killed in action or of deceased and disabled veterans. Applications from other worthy students are also considered. Further information may be obtained from The Provincial Secretary, Canadian Legion, B.E.S.L., 1132 Howe St., Vancouver 1, B.C.

Cominco Undergraduate Scholarships—The Consolidated Mining and Smelting Company of Canada Limited offers annually a number of scholarships, fuller details of which should be obtained from the Secretary, Scholarship Committee, The Consolidated Mining and Smelting Company of Canada Limited, Trail, B.C. Applications, on special forms available at the above address, must be postmarked not later than May 15th and forwarded to that address. These awards include: (a) Two major awards of \$1400 each, payable \$350 each per year. Known as Cominco Undergraduate Scholarships, Class 1, they are open for competition at the Senior Matriculation or equivalent level (i.e. equivalent First Year University) to sons and daughters of Cominco employees. One of these scholarships is offered for the Trail area and one for other Cominco operations. (b) Four one-year awards of \$250 each, known as Cominco Undergraduate Scholarships, Class 2, are open to competition by sons and daughters of Cominco employees. These awards are based on Senior Matriculation standing only, and are allotted geographically on the basis of employee distribution. (c) Two one-year awards of \$300 each, known as Cominco Undergraduate Scholarships, Class 3, open to competition by all students who are attending high schools in School Districts Nos 1-11 inclusive, which cover the East and West Kootenay Districts of British Columbia. These awards are based on Senior Matriculation standing only.

The Crofton House Alumnae Scholarship—A scholarship of tuition fees, the gift of the Crofton House Alumnae, is available annually for a student of Crofton House School who is proceeding to the University of British Columbia. In making the award, consideration will be given to scholastic ability, character, leadership, and participation in the activities of the School. The winner will be selected by the Headmistress and Staff.

Crown Zellerbach Canada Limited Scholarships for Teacher Training—Five scholarships of \$2000 each, payable in yearly instalments of \$400 for

five years, are offered annually by Crown Zellerbach Canada Limited to high school graduates beginning studies at the University and planning to enter the secondary teaching profession. One award will be available, in each of the following school districts: Courtenay-Comox, Campbell River, Ladysmith, Nanaimo, and Ocean Falls. Selection of the winners of the scholarships, which are open to students whose parents reside in these districts, will be made by the School Boards concerned, on the basis of scholastic standing, leadership, citizenship, and suitability for the teaching profession. Application to compete should be made to the high school principal. Yearly renewals to winners will be dependent upon maintenance of good academic standing.

Delta Teachers' Association Bursary—A bursary of \$200, provided by the Delta Teachers' Association, will be awarded annually to a Grade 12 student resident in the Delta Municipality and proceeding to further studies. This award will be given as a single bursary of \$200 or two bursaries of \$100 each. In making the selection consideration will be given to citizenship, scholarship, and financial need. Application forms are available on request from the Secretary of the Association, A. J. Enns, 1050 Birch Rd., Richmond, Vancouver, B.C. The award will be made after June 7 of each year.

The Elizabeth Bentley Eastern Star Scholarship—This scholarship, originally provided by the interest on a \$1000 Dominion of Canada Bond and now increased to \$300, is given annually by the Order of the Eastern Star to a student who is attending the University of British Columbia or Victoria College, and in whose immediate family there is a member of the Order. Names of eligible students are forwarded each year by the various chapters to the Secretary of the Grand Chapter of British Columbia. The award is made to that student who attains the highest average of marks in regular subjects during the Second and Third Years of attendance at the University or College. Further information may be obtained from Mrs. Hazel Freeze, Grand Secretary, 4767 Collingwood, Vancouver 8, B.C.

The E. L. Woods Memorial Prize in Pharmacy (donated by the Canadian Foundation for the Advancement of Pharmacy)—A cash prize of \$100 will be awarded annually by the Canadian Foundation for the Advancement of Pharmacy to the student in the graduating class in any College, School, or Faculty of Pharmacy in Canada, who, in the opinion of the Awards Committee appointed by the Foundation submits the best paper on some phase of pharmacy. Papers entered for this award will be selected by the Faculty of Pharmacy from the theses submitted as part of the Fourth Year requirements.

The Imperial Oil Undergraduate Scholarships—Imperial Oil Limited offers annually a number of scholarships for undergraduates, open to children and wards of employees and annuitants of Imperial Oil Limited and its Canadian subsidiaries. One of these scholarships is available to students resident and completing Grade XII in British Columbia. These scholarships entitle the holders to \$700 per annum each for a period up to four years, paid through the university attended. The university concerned also receives an unrestricted grant-in-aid of \$500 annually for each scholarship winner in attendance. To be eligible for consideration an applicant must have demonstrated, by academic achievement and/or special aptitude, his or her fitness for higher education. Further information and application forms, which must be submitted by June 1st, may be obtained from the Secretary, Imperial Oil Scholarship Committee, 56 Church Street, Toronto 1, Ontario.

The Independent Order of Odd Fellows Bursaries—Six bursaries of \$200 each, provided by the Grand Lodge of B. C., I. O. O. F., the Grand Encampment, and the Rebekah Assembly, are available annually for students in any year of any faculty. Under terms approved by the Grand Bodies, one bursary will be offered in each of the following districts of the Province: (1) Van-

couver Island and Powell River; (2) Greater Vancouver; (3) New Westminster and the Lower Fraser Valley; (4) the Kootenays; (5) North and South Okanagan, including Princeton and Merritt; (6) Main Line of the C. P. R. east of Chilliwack, and Northern B. C. The awards will be made by a joint committee consisting of two representatives from each of the Grand Bodies. All applicants must have direct connection with one or more branches of the Order, through parents, grandparents, or close relatives. Special consideration will be given to applicants with financial need. Full details of the awards and application forms may be obtained from the Secretary of any Odd Fellows Lodge or Rebekah Lodge, I. O. O. F. Applications should be submitted to the Oddfellows or Rebekah Lodge by May 31st so that they may be received by the Committee not later than June 30th. All applications must be sponsored by an Odd Fellows Lodge, Rebekah Lodge, or Encampment.

The above Committee will award annually an additional bursary of \$200 to a student in a recognized theological college of university status. This bursary will be known as the Dr. A. M. Sanford Memorial Bursary. Applicants will follow the same procedure as for all other I.O.O.F. bursaries.

The I.O.D.E. Second War Memorial Bursaries — These bursaries were established as a memorial to Canadian men and women who gave their lives in the Second World War. They are open to sons and daughters, resident in Canada, whose fathers or mothers, having served during World War II in the Navy, Army, Airforce, or Merchant Navy of the British Empire and Commonwealth, suffered death or permanent and serious disability because of this service. Provided there are suitable candidates, fifteen bursaries will be offered across Canada. Each bursary has the value of \$400 a year for four years, renewal each year being subject to satisfactory standing. Awards will be made to candidates who meet the entrance requirements of the university of their choice. *To be eligible applicants must write the departmental examinations of their province.* Application forms and further information may be obtained from the Provincial Educational Secretary, I.O.D.E., Room 203, at 402 West Pender St., Vancouver 3, B.C. Applications must be submitted by March 1st.

Leonard Foundation Scholarships—This National Foundation awards each year a number of scholarships for which students of the University of British Columbia are eligible. Application forms and further information may be secured from Dean F. H. Soward, a member of the General Committee of the Foundation. These forms should be forwarded to the Honorary Secretary of the Foundation, c/o Toronto General Trusts Corporation, 253 Bay Street, Toronto, not later than March 31st of each year. Whenever possible these applications should be filed in February. The awards are made at the annual meeting of the General Committee on the last Friday in May.

MacMillan & Bloedel Limited Scholarships—Six scholarships of \$400 each, one in each of School Districts 65 (Duncan-Cowichan), 67 (Ladysmith-Chemainus), 68 (Nanaimo), 69 (Qualicum), 70 (Alberni), and 79 (Ucluelet-Tofino) are offered by MacMillan & Bloedel Limited. These scholarships are open to students beginning their studies at the University of British Columbia or affiliated Theological Colleges on the Campus or at Victoria College. Awards will be made on the basis of academic ability and potential leadership, as indicated by grade achievements in Grades XI and XII and participation in school activities. The winner in each school will be chosen in June by a committee consisting of the Principal, Vice-Principal, the Senior Girls' and Senior Boys' Counsellors, the Dean of Administrative and Inter-Faculty Affairs of the University (consultative member), and a representative of MacMillan & Bloedel Limited. Further information may be obtained from the Principal of the School.

The Ocean Falls Local No. 312, International Brotherhood of Pulp, Sulphite and Paper Mill Workers Scholarship—A scholarship of \$250, given by Ocean Falls Local No. 312, of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, is available annually for a student entering First Year at the University of British Columbia. This scholarship, which is restricted to students of Charleson High School, Ocean Falls, B.C., will be awarded to the applicant who meets the following conditions: (1) obtains highest standing in the written examinations in the scholarship subjects for High School Graduation (University Programme); (2) qualifies for no other scholarship or bursary award. Without prejudice to any of the above conditions, the Executive of Local No. 312 reserves the right to consider any application on its own individual merits and make the award accordingly. Further information may be obtained from the Secretary, Ocean Falls Local No. 312, I.B.P.S. & P.M.W., Box 190, Ocean Falls, B.C.

Prize for an Essay on Conservatism—A prize will be awarded for the best essay of not less than 4000 words submitted by any student enrolled at the University of British Columbia on one of the following subjects: 1. The philosophy of Conservatism; 2. Some aspect of the history of the Conservative Party in the political life of Canada or of any of the Provinces; 3. An analysis of the Conservative approach to some contemporary Canadian problem. Students intending to compete for this prize must furnish, for approval, particulars of their essay topics to either Dr. Robert M. Clark, of the Department of Economics, or Allan H. Ainsworth, Esq., 1519 Marine Building, 355 Burrard Street, Vancouver, B.C. The essays must be submitted not later than March 31st. For an outstanding essay an award of \$300 will be made, but the Trustees, in their discretion, may make an award in a lesser amount, or may make two awards in the total sum of \$300, or may make no award at all if no essay submitted is of the required standard.

Royal Canadian Engineer Memorial Scholarship—Scholarships of \$125 each were offered in the session 1956-57 to a number of universities in Canada, of which the University of British Columbia was one. These scholarships, established in memory of all ranks of the Corps of Royal Canadian Engineers who gave their lives in the Second World War, were awarded to selected students who had successfully completed their second to last year in a course leading to a degree of Bachelor of Applied Science, Bachelor of Engineering, Bachelor of Architecture or an equivalent degree in the field of Applied Science or Engineering, who were members in good standing of the Canadian Officers' Training Corps at the college or university which they were attending, and who had successfully completed at least one summer season's training with such unit or as a member of such unit; or who were ex-members of the Canadian Officers' Training Corps who had successfully completed three years of COTC training and who had transferred to the Canadian Army (Militia) or to the Canadian Army (Supplementary Reserve); or who were members of the Canadian Army (Regular) attending college or university under the terms of the Regular Officers' Training Plan. Awards, made by the Royal Canadian Engineer Memorial Scholarship Committee, Ottawa, were based on academic standing and qualities of leadership, as evidenced by participation in activities of the Officers' Training Corp and student affairs generally. Where two or more candidates from one university were considered equally meritorious, preference was given, firstly to a candidate who is the son of a member or a former member of the Corps of Royal Canadian Engineers, and secondly, to a cadet who has applied as his first choice for a commission in the Corps, either Regular or Militia.

The Salmon Arm Teachers' Association Scholarship—This scholarship of \$100, the gift of the Salmon Arm Teachers' Association, is available annually

for a student in School District No. 20 who is proceeding from Senior Matriculation to university studies in the College of Education and who intends to enter the teaching profession. The award will be made on the basis of personality, attitude to work, academic standing, and need.

The South Peace Teachers' Association Scholarship—A scholarship of \$100 is available to a student of South Peace High School who is entering Teacher Training. Information about this award may be obtained from Mr. Ken E. Smith, Box 1616, Dawson Creek, B.C.

The Summerland Scholarship—A scholarship of \$250, given by the citizens of Summerland, is available annually for a student of Summerland High School proceeding to the University of British Columbia, or some other institution of higher learning in the event that courses of the winner's choice are not available at the University of British Columbia. The scholarship will be awarded to the applicant who, in the opinion of the Summerland Selection Committee, best exemplifies the qualities of the all-round student.

The Women's Institute Memorial Scholarship—This scholarship of \$250, awarded annually by the Provincial Board of Women's Institutes, is available for a rural student who is taking the Home Economics course at the University and is the daughter of an Institute member of at least three years' standing. Nominations for this scholarship should be forwarded to Mrs. R. Doe, Box 349, Port Coquitlam, B.C.

The William Gray Scholarship—A scholarship of \$200, offered by the North Vancouver Teachers' Association, is available in the College of Education. It will be awarded to a graduate of North Vancouver High School who is proceeding to studies at the University leading toward a degree or certificate in the teaching field. The award will be made on the basis of academic standing, personal qualities and character, interest and participation in school and community affairs, and aptitude for teaching. Letters of application giving information pertinent to the above qualifications, and accompanied by two letters of recommendation, must be submitted to: "The Scholarship Committee", c/o The Principal, North Vancouver High School, 210 E. 23rd St., North Vancouver, B.C., not later than June 1st.

Loan Funds

The British Columbia Library Association Loan Fund—This loan fund is available to students who wish to attend library school. The recipient will be selected primarily on the basis of financial need and aptitude for library work. Application forms and further information may be obtained from Miss Margaret Creelman, Vancouver Public Library, Vancouver 4, B.C.

Department of Education Assistance—See page 434.

Department of Education Assistance for Teacher-Training—See page 434.

The Harry F. Bennett Educational Fund of the Engineering Institute of Canada—This fund was established by subscription from members of the Engineering Institute of Canada in memory of the late Harry F. Bennett, M.E.I.C., who for six years was Chairman of the Institute's Committee on the Training and Welfare of the Young Engineer. One purpose of the fund is to provide loans for deserving students who need financial assistance to enable them to study engineering sciences at university level, and who have successfully completed the First Year in Engineering. Loans will be made largely on the basis of character and qualities essential to leadership. Application blanks may be obtained from the office of the Dean of Administrative and Inter-Faculty Affairs, or from The Trustees, Harry F. Bennett Educational Fund, 2050 Mansfield St., Montreal 2, Quebec.

The P. E. O. Sisterhood Educational Loan Fund—The P. E. O. Sisterhood will assist young women of the age of 18 years or over with educational loans. Students enrolled in a four-year course must have satisfactorily completed the first term of work in order to be eligible. The maximum sum advanced to a student for one year's study is \$500 and for two or more years, \$1000, which latter sum must be the full indebtedness of the student. The note covering the loan is drawn with maturity not to exceed five years from the time it is issued. Interest at the rate of 3% is to be paid annually, and the student is expected to begin payment of the principal as soon as she is out of university and employed. Further information may be obtained from the Dean of Women.

The University Women's Club of Victoria Loan Fund—The University Women's Club of Victoria maintains an interest-free loan fund for women students of the University of British Columbia. Application should be made to Mrs. R. S. Twining, 2077 Ferndale Road, R.R. No. 5, Victoria, B.C.

NFCUS INTERREGIONAL STUDY EXCHANGE PLAN

Through this plan the National Federation of Canadian University Students offers to Canadian students the opportunity to study for one year at a university in another part of Canada. An applicant must be in his penultimate year when he attends the exchange university and must obtain at least Second Class standing in the work of the session previous to the exchange year. The successful candidate does not pay fees to the exchange university, but he must undertake to return to his home university for at least one year's study. If he decides to continue his studies at the exchange university, he must reimburse that institution for the fees waived. Applications may be obtained from the Registrar's Office, and are to be returned to the Registrar not later than February 15th.

APPOINTMENTS IN HER MAJESTY'S OVERSEA CIVIL SERVICE AND OTHER APPOINTMENTS UNDER COLONIAL GOVERNMENTS.

Vacancies exist from time to time in H.M. Oversea Civil Service (formerly the Colonial Service), and in various posts under British Colonial Governments. The Service comprises an administrative branch and various professional branches, including medical, engineering, legal, agricultural, forestry, veterinary, educational, survey, geological survey and nursing. Most appointments are made to the Governments of the larger African territories such as Nigeria, Kenya, Tanganyika, Northern Rhodesia and Uganda; but a few are also made to Sierra Leone and Nyasaland; and occasionally to territories outside Africa such as Hong Kong, Borneo, Sarawak, Fiji, the Caribbean Colonies and Cyprus.

Appointments are on a permanent and pensionable basis, subject to a satisfactory period of probation. In some branches, appointments may be made on a contract basis. Opportunities may arise for promotion to higher posts after some years service.

Further information may be obtained from the Liaison Officer for British Columbia, Dr. Harry V. Warren, Department of Geology and Geography, University of British Columbia.

LECTURESHIPS AND SPECIAL FUNDS

The Ben Hill-Tout Memorial Fund—This fund has been established as a memorial to Benjamin William Hill-Tout who, from 1949 to 1954, served

as staff photographer in the audio-visual services of this University. In founding this fund his friends, colleagues, and family desire to perpetuate the remembrance of a fine artist, a generous friend, and a man of exceptional courage and character. In furtherance of this aim, the annual income from the fund will be used to provide the Ben Hill-Tout Memorial Prize, which will be awarded from time to time in competitive exhibitions of photographic art at the University.

The Canadian Arthritis and Rheumatism Society Lectureship.—Through the generosity of the Canadian Arthritis and Rheumatism Society (British Columbia Division) a lectureship has been established in the Faculty of Medicine. This lectureship makes provision for an annual lecture or lectures on the rheumatic diseases, the arrangements for which are made by the Faculty in consultation with the Society.

Canadian Cancer Society, B. C. Division, Lectureship—Through the generosity of the Canadian Cancer Society, B. C. Division, a lectureship has been established in the Faculty of Medicine in the field of cancer work. The annual lecture provided by this contribution will be arranged to coincide with the Annual Meeting of the B.C. Division of the Canadian Cancer Society.

The Cemco Lectureship in Engineering—Through the generosity of Cemco Electrical Manufacturing Co Ltd., Vancouver, B. C., funds are provided on an annual basis to assist the Faculty of Applied Science in bringing outstanding scholars to the Campus to speak or participate in seminar discussions on matters of particular interest to engineers and scientists.

The Ciba Lectureship—Through the generosity of Ciba Company Limited, a lectureship has been established on an annual basis to provide a distinguished speaker on some topic connected with medical education or research.

The Garnett Sedgewick Memorial Fund—The interest from this fund, established by friends of the late Garnett G. Sedgewick, Professor and Head in the Department of English from 1918 to 1948, will be used to provide special lectures in the University by speakers of scholarly distinction and broad sympathies; alternatively, to supply scholarship aid to exceptional students or to add books, pictures or music to the permanent cultural assets of the University.

The Hewitt Bostock Lectureship—Through the generosity of the Misses Bostock a lectureship has been established in honour of their father, the late Senator Hewitt Bostock, providing for a public lecture at least once in three years by a speaker of national or international reputation on a subject of educational or social importance.

The H. R. MacMillan Lectureship in Forestry—Through the generosity of Dr. H. R. MacMillan, C.B.E., a fund has been established to provide for the presentation and publication of an annual public lecture in forestry by outstanding figures in forestry or the forest industries. In addition, the lecturer is available for several days to speak to forestry students, to consult with members of the Faculty, and to address professional and other groups.

Lectureship in the History of Christianity—Through the generous gifts of several Vancouver citizens of various religious denominations, a lectureship has been provided in the general field of the history of Christianity. It is expected that lectures will be given during each of the fall and spring terms. These lectures are sponsored by the President's Committee on Spiritual Values.

The Merck Lectures—Through the generosity of Merck & Co. Limited, Montreal, annual lectures have been established in the Faculty of Medicine in the field of medicine and allied sciences, including biochemistry, physiology, pathology, bacteriology, or pharmacology.

The Simmons and McBride Lectureship—Through the generosity of Mr. Edward Simmons, a lectureship has been established on an annual basis which will bring to the University a distinguished lecturer in some field of medical research.

The York Lectureship in the Faculty of Medicine—A lectureship in the Faculty of Medicine has been set up by Mrs. S. S. McKeen in memory of her father, the late Andrew York, to bring to lecture at the University and at St. Paul's Hospital, Vancouver, a distinguished contributor to medical science.

1957-58

MISCELLANEOUS

1957-58

1957 - 1958

1957-58

UNIVERSITY SUMMER SESSION

The Faculty and College of Education is now responsible for all teacher education in the Province, including that formerly carried out at the Department of Education Summer School in Victoria. Consequently the summer session offerings for teachers provided by the various University faculties and departments have all been greatly extended.

The announcement of the courses to be offered in the Summer Session (approximately seven weeks in length) will be issued, if possible, before Easter, and will be available on request from the Registrar.

The regulations, etc., governing the Summer Session are as follows:

1. The maximum credit for Summer Session work in any one calendar year is 6 units.
2. Students are required to register on or before the opening day of the session. A fee of two dollars (\$2.00) will be charged for late registration.
3. All students desiring to obtain formal credit for work done in the Summer Session must, upon entrance, present evidence of High School Graduation (University Programme) of this Province, or its equivalent.
4. Students must attend regularly the classes in a course for which they register. Those whose unexcused absences from such a course exceed one-eighth of its total number of meetings will not be credited with attendance in that course.
5. For statement of fees, see page 70.
6. Summer Session examinations are held at the close of the Summer Session.
7. For regulations regarding standing, credit, and supplementals undergraduates should refer to pages 82-83, and graduates to pages 341-344.

CORRESPONDENCE COURSES FOR ACADEMIC CREDIT

The University of British Columbia has developed a programme of correspondence studies, available to persons who wish to earn credit towards a Bachelor of Arts or Education degree, but who cannot attend the regular sessions of the University. These courses are, for the most part, offered at the Second and Third Year level. Some courses may count for credit toward other degrees.

The correspondence courses currently offered by the University are listed in the Correspondence Course Syllabus available from the Department of University Extension.

General regulations governing enrollment in correspondence courses are given below; detailed information regarding University regulations will be found in this Calendar (pages 75-83; 311-337).

Admission

Correspondence courses are open to applicants with full First Year or full Senior Matriculation standing, who have fulfilled the prerequisites for the course concerned. All requirements for admission to the University, as set forth in the Calendar, pages 62-64, apply to correspondence students.

Students registered in the Winter Session of the University are not allowed to enroll in correspondence courses.

Registration

Students will be permitted to register at any time of the year, but it is recommended that if possible they register at the time of the opening of the Winter Session, in September.

Course Credit

Upon completion of all assignments and examinations, full credit toward graduation will be granted.

Correspondence students will note that, of the last 45 units for the Bachelor of Arts degree, at least 30 units must be taken in attendance during a Winter or Summer Session.

Course credit will be granted only when the student has completed his correspondence work within two years of registration for the course.

The University will not grant credit for work taken concurrently at another university.

Fees

Fees charged for a correspondence course are the same as those charged for similar courses in the Summer Session. The course fees may be paid in three equal instalments, the first at the time of registration, the second in advance of receiving the ninth paper, and the third in advance of receiving the eighteenth paper. For details of fees see page 70.

Examinations

Upon satisfactory completion of all course papers and assignments, correspondence students are requested to notify the Extension Department of the date and centre selected for their final examinations.

Students so qualified are permitted to write their final examination at any of the following times: the Christmas examination period, the sessional examination period (April), or the supplemental examination period (the last week in August).

The Registrar of the University will endeavour to arrange the supervision of the examination, usually by a local educational official, at the centre selected by the student or at an alternative centre conveniently located.

Students who fail in two final examinations in any one course will not be permitted to register again for that correspondence course.

Standards in the final examinations will be the same as those for resident students.

EXTRA-SESSIONAL CLASSES

1. Extra-sessional classes in the evenings or late afternoons may be taken for credit, in certain subjects, by students proceeding to the B.A. degree who are at least 18 years of age, are eligible for registration at least as Second Year students (full undergraduate or conditioned) or hold Normal School diplomas, and who have the prerequisite standing. Certain courses for students qualified to proceed to the B.Ed., B.S.W., M.A. (in Education), M.Ed., or M.S.W. degree may also be available.

2. Students attending the extra-sessional classes will be tested by the ordinary Winter Session examinations. Credit will be given for the course if a grade of at least 50% is obtained.

3. Regulations in respect to credit, standing, extra-mural work, examinations, and supplementals are given on pages 75-83.

DEPARTMENT OF UNIVERSITY EXTENSION

Under a grant from the British Dominions and Colonies Fund of the Carnegie Corporation of New York, the University of British Columbia organized early in 1936 a Department of University Extension. This de-

partment carries on a comprehensive and varied programme of adult education.

The grant from the Carnegie Corporation enabled the University to collect much valuable information on the special requirements of adult education in British Columbia. Various experimental projects were tried and, in accordance with the experience gained, were rejected, modified, or accepted as the basis for a more permanent programme. As a result a practicable policy has been evolved—one adapted to local conditions, yet within the financial resources of the University. Through the activities of the Department of University Extension, the University is contributing enduring benefits to the educational, cultural and economic life of the Province.

The Department is responsible for the administration of the rural section of the Dominion-Provincial Youth Training Programme, sponsored jointly by the Canada Department of Labour and the Provincial Department of Education.

Since 1940 the Department of University Extension has been cooperating with the Canada Department of Fisheries in providing an educational programme for British Columbia fishermen. The Department also assists in the administration and supervision of film circuits for the National Film Board, and acts as a coordinating agency for the B. C. Circulating Film Exchange.

The present activities of the Department include the following:

(a) **Extension Lectures.**

Arrangements are made for members of the University teaching staff to give lectures at various centres throughout the Province.

(b) **Evening Classes.**

Evening classes on various subjects including agriculture, business, art, crafts, and courses of general interest are held in Vancouver and adjacent centres. Courses carrying University credit are available on the campus and in various communities throughout the Province.

(c) **Correspondence Courses for Academic Credit.**

The following courses are now available: Philosophy 100 (An Introduction to Philosophy), Psychology 100 (Introduction to Psychology), English 200 (A survey of English Literature), Psychology 301 (Psychology of Childhood and Adolescence), History 304 (Mediaeval History 500 to 1300 A.D.), Economics 306 (formerly 325) (Labour Economics and Labour Problems), Geography 409 (The Geography of North America) and Education 520 (History of Education).

(d) **Correspondence and Discussion Courses.**

Discussion group courses offered each year include specially prepared study bulletins, books and pamphlets in the following fields: pre-school education; parent education; drama; music, art and literature; public speaking; group discussion; current affairs; cooperative education. Discussion outlines are made up in any of these areas to meet the wishes of local groups.

(e) **Audio-Visual Services.**

The Department has over eighteen hundred 16 mm. sound and silent motion picture films; and twelve hundred film strips all of which are available on a rental basis. Projection equipment may also be obtained. Films are distributed for the Canadian Film Institute. In addition, the Department acts as Provincial Library for

United Nations and Civil Defence films and coordinates the work of the Industrial Audio Visual Association of British Columbia.

(f) **Dramatics.**

The Department offers the following services to groups and individuals interested in the theatre: Play Lending Library, Summer School of the Theatre, correspondence courses, short courses and workshops for rural communities in acting, directing and stagecrafts.

(g) **Agriculture.**

Short courses are arranged in cooperation with the University Faculty of Agriculture, the Provincial Department of Agriculture, and agricultural organizations. A pamphlet and advisory service is also maintained.

(h) **Home Economics.**

Workshops, demonstrations and lectures are offered to rural groups in home furnishings, home planning and management, dress-making and food preparation. A pamphlet and advisory service is maintained to aid homemakers as well as commercial firms. A programme planning service is available to women's organizations.

(i) **Art and Crafts.**

Workshop classes in painting, drawing, sculpture, art history, children's art, ceramics, metalwork and other crafts are held on campus. Short courses are given in selected centres of the Province.

(j) **Family Life and Group Development.**

Lectures, short courses, printed materials, films, and advisory services are included in the Department's programme for individuals and groups interested in child development and family relationships. Workshops in group development are designed to increase members' understanding of the principles and methods involved in the effective functioning of groups and organizations. Courses and counselling in the field of pre-school education are also available from a qualified staff member.

(k) **Fisheries Service**

B.C. fishermen may avail themselves of local courses in cooperatives, credit unions, navigation and a two-week technical course at the University. Other Extension resources on the fishing industry include a pamphlet service, a film lending library and a monthly news letter, available on request.

(l) **Extension Library.**

The Extension Library offers a mailing service to all residents of rural British Columbia. Up-to-date books are available on a great variety of subjects.

(m) **Music.**

A Phonograph Record Loan Service and a small collection of books on music are available to groups and individuals interested in increasing their knowledge of good music.

(n) **Radio and Television.**

The Department serves as Provincial Office for the C.B.C. national programmes, Citizens' Forum and Farm Radio Forum. It also arranges for talks and panel discussions over local and national broadcasting outlets, and acts in a liaison capacity in the development of the University role in television.

Full particulars regarding any of the above services will be furnished upon application to the Director, Department of University Extension.

RELIGIOUS STUDIES

Studies on aspects of religion are arranged throughout the session, on an extra-curricular basis, by various student clubs on the campus and by the President's Committee on Spiritual Values. Under the auspices of the latter committee a series of lectures, open to all members of the Faculty and the student body, was offered in 1956-57 on "Living Religions" and "Western Christianity in the Sixteenth Century". It is anticipated that a similar series will be arranged in 1957-58.

From time to time courses in the field of religion are also offered on a non-credit basis by the Department of University Extension.

For students intending to graduate in Theology, credit courses in Religious Knowledge Options, given by the affiliated Theological Colleges on the campus, are open to the extent of three units in each year of the course leading to the degree of B.A. For other students in Arts and Science several courses in fields related to religious studies, each carrying credit toward the B.A. degree, are given by the Departments of English, History, Philosophy, Psychology, and Sociology.

UNIVERSITY SERVICE TRAINING CORPS

Selected students who can meet the physical requirements may take training in the University Contingent of the Canadian Officers' Training Corps (C.O.T.C.), the University Naval Training Division (U.N.T.D.), or the R.C.A.F. (Reserve) University Squadron (R.U.S.). All service training on the campus is under the jurisdiction of a Joint Services University Training Committee composed of the President of the University, the Commanding Officers of the C.O.T.C., U.N.T.D., and R.C.A.F. (Reserve) University Squadron (R.U.S.), the Deans of the Faculties of Arts and Science, Agriculture, and Applied Science, and representatives from the Navy, the Army, and the Air Force. Applications are made at the respective unit offices located in the University Armoury.

(a) Canadian Officers' Training Corps (C.O.T.C.).

The revised programme governing training in the C.O.T.C. provides an opportunity for selected students to qualify for commissions in the Canadian Army, Regular and Militia. Upon acceptance, the candidate is appointed as an Officer Cadet with the status of Second Lieutenant at a basic pay rate of \$200 per month. He is required to devote a minimum of three hours per week at the Armoury to theoretical training in the Winter Session, during which he may earn up to \$100, and he may engage in summer training for a minimum of 12 weeks and up to a maximum of 22 weeks during each of two summers at one of the various Corps Schools of the Regular Army across Canada. The third summer he spends as a junior officer in one of the Regular Army units in Canada or in Germany. On the successful completion of his military training, and upon graduating from the University, the Officer Cadet is qualified for the rank of Lieutenant. A number of officers are accepted into the Regular Army each year. A Regular Officer Training Plan (R.O.T.P.) has also been established whereby selected students with Junior or Senior Matriculation will be subsidized throughout University to their degrees. Their tuition and books will be paid for and, in addition, they will receive an allowance of \$125 per month during the University terms. During the summers they receive \$60 per month all found. On acceptance for R.O.T.P. a student must undertake to serve in the Regular Army for a minimum of three years following graduation.

Further inquiries for information should be directed to the Commanding Officer. Consultation with the Resident Staff Officer may

be had at the C.O.T.C. Orderly Room situated in the University Armoury.

(b) **The University Naval Training Division (U.N.T.D.).**

On the 29th of March, 1943, the Board of Governors of the University of British Columbia approved the establishment of a University Naval Training Division (U.N.T.D.) on the campus.

Since the war the U.N.T.D. has carried on an officer training programme for the Royal Canadian Navy and the Reserve Force. Thus students who are interested in the Navy may avail themselves of training which will develop qualities of leadership, loyalty, sound physique and self confidence, while fitting themselves for commissions in the Regular or Reserve Force.

All applicants undergo medical and personnel tests prior to enrollment, to determine their fitness.

1. **Royal Canadian Navy**—Students interested in the Royal Canadian Navy as a career are selected and enrolled under the "Regular Officers Training Plan" (R.O.T.P.) as Cadets R.C.N. Application for admission must be made not later than July 1st in the year of entrance. Application forms and information may be obtained from the Regular Officer Training Plan Selection Board, National Defence Headquarters, Ottawa.

The Royal Canadian Navy pays between \$50 and \$75 for books and instruments, depending on the registered course at University, all tuition and other essential fees together with a subsistence allowance of \$65 per month plus pay of \$60 per month during the academic year. R.O.T.P. Cadets receive pay at the rate of \$60 per month during periods of practical summer training.

2. **Royal Canadian Navy (Reserve)**—A student interested in a commission in the Royal Canadian Navy (Reserve) is enrolled as a Probationary Cadet. Recruiting will normally cease in mid-November. During January of his first year he appears before a Regional Selection Board and, if found suitable, is promoted to Cadet, RCN(R).

As a Cadet, he must complete three winters and two summers of training with U.N.T.D. and have at least three years of University to his credit in order to be considered for promotion by the Selection Boards to Acting Sub Lieutenant. He may claim up to sixteen full days pay for regular drills during the winter. The winter drills are held Monday nights of the two University terms at H.M.C.S. "Discovery" where regular Naval courses of a theoretical and practical nature are given.

During each summer training period, at Naval establishments and in Ships, Reserve Cadets are paid at the rate of \$200 per month with uniforms, medical care, board and accommodations provided. A Reserve Cadet, if he desires, may apply for a Regular Service Commission.

Full information may be obtained by writing to the Commanding Officer, U.N.T.D., University of British Columbia, Vancouver 8, B.C. or by applying in person to the Staff Officer, U.N.T.D., University of British Columbia, who has an office situated in the Armoury.

(c) **R.C.A.F. (Reserve) University Squadron.**

The R.C.A.F. Primary Reserve Squadron located on the U.B.C. Campus offers undergraduates an opportunity to qualify for commissions in the Regular and Reserve components of the R.C.A.F.

Training is designed to develop character and leadership and to qualify students for a commission in one of the various branches of the Air Force. Although aircrew and technical training are emphasized, many excellent non-technical opportunities are open to students taking both general and specialized courses at University. Training of all squadron members is carried out at weekly parades during the academic year and at R.C.A.F. Stations during the five-month summer recess.

Aircrew training comprises the branches of Pilot and Observer. Commencing with the first summer after enrollment the accepted candidate is progressively trained each summer to a basic flying standard and, upon completion of training, receives either a Pilot Basic Flying Certificate or an Observer's badge. With the exception of medical and theological applicants, and provided they can train for three consecutive summers prior to graduation, all male undergraduates under 25 years of age may apply for aircrew training.

Non-aircrew training covers the technical, medical, and non-technical branches. Technical branches are broken down into aeronautical engineering, armament engineering, construction engineering, and telecommunications engineering components; the medical branch into medical officer and medical associate (pharmacist); the non-technical branches into the accounts, administration, chaplain, education, legal, personnel specialist recreation, supply, ground defence, flying control, fighter controller, ground observer, and security branches. By means of formal courses or contact training, the undergraduate can gain wide experience in his chosen profession under the R.C.A.F. summer training plan.

Students who desire to make the R.C.A.F. a career or who need financial assistance to complete their university training are selected and enrolled as flight cadets in the R.C.A.F. Regular under the Regular Officer Training Plan (R.O.T.P.). By agreeing to remain with the air force a minimum of three years after graduation, the selected candidate receives a monthly salary of \$60, a living allowance of \$65 per month or equivalent, and a book allowance of \$75 per year in addition to the University fees. Male students who have full matriculation standing and who meet age, medical and academic standards may apply for training under this plan. Preference, however, is normally given to undergraduates taking Engineering or Honours Mathematics and Physics courses.

On the other hand, undergraduates who are interested in the R.C.A.F. on a reserve basis, may enroll in the air force under the University Reserve Training Plan (U.R.T.P.). This plan offers three summers and winters of reserve training for the student who is accepted. While undergoing training, U.R.T.P. members have the status of officers and hold the rank of flight cadet. On completion of three years of training the successful flight cadet receives his commission and is promoted to Pilot Officer. Both male and female undergraduates may make application for training under the U.R.T.P. in an air force branch allied with their academic studies. Accepted students are paid at the rate of \$200 per month during the summer and provided with food, lodging, clothing, and transportation to the applicable R.C.A.F. unit. Aircrew personnel receive an additional \$75 a month. Summer training normally covers a period of from 16 to 22 weeks and winter training consists of one parade a week during the academic term. For full attendance at parades during the academic year, U.R.T.P. members may receive a maximum of 16 days' pay amounting to approximately \$100.

Additional information and application forms may be obtained from the R.C.A.F. (Reserve) Squadron Orderly Room in the University Armoury.

STUDENT ORGANIZATION

Alma Mater Society

President : Don Jabour
Secretary : Peggy Andreen
Treasurer : Al Thackray

The Alma Mater Society with its governing executive, the Students' Council, controls all student activities and is responsible for student discipline. Every student automatically becomes a member of the Alma Mater Society when he enrolls in the University. Members of Students' Council are elected every spring to hold office through the next year.

The Society levies a compulsory fee of \$12 upon each student, which may be augmented for special purposes by action of its membership. At present, an additional levy of \$5 for the Brock Memorial Extension, and another of \$1 for World University Service of Canada, bring the Alma Mater fee to a total of \$18. If a student withdraws from the University, he should apply to the A.M.S. office for refund of his A.M.S. fee. This application must be made on or before November 2nd, 1957.

The offices of the Alma Mater Society are in the south end of the Brock Memorial Building.

Publications Board

The Publications Board publishes "The Ubyyssey", student newspaper; the "Totem", yearbook of the Alma Mater Society; the "Raven", a literary magazine; "Pique", a humour magazine; "Tuum Est . . . and all that", an introductory handbook about student affairs; and the "Student Directory", containing a list of addresses and telephone numbers of all members of the Society and a brief resume of "Tuum Est".

University Clubs Committee

The University Clubs Committee (U.C.C.) is comprised of representatives from each of the 70 campus clubs. The U.C.C. elects an executive which administers to the clubs' needs, directs their activities, and represents them on Students' Council.

A list of these clubs and a description of their various fields of interest will be found in the Student Handbook and in "Tuum Est".

Women's Undergraduate Society

The Women's Undergraduate Society is the representative and executive organization of all the women of the University. Its object is to consider and advance the interests of women students by promoting extra-curricular activities.

Women's Athletics

All women students in the Alma Mater Society are members of the Women's Athletic Association and are eligible to participate in the intramural and extramural women's athletic programme. The executive body of the Association is the Women's Athletic Directorate which administers the programme under the supervision of the Women's Athletic Committee, a body composed of both Faculty and student representatives.

Detailed information appears in "Tuum Est".

Men's Athletics

All male students in the Alma Mater Society are members of the Men's Athletic Association. The Association is a local board of the Amateur Athletic Union of Canada, and of the Evergreen Conference. It is supervised by the Men's Athletic Committee, a Presidents' Committee formed of both faculty and student representatives.

Detailed information appears in "Tuum Est".

Fraternities and Sororities

Fraternities and Sororities are recognized by the Senate of the University as student organizations. Fraternities are governed by the Inter-Fraternity Council composed of representatives of each of the fraternities and a member of faculty. Membership in fraternities is by invitation. Sororities are governed by the Women's Panhellenic Association. Membership in sororities is by invitation.

SUMMER SESSION ASSOCIATION

Executive for 1957:

President: George Dew
Secretary: Frank McPhalen
Treasurer: Allan Baker

The Summer Session Association of the University of British Columbia is composed of all persons in attendance at the Summer Session. All students are required to pay a fee of \$2.00 at the time of registration.

This organization originated as a body to care for the purely social requirements of the Summer Session. Growth and expansion down through the years have made it of major importance on the summer campus.

The organization provides social and intellectual activities for both students and staff of the Summer Session. It deals with all matters pertaining to student welfare on the campus; it provides certain Summer Session scholarships and has made available money for student loans. The Executive Committee of the Association serves as a liaison group between the student body and the various governing bodies of the University.

The Summer Session Association hold at least two general meetings each summer. The Executive meets at least weekly during the summer and as often as is deemed necessary throughout the year.

The office of the Association is located in the Brock Memorial Building and Executive members may be contacted there any afternoon during the session, or by telephoning ALma 1230.

ALUMNI ASSOCIATION OF THE UNIVERSITY OF BRITISH COLUMBIA

Executive Committee:

President: Nathan Nemetz, Q.C.	Treasurer: Archie P. Gardner
Past President: Peter Sharp	Executive Secretary: A. H. Sager
2nd Vice-President: Mrs. Lawrence E. Ranta	Administrative Assistant: H. P. Krosby
3rd Vice-President: Dr. Malcolm McGregor	Chronicle Editor: Harry T. Logan

Members at Large:

John Ashby	William A. Craig	Miss Mildred Wright
Leonard B. Stacey	Miss Rika Wright	John Lecky

The Alumni Association seeks to maintain the interest of alumni in the University, develop favourable public opinion for the University's work, and advance the cause of higher education generally.

Membership is open to all former students of the University, old McGill College and Victoria College, who have completed fifteen units of course work while in attendance.

The Association is governed by a Board of Management and Executive Committee, members of which are elected at the annual meeting.

The "U.B.C. Alumni Chronicle", published quarterly by the Association, is mailed regularly to contributors to the Annual Giving Programme of the U.B.C. Development Fund. "U.B.C. Reports" is also distributed to all alumni and friends of the University.

Further information can be obtained from the Alumni Office, Room 201, Brock Memorial Building.

VICTORIA COLLEGE

VICTORIA, B. C.

(In affiliation with the University of British Columbia)

Administrative Staff

W. HARRY HICKMAN, M.A. (Brit. Col.), Docteur de l'Université de Paris, Principal.

ROBERT T. D. WALLACE, M.A. (Brit. Col.), Vice-Principal.

HENRY C. GILLILAND, M.A. (Brit. Col.), Director, Teacher Education.

MISS DOROTHY M. CRUICKSHANK, B.A. (Brit. Col.), Registrar.

Professor Emeritus

JEFFREE A. CUNNINGHAM, B.A. (Queen's), Professor Emeritus of Zoology.

Department of Biology, Botany and Zoology

W. GORDON FIELDS, B.A. (Brit. Col.), A.M. (Stanford), Associate Professor of Biology and Zoology.

MISS ANNE L. GORHAM, B.Sc. (Dalhousie), M.Sc. (McGill), Instructor in Biology and Botany.

ARTHUR R. FONTAINE, B.Sc. (McGill), Instructor in Biology and Zoology.

Department of Chemistry

LEWIS J. CLARK, B.A. (Brit. Col.), M.Sc. (Washington), Associate Professor.

EDWARD J. SAVANNAH, A.B., S.B. (Calif.), Assistant Professor.

CHARLES E. BURCHILL, B.A. (Sask.), Instructor.

Department of Classics

JOHN CARSON, M.A. (Oxon), Assistant Professor.

Department of Commerce and Economics

G. REID ELLIOTT, B.A. (Sask.), M.A. (Toronto), Associate Professor.

Department of English

ROGER J. BISHOP, B.A. (Brit. Col.), M.A. (Toronto), Associate Professor.

RODNEY P. D. POISSON, M.A. (Brit. Col.), Associate Professor.

G. GRANT McORMOND, M.A. (Sask.), Assistant Professor.

ROBERT G. LAWRENCE, M.A. (New Brunswick), Ph.D. (Wisconsin), Instructor.

MISS E. ANN SADDLEMYER, B.A. (Sask.), M.A. (Queen's), Instructor.

CARL R. D. HARE, B.A. (Alberta), Instructor.

Department of Geology and Geography

CHARLES H. HOWATSON, M.A. (Brit. Col.), Associate Professor.

Department of History

SYDNEY G. PETTIT, M.A. (Brit. Col.), Associate Professor.

Department of Mathematics

- ROBERT T. D. WALLACE, M.A. (Brit. Col.), Professor.
 MRS. O. PHOEBE NOBLE, B.A. (Brit. Col.), Assistant Professor.
 GEORGE E. CROSS, M.A. (Dalhousie), Instructor.
 FRED L. MARTENS, B.A., B.Ed. (Brit. Col.), M.S. in P.E. (Wash.), Part-time lecturer for session 1956-1957.

Department of Modern Languages

- W. HARRY HICKMAN, M.A. (Brit. Col.), Docteur de l'Universite de Paris, Professor.
 MISS GWLADYS V. DOWNES, M.A. (Brit. Col.), Docteur de l'Universite de Paris, Assistant Professor of French.
 GORDON L. TRACY, B.A. (Queen's), M.A., Ph.D. (Wisconsin), Assistant Professor of German.
 J. BEATTIE MACLEAN, B.A. (Brit. Col.), M.A., Ph.D. (Wash.), Associate Professor of German.

Department of Philosophy

- CARL R. D. HARE, B.A. (Alberta), Instructor.

Department of Psychology

- WILLIAM H. GADDES, M.A. (Brit. Col.), Ph.D. (Claremont), Associate Professor.

Department of Physics

- JOHN L. CLIMENHAGA, M.A. (Sask.), M.A. (Mich.), Assistant Professor.
 WILLIAM H. HUGHES, B.A. (Queen's), B.Sc. (Sask.), Special Lecturer.

College of Education

- HENRY C. GILLILAND, M.A. (Brit. Col.), Professor and Director of Teacher Education.
 GEORGE A. BRAND, B.A. (Brit. Col.), Associate Professor.
 HUGH E. FARQUHAR, M.A. (Brit. Col.), Associate Professor.
 D. BOYCE GADDES, A.T.C.M., B.Mus. (Oregon), M.A. (Washington), Associate Professor.
 A. WILFRED JOHNS, B.A. (Washington), Associate Professor.
 MRS. KATHLEEN M. CHRISTIE, B.A. (Brit. Col.), Assistant Professor.
 MISS WINNETT A. COPELAND, Assistant Professor.
 ALFRED E. LOFT, B.A. (Brit. Col.), Assistant Professor.
 NEIL A. SWAINSON, M.A., B.Ed. (Brit. Col.), Assistant Professor.
 GEOFFREY P. MASON, M.A. (Brit. Col.), Assistant Professor.
 MISS MAUREEN C. BRAY, B.P.E. (Brit. Col.), Instructor.
 FRED L. MARTENS, B.A., B.Ed. (Brit. Col.), M.S. in P.E. (Washington), Lecturer.

OTHER DEPARTMENTS

Registrar's Office

- MISS DOROTHY M. CRUICKSHANK, B.A. (Brit. Col.), Registrar.
 MISS PATRICIA SULLIVAN, B.A. (Sask.), Associate Registrar.
 MRS. MARJORIE HOEY, Assistant Registrar.

Library

- ALBERT A. SPRATT, B.A. (Sask.), B.L.S. (McGill), Librarian.
 DENIS A. GODSON, B.A. (Brit. Col.), B.L.S. (Toronto), Junior Librarian.
 MISS ANNE VAN DER VOORT, B.A. (Queen's), B.L.S. (Toronto), Junior Librarian.

Book Store

- MRS. E. JOYCE MCKAY, B.A. (Man.), Manager.

Accountant's Office

M. WARREN DAVIDSON, Accountant and Purchasing Agent.

Counselling and Placement

J. BEATTIE MACLEAN, B.A. (Brit. Col.), M.A., Ph.D. (Washington), Supervisor.

Women's Activities

MRS. O. PHOEBE NOBLE, B.A. (Brit. Col.), Co-ordinator.

College Health Service

DR. ROBERT M. LANE, Supervisor.

MRS. ROSE M. EVANS, R.N.

The College at Victoria, B.C., gives instruction in the first two years of the course in Arts and Science (including the First Year of Commerce), also the first two years of the Education degree programmes now under the authority of the Faculty and College of Education of the University. In addition to the first two years of the programmes leading to the B.Ed. degree, both elementary and secondary, Victoria College (as part of the College of Education offers, in teacher education, the one-year course for students with Senior Matriculation standing (or the equivalent) and the one-year emergency course.

The courses offered are as follows:

Biology 105	German 90, 110, 120, 200
Botany 105, 201, 202	Greek 90, 101
Chemistry 101, 200, 210	History 101, 102, 201, 304
Commerce 151	Latin 90, 110, 120, 210, 220
Economics 100, 200	Mathematics 100, 101, 201, 202, 205, 310
Education 102, 105, 201, 204, 205	Philosophy 100
English 100-101, 200, 201	Physics 100, 101, 103, 200
Fine Arts 101	Psychology 100, 202
French 110, 120, 210, 220, 223	Spanish 90
Geography 101, 201, 207	Zoology 105, 202
Geology 200	

The rules and regulations governing the College are the same as those in force at the University.

Information regarding Victoria College and Calendars of the College may be obtained on application to the Registrar, Victoria College, Victoria, B. C.

UNION COLLEGE OF BRITISH COLUMBIA

(United Church of Canada)

VANCOUVER 8, B. C.

(In affiliation with the University of British Columbia)

Principal

REV. W. S. TAYLOR, M.A., B.D., Ph.D., D.D.

Registrar

REV. PROFESSOR S. V. FAWCETT, B.A., B.D., Th.D.

Dean of Residence

REV. PROFESSOR J. W. GRANT, M.A., D.Phil.

Union College offers courses of instruction in Theology leading to a diploma in Theology, and to the degrees of B.D., B.Th., and S.T.M., and, under the general regulations of the University with reference to affiliated Theological Colleges, provides Religious Knowledge options, for

which credit is given in the course leading to the B.A. degree. (See page 76.)

For further information in reference to Faculty, courses of study, etc., see Calendar of Union College.

**THE ANGLICAN THEOLOGICAL COLLEGE OF
BRITISH COLUMBIA
VANCOUVER 8, B. C.**

(In affiliation with the University of British Columbia)

Principal

REV. H. F. WOODHOUSE, B.A., H.Dip.Ed., D.D.

Registrar

REV. F. A. PEAKE, M.A., L.Th., B.D.

Dean of Residence

REV. H. B. BARRETT, B.A., L.Th., B.D.

The Anglican Theological College offers courses in Theology leading to the Diploma of Licentiate in Theology, the Diploma of Scholar in Theology, and the degrees of B.D. and D.D., and, under the general regulations of the University in reference to affiliated colleges, provides Religious Knowledge options, for which credit is given in the course leading to the B.A. degree. (See page 76.)

For further information in reference to Faculty, courses of study, etc., see Calendar of the College.

ST. ANDREW'S HALL

(In affiliation with the University of British Columbia)

By action of the Senate and the Board of Governors approval has been granted to the Presbyterian Church in Canada for the affiliation of a Chapel and residence to be erected on the campus, to be known as St. Andrew's Hall, the first unit of which will serve as a residence and centre chiefly for Presbyterian students attending the University. It is expected that an early start will be made on the construction of this building, and that the residence may be ready for occupancy by the opening of the fall term, 1957.

**ST. MARK'S COLLEGE
VANCOUVER 8, B.C.**

(In affiliation with the University of British Columbia)

Principal

VERY REV. H. CARR, C.S.B., B.A., LL.D.

Registrar

REV. M. J. OLIVER, C.S.B., B.A., Ph.M.

By action of the Senate and Board of Governors approval has been granted for the affiliation of an institution to be erected on the campus to be known as St. Mark's College, which will serve as a residence and centre for the Roman Catholic students attending the University.

It is expected that an early start will be made on construction and that the buildings will be ready for occupancy at the opening of the Fall Term of 1957.

REGISTRATION FOR 1956-57

FACULTY OF ARTS AND SCIENCE

Arts and Science:	Men	Women	Total
First Year	1224	430	1654
Second Year	589	176	765
Third Year	340	126	466
Fourth Year	263	136	399
Total	2416	868	3284
School of Home Economics:			
First Year		61	61
Second Year		50	50
Third Year		38	38
Fourth Year		21	21
Total		170	170
School of Physical Education:			
First Year	11	8	19
Second Year	24	9	33
Third Year	21	6	27
Fourth Year	17	5	22
Total	73	28	101
School of Social Work:			
B.S.W. Course	14	29	43
M.S.W. Course	18	16	34
Total	32	45	77
TOTAL IN FACULTY	2521	1111	3632

FACULTY OF APPLIED SCIENCE

Engineering:	Men	Women	Total
First Year	409	.....	409
Second Year	243	1	244
Third Year	206	1	207
Fourth Year	172	.....	172
Total	1030	2	1032
School of Architecture:			
First Year	29	3	32
Second Year	15	1	16
Third Year	20	.....	20
Fourth Year	9	1	10
Fifth Year	16	.....	16
Total	89	5	94
School of Nursing:			
First Year .....	.....	55	55
Second Year .....	.....	38	38
Third Year .....	.....	34	34
Fourth Year .....	.....	35	35
Diploma Course .....	.....	54	54
Total .....	.....	216	216
TOTAL IN FACULTY	1119	223	1342

FACULTY OF AGRICULTURE

	<i>Men</i>	<i>Women</i>	<i>Total</i>
First Year	38	9	47
Second Year	38	3	41
Third Year	26	5	31
Fourth Year	22	4	26
Fifth Year	4	.....	4
Occupational Course	3	1	4
TOTAL IN FACULTY	131	22	153

FACULTY OF LAW

	<i>Men</i>	<i>Women</i>	<i>Total</i>
First Year	100	3	103
Second Year	73	3	76
Third Year	47	5	52
TOTAL IN FACULTY	220	11	231

FACULTY OF PHARMACY

	<i>Men</i>	<i>Women</i>	<i>Total</i>
First Year	39	16	55
Second Year	40	6	46
Third Year	29	12	41
TOTAL IN FACULTY	108	34	142

FACULTY OF MEDICINE

	<i>Men</i>	<i>Women</i>	<i>Total</i>
First Year	54	6	60
Second Year	46	5	51
Third Year	45	3	48
Fourth Year	46	4	50
TOTAL IN FACULTY	191	18	209

FACULTY OF FORESTRY

	<i>Men</i>	<i>Women</i>	<i>Total</i>
First Year	51	1	52
Second Year	31	.....	31
Third Year	20	.....	20
Fourth Year	26	.....	26
TOTAL IN FACULTY	128	1	129

FACULTY OF EDUCATION

B.Ed. (Elementary Field)

	<i>Men</i>	<i>Women</i>	<i>Total</i>
First Year	19	158	177
Second Year	3	32	35
Third Year	6	33	39
Fourth Year	4	16	20
Total	32	239	271

	<i>Men</i>	<i>Women</i>	<i>Total</i>
One Year Programme (Elementary Field)	47	255	302

B.Ed. (Secondary Field)	<i>Men</i>	<i>Women</i>	<i>Total</i>
First Year	41	19	60
Second Year	52	12	64
Third Year	44	14	58
Fourth Year	11	3	14
Fifth Year	1	.....	1
Total	149	48	197
One Year Programme (Secondary Field)	75	57	132
B.Ed. (Graduate)	1	2	3
TOTAL IN FACULTY	304	601	905
FACULTY OF COMMERCE AND BUSINESS ADMINISTRATION			
	<i>Men</i>	<i>Women</i>	<i>Total</i>
First Year	194	6	200
Second Year	138	8	146
Third Year	118	8	126
Fourth Year	91	9	100
TOTAL IN FACULTY	541	31	572
FACULTY OF GRADUATE STUDIES			
	<i>Men</i>	<i>Women</i>	<i>Total</i>
Course leading to: Ph.D.	61	5	66
M.A.	73	19	92
M.A.Sc.	32	.....	32
M.S.A.	16	1	17
M.Sc.	42	8	50
M.B.A.	2	.....	2
M.F.	8	.....	8
Diploma — Criminology	1	.....	1
Not candidate for degree	94	22	116
TOTAL IN FACULTY	329	55	384
GRAND TOTAL	5592	2107	7699
	<i>Men</i>	<i>Women</i>	<i>Total</i>
Extra-Sessional Classes	720	348	1068
Correspondence Courses	305	276	581
Summer Session, 1956	1104	706	1810
Total	2129	1330	3459

DEGREES CONFERRED

1956

May Congregations:

May 14th and 15th—LL.D. (Honoris Causa)—3; D.Sc. (Honoris Causa)—3; Ph.D.—12; M.A.—22; M.Sc.—11; M.A.Sc.—10; M.S.A.—5; M.B.A.—1; M.F.—1; M.S.W.—18; B.S.W.—39; B.Ed.—36; B.A.—300; B.Com.—97; B.H.E.—35; B.P.E.—19; B.A.Sc.—132; B.Arch.—8; B.S.A.—25; LL.B.—58; B.S.P.—38; M.D.—60; B.S.F.—20. Total—953.

October Congregation:

October 26th—LL.D. (Honoris Causa)—6; Ph.D.—7; M.A.—17; M.Sc.—10; M.A.Sc.—5; M.S.A.—1; M.S.W.—2; B.Ed.—84; B.A.—116; B.Com.—9; B.H.E.—4; B.P.E.—7; B.A.Sc.—19; B.S.N.—21; B.S.A.—7; B.S.P.—2; B.S.F.—3. Total—320. Grand total—1273.