THE UNIVERSITY OF KING'S COLLEGE

CALENDAR 1978-79

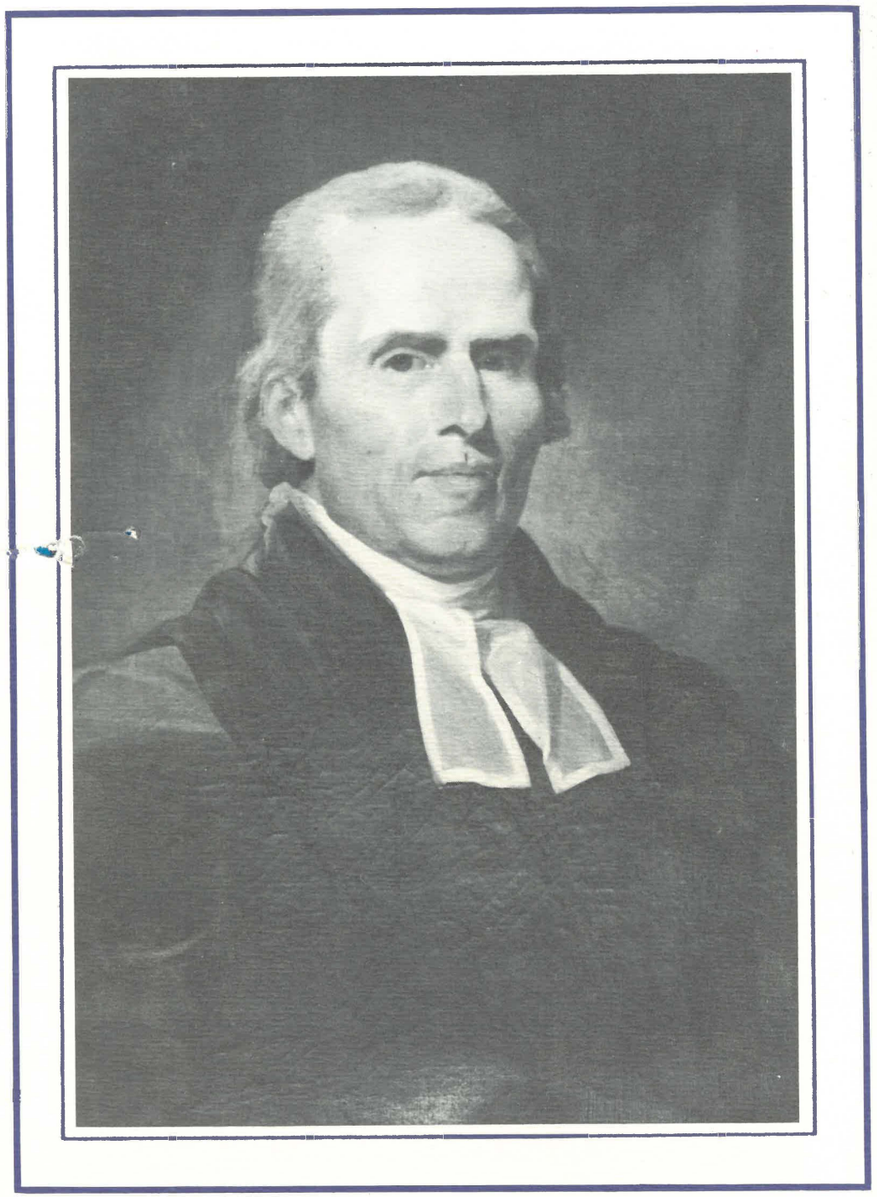


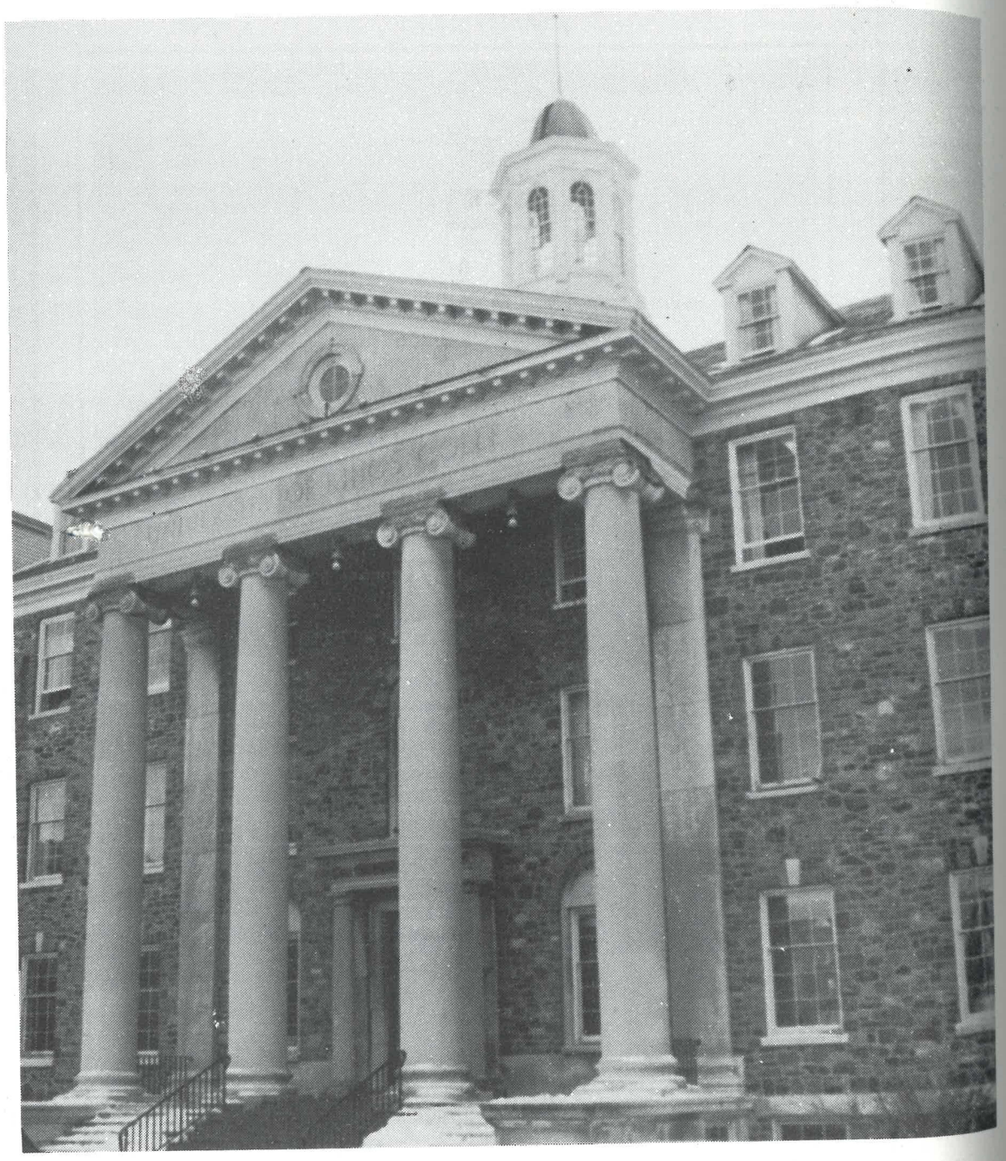
PHOTO: DELOREY

Dr. William Cochran,
First President of King's

CALENDAR
1978-1979

University of King's College
FOUNDED A.D. 1789

HALIFAX, NOVA SCOTIA
190th SESSION



Administration Building

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ALMANAC 1978-79

JULY 1978

Saturday, 1
Dominion Day

Monday, 3
General University offices closed. No classes.

Tuesday, 4
Summer School (2nd session) registration and classes begin.

Monday, 17
Halifax Natal Day - No classes.

AUGUST 1978

Wednesday, 2
12:00 noon, Dartmouth Natal Day (half holiday).

Wednesday, 16
Supplemental examinations begin in Arts and Science.

Friday, 18
Final day of classes, Summer School.

SEPTEMBER 1978

Monday, 4
Labour Day

Wednesday, 13 - Saturday noon, 16
Last regular days for class approval, registration and payment of fees for students in Arts and Science and Journalism.

Thursday, 14
Classes begin in the Foundation Year Programme.

Monday, 18
Classes begin in Arts and Science and Journalism.

Sunday, 24
University Church Service - Chapel 4:30 p.m.

Monday, 25 - Friday, 29
Last days for change of course or class in Arts and Science.

Wednesday, 27
Registration and payment of fees for Extension Course.
7:00 - 9:00 p.m.

OCTOBER 1978

Monday, 2
Last day for adding classes (except "B" classes). Arts and Science.

Monday, 9
Thanksgiving Day.

NOVEMBER 1978

Saturday, 11
Remembrance Day.

Tuesday, 14
Last day for withdrawing from "A" classes without academic penalty, Arts and Science.

DECEMBER 1978

Thursday, 7
Last day of classes in Arts and Science, Foundation Year Programme and Journalism.

Friday, 8
Examinations begin in Arts and Science.

Tuesday, 19
No classes, student holidays begin.

Monday, 25
Christmas Day.

Tuesday, 26
Boxing Day.

JANUARY 1979

Monday, 1
New Year's Day.

Tuesday, 2
Registration of new students.
Classes resume all faculties.

Monday, 15
Last day for adding or changing "B" (or second term) classes, Arts and Science.

Friday, 26
Munro Day. No classes.

Saturday, 27
Winter Carnival. No classes.

Monday, 29
Last day for withdrawing from full-year classes without academic penalty, Arts and Science.

FEBRURY 1979

Wednesday, 7
Meeting of Convocation 8:00 p.m.

Monday, 19 - Sunday, 25
Study break.

Monday, 26
Classes resume.

MARCH 1979

Monday, 5
Last day for withdrawing from "B" classes without academic penalty, Arts and Science.

APRIL 1979

Friday, 6
Awards Banquet.
Last day of classes, Foundation Year Programme, Journalism.

Saturday, 7
Last day of classes in Arts and Science.

Monday, 9
Examinations begin in Arts and Science.

Friday, 13
Good Friday.

Friday, 20
Last day for submitting work in the Foundation Year Programme.

MAY 1979

Monday, 7
Registration and beginning of classes, Chemistry 240: (1st session of Summer School).

Wednesday, 9
Encaenia Day - 11 a.m. Baccalaureate Service.
King's Convocation - 2:30 p.m.

Thursday, 10
Dalhousie University Convocation.

Friday, 11
Dalhousie University Convocation.

Monday, 14
Summer School registration (1st session).

Tuesday, 15
Summer School begins (1st session).

Friday, 18
Dalhousie University Convocations.

Monday, 21.
Victoria Day.

JUNE 1979

Monday, 25
Registration and beginning of classes, Chemistry 100: (2nd session of Summer School).

Thursday, 28
Summer School ends (1st session).

OFFICE HOURS
Week days (Monday - Friday) 9:00 a.m. - 5:00 p.m.
June, July, August (Monday - Friday) 9:00 a.m. - 4:30 p.m.

OFFICERS OF THE UNIVERSITY

Patron
The Most Reverend the Lord Archbishop of Canterbury and Primate of All England.

Visitor
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Chancellor
The Honourable Mr. Justice R.A. Ritchie, Q.C., B.A. (Vind et Oxon.), D.C.L. (Vind), LL.D. (Dal.)

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Mr. C. William Hayward, B.Com.
Her Honour Judge Sandra E. Oxner, B.A., LL.B.
The Rev. D.F.L. Trivett, B.A., L.Th., B.D.
Mr. C. Bruce Cochran, B.Comm., M.L.A.
Dr. Henry F. Muggah, Q.C.
Dr. Robert J. McCleave, Q.C., M.P.
Mr. James E. Cochran, B.A., B.Ed.

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Professor J.P. Atherton, M.A., Ph.D.
Professor Colin J. Starnes, B.A., S.T.B., M.A., Ph.D.
Professor R. MacG. Dawson, B.A., M.A., B.Litt.

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Miss Vera G. Turnbull
Mr. Wallace F. Stephen
Mr. John M. Ferguson

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Mr. R.G. Smith
The Very Rev. E. B. N. Cochran, B.A., L.Th., D.D.
Dr. Eric Balcom, D.C.L.
Mr. J.R. Ellis
Professor F. Hilton Page, M.A., D.D.
Mr. F.W. Chenhall
Mr. Ralph V.A. Swetnam, L.L.B.

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The Bishop of Fredericton
The President
The Vice-President
The Treasurer
The Very Rev. E. B.N. Cochran
Dr. E.W. Balcom
Mr. G. R. K. Lynch
Mr. R.G. Smith
Mr. John Wiles
Mr. R. V. A. Swetnam
Dr. J. P. Atherton
The Very Rev. H. Rhodes Cooper
The Rev. T. W. F. Crowther
The Ven. Raymond H. Murphy

Representatives on Dalhousie University Board of Governors
Mr. G. R. K. Lynch
Mr. R. G. Smith

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The Very Rev. E. B. N. Cochran (1978)
Prof. R. MacG. Dawson (1979)

Governors Emeriti
Dr. D.S. Fisher, D.C.L.,

Secretary to the Board of Governors
Miss R. E. N. Smith, B.A.
University of King's College, Halifax, N.S.
B3H 2A1

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Professor H.S. Granter, B.A., A.M.
Vice-President
Professor W.J. Hankey, B.A., M.A.
Director, Foundation Year Programme
Miss Allison Conrod
Bursar
Mr. D. Fry
Domestic Bursar
Mrs. C. Goodday
Accounts Bursar
Mrs. G. S. Clark
Registrar

Mrs. J.E. Lane, B.A.
Librarian
The Rev. R. Bridge, B.A., M.A., M.Div., A.M., Ph.D.
University Chaplain
The Rev. Canon J. H. Graven, M.A., L.Th.
Divinity Secretary
Mrs. Iris Newman
Executive Secretary Alumni Association
Mr. T.H. Curran, B.A., M.A.
Dean of Residence
Mrs. T.H. Curran, B.A.
Dean of Women
Mr. R. M. Shoveller, B.P.E.
Director of Athletics
Ms. Judith Campbell, B.A.
Information Officer

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Chancellor
J.F. Godfrey, B.A., B.Phil., D.Phil.
Vice-Chancellor
The Rev'd Dr. R.D. Crouse B.A., S.T.B., M.Th., Ph.D.
Clerk of Convocation
J.P. Atherton, M.A., Ph.D.
Public Orator

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The Very Rev. Edwin Gilpin, D.D., D.C.L., 1891-1897
Edward Jarvis Hodgson, D.C.L., 1897-1911
Sir Charles J. Townshend, D.C.L., 1912-1922
The Most Rev. John HacKenley, D.D., 1937-1943
Hon. Ray Lawson, O.B.E., LL.D., D.Cn.L., D.C.L., 1948-1956
Lionel Avard Forsyth, Q.C., D.C.L., 1956-1958
H. Ray Milner, Q.C., D.Cn.L., D.C.L., LL.D., 1958-1963
Robert H. Morris, M.C., B.A., M.D., F.A.C.S., 1964-1969
Norman H. Gosse, M.D., C.M., D.Sc., D.C.L., LL.D., F.A.C.S., F.R.C.S.(C), 1971-1972
The Honourable Mr. Justice R.A. Ritchie, Q.C., B.A., D.C.L., LL.D., 1974-

Presidents and Vice-Chancellors of the University
The Rev. Dr. William Cochran, 1789-1804
The Rev. Thomas Cox, 1804-1805
The Rev. Dr. Charles Porter, 1805-1836
The Rev. Dr. George McCawley, 1836-1875
The Rev. Dr. John Dart, 1875-1885
The Rev. Dr. Isaac Brock, 1885-1889
The Rev. Dr. Charles Willets, 1889-1904
Dr. Ian Hannah, 1905-
The Rev. Dr. C. J. Boulden, 1905-1909
The Rev. Dr. T. M. Powell, 1909-1914
The Rev. Dr. T.S. Boyle, 1916-1924
The Rev. Dr. A. H. Moore, 1924-1937
The Rev. Dr. A. Stanley Walker, 1937-1953
The Rev. Dr. H. L. Puxley, 1954-1963
Dr. H. D. Smith, 1963-1969
Dr. F. Hilton Page, (Acting), 1969-1970
Dr. J. Graham Morgan, 1970-1977
Dr. J.F. Godfrey, 1977-

ACADEMIC STAFF

King's Faculty of Arts and Science (1977-78)

J.P. Atherton, M.A. (Oxon.), Ph.D. (Liverpool)
Associate Professor of Classics
T. H. Curran, B. A. (Trinity), M.A. (Dal.)
Junior Fellow
R. MacGregor Dawson, B.A. (Trinity), M.A. (Tor.), B. Litt. (Oxon.)
Associate Professor of English
John F. Godfrey, B.A. (Trinity), B.Phil, D.Phil. (Oxon.)
President of the University, Assistant Professor of History
H.S. Granter, B.A. (Dal.), A.M. (Harvard)
Professor of History
W.J. Hankey, B.A. (Vind.), M.A. (Tor.),
Assistant Professor of Humanities and Social Sciences and Director of Foundation Year Programme, Special Lecturer in Classics
E. L. Heighton, B.Sc., M.A. (Dal.), Ed.D. (Virginia)
Associate Professor of Mathematics
J. G. Morgan, B.A. (Nott.), M.A. (Mc.M.), D.Phil. (Oxon.)
Associate Professor of Sociology and Anthropology
F. Hilton Page, M.A. (Tor.), D.D. (Pine Hill)
Professor of Philosophy
H. Roper, B.A. (Dal. et Cantab.), M.A., Ph.D. (Cantab.)
Junior Fellow
C. J. Starnes, B.A. (Bishops), S.T.B. (Harv.), M.A. (McG.), Ph.D. (Dal)
Assistant Professor of Humanities and Social Sciences. Special Lecturer in Classics
J. Stolzman, B.A. (Oreg.), M.S. (Fla. St.), Ph.D. (Oreg.)
Assistant Professor of Sociology and Anthropology

Associate Fellows
A.H. Armstrong, M.A. (Cantab), F.B.A.
Professor of Classics and Philosophy, Dalhousie University
R.D. Crouse, B.A. (Vind.), S.T.B. (Harv.), M.Th. (Trinity), Ph.D. (Harv.)
Professor of Classics, Dalhousie Univeristy
Y. Glazov, Ph.D. (Oriental Institute, Moscow)
Professor of Russian and Chairman of the Department, Dalhousie Univeristy
J.F. Graham, B.A. (U.B.C.). A.M., Ph.D. (Col.), F.R.S.C.
Fred C. Manning Professor of Economics, Dalhousie University
J.R. Lawlor, B.A., M.A. (Melbourne), Ph.D. (Paris)
McCulloch Professor of French, Dalhousie University
K.E. von Maltzahn, M.S., Ph.D. (Yale)
George S. Campbell Professor of Biology, Dalhousie University
W.C. Smith, B.A. (Tor.), M.A., Ph.D. (Prin.), F.R.S.C.
McCulloch Professor of Religion and Chairman of the Department, Dalhousie University
S.E. Sprott, M.A., B.D. (Melbourne), Ph.D. (Col.)
Professor of English, Dalhousie University
D.F. Steffen, Ph.D. (Goettingen)
Professor of German and Chairman of the Department, Dalhousie University

HISTORICAL SKETCH

The history of higher education in Canada began in 1789 with the founding at Windsor, Nova Scotia, of the University of King's College. At the time of its establishment it was, with the exception of the fifteenth-century King's Colleges in Cambridge and in Aberdeen, the only foundation of that name in existence. Although there had been a King's College, New York, chartered by George II in 1754, it did not survive the end of the colonial period in America and its re-organization in 1784 under the name of Columbia College was undertaken on an entirely different plan. The Loyalist political and religious principles upon which the New York seminary had been founded migrated, along with the Loyalists themselves, to Eastern Canada, and in 1802 a Royal Charter was granted by George III proclaiming King's College, Windsor, "The Mother of a University for the education and instruction of youth and students in Arts, to continue forever and to be called King's College."

From the beginning, size was never a determining factor since nothing prevented the Loyalists from sending their children to the larger established American Universities. But they would not do this just because they were not convinced of the wisdom of too quickly severing ties with the Old World. Located in Windsor, Nova Scotia, the College served the colonists and their descendants for 131 years. It produced a long list of distinguished graduates nurtured on the classical traditions of Western European civilization until, in the disastrous fire of 1920, the main building was burnt to the ground.

Although in spite of this calamity the University was determined to maintain its old purpose and vision, it now recognized that if it was to do so in the 20th Century, it could no longer simply draw on the strength of the old European culture but had also to become fully involved in the vigorous and developing civilization of North America. As a result the University accepted the terms of a munificent grant from the Carnegie Foundation, and moved to Halifax and into its association with Dalhousie University which, with a Royal Charter dating from 1820, is the third of Canada's senior universities. By an agreement reached in 1923, the two universities on the same campus have maintained joint faculties of Arts and Science, so that undergraduates of King's read for the B.A. and B.Sc. of Dalhousie, King's having left her own degree-granting powers in abeyance in these faculties. King's students registered in Arts and Science attend classes with Dalhousie students. *The students of both institutions follow the same curriculum, take the same examinations, and must attain the same academic standard.*

In May, 1941, the King's College buildings were taken over by the Royal Canadian Navy as an Officer's Training Establishment, and during the next four years, until May, 1945, nearly 3100 officers were trained for sea duty with the R.C.N. The students and academic staff of King's carried on during this period through the kindness of Dalhousie University and Pine Hill Divinity Hall.

In July 1971, King's College entered into a partnership agreement with Pine Hill Divinity Hall (for the United Church of Canada) and the Corporation of the Roman Catholic Archdiocese of Halifax to found the Atlantic School of Theology. This unique institution provides ecumenical as well as denominational theological education for candidates for the ministry and for laymen. During 1974 the School received incorporation as a degree granting institution of higher education; thus the work previously done by the Faculty of Divinity of King's College is now conducted by that School. King's holds in abeyance its powers to grant degrees in Divinity in course. King's grants the honorary degree of D.D.

A significant development in King's history began in the 1972/73 academic year with the introduction of the Foundation Year Programme for first year undergraduates. By taking advantage of its independence from the dominant concerns of a large modern North American University, and yet drawing strength from its very close association with Dalhousie, King's established this Programme, which is unique in Canada and aims to provide the solid foundation of a modern humanistic education through a comprehensive view of Western Civilization from its beginings in the Ancient World up to the present day. This course is available only to students registered at King's though in all other respects their education is conducted within the joint faculty of Arts and Science.

In 1977 the University took another step forward by establishing the only degree granting School of Journalism in the Atlantic Provinces. This School will begin to offer two degree programmes (B.J. Honours and B.J.) in the Fall of 1978.

King's College is residential, on the Oxford and Cambridge pattern, and, in addition to the day students who live out, 115 men and 110 women can be accommodated in residence. The inestimable benefits of life in a small residential college are, in England at least, an accepted part of the "Ox-bridge" tradition, but this is certainly not so in North America, where universities have in general followed either the German policy of having no residential facilities at all, or the English provincial plan of housing a proportion of the student body in "halls of residence" entirely separated from the university itself. The corporate life in King's thus emerges as something rare on the North American continent, since it is designed to educate "the whole man" and not simply to train him for specific examinations.

In addition to its athletic activities, the College runs a Debating Society, known as the "Quintilian", and a Dramatic Society. Daily services are held in the Chapel for those who wish to participate. Although the College is an Anglican foundation, there is no denominational bar aimed at the exclusion of non-Anglicans from membership of the College, either as lecturers or students. Members of Faculty may themselves be resident and function in the traditional manner as "dons" for the staircase (i.e. "bays"). The bays are named Chapel Bay, Middle Bay, Radical Bay, North Pole Bay, Cochran Bay (co-ed), and The Angel's Roost. Alexandra Hall is the residence for women only.

Now that there are many large overcrowded universities which find it difficult if not impossible to concentrate upon anything not strictly connected with a student's graduation at the earliest possible time, there is all the more reason for the encouragement of the small residential university wherein the future leaders of society may be educated towards the acceptance of social and moral responsibility. The education of such people must be conducted on an individual, not a mass, basis.

Drawing its strength from both the older tradition of classical European culture and at the same time offering its students all the opportunities and challenges of a large modern North American University through its association with Dalhousie, King's tries to maintain itself in the Canadian context as a miniature of the Christian ideal of the larger community.

Constitution

The Board of Governors is the Supreme Governing Body of the University. It consists of the Bishops of the Diocese of Nova Scotia and Fredericton, the President of the University, the Vice-President, the Treasurer, four members elected by the Faculty, together with eight members elected by the Alumni Association, four members by the Students' Union, six by each of the Synods of Nova Scotia and Fredericton, and not more than eight co-opted members. The Governors have the management of the funds and property of the College, and the power of appointment of the President, professors and officials. The Board appoints an Executive Committee.

Convocation consists of the Chancellor and the Vice-Chancellor, together with all Bachelors of Divinity and Masters and Doctors of the University; Members of the Board of Governors and of the Faculty of Arts and Science who hold the degree of Master or Doctor from any recognized University, Fellows of the University and Bachelors of the University of five years' standing who are recognized by the Clerk of Convocation. All degrees are conferred by Convocation.

The Chapel

An attractive collegiate chapel provides a centre of spiritual life on the campus. All students, regardless of their denominational affiliations, are cordially invited to attend the daily Anglican services conducted in the chapel.

The offices of Mattins and Evensong are said in the chapel Monday through Friday, and the Holy Eucharist is celebrated daily during term. The chaplain is assisted by other campus clergy in the daily celebrations, and there is a wide variety of liturgies and liturgical styles, ranging from traditional to contemporary forms.

Students take a large responsibility for the operation of the chapel, and normally they conduct the daily offices. An active guild of student acolytes assist at the daily Eucharist, and an active sanctuary guild cares for the altar and its appointments. An excellent choir, with an impressive repertoire, sings three services in the chapel each week in addition to various guest appearances during the year. A group of contemporary musicians sing a Folk Mass each month.

The Anglican chaplain is available to all students for pastoral counselling.

King's College Library

King's College Library was founded in 1789. In 1800, Bishop Inglis sent his son to England with £250 to begin the purchase of books. The library grew steadily during the 19th century and was probably one of the best libraries in English-speaking Canada of the time. There were various benefactors over the years, chief of whom was Thomas Beamish Akins. From Mr. Akins the library received many items in its rare collection of some 40 incunabula (books printed before 1500, that is, during the first fifty years since the invention of printing with movable type). This is a remarkable number of these very rare books to be found in a library of this size.

King's Library is very rich in the field of English literature. Much of the credit for the development of this field must go to the late Professor Burns Martin. The Professor Burns Martin Memorial Fund continues to aid the library's growth in this area.

With the help of the William Inglis Morse Endowment for Canadiana, this important area of study is growing steadily as more and more works are being published about our country.

The largest proportion of books, however, is found in the field of theology. This collection is large and comprehensive and is being kept up to date constantly. The John Haskell Laing Memorial Bequest helps with the purchase of books in this field.

Book purchases in the general field are aided by memorial funds to the following persons: the Hon. William Johnston Almon, Frances Hannah Haskell, James Stuart Martell, and Thomas Henry Hunt (Alumni Memorial).

The Library hours are:

Monday to Friday	9:00 a.m. - 5:00 p.m. 7:00 p.m. - 11:00 p.m.
Saturday	9:00 a.m. - 12:00 noon 1:00 p.m. - 5:00 p.m.
Sunday	2:00 p.m. - 5:00 p.m. 7:00 p.m. - 11:00 p.m.

The student loan period for all books except those on reserve is one week.

Fines are charged for overdue books at the rate of twenty-five cents a day for seven day books.

Students are given the privilege of borrowing books for the summer.

Degrees

The degrees of Doctor of Divinity and Doctor of Civil Law, may be conferred *honoris causa* in recognition of eminent

literary, scientific, professional or public service.

The dignity and honour of Fellow may be conferred by the vote of Convocation upon any friend of the University for noteworthy services rendered on its behalf.

The honour of Associate Fellow is conferred by the Board of Governors on the Recommendation of Faculty and President.

The University confers the degrees of Bachelor of Journalism (Honours) and Bachelor of Journalism in course.

Convocation confers the Master of Sacred Theology in Pastoral Care on recommendation of the Graduate Studies Committee of the Institute of Pastoral Training.

Pre-professional work in Arts and Science by students intending to enter one of the Dalhousie professional schools may be taken as a student of King's College.

The Dalhousie Senate confers the degrees of Bachelor of Arts and Bachelor of Science ordinary and honours, in course, at the King's Encaenia.

UNIVERSITY REGULATIONS

All students are required to report their local address while attending the University to the Office of the Registrar, on registration or as soon as possible thereafter. Subsequent changes must be reported promptly.

Place of Residence of Students
For the purpose of admission to the University the place of residence of a student is the place where he is domiciled. This is normally presumed to be the place (country, province, etc.) where the home of his parents or guardian is located. That place remains unchanged unless he takes steps that satisfy the Registrar that he has established a place of residence elsewhere.

Admission
No person under sixteen years of age is admitted to any class except by special permission of the Senate.

Special Cases: The University will consider for admission students who are lacking the normal high school preparation, provided that the applicant can show (by record, interviews, or possibly by taking additional tests) that his qualifications in other respects are acceptable.

Admission Ad Eundem Statum: Students from other universities desiring to study at King's University may, on producing satisfactory certificates, be admitted with advanced standing and given credit for classes equivalent to those offered by Dalhousie-King's.

Successful candidates for degrees in this University ordinarily are required to complete a substantial portion of their work, including the final year, in the Faculty in question.

Registration
All registered students are required to agree to obey all the regulations of the University already made or to be made, and to pay the required fees and deposits before entering any class or taking any examination.

Under no circumstances may a student register unless all previous accounts, including fees, library fines, and other fines, to the university have been paid.

Late Registration
Late registration in the Faculty of Arts and Science requires the approval of the Registrar.

Withdrawal
See the individual faculty regulations, and the Fee Section.

Tuberculin Test: In the interests of public health in the University students are required to have a tuberculin test. Facilities for testing are arranged by the University Health Services as a regular part of the Registration Process.

Transcript: A student may receive only an unofficial transcript. Official transcripts will be sent at a student's request to other universities, or to business organizations.

If a student so requests a copy of a medical certificate will be enclosed with the transcript.

Academic Discipline

All matters relating to academic affairs and discipline are the responsibility of the Senate of Dalhousie University, subject to the approval of its Board of Governors. Within the general policies approved by Senate, academic requirements are administered by the Faculty concerned.

When the work of a student becomes unsatisfactory, or a student's attendance is irregular without sufficient reason, the Faculty concerned may require withdrawal from one or more classes, or withdrawal from the Faculty.

If a student is required to withdrawal from a Faculty because of failure to maintain adequate academic standing, the right to be considered for admission to another Faculty is unaffected.

General Discipline

Members of the University, both students and staff, are expected to comply with the general laws of the community within the University as well as outside it.

The maintenance of discipline is the responsibility of the Deans, the Dons, the Residence Councillors, the Wing Monitors and the Campus Police. All have fining powers for unbecoming or unseemly behaviour.

The final authority and the highest body of appeal in the College for disciplinary matters is the College Board. Its composition is the Dean of Residence, the Dean of Women, the President of the Students' Union, the Chairman of the Men's Residence Council, the House President of Alexandra Hall, three professors elected by faculty, and the President of the University, who is the Chairman of this body. The President calls this body together at his discretion, and he decides which disciplinary matters merit an appeal before the College Board.

While the students exercise a large measure of self-government in maintaining good order and discipline in the residences, the College reserves the right to fine, suspend, or expel in extreme cases. The decision to expel lies finally with the President of the University, or the Vice-President in the case of his absence.

In keeping with the traditions of the College, students are expected to wear gowns when attending chapel, when seated for formal meals, and when calling upon the President of the University. Gowns may be obtained from the Dean of Residence.

Students are expected to attend lectures and laboratories regularly and punctually and to perform all exercises assigned by the Faculty.

Dons in the Bays, the Dean of Residence, the Chaplain, the Registrar, the Bursar, the Faculty, and the President are willing to help, counsel, and advise any student at any time, and will act as much as is within their power in the best interest of the students and the College.

The Dalhousie Senate is charged with the authority to deal with cases of alleged academic offences and delegates this authority to the Senate Committee on Discipline.

Academic offences include such acts as the falsification of records or documents in order to gain admission or credit, cheating or assisting others to cheat in examinations or tests and plagiarism. Offences reported to the Secretary of Senate will be dealt with by the Senate Discipline Committee which may impose penalties including the withholding of academic credit or suspension or dismissal of a student from the University.

Plagiarism is considered a serious academic offence which could lead to loss of credit and suspension from the University. Plagiarism may be defined as the presentation by an author of the work of another author, in such a way as to give his or her reader reason to think that the other author's work is his or her own. A student who is in any doubt as to what constitutes plagiarism is urged to discuss the matter with the instructor concerned *before* completing an assignment.

A student who is alleged to have committed an academic offence shall have the opportunity to be heard by the Senate Discipline Committee, or to answer allegations against him in writing before the Committee makes a finding of the facts or reaches a decision.

On report of a serious breach of the law, or a serious academic offence deemed by the President, or in his absence by the Vice-President or the Dean of a Faculty, to affect vital University interests, a student involved may be temporarily suspended and denied admission to classes or to the University by the President, Vice-President or Dean, but any suspension shall be reported to the Senate, together with the reasons for it, without delay.

No refund of fees will be made to any student required to lose credit for any course taken, required to withdraw or who is suspended or dismissed from any class or from any Faculty of the University.

Dalhousie Libraries

King's students enjoy the same privileges in the Dalhousie Libraries as Dalhousie students. For regulations and hours see the current Dalhousie calendar.

Conferring of Degrees

Successful candidates for degrees are ordinarily required to appear at Convocation in the proper academic costume to have the degree conferred upon them. However, any student may elect to have his degree conferred in absentia by giving formal notice to the Registrars of Dalhousie and King's before May 5.

Exemptions Granted by Other Institutions

Oxford University exempts from Responsions an undergraduate in Arts of this University who has passed in the subjects of the second or a higher year. A Bachelor of Arts with Honours is further exempted from four terms of residence. The Trustees of Rhodes Scholarships exempt from the qualifying examination candidates who are exempt from Responsions by Oxford University.

STUDENT SERVICES

Student Employment

The Department of Manpower and Immigration, Manpower Division, in co-operation with the University, maintains a year-round Canada Manpower Centre on campus. (Student Union Building, Dalhousie). This is done to assist students in obtaining employment.

All students wishing assistance in obtaining part-time and summer work, or graduates seeking permanent employment, are urged to contact the Canada Manpower Centre early in the academic year.

There are opportunities for students to earn part of their college expenses by working in the Library, Gymnasium, Dining Hall, or as Campus Police.

Student Services and Student Affairs

Dean of Student Services:
E.T. Marriott, B.A., M.Ed.

The office of the Dean of Student Services (Dalhousie) is located in Room 124 of the Arts and Administration Building just opposite the Registry. The Dean provides academic counselling and co-ordinates the administration of Awards, Chaplaincy, the Counselling and Psychological Services, the University Health unit, and acts as liaison with the Student Union. Through the Council of Student Services, which meets monthly, active participation exists between the various divisions and the officials of Housing, Recreation, and the campus Federal Manpower office. The services of this office are available to King's students.

Students should feel free to come to the Dean's office to initiate discussion about their academic programmes. They are encouraged to display that degree of maturity and self-interest which would prompt them to look for support early in the term.

A programme designed to assist students with their academic problems has been developed. All divisions of student services co-operate in the programme along with a number of departmental faculty advisers. Students experiencing difficulties are encouraged to consult with the Dean of Student Services who will discuss their problems with them and advise them of the services available.

Many students, particularly those in their first year, experience difficulty in organizing and presenting written work. In an attempt to respond to this problem, the University provides a *Writing Workshop.* Attendance is on a voluntary basis. For further information, call the Student Services Office at 424-2404.

The Dean acts as the International Student Advisor. Foreign students should look to this office for assistance and guidance in matters related to immigration status, medical insurance coverage, or any other matter of special concern to non-Canadian students.

Student Counselling Service

Acting Director
Judith L. Hayashi, B.A., M.A.

The Student Counselling and Psychological Services Centre offers programmes for personal development as well as assistance with personal, inter-personal, and educational concerns. Counselling is offered by professionally trained counsellors and psychologists. Strict confidentiality is assured.
Individual counselling is available for any personal or social problem which a student may encounter. Typical concerns involve family difficulties, sexual problems, depression, roommate conflicts, lack of self-confidence, fears and anxieties, and decision-making difficulties.

Some of the programmes offered regularly are:
Study Skills Programme — Seven videotaped sessions concerns with improving concentration, lecture note-taking, exam writing, etc. Opportunities are provided for practice and discussion. Groups meet twice weekly at convenient times.
Career Planning Programme — Groups of students discuss career related topics such as assessing interests and abilities, obtaining occupational information, etc.
Stress Management Programme — Headaches, insomnia, exam tension and general anxiety are treated through relaxation techniques and coping skills.
Shyness Clinic (a Social Skills Programme) — Individual and group counselling to help students gain self-confidence and learn social skills.
Couples Counselling/Therapy — Couples are helped to acquire the skills to solve existing and potential marital problems.
Career Information Centre — Calendars and occupational information are available. Students are invited to drop by without an appointment to explore career possibilities.

Counselling Centre offices are on the 4th floor of the Student Union Building. Enquire or make appointments by coming in or calling 424-2082.

Tutors

The student body has an academic committee which arranges tutorial services for students.

University Health Service

Director
J.C. Johnson, M.B., Ch.B.

Dalhousie University operates an out-patient service, and an in-patient infirmary in Howe Hall, at Coburg Road and LeMarchant Street staffed by general practitioners and psychiatrists.

Further specialist's services are available in fully accredited medical centres when indicated.

All information gained about a student by the Health Service is confidential and may not be released to anyone without signed permission by the student.

Emergency Treatment
In the event of emergency, students should telephone the University Health Service at 424-2171 or appear at the clinic in person. The university maintains health services on a 24 hour basis.

Medical Care-Hospital Insurance
All students should have medical and hospital coverage approved by the Health Service.

All Nova Scotia students will be covered by the Nova Scotia Medical Services Insurance. All other Canadian students should maintain coverage from their home provinces, and this is especially important for residents of Saskatchewan and Ontario and any other province requiring payment of premiums.

All Non-Canadian students should be covered by medical and hospital insurance. Details of suitable insurances may be obtained from the University Health Service and all students are advised to make these arrangements prior to their arrival in Canada. Failure to do so may entail them in siginficant medical expenses.

Any student who has had a serious illness within the last 12 months, or who has any chronic medical condition, is advised to contact and advise the Health Service, preferably with a statement from their doctor.

Exclusions
The University Health Service does not provide the following:
(a) Medical or hospital surgical care other than that provided by, or arranged through, the University Health Service.
(b) X-ray or Laboratory service, except as authorized through the University Health Service.
(c) Medications, prescriptions, or drugs, other than those provided through University Health Service.
(d) Dental treatment.

Prescriptions
Medications prescribed by the health service physicians, or consultants to whom the student is referred by the health service, may be paid by a prepaid drug plan operated by the Student Union. **All other prescriptions are at the student's expense.**

Athletic Programmes

The University has on its campus a Regulation sized gymnasium, complete with swimming pool and weight training room. All students in attendance at King's are encouraged to participate in some form of physical activity. The College is a member of the N.S. College Conference, and offers three types of athletic programmes.

(1) **Varsity:** for the more serious athlete who wishes to represent the University in competition with other members of the N.S. College Conference.

(2) **Inter Residence:** is one of the strengths of the college's residence life, where competition (sometimes serious, sometimes not too serious) between Bays (mens residence) and Wings (womens residence) in volleyball, basketball, floor hockey, swimming and badminton is carried on in the spirit of friendly and good humoured competition.

(3) **Recreation:** gym time is available for those who wish merely to do their own thing, and to obtain some form of physical exercise without structured competition, games, etc.

Canadian Armed Forces

The Regular Officer Training Plan (ROTP), Medical Office Training Plan (MOTP) and the Dental Officer Training Plan (DOTP) are completely subsidized university plans covering tuition, books, medical services, monthly pay and summer employment for up to four years of undergraduate study. Successful applicants serve as commissioned officers in the Canadian Armed Forces for varying compulsory periods after graduation.

For further information on above plans, students should contact the

Canadian Forces Recruiting Centre
Sir John Thompson Building,
1256 Barrington Street,
Halifax, Nova Scotia.
Phone: 422-5956 or 423-6945.

Children of War Dead (Education Assistance).

Children of War Dead (Education Assistance 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.

KING'S COLLEGE RESIDENCES

Dean of Residence
Thomas H. Curran, B.A., M.A.

Dean of Women
Jane V. Curran, B.A.

Dons (1977-78)

Avard Bishop, B.A.
Peter Bryson, B.A.
Wayne Hankey, B.A., M.A. (Senior Don)
Michaela Huard, B.Sc.
Gary Maclean, B.A.
Michele Martinello, B.A.
Sandra Myers, B.F.A.
Regina Lannon, R.N. (College Nurse)

Residence life at the University is encouraged for all students, because the life in a small residential college is one of the great experiences of one's years at university. All students registered at King's College are normally guaranteed residence accommodation, upon completion of an application for residence, and subject to the approval of the Dean of Residence or the Dean of Women.

All rooms are furnished with bed, dresser, desk, and chairs. Students are required to provide their own bedding and towels, and to attend to their own laundry arrangements. Washing and drying equipment is provided in both men's and women's residences.

Single and double rooms are available to both men and women, priority for single rooms being given to students in the upper years.

The Men's Residence is divided into Bays; and in them there are both single and double rooms. A "double" for men is defined as a suite of two rooms shared by two male students.

The Women's Residence was built in 1962 and is modern in every respect. Traditional double and single rooms are available and in addition the residence provides a library, a laundry room, a recreation room, three lounges with kitchenette facilities, a service elevator, and ample storage space.

Both residences are designed so that it is not necessary to go outside for meals and extracurricular activities.

Cochran Bay, a co-ed Bay with its first floor for male students and its second and third floors for female students, was designed to equalize male-female accommodation and is open to senior students only.

Meals are prepared and served to all resident students in Prince Memorial Hall, erected in 1962.

Applications for accommodation in all residences are accepted on the understanding that the student will remain for the whole academic session. No student may withdraw from residence without permission from the Deans. Students withdrawing from residences are required to give one month's notice in writing to the Deans. Students withdrawing after occupying a room will lose their room deposit, in addition a penalty of $50.00 will be imposed for failure to give one month's notice.

It should be noted that the University assumes no liability for personal property in the case of theft or damage. No pets of any kind are allowed in residence.

The residence will be open for new and returning students from 2 p.m., September 12, 1978, until December 19, 1978, and from the evening of January 1, 1979 to the morning after the last day of examinations in the Faculty of Arts and Science. Students in their graduating year are permitted to remain in residence until the morning after the last day of Encaenia activities. Resident students in faculties whose terms exceed these periods may reside in the College by permission of the Deans on payment of rent. When Prince Hall is open, meals may be purchased.

Except under unusual circumstances and with the permission of the Deans, no student is permitted to occupy the residences over the Christmas holidays.

Confirmation of accommodation will not be made until the student has been accepted by the University for the coming session and a $50.00 residence deposit has been received by the Bursar's Office.

Cancellation of application received by the Registrar or the Deans prior to August 15th will entitle the student to a refund of the $50.00 deposit. Failure to cancel with the Registrar or the Deans before August 15 will result in forfeiture of the $50.00 deposit.

Day Student Hostels

Limited overnight accommodation is available for King's Day Students in the form of small male and female "hostels" on campus, each of which can accommodate four persons at once. Space is available, to a maximum of three nights per week per student on a first-come, first-served basis for a nominal **per diem** charge. Lockers are available for the safe storage of personal effects. With this limited overnight accommodation Day Students will be able more comfortably to utilize campus facilities such as the library, attend campus functions such as evening lectures and debates, and in general participate more fully in the total life of the King's community. Further details on the operation of these "hostels" will be mailed to each day student early in the fall term.

STUDENT ORGANIZATIONS

The University of King's College Students' Union

The University of King's College Students' Union is the organization in which the students enjoy their right of self government. The Constitution revised in 1974, provides for a democratic government in which the participation of every student is expected. The students endeavour to play a determining role in every aspect of university life. The Union's main organs are the Student Assembly, the Executive of the Students' Union, the Students' Council. The power of self discipline is exercised through the Union's Male and Female Residence Councils.

The Union operates through a number of permanent committees, e.g.; the Academic Committee, the Social Committee, committees on the constitution, elections, finances, Dalhousie relations, awards, etc.

King's College Women's Athletic Association

Executive officers of this association are: President, Vice-President, Secretary Treasurer and Inter Wing Manager. Its objective is the organization, administration, and promotion of Women's athletics at the College. Women's Varsity teams compete in field hockey, volleyball, basketball and swimming within the Women's Division of the N.S. College Conference, and the volleyball team is a member of Volleyball N.S with the full playing privileges of that organization. A strong Inter Wing programme operates two nights per week, and a co-ed badminton club also meets twice weekly. Table tennis and chess are also available on a recreational basis, and the swimming pool is available for recreation swimming every evening. The Women's Athletic Association in conjunction with the Men's Athletic Association is also responsible for the organization and administration of the University's annual Awards Banquet and Dance.

King's College Men's Athletic Association

The executive of this association (President, Vice-President, Secretary Treasurer and Inter Bay Manager) is responsible for the organization, administration and promotion of the mens athletic programme at the University. Varsity athletics include soccer, basketball, hockey and swimming. The Inter Bay League features spirited and sometimes hilarious competition between the various men's residences on the campus. Competition in road racing, volleyball, basketball, badminton, hockey and swimming are available to inter bay competitors, and all bay members are encouraged to participate. In addition, table tennis, chess, weight-lifting, and co-ed badminton are available, and the swimming pool is open daily for student use. The Men's Athletic Association in conjunction with the Women's Athletic Association is also responsible for the organization and administration of the University's annual Awards Banquet and Dance.

King's College Dramatic Society

This society was founded in 1931 to further interest in drama. The Society has recently joined with the Dalhousie Drama Society under the name of the King's Theatre. It is anticipated that the combined resources of these two groups, which draw on the amateur talent of both Universities, will enable first class studio theatre to be presented.

The Dalhousie Drama Workshop, a branch of the Department of English, offers training in voice production, acting, dance, movement, make-up, costume, set design and construction, and lighting under the direction of experienced instructors. King's students are invited to participate in the activities and productions of the Workshop on the same basis as Dalhousie students.

The King's College Record

The Record (founded 1878) is published by the undergraduates of the College during the academic year. It contains a summation of the year's activities and awards.

The Quintilian Debating Society

The Quintilian Society, founded in 1845, is the oldest surviving debating association in British North America. The activities of the organization include an annual crossing of swords with the gallants of the King's Alumni Association, even more regular drubbings of the Dalhousie Debating Union, and, by the grace of Students' Union financing, participation in tournaments at Upper Canadian and American colleges and universities. The Quintilian annually hosts the Nova Scotia Provincial High Schools Debating Tournament. Finally, the Society sponsors the celebrated King's Debate series, which provides a sought after platform for public figures to debate issues of the day.

The Haliburton

The Haliburton was founded and incorporated by Act of Legislature in 1884, and is the oldest literary society on a college campus in North America. Its object is the cultivation of a Canadian Literature and the collecting of Canadian books, manuscripts, as well as books bearing on Canadian History and Literature. College students and interested residents of the metropolitan area meet to listen to papers which are given by literary figures and by the students.

The Ancient Commoner

The "Ancient Commoner" is the students' newspaper.

The Students' Missionary Society

This society was founded in 1890. Its object is to promote interest in missionary work and to further the gospel of Christ especially in the Maritime Provinces, and particularly on the University campus. The annual meeting is held on St. Andrew's Day, or as near to it as possible. The society seeks to direct its energies to the development of the spiritual life open to university students at King's and promotes a strong and lively witness to the Christian faith on the university campus. On the larger scale it addresses itself to the concerns of the faithful of the Dioceses of Nova Scotia and Fredericton.

The King's College Chapel Choir

Under the direction first of Rev. Dr. R. D. Crouse and then of Miss Helen Roby, the Choir has grown to about 35 members, sings three services each week and has developed a considerable range of liturgical music.

The Aquinas Society

This group is concerned with the maintenance of the liturgical life of the College.

Other Societies

Each year a number of groups develop for the purpose of promoting various activities. Currently these include a chess club, a bridge club and a pre-medical society.

Awards

The Student Body of the University of King's College awards an overall "K" to participants in King's activities. Under this system, begun during the 1956-1957 term, a student may receive a silver "K" upon amassing 160 points and a gold "K" upon amassing 250 points.

In addition several awards are presented to students for outstanding achievements in extra-curricular activities.

The Bob Walter Award. Awarded to the graduating male student who best exemplifies the qualities of manhood, gentlemanliness, and learning, and has contributed to the life at King's.

The Warrena Power Award. Awarded annually to the graduating female student who best exemplifies the qualities of womanhood, gentleness, and learning, and has contributed to the life at King's.

The Sandra MacLeod Memorial Award. This award, made possible by a generous donation from the parents of the late Sandra MacLeod, may be given to either a male or female student. The award is made to a student with a good scholastic record, whose qualities of character are similar to those which exemplified Sandra's life; a keen appreciation of life itself and a determination to live life to the full, despite adversity, disability or handicap. The award may be given to a student in any year of his or her degree, but will be given only if there is a deserving recipient. The award is made at the annual Alumni dinner in May.

The R. L. Nixon Award. This award is given annually to the resident male student who, in the opinion of his fellows, contributes most to residence life in King's.

The Margaret J. Marriner Award. This award is the women's counterpart of the R.L. Nixon award. It is presented to the woman who contributes the most to the life at King's.

The Prince Prize. This prize is designed for the encouragement of effective public speaking. The recipient is chosen by adjudicators in an annual competition.

The H. L. Puxley Award. Awarded annually to the best all-round woman athlete.

The Bissett Award. This award is given annually to the best all-round male athlete.

The Arthur L. Chase Memorial Trophy. This is presented annually to the student who has contributed most to debating in the College.

The Ron Buckley Award. Awarded annually to the most valuable player on the Men's Varsity Soccer Team.

The G. H. McConnell Award. Presented annually to the men's varsity basketball player who best combines ability and sportsmanship.

The Dartmouth Sport Store Trophy. Presented annually to the most valuable player on the Men's Varsity Hockey Team.

SOCIETIES CONNECTED WITH THE COLLEGE

Alumni Association of King's College

This Association, incorporated in 1847 by Act of the Legislature, consists of graduates and other whose object is the furtherance of the welfare of the University.

The Association maintains annual scholarships, and supports alumni, student and University activities.

The annual meeting of the Association is held the day before Encaenia.

The Officers of the Association in 1977-79:

President,
Mr. C. Wm. Hayward
918 Robie Street
Halifax, N.S.

Vice-President,
Mr. D. F. Chard
85 Newcastle Street
Dartmouth, N.S.

Treasurer,
Mr. James S. Jardine
1055 Lucknow St.
Apt. 408
Halifax, N.S.

Executive Secretary,
Mrs. Iris Newman
University of King's College
Halifax, N.S.
B3H 2A1

The Alexandra Society of King's College

This Society, which has branches all over the Maritime Provinces, was formed in Halifax in 1902 as the Women's Auxiliary to the College. It maintains an annual scholarship and bursary and supports the Alexandra Special Lecturer in Pastoralia (Director of Parish Field Work).

Officers 1976-77

Hon. President,
Mrs. G. F. Arnold

Hon. Vice-President,
Mrs. H. L. Nutter

Immediate Past President,
Mrs. A. G. MacIntosh, 12 Westwood Drive, Truro, N.S.

President
Mrs. P. N. McIvor, 8 Lakeview Point, Dartmouth, N.S.

Vice-Presidents,
Mrs. J. E. Lane, Apt. 34, 6411 South Street, Halifax, N.S. B3H 1V1
Mrs. A. MacKeigan, 68 Reserve St., Glace Bay, N.S.
Mrs. E. R. McCordick, Apt. 5, 1222 Regent St., Fredericton, N.B. E3B 3Z4

Recording Secretary,
Mrs. H. B. Wainwright, 9-1-7, RR No. 2, Armdale, N.S.

Corresponding Secretary,
Mrs. V. Fairn, 55 Lynn Drive, Dartmouth, N.S.

Treasurer,
Mrs. A. G. MacIntosh, 12 Westwood Drive, Truro, N.S.

FEES AND CHARGES

Academic and Related Fees

Fees are subject to change. Those payable in 1977-78 are as follows:

Full Time Students
Full time students are students registered for more than three credits

Faculty	University Fee	Society Fee	Total	In Full at Registration	OR	Payable in 2 instalments (incl. carrying charge of $5) At Registration	Bal. Jan. 20
Arts and Science	765.00	1.50	766.50	766.50		495.00	276.50

(A student enrolled at King's is required to pay the King's Student Union fee of $41.00, but not the Dalhousie Student Union fee, or the Rink and Athletic Field fee. However, any King's student who wishes to participate in the Dalhousie Student Union activities must pay both of the above Dalhousie fees. Dalhousie students resident at King's College must pay a Student Union fee of $30.00).

Part Time Students

Total fees payable at registration
Students registered for a total of three full credits, or less, for session, per course —

1 full credit class (University fee $160. & Student Union fee $5.)	$165.00
1 / 2 credit class (University fee only)	80.00
1 / 3 credit class (University fee only)	55.00

Students registered for a total of three one-half credit courses, or less, per course —

1 / 2 credit class (University fee only)	80.00
1 / 3 credit class (University fee only)	55.00
Students registered for more than a total of three one-half credit courses (University Fee $400.00 & Student Union Fee $25.00)	$425.00

Audit or Occasional Students
Fee payable at registration
Students, not candidates for credit, who wish to attend a class because of their interest in it.

No credit or official transcript will be issued. A student who registers to audit a course and during the session wishes to receive credit for the course must receive approval from the Registrar and pay the difference in fee, **plus** a transfer fee of $25.00.

1 full credit course	80.00
1 / 2 credit course	40.00
1 / 3 credit course	27.50

Regulations for Payment of Fees

Fees must be paid in Canadian funds by cash or negotiable cheque. If payment is made by cheque returned by bank as non-negotiable the account cannot be considered paid. Penalties will be charged totalling $25.00 ($20 for late payment + $5 for cheque returned by bank). Post-dated cheques cannot be accepted.

Payments
Fees are due and payable at registration but if preferred, payment may be made in two instalments, the first payable at registration, the second on or before January 26. A carrying charge of $5.00 is added if fees are not completely paid at registration. Registration is not complete until the first instalment is paid.

Bills for fees will not be issued. The receipt issued at registration will show the balance outstanding.

Students planning to pay the first instalment of fees from a Canada Student Loan should apply to their Province as early as possible so that funds will be available at registration.

Penalties for Late Payment
Students unable to pay for the first instalment due for fees may register conditionally. A penalty of $5.00 per day, to a maximum of $30.00, commencing on the first business day following the regular registration day, will be charged. To accounts outstanding after September 30, an additional charge of 10 per cent interest from October 1 will be added. Students whose accounts are 30 days in arrears are subject to withdrawal from the University.

Penalty and interest charges will be waived for students paying accounts from provincial loans who pay by October 31 and give evidence of having received the loan from the province. Students who produce evidence that their application for a provincial loan has been rejected and pay accounts by October 31 will also have penalty and interest charges waived. Students who receive payment or notification of rejection of application from the province after October 31 and pay accounts within seven days may have the penalty charges waived, but interest will be charged from October 1. Proof must be provided to the Awards Officer that an application for a provincial loan was made prior to August 15 and the payment or notification of rejection of application had not been received by October 31.

Interest at 10 per cent will be charged on second instalments outstanding after January 26. No examination results will be released, nor will the student be permitted to register for another session until all accounts are paid in full. The names of graduating students whose accounts are not completely paid by April 26 will not be included in graduation lists.

Part-time Students Audit Students

Fee must be paid at registration.

Application Fee
An application fee of $10.00 must be forwarded with the application form submitted by all students applying for registration for the first time in the Faculty of Arts and Science.

This $10.00 fee is not refundable and is not to be applied as a credit to class fees.

Late Registration
Students are required to register on the regular registration dates. Late registration requires the approval of the Registrar, and payment of an extra fee of $5.00 per day, to a maximum of $25.00.

Fees Deductible For Income Tax

The amount of fees constituting an income tax exemption for the student is calculated by deducting from the total charge (1) the portion of the Student Union Fee for operating expenses of the Union ($41.00 or $5.00, as applicable) and (2) the Society Fee. Fees may be claimed as a deduction only by the student. A special certificate for income tax purposes will be issued on request to the Cashier Dalhousie in February of each year.

Other Charges

Identification Cards
All new, full and part-time students will be issued an identification card upon registration and payment of proper fees. If these cards are lost, replacement will be made at the Registry Office, Dalhousie, upon payment of a $2.00 fee.

Laboratory Charge
No laboratory deposit is charged. Students will be charged for careless or wilful damage.

Examinations
An application for a supplemental examination must be accompanied by the proper fee.

Supplemental and Special Examinations (Per examination) $15.00
Extra fee for each examination written at an outside centre $10.00
Fee for re-marking a paper is $3.00. Application for remarking must be made in writing to the Registrar Dalhousie within two months of the date of examination. Fee will be forfeited unless application for refund is made on or before July 31.

Degree in Absentia
A graduating student must notify the Registrar prior to May 4th if he does not plan to be present to receive his degree. If this notification is not given and the student does not attend the graduation ceremony, a charge of $10.00 is required before the degree is released.

Transcripts
An application for a transcript must be accompanied by the proper fee. First transcript, no charge; additional copies, each original, $1.00; extra copies, $.50 each. No transcript will be issued until all charges owing to the University have been paid in full.

Scholarships
Scholarships awarded by King's College will normally be applied to charges at King's. If a student has a larger scholarship than his obligation to King's, the balance may be paid by King's to Dalhousie University towards tuition fees. The student should enquire at the Bursar's Office to ascertain if the Dalhousie Business Office has been informed of the arrangement.

Student Photograph
At time of first registration at King's each student will be asked to supply two pictures.

Parking on the Campus
Each student who has a car on campus may obtain a parking permit from the General Office upon the presentation of insurance and license number for a charge of $20.00.

Students with motorbicycles may obtain parking permits under the same conditions for a charge of $5.00, and will be required to park them in a designated area.

Refund of Fees
A student who has completed registration and wishes to withdraw must obtain written approval from the Registrars of Dalhousie and King's.

Until this is done a student is not entitled to any refund of nor exemption from unpaid fees.

A student who has preregistered and cancels his registration before the first day of classes will be entitled to a full refund of fees.

A student withdrawing within two weeks of the date of commencement of classes will be charged a registration fee only of $25.00 if registered full time, $10.00 if registered part time.

A student withdrawing after two weeks of the date of commencement of classes will be charged in full for the incidental fees and may receive a refund of the balance on a propor-

tional basis, calculated in monthly units; a full charge will be made for the month in which the withdrawal is approved, including the month of December.

A student withdrawing in January will be charged the full first installment of fees.

A student changing before February 1 from full-time to part-time status, with the approval of the Registrar, will be eligible for an adjustment in fees for the remainder of the session.

A student who is dismissed from the University for any reason will not be entitled to a refund of fees.

Application for a refund or adjustment should be made to the Business Office after the approval of the proper authority has been obtained. N.B. — King's College students must report AS WELL to the Bursar, King's College.

Fee For Student Organizations
At the request of the King's student body, a fee of $41.00 is collected on enrolment from each student who takes more than one class. This fee entitles the student to the privileges of the various students' organizations and clubs, a copy of the King's College Record and free prescription drugs.

All residence rates include three meals per day for the entire duration of the academic year. There are no meal plans which exempt resident students from some meals. In the case of time-table conflicts, students are permitted to obtain a box lunch or an early supper from the kitchen. Non-residents can pay for individual meals at any time, and they can also obtain a full meal plan by arrangement with the Bursar. (In 1977-78 the cost of a meal plan of two meals per day was $775.00).

No student will be admitted to the King's College Residence who has not paid his room deposit of $50.00. This deposit will not be refunded to anyone who accepts a room after August 15, 1978, or who fails to notify the Dean of Residence or the Dean of Women that he does not intend to occupy the room which he has been assigned before this date.

Students are expected to remain in residence for the whole of the academic year, unless other arrangements have been made with one of the Deans. Students are not free to withdraw at will, and every student who withdraws from residence after occupying a room will lose his room deposit. In addition, should the student fail to give one of the Deans one month's written notice of his intention to withdraw, he will be fined $50.00.

A complete session is defined for students registered in the Faculty of Arts and Science and the School of Journalism as being from the first day of regular registration to the day following the last regularly scheduled examination in the Faculty of Arts and Science. A graduating resident student may stay in residence without charge after these periods up to and including the last day of Encaenia activities, but will be expected to pay for meals during this time.

In exceptional circumstances a student may seek the permission of the Deans to occupy a room at times other than those specified above. For charges and conditions, students should consult with the Dean of Residence and the Bursar.

Resident students who are not registered at King's College are required to pay the King's College Student Union fee of $41.00. In return for the payment of this fee, resident students not registered at King's become fully active members of the King's College Student Union.

Surcharges
If the first term installment is not paid within 21 days of registration day a surcharge of 10% will be charged. (Students waiting for notification of a student loan are exempted from this surcharge until after they have received notification.)

Second Term residence fees are due in January and surcharge as above will be levied after February 15.

Caution Deposit
On enrolment each resident student is required to make a deposit of $25.00 as caution money to cover damage done to furniture, etc. This amount, less deductions, will remain a credit on the books until the the student graduates or leaves, when the balance will be returned by cheque usually during June. No refund in whole or in part will be made until that time. All students in residence are held responsible for the care of furnishings within their respective rooms. Losses or damages incurred during the session will be charged to the caution deposit.

Each year a student, on returning, is expected to settle for the previous year's deductions so that his credit may be maintained at $25.00.

The items above, together with a key deposit of $5.00 and gown rental of $15.00 (Gowns for non-resident students are optional) are payable at King's Business Office.

The following schedule shows **Residence Fees and Meal Charges** applicable during the 1977-78 academic year.

RESIDENCE	TOTAL	Residence Fees PREPAID DEPOSIT	MINIMUM PAYABLE AT REGISTRATION	BALANCE JAN. 20 (INCLUDES $5 SERVICE CHARGE)
Single Room and Board (Men)	$1653.00	$50.00	$825.00	$828.00
Single Room and Board (Women)	$1653.00	$50.00	$825.00	$828.00
Suite Room and Board (Women)	$1728.00	$50.00	$825.00	$903.00
Double Room and Board (Men)	$1573.00	$50.00	$825.00	$748.00
Double Room and Board (Women)	$1573.00	$50.00	$825.00	$748.00

SCHOLARSHIPS, BURSARIES AND PRIZES

Any scholarship winner who can afford to do so is invited to give up all or part of the money awarded. He will still be styled the winner of the Scholarship during its tenure. This arrangement increases the value of the scholarship funds as it enables other students of scholarly attainments to attend the University.

All Scholarships, Prizes and Bursaries, except awards to Graduating Students, will be credited to the student's account and not paid in cash.

No special application forms are required as all students who have been admitted are automatically considered for a scholarship. Students who hope to receive scholarships are encouraged to apply for admission by March 1.

In order to retain scholarships tenable for more than one year, a B average must be made each year, with no failing mark in any subject.

ARTS AND SCIENCE

1. ENTRANCE AWARDS

A. Annual scholarships to the value of $2000, $1000, $800, and $500 respectively, provided from various bequests to the university as well as from university funds.

The George David Harris Memorial Scholarship—$2000. (George David Harris was a student at King's who lost his life by drowning in an attempt to save the life of a friend.)

Established from a bequest of the estate of James R. Harris, this scholarship is open to competition to all students admitted to the University. The award is based on the record of performance in High School and on qualities of mind and character. Applications and nominations for this scholarship must be supported by High School transcripts, letters of reference and a sample of the applicant's writing. For further details, application and nomination forms, inquire from the Registrar.

Nominations should be received by January 31 and completed applications by March 31. Final selection will be based on interviews of leading candidates.

Anna H. Cousins bequest, in memory of her husband, Henry S. Cousins, to be known as the Henry S. Cousins Scholarship.

Susanna Weston Arrow Almon bequest, to be known as the Almon Scholarships.

Alumni Association Funds to provide for one scholarship at $1000, one at $750 and two at $400, of which one is to be awarded to a student from King's College School, Rothesay Collegiate, Edgehill, Netherwood, or Halifax Ladies College.

Dr. Norman H. Gosse, former Chancellor of the university, bequest. This scholarship of $400 is open to a science student entering the Foundation Year Programme.

Mrs. W. A. Winfield bequest in memory of her husband.

The Rev. J. Lloyd Keating bequest to encourage students in the study of chemistry and physics.

B. Scholarships and Bursaries tenable for three years, or for four years if the student takes the Honours Course

Margaret and Wallace Towers Bursary—$600 a Year. Established by Dr. Donald R. Towers, an alumnus of King's, in memory of his mother and father. This bursary, tenable for four years, is open to a student of high academic standing entering the University to study Arts and Science and who is a resident, or a descendant of residents, of Charlotte County, New Brunswick. Failing any qualified applicants from this county in any one year, the bursary for that year only will become vailable to a student resident anywhere outside the Maritime Provinces of Canada. The holder must live in residence.

King's College Naval Bursary — $300 a year. In order to commemorate the unique and valuable relationship between the University of King's College and the Royal Canadian Navy during the Second World War, ships and establishments of the Atlantic Command have set up a Bursary to enable a student to attend King's.

Applicants must be children of officers and men either serving in the Royal Canadian Navy or retired from the R.C.N. on pension. Academic achievement and promise will be the first consideration in selecting a candidate. Purpose, industry, and character are to be carefully weighed, together with the likelihood that the candidate will make good use of higher education to benefit not only himself but also his country.

The Bursary is awarded annually but it is intended to be tenable by the same student to the completion of his course at King's College provided that he makes acceptable progress. The Bursary will be withdrawn in the event of academic failure or withdrawal from King's College for any reason.

The United States Scholarship — $500. Awarded annually by Friends of New York State Corporation, to a continuing student who is a citizen of the United States, and who in the judgment of the Directors of the Corporation best exemplifies an appreciation of the importance of good relationships between the people of the United States and Canada.
In any year the scholarship may be divided among two or more students.

Canadian International Paper Company, Scholarship Program for Employees' Children. Canadian International Paper Company has established this scholarship program to identify and honour scholastic achievement and to encourage children of CIP employees to enter univeristy. Eligibility is limited to employees of the Company or its subsidiaries in Canada who have a minimum of one year of service. Each scholarship is valued at $1,000 per year. These scholarships are tenable at any Canadian university or college which is a member or affiliated to a member of the Association of Universities and Colleges of Canada. Further information and application

forms should be requested directly from:
Awards Officer
National Programs Division
Association of Universities and Colleges of Canada
151 Slater Street
Ottawa, Ontario K1P 5N1
Completed application forms must be received at the above address not later than June 1st of the year of application.

Imperial Oil Higher Education Awards. Imperial Oil Limited offers annually free tuition and other compulsory fees to all children or wards of employees and annuitants who proceed to higher education courses. The awards are tenable for a maximum of four years, or the equivalent, at the undergraduate or bachelor degree level.
Further information and application forms may be obtained from The Secretary, Committee on Higher Education, Imperial Oil Limited, 111 St. Clair Avenue West, Toronto 7, Ontario.

C. Professional Scholarships

Dr. W. Bruce Almon Scholarship — $1500 a year. Established by the will of Susanna Weston Arrow Almon, this scholarship is open to a student entering the University of King's College and proceeding to the degree of Doctor of Medicine at Dalhousie University. It is renewable yearly provided that the student maintains a first class average, and lives in residence each year until the regulations of Dalhousie Medical School require otherwise.
By the terms of the will preference is given to a descendant of Dr. William Johnstone Almon.

Charles Frederick William Moseley Scholarship — $750 a year. Established by the will of Charles Frederick William Moseley, this scholarship is open to a student from regions No. 16 and No. 17 of the Anglican Diocese of Nova Scotia (To be eligible a student must have resided in the areas for at least one year while attending High School) entering the University of King's College as a pre-Divinity student, and proceeding to the degree of Master of Divinity at the Atlantic School of Theology. It is renewable yearly provided that the student maintains suitable academic standing. When no pre-Divinity student is nominated by the Bishop for any one year when the scholarship is available it will be awarded to the highest competitor from the regions as an entrance scholarship for one year only.

D. Restricted and Regional Scholarships and Bursaries

Nova Scotia Teachers College Bursary — $500. Awarded on the recommendations of the Principal to a graduate of Nova Scotia Teachers College who registers as a full time student in the Faculty of Arts and Science.

Deihl Bridgewater Bursary — $250. To assist needy students of suitable standing, resident in the town of Bridgewater, or within six miles of the town. Bequeathed by the late Lena Ruth Deihl.

I.O.D.E. Bursaries, value $100 to $200. Awarded to entering students who show academic ability and financial need. Address applications to Provincial Education Secretary, Provincial Chapter, I.O.D.E., Roy Bldg., 1657 Barrington St., Room 505, Halifax, N.S. B3J 2A1. Applications open March 1, close May 1.

The Halifax Rifles Centenary Scholarship — $200. Established by the Halifax Rifles as an entrance scholarship. For particulars apply to the Registrar.

Lois Hudson Bursary — $150. Established by a bequest from the estate of David W. Hudson in memory of his sister, Lois Hudson, as an entrance bursary to a woman student in need of financial assistance.

II. SECOND, THIRD AND FOURTH YEAR AWARDS

A. Annual scholarships of $2000, $1000, $800 and $500 respectively, provided by the bequests listed above and from university funds

The George David Harris Memorial Scholarship—$2000. (George David Harris was a student at King's who lost his life by drowning in an attempt to save the life of a friend).

This scholarship established from a bequest of the estate of James R. Harris will be awarded to the student with the highest average in the university at the end of **either** the first **or** the second or, in the case of Honours students, the third year.

B. Restricted Scholarships:

The Honorable Ray Lawson Scholarships — $600 and $400. Established through the generosity of the Hon. Ray Lawson, Chancellor of the University, 1948-56, two scholarships of $600 and two of $400 are awarded to students entering their second year.

The Stevenson Scholarship — $120. Founded by the Rev. J. Stevenson, M.A., (sometime Professor of Mathematics), this scholarship of $120, tenable for 2 years, will be awarded to a student with the highest average on the five best subjects in the first year examinations.

Alexandra Society Scholarship — $300. An annual award offered by the Alexandra Society of King's College to a woman student who stands highest in the second or third year examinations. If the student who stands highest holds another scholarship, the award shall be left to the discretion of the Scholarship Committee.

The Claire Strickland Vair Scholarship — $300. An annual award to be offered to a student beyond the first year who displays excellence in English, an English Major or English Honours student preferred.

Saint John University Women's Club Scholarship — $[illegible]00 (Undergraduate). The Saint John University Women's Club awards a scholarship of $100 each year to a woman student entering her senior year in a Maritime University. The award is made to a student from the City or County of Saint John, with the consideration being given to both academic attainment and financial need. For particulars apply to the Registrar, before March 1.

C. Bursaries

Canadian Army Welfare Fund Bursary — A bursary of up to $1000 awarded primarily to finance tuition fees and the purchase of text books to children of Canadian Army servicemen, serving between October 1, 1946, and January 1, 1968. Applications must be received by July 1 each year. For further particulars about how to apply consult the Registrar.

Walter Lawson Muir Bursary — $175. Endowed by Mrs. W. L. Muir. To be awarded at the discretion of the Scholarship Committee to a student returning to college who won high scholastic standing in the previous year.

E. Mabel Mason Memorial Bursary — $200. Available to women students in need of financial assistance, as a single bursary of $200, or two bursaries of $100 each.

Roy M. Haverstock Bursary — $225. Established by a bequest of Gertrude H. Fox in memory of her brother, Roy M. Haverstock.

Khaki Bursary — $60. Awarded to the sons and daughters of the soldiers of the Great Wars. Written application must be made to the Registrar showing claim for consideration.

The Binney Bursary — $50. Founded in the year 1858, by Miss Binney, sister of the late Bishop Binney, and daughter of the late Reverend Hibbert Binney, in memory of her father.
This bursary is intended to aid students who may require assistance, and who shall have commended themselves by their exemplary conduct.

Charles Cogswell Bursary — $20. Charles Cogswell, Esq., M.D., made a donation of $400 to the Governors of King's College, the object of the donation being "to promote the health of the students and encourage them in the prosecution of their studies".

The Jackson Bursary — $25. Founded by the Rev. G. O. Cheese, M.A. (Oxon.), in memory of his former tutor, the late T. W. Jackson, M.A., of Worcester College, Oxford.

University Bursaries — A limited number of other small bursaries are available to students in need of financial assistance.

D. Prizes

The Lawson Prize — $100. Established by The Hon. Ray Lawson, former Chancellor of the University, for the student who shows the greatest progress between the first and second year.

Dr. M. A. B. Smith Prize — $25. Established by a bequest of $500 from the late Dr. M. A. B. Smith. Awarded to the student with the highest marks at the end of his second year with ten classes. In case of a tie preference will be given to a Pre-Divinity student.

Bishop Binney Prize — $20. This prize, which was founded by Mrs. Binney, is given to the undergraduate with the best examination results at the end of the second year with ten classes.

The Akins Historical Prize — $100. Founded by T. B. Akins, Esq., D.C.L., Barrister-at-Law and Commissioner of Public Records.
The award is made for the best original study in Canadian History submitted in competition.
Essays must be handed in, under a nom de plume, with the writer's name in an attached envelope, on or before the 15th day of April of the year concerned. Essays become the property of King's College.

The Beatrice E. Fry Memorial Prize — $50. Established by the Diocesan Board of the W.A. of the Diocese of Nova Scotia, in memory of Miss Beatrice E. Fry. To be awarded to the woman student (Anglican) of the College obtaining the highest mark of the year in English 100, provided that mark is at least B.

The Henry D. deBlois English Prize — $50. The late Rev. Henry D. deBlois, D.C.L., a graduate of King's College, left the sum of $200 to the Governors of the College to establish a prize in English. Awarded to the student of the 2nd, 3rd or 4th year in Arts or Science who submits the best essay on some subject relating to English Literature.
For conditions, apply to the Registrar. All essays must be in the hands of the Registrar of King's College by April 15.

The Almon-Welsford Testimonial Prize — $30. The Honourable William J. Almon, Esq., M.D. (1816-1901) and his family endowed a prize to commemorate the gallant and loyal deeds of Major Augustus Frederick Welsford who died in the Crimean War (1855) and to encourage the study of Latin. The prize is awarded annually to the student in his first year who makes the highest mark in a Latin course at the 100 or 200 level provided the grade is at least B.

The McCawley Classical Prize — $35. Established as a testimonial to the Rev. G. McCawley, D.D., on his retirement from the office of President. This prize is awarded annually to the student who makes the highest mark in a Greek course at the 100 level, providing the grade is at least B.

The Zaidee Horsfall Prize in Mathematics — $10. Established as a memorial to the late Zaidee Horsfall, M.A., D.C.L. Awarded to the student who makes the highest mark in first year Mathematics.

The Harry Crawford Memorial Prize — $40. Offered annually by a friend in memory of Harry Crawford, son of Thomas H. and Elizabeth A. Crawford, Gagetown, N.B.; a student of this College, who died true to his King and his Country, April 14, 1915, while serving in the Canadian Motor Cycle Corps.
The prize is awarded to the student completing the second year Arts course, of good character and academic standing, who in the opinion of the Faculty deserves it most.

III. GRADUATE SCHOLARSHIPS, MEDALS AND PRIZES

The Governor General's Medal. Awarded to the candidate who obtains the highest standing in the examination for the B.A. or B.Sc. Degree. Preference will be given to an Honours Student.

The Rev. S. H. Prince Prize in Sociology. This prize was made available by a $1,000 bequest under the will of the late Dr. S. H. Prince for annual award to both Dalhousie and King's Students.

The Rhodes Scholarship. This scholarship is of the annual value of 750 pounds sterling. Before applying to the Secretary of the Committee of selection for the Province (which application must be made by November 1), consult the Registrar, King's College.

Rhodes Scholars who have attended the University of King's College

1909 Medley Kingdom Parlee, B.A. '08
1910 Robert Holland Tait, B.C.L., '14
1913 Arthur Leigh Collett, B.A., '13
1916 The Rev. Douglas Morgan Wiswell, B.A., '14 M.A., '16
1916 The Rev. Cuthbert Aikman Simpson, B.A., '15, M.A., '16
1919 William Gordon Ernst, B.A., '17
1924 The Rev. Gerald White, B.A., '23, M.A., '24
1925 M. Teed, B.A. '25
1936 Allan Charles Findlay, B.A., '34
1938 John Roderick Ennes Smith, B.Sc., '38
1946 Nordau Roslyn Goodman, B.Sc., '40, M.Sc., '46
1949 Peter Hanington, B.A., '48
1950 Ian Henderson, B.Sc., '49
1950 Eric David Morgan, B.Sc., '50
1955 Leslie William Caines, B.A., '55
1962 Roland Arnold Grenville Lines, B.Sc., '61
1963 Peter Hardress Lavallin Puxley, B.A., '63
1969 John Hilton Page, B.Sc., '69

University Women's Club Scholarship — $500. The University Women's Club of Halifax offers a scholarship of the value of $500 every second year, 1976-1978, etc., to a woman graduate of Dalhousie University or King's College, to assist her in obtaining her M.A. or M.Sc. degree at any recognized graduate school. For particulars apply to the Registrar.

The Canadian Federation of University Women Fellowships — $1500 to $2500. For information apply to the Registrar.

The Imperial Order Daughters of the Empire PostGraduate Scholarships — $5000 (for study overseas) **and $3000** (for study in Canada). For information apply to the Registrar.

Imperial Oil Graduate Research Fellowship $3000 for three years. For information apply to the Registrar.

Commonwealth Scholarships. Under a Plan drawn up at a conference held in Oxford in 1959, each participating country of the Commonwealth offers a number of scholarships to students of other Commonwealth countries. These scholarships are mainly for graduate study and are tenable in the country making the offer. Awards are normally for two years and cover travelling, tuition fees, other university fees, and living allowance. For details of the awards offered by the various countries consult, the Registrar.

Rotary Foundation Fellowship. Open to graduate students for advanced study abroad. Available every second academic year, 1979, 1981, etc. Applications must be considered before August 1st of the previous year. Information may be obtained from Rotary Clubs or the Registrar.

Divinity

Scholarships in Divinity are tenable at the Atlantic School of Theology (or elsewhere in the case of particular scholarships). The Anglican faculty members of the Atlantic School of Theology advise on their disposition. Information on and application for these scholarships should be sought from the Divinity Secretary of King's College, Rev. Canon J. H. Graven.

Owen Family Memorial Scholarships — Two of $250. Established by Mr. and Mrs. D.M. Owen, in memory of the Owen family, tenable for one year, but renewable, and open to applicants who are Nova Scotia born, and resident therein, and are or are about to become theological students preference being given (1) to native residents of the town of Lunenburg, and (2) to native residents of the County of Lunenburg.

Canon W. S. H. Morris Scholarship — $1,500. This Scholarship was founded by the late Robert H. Morris, M.D., of Boston in memory of his father, the Reverend Canon W. S. H. Morris, M.A., D.D., Kingsman, Scholar and Parish Priest in the Diocese of Nova Scotia for forty years.

The Scholarship may be awarded annually by the President and Divinity Faculty to the most deserving member of the present or recent graduating class of the Divinity School, who has been at King's at least two years, and who, in the opinion of the Faculty, would benefit from travel and/or study in Britain, the U.S.A. or some other area outside the Atlantic Provinces of Canada, provided he reaches a satisfactory standard. Applications, stating the use which the applicant expects to make of the Scholarship, must be submitted to the Divinity Secretary on or before January 8, of the year in which the applicant, if successful, intends to use the scholarship. The recipient will be required to serve in the Atlantic Provinces for a minimum of three years after his return from abroad.

William Cogswell Scholarship. Open to students intending to work in the Diocese of Nova Scotia. Scholarship (A): Under the direction of the Trustees of the William Cogswell Scholarship to be awarded to the student who passes a satisfactory examination and who takes his Divinity course at any recognized Divinity College of the Anglican Church in Canada best fitted, in the opinion of the Trustees, to serve the terms of the Trust.

Scholarship (B): Under the direction of the Faculty of Divinity of the University of King's College, Halifax, Nova Scotia, an entrance scholarship of $200 or $300 depending on quality of work submitted, will be awarded to the properly accredited student entering the Divinity course for the first time and who stands highest in a special examination to be held in the month of admission provided he reaches a satisfactory standard. The recipient will be required to sign a statement promising to serve in the Diocese of Nova Scotia for a period at least as long as the period during which he holds the scholarship.

This examination will consist of two papers:
a. A paper on the content of the Old and New Testaments, and
b. A paper on A.H. McNeile's Introduction to the New Testament (revised edition by C.S.C. Williams) Oxford, 1953.
Awards will not be made every year.

The Daniel Hodgson Scholarship — $240. Founded in 1883 by Edward J. Hodgson and the Reverend G. W. Hodgson in memory of their father Daniel Hodgson, who died about that time. This Scholarship of an annual value of $60, tenable for four years, is the purpose of encouraging students to take an

Arts Degree before entering upon the study prescribed for Holy Orders. Candidates, who must be residents of Prince Edward Island, shall file their applications and certificates of having passed the full Arts matriculation requirements before August 15th, and must not be over 24 years of age at that time. They must also satisfy the Diocesan Committee for Holy Orders as to their aptitude for the Ministry of the Church. At the end of each academic year the Scholar shall file with the Trustees a certificate from the President or Secretary of the University "that during the past year he has resided in College (or has been excused from such residence) and has attended the full Arts course in the College", together with a certificate that his moral conduct, his attention to his studies and his general conduct have been satisfactory to the Board of Governors.

Scholars who fail to comply with the foregoing conditions automatically forfeit the Scholarship, but in special cases the Bishop, on the representations of the Trustees, may restore a terminated Scholarship in whole or in part.

The Bishop Waterman Bursary (Parish of Clements) — $150. The Parish of Clements, Nova Scotia, wishing to give tangible expression to its appreciation to the Rt. Rev. R. H. Waterman, D.D., for his services to the Parish immediately following upon the death of their Rector (Rev. W. H. Logan, December 19, 1964), has set up a Bursary Fund, to be known as the Bishop Waterman Bursary Fund, to help young men to undergo training for the Ministry. An amount not less than $150 is to be forwarded by the Treasurer of the Parish to the Bursar at King's on September 1st of each year. This money is to be used at the discretion of the Faculty of Divinity in consultation with the Bishop of the Diocese for the assistance of any candidate for Holy Orders needing it from any Parish of the Diocese of Nova Scotia enrolled for training for work in the Diocese of Nova Scotia or any Missionary Diocese. If any young man from the Parish of Clements offers himself for such training, he shall be given first consideration in the awarding of the Bursary.

The Mabel Rudolf Messias Divinity Bursary — $120. The interest on an endowment of $2,000, the gift of Mrs. M. R. Messias of Wolfville, Nova Scotia, is to be used to provide an annual bursary for a needy and deserving Divinity student.

Order of the Eastern Star — $300. Four scholarships are to be awarded, primarily on the basis of financial need, to 2nd and 3rd year Arts students, or to older men with their Arts degree, in their 3rd year of Theology.

The H. Terry Creighton Scholarship — $150 approximately. The annual income from an endowment of $2,000, established by family and friends to honour the memory of H. Terry Creighton of Halifax, Nova Scotia, who was an active Lay Reader and prominent Layman of the Diocese of Nova Scotia for many years.

The Scholarship is to be made to an outstanding and deserving Anglican Divinity student at the conclusion of his final year of training and who is intending to enter the ministry of the Diocese of Nova Scotia. Should there be no suitable candidate for the Scholarship training in Nova Scotia, the award may be made, in consultation with the Bishop of Nova Scotia, to one studying elsewhere, provided that the student intends to return to Nova Scotia for ministry in that Diocese.

Mary How Donaldson and Cornwallis W. A. Bursary — $400. This Bursary was established by St. John's (Cornwallis, N.S.), Anglican Church Women to provide a living memorial to the life and work of Mary How Donaldson, who had family connections with King's College, and of Cornwallis W. A., of which she was a charter member. It is to be awarded on the recommendation of the Divinity Faculty to a deserving Anglican Divinity student, male or female, preferably a Nova Scotian, who is prepared for full-time service in the Church and is in need of financial assistance.

The George M. Ambrose Proficiency Prize — ($300. approx.). The income from a trust fund set up in memory of Canon G. M. Ambrose, M.A., an alumnus of King's, provides an annual award to the Divinity student who receives the highest aggregate of marks at the end of his first year, provided that during that year such student takes the regular full course in theology.

Anderson Scholarships — $450. Two scholarships of the value of $450 each, established under the will of Maple B. Anderson of Lunenburg, Nova Scotia, in loving memory of her brothers, Roseville W. & George M. Anderson, to be used for scholarship purposes for qualified applicants wishing to study theology at the Atlantic School of Theology.
The scholarships are to be awarded annually on the recommendations of the Anglican Divinity professors at the Atlantic School of Theology with the approval of the President of the University of King's College.
A student may apply for renewable tenure of the scholarship.

The Margaret Draper Gabriel Bursary — $450. A fund has been established in memory of Margaret Draper Gabriel by her son, Rev. A. E. Gabriel, M.A., an alumnus of King's, the yield from which is to be used to give financial aid to a Nova Scotian Divinity Student in preparation for the Ministry of the Church. The recipient must be nominated or recommended by the Bishop of Nova Scotia. If in any year there is no candidate for this assistance the yearly yield is to be used to augment the fund. Should King's College Divinity School cease to exist as such, the fund is to be transferred to the Diocese of Nova Scotia and the income used as aforesaid.

The Reverend Canon H. Douglas Smith Bursary Fund. A fund of $4,000 has been established by Mrs. Ethel May Smith in memory of her son and King's graduate, the Reverend Canon H. Douglas Smith. The income of the fund is disbursed in the form of bursaries (one or more) to needy and deserving persons from the Diocese of Nova Scotia or the Diocese of Fredericton who are theological students at the Atlantic School of Theology, and who intend to enter the ministry in one of these Dioceses.

H. H. Pickett Memorial Scholarship — $175. This scholarship is payable to the student entering the final year of study for the Sacred Ministry who has shown the greatest all round improvement during his time in Divinity studies. Preference is to be given, first, to a student from Trinity Church, Saint John, and, second, to a student from the Diocese of Fredericton.

John Clark Wilson Memorial Bursaries — $100 each. Established in 1947 by Miss Catherine R. Kaiser, in memory of John Clark Wilson. Two bursaries of $100 each, tenable for one year. Awarded to Divinity students deemed worthy of financial help.

Glebe Scholarship. A scholarship of approximately $250 is offered annually to Anglican students of Prince Edward Island, preference being given to Divinity students.

Application, accompanied by a certificate of character from the applicant's Rector, must be sent to Canada Permanent Trust Company, Charlottetown, P.E.I. on or before May 31st.

Moody Exhibition — $100. The "Catherine L. Moody" Exhibition of $50 a year for two years is awarded every two years to the student entering the second year preparing for Holy Order, whose scholarship and exemplary conduct shall, in the opinion of the Faculty, merit it. (Next award 1979).

The George Sherman Richards Proficiency Prize — $120. In Memory of the Reverend Robert Norwood, D.D. The income from a fund of $2,000 to be awarded annually to the Divinity student who gains the highest aggregate of marks at the end of his penultimate year, provided that in that year he takes the regular full course in Theology.

The Countess de Catanzaro Exhibition — $100. The income from a fund of $2,000 to be awarded by the Faculty to a Divinity student during his second year in college. The award will be made on the basis of character and need.

The McCawley Hebrew Prize — $25. Open to all members of the University who are below the standing of M.A.

This prize is given out of the interest of a Trust Fund, the gift of the Reverend George McCawley, D.D., in the hands of the Society for the Propagation of the Gospel in Foreign Parts.

This prize will be awarded to the student who leads the class in Hebrew 2 and receives a recommendation from the professor of Hebrew.

Junior McCawley Hebrew Prize — $25. With the accumulated unexpended income from the McCawley Hebrew Prize a fund has been set up establishing a second prize, to be awarded to the student standing highest in first year Hebrew.

Archdeacon Forsyth Prize — $50. The Ven. Archdeacon D. Forsyth, D.C.L., of Chatham, N.B. who died in 1933, left to King's College $1,000 to provide an annual prize or scholarship, to be awarded to a Divinity student for proficiency in the study and knowledge of the original Greek Scripture. To be awarded on the combined results of Greek Testament 1 and 2.

Shatford Pastoral Theology Prize — $40. Established by an anonymous donor, in memory of the late Rev. Canon Allan P. Shatford, C.B.E., D.C.L. Awarded annually for Pastoral Theology. The winner must receive a recommendation from the Professor of Pastoralia.

Laurie Memorial Scholarship. One or more scholarships of about $250 each, founded in memory of Lieut.-Gen. Laurie, C.B., D.C.L., open to candidates for the Ministry, under the direction of the Trustees. Particulars may be had from the Registrar.

The Wiswell Trust Divinity Studentship — $120. A. B. Wiswell, D.C.L., Hon. Fell. (Vind.) of Halifax, N.S., in order to perpetuate the memory of the Wiswell family, augmented a bequest from members of the family, thus providing a capital sum of $2,500, the income of which is to assist Divinity students who were born in Nova Scotia and who propose entering the ministry of the Anglican Church in Canada.

Prince Prize in Apologetics — $60. Established by a bequest of the late Dr. S.H. Prince. Awarded every alternate year, at the discretion of the Faculty. (Next award 1979-80).

Wiswell Missionary Bursary — $200. Founded by Dr. A. B. Wiswell for help to a Divinity student who believes he has a call to the Mission Field either Overseas or in the Canadian West.

Preference will be given to a student who has given promise of the needed qualities and has taken his degree or is within a year of completing his Arts course. If there is no student meeting the above requirements the award will be left to the discretion of the Divinity Faculty.

Clara E. Hyson Prize — $5.00. Founded by Miss Clara E. Hyson and awarded each year on vote of the Faculty.

A. Stanley Walker Bursary — $200. Awarded by the Alexandra Society of King's College. To be given to an Anglican student at the Atlantic School of Theology for the year 1978-79.

Johnson Family Memorial Bursary — $60. Founded by the Misses Helen and Marguerite Johnson in memory of their parents. This bursary is to be awarded annually at the discretion of the President and Divinity Faculty to the Divinity student considered most worthy on grounds not only of scholarship, but also, of financial need and of devotion to his vocation. Preference will be given to a student from the parish of St. Mark's. Halifax.

Divinity Grants. Grants to aid students in Divinity who require assistance are made by the Bishop of Nova Scotia, and by the Bishop of Fredericton. The holders of these must fulfill such conditions as the Bishops lay down and in every case attend a personal interview. For further particulars apply to the Divinity Faculty.

The King's Divinity Scholarship — $150. The Anglican Church Women in the Diocese of Nova Scotia makes an annual grant of $150 towards the expenses of Divinity students who agree to work in the Diocese of Nova Scotia after ordination.

Archbishop Kingston Memorial — $100. Awarded annually by the Nova Scotia Diocesan A.C.W. on recommendation of the Divinity Faculty, to a needy divinity student.

The Wallace Greek Testament Prize — $50. A Book Prize established by the late Canon C. H. Wallace of Bristol, England, in memory of his father Charles Hill Wallace, barrister, of Lincoln's Inn, who graduated at King's College in 1823, and died in England in 1845. Subject: Epistle to the Hebrews. Application to be made to the Divinity Secretary by March 1st.

Agnes W. Randall Bursary. Two bursaries of $8.00 each will be given each year to the students in Theology who show the greatest diligence in their studies. An award will not be made twice to the same student.

Bennett-Cliff Memorial Prize. A prize of $10.00 each year. Award to be at the discretion of the President.

Kenelm Eaton Memorial Scholarship — $60. This scholarship is provided by the Synod of Nova Scotia as a memorial to The Hon. Captain Kenelm Edwin Eaton, B.Sc., L.Th., who made the supreme sacrifice while serving as a Chaplain in Italy,

August 31, 1944. For particulars apply to the Divinity Secretary.

Dr. C. Pennyman Worsley Prize — $100. A memorial to the late Dr. Worsley. To be used in alternate years for a prize in Church History. Next award 1979-80.

Fenwick Vroom Exhibition — $40. To be awarded to a Divinity Student at the discretion of the Faculty.

The Church Boy's League Bursary Fund. Students eligible for assistance from this Fund are those who have, at one time, been full-pledged members of any Parochial C.B.L. branch in Canada. Particulars are available from the Divinity Secretary.

Archbishop Owen Memorial Scholarships. A number of scholarships of $300 each are awarded each year by the General Synod Committee concerned to students in their final year in Theology, who are ready to take up missionary work, either in Canada or overseas. Academic standing and financial need are taken into account in making the award.

Application should be made to the Divinity Faculty by November 1st of each year.

The Florence Hickson Forrester Memorial Prize — $100. The prize, presented in memory of the late Mrs. Forrester, by her husband, is to be awarded on Encaenia Day to the Divinity Student in his penultimate or final-year who passes the best examination on the exegesis of the Greek test of St. Matthew, Chapter V-VII provided always that the standard is sufficiently high.

Bibliography:
T. W. Manson: *The Sayings of Jesus* (SCM)
J. Jeremias: *The Sermon on the Mount,* (Athlone Press)
F. W. Beare: *The Earliest Records of Jesus,* (Blackwell) pp. 52-69 and 95-98.
H. K. MacArthur: *Understanding the Sermon on the Mount,* (Epworth).

The Bullock Bursary — $225. Established by C. A. B. Bullock of Halifax for the purpose of defraying the cost of maintenance and education of divinity students who were before being enrolled residents of Halifax, and members of a Parish Church there, and who are unable to pay the cost of such maintenance and education.

The Harris Brothers Memorial — $100. To be awarded at the beginning of each college year as a bursary to a student of Divinity. The student shall be selected annually by the Divinity Faculty, preference being given to a needy student from Prince Edward Island, failing that, a needy student from the Parish of Parrsboro, and failing that, to any deserving student of Divinity.

The Carter Bursaries — $160. Two bursaries of a value of $160 each, established under the will of Beatrice B. Carter of Amherst, Nova Scotia, to be used to assist young men studying for the ministry.

Royal Canadian Air Force Protestant Chapel Bursary — $120. This Bursary, established in 1959 by endowment from collections taken in R.C.A.F. chapels, is awarded annually at the direction of the Divinity Faculty to a bona fide ordinand, preference where possible being given to (a) ex-R.C.A.F. personnel, (b) children of R.C.A.F.

William A. and Kathleen Hubley Memorial Bursary — $175. This bursary is designed to assist students from St. Mark's Parish, Halifax, and failing a suitable candidate then from any parish in the Diocese of Nova Scotia, who are studying for the Sacred Ministry at any recognized College in the Anglican Communion, preference being given to students studying at the Atlantic School of Theology. The award is made on the basis of need and may be renewed provided a certain acceptable standard is attained. The recommendations of the Rector of St. Mark's and the Divinity Faculty are necessary conditions. The bursary must be applied for annually.

The Reverend Dr. W. E. Jefferson Memorial Bursary — $100. This bursary, the gift of the Parish of Granville, N.S., is established in memory of Reverend W. E. Jefferson, D.Eng., an alumnus of King's and a graduate engineer, who was ordained late in life and yet was able to give nearly twenty years of devoted service to the ordained ministry. Preference will be given to older men pursuing post-graduate studies or to older men preparing for ordination. The award is to be made by the Divinity Faculty.

The Archdeacon Harrison Memorial Bursary — $20. Established by Miss Elaine Harrison in memory of her father. To be awarded to a deserving and needy Divinity student, at the discretion of the Faculty.

St. Paul's Garrison Chapel Memorial Prize — $20. To be awarded to the Divinity student chosen by the Faculty to attend a Christmas Conference.

The Clarke Exhibition. An endowment was established by the late Reverend Canon W. J. Clarke of Kingston, New Brunswick, the first charge upon which shall be the provision of copies of *The Imitation of Christ* to members of each year's graduating Class in Divinity. The balance of the income each year is to be awarded by decision of the Divinity Faculty to a deserving Divinity Student for the coming year.

Northumbria Region Bursary — $150. Offered annually by the Brotherhood of Anglican Churchmen in the Northumbria Region.
It is awarded to a needy and worthy student from the Amherst region. If no candidate is available from this Region, in any one year, then any needy and worthy Anglican student would be eligible.

Canada Student Loans

1. All Canadian students are eligible to be considered for Canada Student Loans which, in most provinces, are administered in conjunction with provincial bursary plans.

2. Students should apply as early as possible by requesting application forms from the provincial authority in order to have the money available for registration.

CONVOCATION 1977

GRADUATING CLASS

LIFE OFFICERS

Honorary President
Mrs. J.E. Lane

President
Anne Elizabeth Musgrave

Vice-President
Julie Anne Teresa Lycon

Secretary
Melda Irene Rafuse

Treasurer
John Alexander Matheson

Valedictorian
Miss Margaret Ann vonMaltzahn

Doctor of Civil Law (honoris causa)
Lieutenant-Colonel Thomas Frederick George Lawson . . . . . London, Ont.
Robert Wilson Southam . . . . . Ottawa, Ont.

Doctor of Divinity (honoris causa)
The Reverend Dr. David William Hay . . Caledon East, Ont.
The Reverend Canon Karl Harrington Tufts . . . . . Granville Ferry, N.S.

Bachelor of Divinity Degree
The Reverend Donald Feversham Arnold . . . . . Charlottetown, P.E.I.

BACHELOR OF ARTS DEGREE:

**	ARMSTRONG, Niall Anthony . . .	Digby, N.S.
	BOGGILD, Hans William.	Halifax, N.S.
**	BOLTZ, Deborah Sandra Lee. . . .	Halifax, N.S.
	CECCOLINI, Jill Diane.	Wappingers Falls, N.Y., U.S.A.
**	CLARE, Geoffrey Walter	Halifax, N.S.
*	COULTER, Carolyn Fraser	Dartmouth, N.S.
	CURRY, David Philip (Honours in Classics and German).	Dartmouth, N.S.
	DAVIS, Wendy Ann	Dartmouth, N.S.
	DONOVAN, Donald James	Ingonish Beach, N.S.
	FLERLAGE, Christopher Stuart. . .	Wellesley, Ma., U.S.A.
	GILES, Phillip Peter	Halifax, N.S.
	HIBBITTS, June Marie	Halifax, N.S.
	HILTZ, Maureen Angela	New Ross, N.S.
*	HULL, Peter William	Portage la Prarie, Man.
	JACOBS, Helene Frances.	Halifax, N.S.
*	KELLY, Tony Nelson.	Little River, N.S.
	LYCON, Julie Anne	Dartmouth, N.S.
	MacDONALD, Michael Lewis (Honours in Political Science)	Louisbourg, N.S.
	MacLEAN, Audrey Catherine. . . .	Sydney, N.S.
	MATHESON, John Alexander (Honours in Classics)	Saint Stephen, N.S.
**	McLANDERS, Donna Lee.	Sydney, N.S.
	MORRIS, Julie May	Bridgewater, N.S.
	MUSGRAVE, Anne Elizabeth. . . .	Leitches Creek, N.S.
	NICKERSON, Robert Earl	South Ohio, N.S.
	PIKE, Jane Elizabeth	Halifax, N.S.
**	PLOCIENNIK, Richard Jerzy (Distinction)	Brantford, Ont.
**	RAFUSE, Carla Rae	New Ross, N.S.
	RAFUSE, Melda Irene	Eldon, P.E.I.
	ROSE, Thomas Anthony	Sydney, N.S.
*	SCRATCH, David Ernest	Halifax, N.S.
	STEVENS, Gail Marguerite	Sydney, N.S.
	THOMPSON, Gary Francis	Trenton, N.S.
*	TOMLIN, Carolyn Mary	Halifax, N.S.
	vonMALTZAHN, Margaret Anne (First Class Honours— Unconcentrated)	Halifax, N.S.
	WHALLEY, Clement Michael. . . .	Sydney, N.S.
	WHYTE, Mary Margaret MacGregor	Chatham, N.S.
	ZWICKER, Diane Katherine (Honours in German)	Halifax, N.S.

* Conferred during the session
** In Absentia

HONOURS CERTIFICATE:

	BRYSON, Peter Martin Stewart, B.A. (Honours in Classics). . . .	Halifax, N.S.
*	DESROSIERS, Jacques Gordon, B.A. (Honours in Sociology and Political Science)	Halifax, N.S.
	KIRBY, William John Torrance, B.A. (First Class Honours and University Medal in Classics) . .	Calgary, Alberta

BACHELOR OF SCIENCE DEGREE:

	CLUETT, Ann LaVerne	Halifax, N.S.
	COMEAU, Lucien Leger	Meteghan, N.S.
	FIANDER, Richard James (Honours in Chemistry).	Liverpool, N.S.
*	GOUGH, Sandra Victoria	East Preston, N.S.
	GRANT, Dorothy Kathleen	Sydney River, N.S.
	HUARD, Michaela Margarette Jean	Summerside, P.E.I.
**	KENNEDY, Clarence George . . .	Wallace, N.S.
*	LAKE, Catharina Louisa M.	Windsor, N.S.
**	MATHIESON, Euan Wallas	Sydney, N.S.
*	RYDER, Deborah Irene	Halifax, N.S.
	TUFTS, David John	Dartmouth, N.S.
	WADDELL, Phyllis Claire.	Danbury, Conn., U.S.A.
*	WRIGHT, John Alexander	Halifax, N.S.

* Conferred during the session
** In Absentia

ENCAENIA AWARDS

Arts and Science

The Governor General's Medal . . Margaret Ann vonMaltahn
The Beatrice E. Fry Memorial Prize. . . . . Susan Bungay
. . . . . Elizabeth Ingraham
The Almon-Welsford Testimonial Prize. . . . . Patricia Chalmers
The Harry Crawford Memorial Prize. . . . . Deborah Mackenzie
Dr. M.A.B. Smith Prize. . . . . Isobel Manzer
The Bishop Binney Prize . . . . . Isobel Manzer
The Zaidee Horsfall Prize in Mathematics . . . . . Michael Ruohoniemi
The McCawley Classical Prize. . . Patricia Chalmers
. . . . . Nigel Russell
The Lawson Prize. . . . . Heather Salsman

DIVINITY:

The Cannon W.S.H. Morris Scholarship . . . . . .
The George Sherman Richards Proficiency Prize . . . . . Andrew Wetmore
The Archdeacon Forsyth Prize. . . Rev. Ronald Walker
The Shatford Pastoral Theology Prize. . . . . Donald Young
The Kenelm Eaton Memoral Scholarship . . . . . Rev. Barry Thorley
The Canadian Bible Society Book for the Reading of the Holy Scripture . . . . . Andrew Wetmore
The George M. Ambrose Proficiency Prize . . . . . Bruce McLeish
The Moody Exhibition . . . . . Frederick Hiltz
The H. Terry Creighton Scholarship . . . . . Rev. Ronald Walker
The Junior McCrawley Hebrew Prize. . . . . Roderick Gillis

ENTRANCE SCHOLARSHIPS AND BURSARIES (ARTS AND SCIENCE)

Blair Blakeney (Henry S. Cousins)
Lawrene Cahoon (Dr. Norman H. Gosse)
Elizabeth Chandler (Henry S. Cousins)
Michael Chisholm
Paula Cornwall
Deborah Craig (Susanna Almon)
Vickie Donally
Michele Dutnall
David Harris (Alumni)
David Hazen (Margaret and Wallace Towers Bursary)
Jacqueline Jollimore
Thomas Kilgour (Alumni)
Carol Krol
Peter Linder (Henry S. Cousins)
Richard Lorway (Alumni)
Heather MacDonald (Henry S. Cousins)
Helen MacDonnell (Henry S. Cousins)
Andrew McInnis (C.F.W. Moseley)
Michael Miller
Jane Plant (Susanna Almon)
Steven Porter (Susanna Almon)
Maria Rey (C.F.W. Moseley)
Barbara Sers (Susanna Almon)
Lana Steeves
Timothy Vondette
David Wilcox (Alumni)
Tracey Williams (Susanna Almon)

Nova Scotia Teachers College Bursary
Louise Levy

Lois Hudson Bursary
Lucille Logan

ADMISSIONS

1. General Statement

For further information on admission to the Faculty of Arts and Science, visit, write or telephone: the Registrars Office, University of King's College, Halifax, N.S. B3H 2A1 (902-422-5902).

Minimum age
No person under sixteen years of age is admitted except by special permission of the Senate.

Language requirement
Applicants whose native language is not English must give evidence that they are proficient in spoken and written English. This may be done by presenting a certificate of having passed the English Language Test of the University of Michigan, which is administered in various centres throughout the world. Information may be obtained by writing to the English Language Institute, Testing and Certification Service, Ann Arbor, Michigan 48104, U.S.A.

Definitions
(a) Undergraduates are students who are candidates for a Bachelor's degree, for a degree in a professional course, or for a diploma. (For details of admission to professional courses, see entries in the calendars of the faculties concerned).

(b) Part-time students are students registered for three full credit classes or less. (students registered for more than three full credit classes are *full-time students).*

(c) Special students are students who are not candidates for a degree or diploma but who wish to take one or more university classes. Such students may be admitted if qualified. There are two categories of special students: *no degree students,* who may receive credit for classes taken; and *auditors* or *audit students,* who receive no credit and to whom no official transcript is issued.

(d) Matriculation standing: Senior matriculation designates the level of studies attained by students who have successfully completed Grade XII in a public high school in Nova Scotia.

(e) Credits: See General Faculty Regulations 2.

Special Cases
See the University regulations in the preliminary pages of this calendar and Section 5 below, *Admission of Mature Students and Those Lacking Normal Admissions Requirements.*

Journalism
Admission requirements for the School of Journalism are generally the same as for admission to Arts and Science. Applications must be sent to the Registrar of King's College. The applications are processed through an Admissions Committee of the King's Faculty.

2. Admission from High Schools in Nova Scotia, New Brunswick and Prince Edward Island

General
The normal minimum requirement for admission to King's College is completion of at least five appropriate senior level university preparatory subjects as outlined below. An average of 60% in Grade XII high school examination, or the equivalent, is required. The University does not apply criteria mechanically. It reserves the right to refuse admission and also has discretionary power to admit students who do not meet the normal requirements, but who appear acceptable on other grounds. Any student who submits the appropriate documents will be considered for admission.

Early Admission
Students who have been receiving good marks (a general average of 70% or more) will be considered for admission before the final results of their senior year are known. Such students are encouraged to apply early during their last year at school.

Application Procedure
Candidates for admission to the Faculty of Arts and Science and the School of Journalism must submit a completed application form (available from the Admissions Office, or from most high schools) to the Registrar, King's College, as soon as possible after January 1st, and normally not later than August 15th. To complete the application, a candidate must provide:

(a) evidence of successful completion of Grades XI and XII in the University Preparatory Programme (senior Matriculation standing) from a public high school in Nova Scotia, or the equivalent, as shown in a certified high-school record-transcript, Provincial Examination Certificate, or Principal's report;

(b) recommendations from high school officials.

Decisions on admission will be made known to applicants as soon as possible after their credentials have been received and studied.

Preparation for Admission
Students wishing to study at King's College should choose their high school subjects from a University Preparatory Programme. At least five senior level subjects must be taken. All students are required to have taken Senior level English and at least two other senior classes from among Biology, Chemistry, French, German, History, Latin, Mathematics and Physics. The remaining required classes may be chosen from the above list or selected from among senior classes in Economics, Geography, Geology, Law, Modern World Problems, Music, Political Science, Sociology or Spanish. Any special or experimental classes taken must previously have been deemed acceptable by the Admissions Office. For such information and any other advice necessary, students should consult their high school guidance counsellors or the Admissions Office. Students should read the sections of the Calendar headed *Degree Programmes and Programmes of Study* and also refer to the Programme Planning Guide to ensure that their high school programme satisfies entrance requirements to particular programmes. Students should note

that if they lack preparation in subjects such as Mathematics, they may not be eligible to register in certain programmes, since admission to the University does not guarantee admission to all programmes.

3. Admission from Outside the Maritime Provinces at Senior Matriculation Level

Deadlines for Receipt of Applications
Applications for admission from *any part of Canada or the USA* must be received by the Registrar's Office by August 1st in order to ensure prompt and efficient handling.

Applications from *all other countries* must be received by May 1st. (Students from Great Britain or the West Indies who write GCE qualifying examinations in June may request an extension of this deadline if they can ensure that their examination results will be available to the Admissions Office by August 21st; otherwise the May 1st deadline must apply.)

Application procedure and ways of appraising applications: as for students from the Maritime Provinces.

Equivalences
The following levels are considered equivalent to Senior Matriculation (Grade XII) in Nova Scotia:
Other Provinces of Canada
(a) Newfoundland: first year Memorial University.

(b) Quebec: Senior High School Leaving Certificate; or Quebec Diploma of Collegial Studies (D.C.S.). Well qualified students may be admitted after one year of CEGEP.

(c) Ontario: Grade XIII (Secondary School Honour Graduation Diploma), or very high standing in Grade XII.

(c) Manitoba, Saskatchewan, Alberta, British Columbia: Grade XII.

Other Countries
(e) USA: first year at a recognized university or similar institution of higher learning (minimum: 30 semester hours). Students of lesser standing will be considered if they appear exceptionally well qualified, for example on the basis of CEEB scores or advanced placement work.

(f) Great Britain, West Indies, West Africa: General Certificate of Education with pass standing in at least five subjects, of which at least two must be at Advanced level, and one must be English.

(g) Hong Kong: GCE as for Great Britain; or University of Hong Kong Matriculation Certificate under same conditions as for GCE.

(h) India, Pakistan: Bachelor's degree with first-or second-class standing from a recognized university; or in certain circumstances, first-class standing in the Intermediate examinations in Arts and Science, provided the candidate has passes at the university level in English, Mathematics and a language other than English.

(i) Countries not mentioned above: Write to the Registrar's Office, University of King's College for further information.

4. Transfer from other Colleges and Universities

Deadlines for Receipt of Applications
Canada and the USA: August 1st.
Other Countries: May 1st.
Applications received after the above dates will be considered, but prompt processing cannot be assured.

Documents to be Submitted
a) Completed application form (available from Registrar's Office).

b) Official academic transcripts (or certified copies) from all colleges and universities attended;

c) Copies of calendars (or similar publications) of all colleges and universities attended;

d) Certification of proficiency in English if the native language of the applicant is another language;

Certified copies of original documents, or relevant sections of documents (e.g. calendar pages) are acceptable in lieu of originals. Certificates in languages other than English or French must be accompanied by certified translations into English or French.

Transfer of Credits
Students who have attended a recognized junior college, for at least one year, and can present satisfactory certificates may be granted Senior Matriculation standing provided the work has been done in approved academic courses. For work completed beyond the Senior Matriculation level, credit may be granted on admission for a maximum of five equivalent classes. Students who are admitted under these conditions can complete the requirements for a general degree in two years, or for an honours degree in three years. Such transfer is regularly accepted from the Convent of the Sacred Heart in Halifax, or the Nova Scotia Teachers' College, or Nova Scotia Agricultural College in Truro.

Students who have attended another recognized university may, on presentation of satisfactory documentary evidence, be granted credits for appropriate classes, within the limits of the **Regulations** set out below.

General Regulations Concerning Transfer *(See also General Faculty Regulations.)*

a) A student from another college or university who is not eligible for re-admission to that college or university on academic grounds will not be admitted to King's College.

b) No transfer credit will be granted for any class in which a final mark of less than C (or the equivalent) was obtained, or for any class in which a final mark was granted conditionally.

c) To obtain a first degree from the Faculty of Arts and Science, Dalhousie-King's University, at least half of the classes, including at least half in the field of concentration, must normally be taken at Dalhousie-King's.

d) A student in a Dalhousie-King's honours programme must attend Dalhousie-King's as a full-time student in his last two years, unless special permission to the contrary is obtained from the Committee on Studies.

e) No classes taken at another institution will be counted towards fulfilling the concentration requirement of the general Bachelor's degree or the principle subject requirement of an honours programme without specific approval from the departments concerned at Dalhousie.

f) Transfer credits may be granted only for classes equivalent to classes offered at King's, and only in subjects recognized as having standing in a faculty of Arts and Science.

g) No credit will be given for any classes taken at another university while a student is inadmissable at Dalhousie-King's.

5. Admission of mature students and those lacking normal admissions requirements

In individual circumstances, the University may admit persons who lack the normal high school preparation including those who have been away from school for a number of years, provided they can show by letter and through interview that they possess qualities fitting them for university studies.

GENERAL FACULTY REGULATIONS

Changes of Regulations usually become effective upon publication in the Calendar. Students are subject to changes in regulations and courses made after their first registration unless specifically excused by the Faculty. All enquiries about the regulations hereunder should be made to the Registrar. Any students suffering *undue hardship* from application of any of the regulations may appeal for relief through the Registrar to the Committee on Studies at Dalhousie.

1. General

Admission to Classes
No student shall be admitted to a class until he has satisfied the regulations regarding entrance and complied with the *General University Regulations.* Students who wish to add classes after two weeks from the commencement of the term in which the class begins would have to get the approval of the chairman of the department in which the student intends to add the class, as well as the approval of the class instructor.

Duration of Undergraduate Studies
A student is normally required to complete his undergraduate studies within ten years of his first registration.

Auditing
A full-time Arts and Science student registered at King's College may, with the permission of the instructor concerned, audit any class in the Faculty of Arts and Science, provided that it is clearly understood that he will not be eligible to write examinations in the class and will not in any circumstances be granted credit for it.

Advanced Placement
A student possessing advanced knowledge of a subject which he has acquired otherwise then at a university, will be encouraged to begin his studies in that subject at a level appropriate to his knowledge, as determined by the department concerned, and will be exempted from any classes which are normally prerequisites for the one to which he is admitted. However, the student must substitute for the exempted classes an equal number of other classes, not necessarily in the same subjects (i.e., he must complete at the University the full number of classes required for a general or an honours degree).

Counting of Classes toward Two Undergraduate Degrees
A student who holds one undergraduate degree from Dalhousie-King's and who wishes to gain a second undergraduate degree must fulfill the requirements of the second degree and meet the following stipulations:
a) only classes that are applicable of the course for the second degree may be counted for credit;
b) each class carried forward must bear a grade of C or higher;
c) a minimum of six new classes must be taken, four of which must be above the 100 level in a new area of concentration and two normally in other subjects.
d) merit points must be scored on the new classes as required by regulations 3 below.

A student who holds one undergraduate degree from another recognized university and who wishes to gain a second undergraduate degree from Dalhousie-King's University, must complete at least half of the classes for that degree at Dalhousie-King's. Accordingly, the student must meet the requirements set out in (a) above but must take a minimum of seven and one half classes, at least four of which must be above the 100 level in a new area of concentration, and at least two in other subjects.

Note: Conversion of a General degree to an Honours degree (degree Programmes, section 5.3.3) does not involve the award of a second degree; hence it is not subject to this regulation. However, graduates from other universities wishing to obtain an Honours degree from Dalhousie-King's must qualify for a General degree as well as satisfy the Dalhousie-King's requirement for honours.

Concurrent Registration at University of King's College and Another Educational Institution
Ordinarily no student may register at King's if concurrently taking work in another educational institution. Regulation 8 below outlines procedures to be followed to secure waiver of this general regulation. Regular exceptions are made with respect to registration at affiliated institutions.

Forced Withdrawal Consequent on Unsatisfactory Performance
When the work of a student becomes unsatisfactory his case will be discussed by the Committee on Studies which may require him to withdraw from the class or classes concerned and to be excluded from the relevant examinations, or may advise him to withdraw temporarily from the University or to reduce his class load.

2. Credit and Assessment

A credit toward a degree is earned in a full-credit class, a class in which typically there are two to three lecture hours weekly for the regular (September to May) academic year. Credits may be obtained for university-level studies
a) normally during the regular academic year; or exceptionally
b) during a summer session or by correspondence,
c) by transfer from other universities attended prior to entrance to University of King's College,
d) in other Faculties of Dalhousie, or
e) at other institutions while registered at King's.

Regulations governing each of these ways of earning credit are presented below

Gaining Credit
To gain credit toward a degree, a student must meet the requirements relevant to that degree and must appear at all examinations, prepare such essays, exercises, reports, etc. as may be prescribed and, in a class involving field or laboratory work, complete such work satisfactorily.

Credit Contingent on Settling Debts to the University
To gain credit, a student must settle all obligations to the University with respect to tuition and residence fees, bookstore debts, library fines, etc. (not later than April 30 for Spring Convocations).

Method of Assessment
In determining pass lists, the standings attained in prescribed class exercises, in field or laboratory work, and in the various examinations, may be taken into consideration by an instructor. Each instructor must ensure that students are informed of the method of evaluation to be used in a class within two weeks of the first meeting of the class; without four weeks after the beginning of each term the departmental chairmen must report to the Dean the method of evaluation to be used by each instructor in each class.

Grades
The passing grades are A^+, A, A^-, B^+, B, B^-, C^+, C, C^- and D. The failing grades are F/M and F.

Submission of Grades
On completion of a class, the instructor is required to submit grades to the Registrar, such grades to be based on the instructor's evaluation of the academic performance of the students in the class in question. Christmas grades must be submitted to the Registrar in 100-level full-year classes with enrolments in excess of 25 (on October 1); Christmas grades are normally submitted in other full-year classes.

Incomplete
Each student is expected to complete class work by the prescribed deadlines. Only in special circumstances may an instructor extend such deadlines. Incomplete work in a class must be completed within four weeks of the required date for submission of grades in that class to the Registrar's Office.

Exceptions to this rule will only be extended to classes which require field work during the summer months. At present the list of these classes consists of Biology 4800 (A, B, C or R) and 4900 and Music 360R and 460C. Students taking these classes in their final year should note that they will not be able to graduate at the spring convocation.

Change of Grade
Correction of errors in the recording of a grade may be made at any time. The final date for grade changes for other reasons is September 1 following the academic year; such changes to be made only after the procedures for reassessment of a grade have been complied with.

No student is entitled to appeal for a grade change six months after the required date for submission of grades in that class to the Registrar's Office.

Examinations and Tests
A period of roughly two weeks in the spring and one week in December will be set aside for the scheduling by the Registrar of formal written examinations. An instructor wishing to have an examination scheduled by the Registrar for his class must so inform the Registrar by October 15 for the Christmas period and February 15 for the Spring period. Departments will advise the Registrar, on request, of examinations to be scheduled by the Registrar. An instructor may also arrange his own examinations at a time and place of his choosing (including the formal examination periods), but with the understanding that in cases of conflict of examinations for an individual student, the Registrar's examination schedule takes priority. No tests or examinations covering the work of an entire term or year shall be held during the last two weeks or classes in the term. No tests or examinations shall be held during the period between the end of classes and the beginning of the official examination period.

Reassessment of a Grade
On payment of a fee, a student may appeal to the Registrar at Dalhousie for reassessment of a grade in a class. The Registrar will direct the request to the Chairman of the Department concerned, who will ensure that the reassessment is carried out and reported to the Registrar. Written applications for reassessment must be made to the Registrar within two months of the date the grade is sent from the Registrar's office.

Special Examinations
Special examinations may be granted to students in case of genuine illness, supported by a medical certificate, or in other unusual or exceptional circumstances. Medical certificates must be submitted at the time of the illness and will normally be accepted after a lapse of one week from the date of the examination. A student wishing to appear as a candidate at a special examination shall be required to give notice of his intention to the Registrar's Office at Dalhousie on or before July 10. Students wishing to write at outside centres must apply by July 10.

Supplemental Examinations
A student is permitted to write a supplemental examination in one class which he failed provided that:
(a) he obtained a final grade of F/M;
(b) he has satisfied the requirements for the class (see Regulations);

(c) a single compulsory final examination or test in the class in question accounted for at least forty percent of the final grade (the supplemental examination should — at the discretion of the department — constitute the same proportion of the final grade as did the final examination during the regular session);
(d) he has not failed his year (See Regulation).

Apart from the case of "A" classes (given in the fall term), the supplemental examination must be written in August immediately following the failure. For "A" classes, supplemental examinations must be written in February immediately following the failure. Supplemental examinations may not be deferred. Notice of intention to write, together with the required fee, must be presented to the Registrar's Office, Dalhousie, by July 10th for supplemental examinations to be written in August, and by January 28th for supplemental examinations to be written in February.

A student who fails to pass the supplemental examination can obtain credit for that class only by repeating it.

No more than one supplemental examination may be written by any student on the work of any one year.

No student may write both a supplemental examination and an examination at the end of the Summer School in the same class in the same year.

No supplemental examinations are allowed for classes taken at Summer School.

No more than five passes obtained as a result of supplemental examinations may be counted toward a degree.

Repetition of Classes not Passed
Except as provided in Regulation above, a student can gain credit only by repeating a class which he has not passed.

3. Merit Points and Minimum Standing

Merit points are awarded for each class as follows:

Grade	Points
A^+, A, A^-	3
B^+, B, B^-	2
C^+, C, C^-	1
D	0

Note that although D is a passing grade, no points are awarded. For fractional credit classes, corresponding fractional merit points are awarded. (e.g., in a half-credit class, an A would yield 1 1 / 2 points). Students receiving credit for classes taken at another institution are not awarded points for those classes.

Minimum Standing for a General Degree
In order to qualify for the award of a general degree, candidates must have obtained a minimum of twelve merit points on the fifteen classes required. This minimum is adjusted in proportion to the number of Dalhousie credits received relative to the number required.

General Degree with Distinction
A general degree will be awarded "With Distinction" to a student who has achieved an aggregate of 40 points in the 15 classes taken for his degree or a proportional figure if he has taken more than 15 classes. Repeated classes count as additional classes in this context.

Note again that classes taken at another institution are not awarded merit points.

Students in honours courses are expected to maintain an overall standing of at least C in each year of study; if they fail to do so, they may be required by the Committee on Studies to transfer to a general degree course. If a student receives a D or C^- in any advanced class, he/she may repeat the class or take an additional advanced class (preferably in the same subject) or transfer to a general course.

Students who, by the end of their third year, have not obtained at least five credits of B^- or better in the advanced classes of their honours programme will not be admitted to the fourth (honours) year without the explicit recommendation of their departments and the prior approval of the Committee on Studies.

4. Regular Academic Year

Workload
Five classes shall be regarded as constituting a normal term's work for a student, and may not be exceeded without written permission from the Committee on Studies. Applications from students who have strong reason for wishing to take an overload, and who in their previous year completed a full programme in good standing, will be considered. Such permission will not normally be granted to any student in his/her first year of study, or to any student who, in the preceeding academic year, has failed any class or had two or more class grades below B^-. In no case will the workload exceed six classes per term. Applications from students who were part-time during the preceding year wil be considered if they have completed at least five classes with grades of B^- or better in all classes.

Failed Year
Students who have not passed at least half of the classes for which they are enrolled, after the final date of withdrawal without penalty, will be considered to have failed the year. The results reported in the pass lists of the academic year determine whether students have passed or failed their year.

Penalty for Failed Year
(a) A student who has failed his year for the first occasion is required to reapply to the Faculty for consideration for readmission.
(b) A student who fails a year on two occasions will be ineligible to return to the University as either a full-time or a part-time student. Ordinarily an appeal will be allowed only if illness has seriously interrupted the student's studies and this is established by submission of a medical certificate from the physician attending the student to the Registrar at the time of the illness.

Repeating Classes for Which a Passing Grade has been Awarded
With the permission of the department concerned and the endorsement of the Committee on Studies, a student may repeat any class for which a passing grade has previously been awarded. The original passing grade will nevertheless remain on the transcript, and a second entry will be recorded with the new grade and the notation "repeated class". No additional credit will be given for such a repeated class, but the higher grade, or point count appropriate to it, will be used for degree purposes.

5. Summer School and Correspondence Classes

Limits on Credits
Up to five credits from Summer School and correspondence classes may be accepted towards the requirements for a degree, not more than two of them by correspondence. Such classes must have been passed at an adequate level and can be accepted only if they are closely equivalent in content to classes normally given at King's.

Maximum Workload
No student may take classes totalling more than one full credit in any one Summer School session. Not more than two full credits can be obtained at Summer School in any one academic year.

Exceptions will normally be granted by the Committee on Studies only in respect of attendance at a university which operates a trimester system or its equivalent.

In all cases, permission must be obtained in advance, following the procedure detailed below.

Credit for Summer School Classes at Other Institutions
A student wishing to take, at a university other than Dalhousie, a Summer School class to be counted for credit towards a Dalhousie-King's degree must:
(a) obtain an application form from the Office of the Registrar at Dalhousie University;
(b) obtain from the university he proposes to attend a full description of the Summer School classes (or alternative classes) he wishes to take; usually the Summer School calendar will suffice;
(c) make application to the Registrar of Dalhousie University and submit the class description of the class he wishes to take (alternatives should be indicated where possible).

When a decision has been reached, the student will be notified directly by the Registrar. If the decision is favourable, the receiving university will be so advised by the Registrar's Office.

Correspondence Classes
A regulation similar to the above to correspondence classes and, at the present time, only the correspondence classes offered by Queen's University, Kingston, Ontario will be considered.

Students should make application for Summer School as early as possible in order that they may make necessary arrangements and obtain a list of the textbooks required.

6. Transfer Credits

Upon receipt of an application for admission to this University, and an official transcript, students will be advised of the number of credits which may be transferred from another university. However, provisional assessment can be made on interim transcripts.

7. Credits from Other Faculties

A student taking classes in another Faculty as part of an affiliated course must conform to the regulations of that Faculty with respect to these classes.

8. Credits from Other Universities under Concurrent Registration

A student, while registered at King's, wishing to take classes at another institution, must make an application to the Registrar at Dalhousie and provide a description of the classes offered at the other institution. A letter of permission will be provided if approval for the classes is given by the appropriate department.

The class fee will be paid by Dalhousie if:
(a) the student is registered as a full-time student at Dalhousie-King's;
(b) the classes are approved.
The class fee will be paid by the student if registered as a part-time student at Dalhousie-King's.

9. Change of Registration

Changing a Class
Class changes will not be permitted during the first week after commencement of classes in September. Students should decide during the first week of classes what changes they wish to make and make these changes during the second week of classes (see below).

Adding Classes
The last date for adding classes is two weeks from the commencement of the term in which that class begins. Students must complete the appropriate registration change form which must be approved by the instructors concerned and by the Registrar at Dalhousie.

Withdrawing from Classes
(a) The last day for withdrawing from a class without penalty

is: for A classes: 16th November, for B classes: 1 week after study break, for C classes: 31 January, for full year classes: 31st January. Classes dropped after these dates are recorded as W (withdrawal). Students must complete the appropriate registration change form which must be approved by the instructors concerned and by the Registrar.
(b) No class may be dropped after the last day of classes in the term in which that class ends.
(c) Classes may not be added to replace withdrawn classes after the second week of the term in which that class begins (see Regulation).
(d) A student may not transfer from full to part-time status by withdrawing from classes after the deadlines listed (see Regulation).

Withdrawing from the University or Changing to Part-time Status
A registered student who wishes to withdraw from the University, or one who wishes to change from full-time to part-time status, must write to the Registrar at Dalhousie and King's explaining his circumstances. In either case, the student should not discontinue attendance at any class until his application has been approved. A student proposing withdrawal will normally be invited to discuss his situation with the Dean or the Assistant Dean of Student Services at Dalhousie and the Registrar at King's.

Non-attendance, by itself, does not constitute official withdrawal.

10. Experimental Classes

Experimental classes, on any subject or combination of subjects to which the arts and sciences are relevant and differing in conception from any of the classes regularly listed in departmental offerings, may be formed on the initiative of students or of faculty members.

If formed on the initiative of students, the students concerned shall seek out faculty members to take part in the classes.

Whether formed on the initiative of students or on the initiative of faculty members, the faculty members who wish to take part must obtain the consent of their department.

The classes may be of one-year length or half-year length.

A class shall be held to be formed when at least one faculty member and at least eight students have committed themselves to taking part in it for its full length, and in the case of one-half year classes when a class in the other one-half year is available.

Classes may be formed any time before the end of the second week of classes in the Fall term to run the year or first half year, or any time before the end of the second week of classes in the Spring term. If they are formed long enough in advance to be announced in the Calendar, they shall be so announced, in a section describing the Experimental Programme; if they are formed later, they shall be announced (a) in the Dalhousie Gazette, (b) in the University News, (c) on a central bulletin board set aside for this purpose.

One faculty member taking part in each experimental class shall be designated the *rapporteur* of the class. It shall be his responsibility (a) to advise the Curriculum Committee of the formation and content of the class; (b) to obtain from the Curriculum Committee a ruling as to what requirement or requirements of distribution and concentration and credit the class may be accepted as satisfying; (c) to report to the Registrar on the performance of students in the class; and (d) to report to the Curriculum Committee, after the class has finished its work, on the subjects treated, the techniques of instruction, and the success of the class as an experiment in pedagogy (judged so far as possible on the basis of objective comparisons with more familiar types of classes).

A student may have five one-year length experimental classes (or some equivalent combination of these with half-year length classes) counted as satisfying class for class any of the requirements for the degree, subject to the rulings of the Curriculum Committee (above) and (where relevant) to the approval of the departments.

PROGRAMMES OF STUDY

King's offers 4 Programmes of Study leading to degrees in Arts and Science.

B.A. (General) three years
B.A. (Honours) four years
B.Sc. (General) three years
B.Sc. (Honours) four years

King's offers 2 Programmes of Study leading to degrees in Journalism.

B.J. (Honours) four years
B.J. one year following B.A. or B.Sc.

The University of King's College and Dalhousie University have one Faculty of Arts and Science. King's students can take all the courses offered by that Faculty leading to the Bachelor of Arts or the Bachelor of Science either ordinary or with honours. Currently these degrees can be done in Social Anthropology, Biochemistry, Biology, Chemistry, Classics, Economics, English language and literature, French, Greek, Geology, German, History, Latin, Mathematics, Medieval Studies, Music, Philosophy, Physics, Political Science, Psychology, Religion, Russian, Sociology, Spanish, and Theatre. Joint majors or joint honours may be taken in a number of subjects. King's student's can also do the preprofessional work offered by the Faculty of Arts and Science and which sometimes amounts to less than what is required for the B.A. or B.Sc. Architecture, Medicine, Dentistry, Physiotherapy, Social Work, Law, Education, Theology all accept students after one level or another of work in Arts and Science. The University of King's College does not, however, admit students to programmes which involve degrees or diplomas other than the B.A. and B.Sc. (except Journalism—B.J.,B.J. (Hons.)). For example, King's students cannot be taking the Diploma in Engineering, or the Bachelor of Music Education, nor will they be doing Commerce or Graduate Studies. What King's does offer other than what is available to Dalhousie Arts and Science students is a unique way of doing an Arts and Science first year—the Foundation Year Programme—and also the B.J. and B.J.(Hons.) taught by our School of Journalism both of which are open only to students registered at King's College.

The King's alternative first year programme, the Foundation Year Programme, is a first year programme for both general and honours students. Bachelor of Arts students enrolled in the Foundation Year Programme do one class in addition to the Foundation Course. Bachelor of Science students in the Programme do two additional classes. Thus for B.A. students the Foundation Year Programme is equivalent to 4 classes, for B.Sc. students it is equivalent to 3 classes.

Diploma for Studies in the Humanities and Social Sciences.
Students who do not intend to proceed to graduation may be admitted as Special Students into the Foundation Year Programme (equivalent to four credits), successful completion of which will result in the obtaining of the Diploma for Studies in the Humanities and Social Sciences. Permission to enrol as a Diploma student must be sought through the Director of the Foundation Year Programme. Evidence of genuine interest in pursuing such studies will be considered in the admittance decision, together with high school record.

The University year begins in mid September and classes are completed by the end of April. In Arts and Science, the ordinary degree is normally completed in three years after admission, the honours degree in four years. A total of fifteen classes is required for the ordinary degree, and twenty for the honours degree. A major for the ordinary degree requires four classes beyond the first year level, taken in the second and third years. Honours degrees require a minimum of nine classes in the area of concentration after the first year, a certain standard being maintained (in some subjects an honours thesis is obligatory). Five classes constitute a normal class load in an academic year. Regulations for Journalism degrees appear below.

FOUNDATION YEAR PROGRAMME

Introduction

The University of King's College, in association with Dalhousie University, offers a special Foundation Year Programme in the first year of the Bachelor of Arts and Bachelor of Science. First offered in 1972-73, the Programme has proved a successful way of providing an integrated and interdisciplinary course for first year students. Now approved by the Dalhousie Senate as a permanent part of the offerings of the Dalhousie-King's Faculty of Arts and Science, the Programme is open only to students registered at King's. Students taking this course will, like other King's students, be proceeding to the degrees of Bachelor of Arts or Bachelor of Science granted by the Senate of Dalhousie University, or will be engaged in one of the professional courses in medicine, dentistry, law, architecture, divinity, social work, education, physiotherapy, and so on, or will be proceeding to the Bachelor of Journalism (Honours) awarded by King's College.

The Foundation Year Programme is a new approach to the first year of University. Literature, history, philosophy, political and social institutions, the history of science, economic forms, religion, art and music are studied together in one course in an integrated manner which sees them as interdependent elements in the development of western culture. The movement of this culture is understood through the examination of some of the most basic works in our history. To learn to deal with these works is to acquire a foundation for studies in the humanities and social sciences, just as to have a conception of the nature of our society and culture is to have a basis for thoughtful living. To provide these is the aim of this programme.

Many scientists are acutely aware of the need to understand the relation of science to other aspects of culture and to social life; a stream of the Programme will provide a general view of our culture for science students interested in these questions.

The form of the teaching is designed to meet the special problems of first year students. Enrolment in the Programme is limited to 100 Arts students and 25 Science students. The very favourable ratio of staff to students and the concentra-

tion of the student's work within one course permit the course to offer a wide variety of experiences and allow it to help students analyze, focus, and evaluate their experiences. The amount of time spent in small group tutorials permits close attention to be paid to each student's development. The exposure to many different aspects of our civilization, and the large number of departments recognizing the Programme as a substitute for their introductory class, give Foundation Year students both a wider experience from which to judge their interests and wider options for second year study.

The instructors in the programme are specialists in a wide variety of university subjects. All take the view, however, that first year study at university can profitably be devoted to attempts to integrate knowledge and understanding rather than to premature specialization in particular subjects.

Teaching Staff

Lecturers
G. Alfaro, B.A. (Col.), M.A. (Berk), Ph.D. (Harvard),
Associate Professor of Spanish.
R. Apostle, B.A. (Sim. Fr.), M.A. (Calf.),
Assistant Professor of Sociology
A.H. Armstrong, M.A. (Cantab),
Professor of Classics and Philosophy.
J.P. Atherton, M.A. (Oxon), Ph.D. (Liverpool).
Associate Professor of Classics and Chairman of the Department.
R. D. Crouse, B.A. (Vind.), S.T.B. (Harvard), M.Th. (Trinity), Ph.D. (Harvard),
Professor of Classics.
R. Mac.G. Dawson, B.A. (Trinity), M.A. (Tor.), B.Litt. (Oxon),
Associate Professor of English
J. Farley, B.Sc. (Sheffield), M.Sc. (West. Ont.), Ph.D. (Man.)
Associate Professor of Biology.
R. Friedrich, Ph.D. (Gott.),
Associate Professor of Classics and German.
B. E. Gesner, B.A., B.Ed., M.A. (Dal.),
Assistant Professor of French.
Y. Glazov, Ph.D. (Oriental Institute, Moscow),
Professor of Russian and Chairman of the Department.
J. Godfrey, B.A. (Trinity), B.Phil., D.Phil. (Oxon),
President, University of King's College, Assistant Professor of History.
J. F. Graham, B.A. (U.B.C.), A.M., Ph.D. (Col.)
Fred D. Manning Professor of Economics.
W. J. Hankey, B.A. (Vind.), M.A. (Toronto),
Assistant Professor of Humanities & Social Sciences, Special Lecturer in Classics, Director, Foundation Year Programme.
J.R. Lawler, B.A., M.A. (Melbourne), Ph.D. (Paris),
McCulloch Professor of French.
K. E. vonMaltzahn, M.S., Ph.D. (Yale)
George S. Campbell Professor of Biology.
J. G. Morgan, B.A. (Nottingham), M.A. (McMaster), D.Phil. (Oxford),
Associate Professor of Sociology.
N. G. O. Pereira, B.A. (Man.), M.A., Ph.D. (Berkeley),
Associate Professor of History and Russian.
R. P. Puccetti, B.A. (Ill.), M.A. (Tor.), Ph.D. (Sor.),
Professor of Philosophy.
R. Ravindra, B.Sc. (I.I.T.), M.A., Ph.D. (Tor.),
Associate Professor of Physics and Religion.
P.K. Schotch, B.A., M.A., Ph.D. (Waterloo),
Assistant Professor of Philosophy.
W. C. Smith, B.A. (Tor.), M.A., Ph.D. (Prin.),
McCulloch Professor of Religion and Chairman of the Department.
S. E. Sprott, M.A., B.D. (Melb.), Ph.D. (Col.),
Professor of English.
C. J. Starnes, B.A. (Bishops), S.T.B. (Harvard), M.A. (McGill), Ph.D. (Dal.),
Assistant Professor of Humanities and Social Sciences, Special Lecturer in Classics.
D. H. Steffen, Ph.D. (Goettingen),
Associate Professor of German and Chairman of the Department.
J. B. Stovel, B.A. (Sir G. Wms. et Camb.), Ph.D. (Harvard),
Assistant Professor of English.

Junior Fellows: 1977-78
T.H. Curran, B.A. (Trinity), M.A. (Dal.).
H. Roper, B.A. (Dal. et Cantab.), M.A., Ph.D. (Cantab.)
A. Johnston, B.A. (Mt. A.), M.A. (Dal.).

Admission Requirements

The admission requirements are those pertaining to the faculty of Arts and Science, i.e. Nova Scotia Grade XII or its equivalent. Mature students, students whose education has been interrupted and who do not meet the normal admission requirements, but who can demonstrate that there is a reasonable likelihood of success at university, may be admitted as special cases. Students from New Brunswick and Prince Edward Island should complete Grade XII and have an average of 60%. Very exceptional students from Nova Scotia Grade XI and students not in the University Preparatory Programme are also considered for admission on their individual merits.

Scholarships

Scholarships ranging from $2000 to $500 are open to students entering the Foundation Year Programme. Application for admission constitutes application for a scholarship. In recent years more than one quarter of the entering students have received awards. Scholarships provided from monies given in memory of Henry S. Cousins and Dr. Norman H. Gosse are open only to students entering the Foundation Year Programme.

Grading and Credit

The Programme is to be regarded as a complete unit. It is not possible for students to enrol in only part of the course. Evaluation of the students' performances is continuous and made on the basis of tutorial participation and essays. There are no examinations. The final grade is a composite of all evaluations. Final grading is the result of discussion among all those teachers who have had grading responsibilities. Grades are given in terms of the letter grade system of the Faculty of Arts and Science.

Successful completion of the Programme gives students in the K100 course twenty four credit hours or four class credits toward a Bachelor of Arts or Bachelor of Science degree. These students do one other class to achieve a complete first year. Students taking K110 do two courses in addition to their work in the Foundation Year Programme. This stream of the Foundation Year Programme carries eighteen hours of credit i.e. three class credits. Normally students taking K100 would be candidates for the Bachelor of Arts degree and students taking K110 will be candidates for the degree of Bachelor of Science but exceptions may be made.

Upon successful completion of the Programme the normal departmental requirement of passing an introductory course in the discipline concerned is waived by the following departments:
English Language and Literature
History
Sociology

The following departments admit students completing the Foundation Year Programme to introductory and advanced courses for which there is no language requirement:
Classics
German
Spanish
Russian.

In addition the following departmental provisions have been established:

Biology:
Successful completion of the Foundation Year Programme supplies the prerequisites for Biology 3400, 3401A, 3410B. These are courses in the history of science, the history of biological sciences and man in nature.

French:
The Programme satisfies the prerequisite for French 2050.

German:
Successful completion of the Foundation Year Programme may be regarded as a substitute for German 220.

Economics:
Honours students in Economics who have completed the Foundation Year Programme are exempted from doing one economics course.

Philosophy:
Successful completion of the Foundation Year Programme may be regarded as a substitute for Philosophy 230.

Religion:
The Department of Religion recognizes the Foundation Year Programme as satisfying the prerequisites for Religion 201, 202 and 251.

Pre-Professional Training

The Faculties of Medicine and Dentistry and the School of Physiotherapy of Dalhousie University have approved the Foundation Year Programme as part of the preprofessional work they require for admission to their respective faculties and schools. Students may substitute the Programme for the appropriate requirements laid down by these faculties; for details of these provisions consult the Director of the Foundation Year Programme. The Department of Education of Dalhousie University waives its requirement of English 100 for students enrolled in the B.Ed. Integrated Course who have successfully completed the Foundation Year Programme. The University of King's College requires the Foundation Year Programme for its first year of the Journalism degree.

Course Designation, Lecture and Tutorial Hours

The formal designation of the Programme courses is as follows:

King's Interdisciplinary Studies

K100 Foundation in Social Science and Humanities; Lectures M.W.Th.F. 9:35 a.m. - 11:25 a.m.; Four hours of tutorials to be arranged.

K110 Foundation in Social Science and Humanities; Lectures M.W.F. 9:35 a.m. - 11:25 a.m.; Four hours of tutorials to be arranged.

Evaluation

The mark for the course is based on students' papers and their class participation. No student will be able to pass the course without completing the written requirements. Students registered in K100 will write at least two essays for each of the six units of the course. Students in K110 write at least one essay for each of these units. Some of the additional work of students in K100 will relate to the Thursday lectures which are required for them but not for students of K110. Generally the additional Thursday lectures will consider one text or topic in detail during the whole unit e.g. in 1978-79 Section III will read Cervantes, *Don Quixote;* Section IV: Goethe, *Faust,* and Section V: Dostoyevsky, *Crime and Punishment.*

Outline of the Foundation Year Programme

The course has its own logic; it is not just a collection of diverse materials but integrates them in accord with the interpretation of our culture which it develops. As we work out this interpretation, we consider works of various kinds, some of the most crucial works in this culture. These we consider no matter what discipline ordinarily studies them. Thus we look, for example, at Mozart's Don Giovanni, early Greek urns, Michelangelo's - Holy Family, the Bamberg Dom; these are usually understood to belong to the disciplines of music,

archaeology, art history and architecture. We read Homer's *Iliad,* Marlow's *Faust,* Dicken's *Hard Times;* works usually studied by the departments of classics, theatre, and English literature. We analyse St. Anselm's *Proslogion,* Descartes' *Meditations,* and Luther's *The Freedom of a Christian,* which are usually studied by departments of philosophy, theology and religion. We study Huizinga's *The Waning of the Middle Ages,* Rousseau's *Social Contract,* Marx's *Capital,* Heibroner's *The Making of Economic Society;* works thought to belong to history, political theory, economics and sociology. We read selections from Copernicus' *On the Celestial Spheres,* Newton's *Optics,* Darwin's *On the Origin of the Species;* texts taken from the history of astronomy, physics and biology.

The logic we develop to integrate the different stances of these various works is of two kinds. On the one hand, we see how each of these works shows the nature of the different epochs or stages of our culture and how each of these civilizations breaks up to form the one succeeding. On the other hand, we trace some institutions, ideas and movements through each of the historical periods.

The following are the teaching units of the course. One or more of the aspects of culture mentioned above tends to be stressed in each unit. This is both because of the differences between the general character of each period and also on account of the particular approach which the co-ordinator responsible for the section brings to the presentation of it. Four teaching weeks are devoted to each of these units.

1. The Ancient World: the origin of the primary institutions and beliefs of the western world in Greece, Rome, and Israel. Religion manifesting itself in art, myth and institutions provides a focus for our approach to this epoch.

2. The Medieval World: the formation of Christendom. The development of Christian forms in political, social, intellectual life as these grow in contrast to and by assimilation of ancient culture is our main concern. We attempt to grasp the unity of this world as the medievals themselves saw it in Dante's *Divine Comedy.*

3. The Renaissance and Reformation: the foundations of modernity in the break up of the medieval world. The worldliness of the Renaissance and the renunciation of this in the Reformation form the two poles of our treatment of this period. The discovery of the new world and the counter-Reformation culture of Spain are also considered, Cervantes *Don Quixote* is read in this section.

4. The Age of Reason or the enlightenment: Modern freedom developed theoretically in the philosophy of Descartes and in relation to nature and society is the central theme. Special attention is paid to political theory and natural science in this section. Goethe's *Faust* is its literary center.

5. The Triumph of the Bourgeoisie: Bourgeois culture from its triumph in the French Revolution to its collapse in World War I. The nineteenth century is mainly treated in terms of the revolutions: political and industrial and we endeavour to understand the rise of parties and ideologies relative to them. The century is seen as providing the transition between Classical and Romantic Europe and our own Post-Romantic naturalistic individualism. The most central conflicts are seen through Dostoyevski's *Crime and Punishment.*

6. The Contemporary World: The period since World War I is characterized by the shift of political, economic and cultural power from Europe to Russia and the United States and to Asia and Africa and by the technological and bureaucratic organization of the total means of life for individual well-being and freedom.

The following are the recurring general topics which are discussed in each of the units outlined above.
(a) Political institutions, the modes of authority, conceptions of law and the person, the political ideal.
(b) Religious, theological and philosophical positions and forms.
(c) The conception of nature and forms of natural science.
(d) Economic institutions.
(e) The structure of society.
(f) Literary, musical and artistic expression.

A classroom with facilities for slides, films and musical reproduction is used so that the presentation of these aspects of culture can be an integral part of the teaching.

Required Reading (1977-78)

The following list of required reading for 1977-78 gives an indication of the theoretical works through which our understanding of these aspects of our culture is developed.

This is a list of the reading required for arts students (K100) and science students (K110). The items marked (*) are required reading for arts students but not for science students.

Hesiod	*Theogony* (selections)
Homer	*Iliad*
Sophocles	*Oedipus Rex*
Sophocles	*Antigone*
Sophocles	*Oedipus at Colonus**
Plato	*The Republic*
Coulanges	*The Ancient City*
Virgil	*The Fourth Eclogue*
The Bible	*Genesis 1-3*
	Exodus 3, 19, 20
	Epistle to the Romans 1-8
	Epistle to the Ephesians 1-6
Eusebius	*Vita Constantinae* (selections)
Augustine	*The City of God* (short selection)
Sayers (trans)	*The Song of Roland*
Ganshof	*Feudalism*
St. Benedict	*Regula* (extensive selections)
Wippel and Wolter	*Medieval Philosophy* (extensive selections)
Aquinas	*Summa Theologica,* Questions I and II
Virgil	*Aeneid,* Book VI
Dante	*Divine Comedy:* Inferno, Purgatorio, and Paradisio
Huizinga	*The Waning of the Middle Ages*
Mirandola	*Oration on the Dignity of Man* (short excerpt)
Machiavelli	*The Prince*
Thomas More	*Utopia*
Cohen	*Birth of the New Physics*
Marlowe	*Dr. Faustus*
Diaz	*The Conquest of New Spain*
Martin Luther	*"The Freedom of a Christian" "An Address"* and other selections
Cervantes	*Don Quixote*
Descartes	*Meditations on First Philosophy, Principia,* "Author's Letter"
Hobbes	*Leviathan,* Books I and II
Locke	*Second Treatise of Government* (selections)
Hume	*An Inquiry Concerning Human Understanding* (a selection)
Kant	*The Critique of Pure Reason* (extract)
Koyre	*"The Significance of the Newtonian Synthesis"*
Westfall	*The Construction of Modern Science,* Chapters 1 and 2
Rousseau	*The Discourse on the Origin of Inequality, The Social Contract*
Goethe	*Faust* Parts I and II*
von Kleist	*Prince Frederick of Homberg*
Mill	*On Liberty, Utilitarianism*
Engels	*Socialism, Utopian and Scientific, "Letters on Historical Materialism"*
Marx and Engels	*Manifesto of the Communist Party*
Marx	*Wage Labour and Capital*
Dickens	*Hard Times*
Dostoyevsky	*Crime and Punishment*
Nietzsche	*On the Genealogy of Morals*
Freud	*Civilization and its Discontents*
Eiseley	*Darwin's Century*
Heisenberg	*Physics and Philosophy*
Spengler	*Decline of the West* (selection)
Daniels	*The Russian Revolution*
T.S. Eliot	*The Waste Land**
Wolf	*Peasant Wars of the Twentieth Century*
Wrong	*Max Weber* (excerpt)
Michaels	*Political Parties* (excerpt)
Lipset	*Agrarian Socialism* (excerpt)
Lukasiewicz	*Polish Logic,* "on determinism"
W.C. Smith	*Religion as Symbolism*
MacNeil	*History of Western Civilization, A Handbook*

The Handbook of the Programme (119 pages) contains a complete outline of the course. A copy may be had from the Director on request.

THE SCHOOL OF JOURNALISM

In September 1978, the University of King's College will open the only degree granting School of Journalism in the Atlantic Provinces.

The aim of the School will be to provide a grounding in the methods and problems of contemporary Journalism in the context of a liberal education. In addition to training in journalistic skills and methods, the student will acquire both a knowledge of the history of Western civilization and a specific competence in some one of the traditional disciplines of Arts and Science. As well the University will require the attainment of a certain degree of competence in both of the official languages of Canada.

The University will offer two degrees.

1. The four year Bachelor of Journalism with honours, B.J. (Hons.)

The admission Requirements will be generally those for admission to the Faculty of Arts and Science. Application should be made on the standard Dalhousie-King's application form. Enrolment in the School of Journalism is limited and those actually admitted will have attained a higher standard than the minimal requirements for admission to Arts and Science. In order to continue in the Journalism degree programme and to move from year to year students must maintain a certain academic standing set from time to time by the Faculty.

In the first year, the student will normally take the Foundation Year Programme. (This Programme is described elsewhere in the Calendar). In addition all students who do not have the required level of French will take a course in French language designated by the Faculty. Bilingual students will take an elective to make up the five credits required for a complete first year. Electives must be chosen with the approval of the Faculty and will usually be taken in the field in Arts and Science in which the student aims to fulfill the Arts and Science requirement of the degree programme. (In exceptional cases where the prerequisites of the Arts and Science field demand it, the student may be permitted to take the Foundation Year Programme for three credits (K110) and to take French as well as the necessary elective).

In the second year, the student shall definitely declare in which field in Arts and Science he intends to eventually complete four full courses beyond the introductory level and shall take at least two of these courses. The other classes in this year will be chosen with the approval of the Faculty from the courses offered in the Faculty of Arts and Science. In total five classes are required in this year and may include work in French if the necessary level of competence in this language has not yet been attained.

In the third year, the student will take five courses in Journalism designated by the School of Journalism.

In the fourth year, the student will take one course in Journalism designated by the School, two electives from his field in Arts and Science, and will complete an Honours Research Project. This project will be worth two full credits and will be a substantial piece of research on the media.

Language requirement: In order to graduate all students must demonstrate in an examination taken at some point in their studies, the required competence in French. This examination may be taken repeatedly until successful. If reaching this level necessitates French course work beyond the first two years such a course will be taken as a sixth class in the third and fourth years.

Field Work: the School aims to establish a field work programme enabling students to gain experience in local, national, and international journalism during the summer between their third and fourth year.

2 The one year Bachelor of Journalism (B.J.).

Admission
Application should be made on the standard Dalhousie-King's application form. Applicants must be university graduates with degrees which satisfy the requirements set out below.
This is a post first degree course offered to students who have completed a B.A. or B.Sc. It is intended for those who wish to pursue their undergraduate studies in the Faculty of Arts and Science in a more complete manner than is permitted in the four year B.J. Honours programme.

Nevertheless, the University expects the same degree of competence and in the same areas for those who graduate from this programme as it does from those who graduate with the B.J. Honours degree. Specifically this means: (1) students who are admitted to this programme must show the same competence in French required of those who graduate with the B.J. Honours and (2) admission to the programme depends on the student's ability to show that he or she has acquired a broad knowledge of the history of Western Civilization such as the Foundation Year Programme provides as well as having a competence in an area of humanistic study.

Successful completion of the Foundation Year Programme in the first year of undergraduate work is thus the **normal** requirement for admission to the one year B.J. degree programme, and likewise the student must, during the course of his or her undergraduate studies have prepared himself or herself to pass the examination in French language on admission.

The course work in this programme is identical with that in the third year of the B.J. Honours programme and may therefore be completed in an academic year. In addition however, all students in the one year B.J. programme are required to complete an Honours Research Project (as required in the fourth year of the B.J. Honours), which will normally be undertaken in the summer months following completion of the course work. As a result it will not ordinarily be possible to complete this degree in less that a calendar year (September - August).

PRE-PROFESSIONAL COURSES

Students may be admitted to the professional courses in Education, Dentistry, Medicine, Architecture and Design after certain work in the Faculty of Arts and Science but without completing a Bachelor of Arts or Bachelor of Science. Requirements for these courses are given below.

1. Education

The Dalhousie Department of Education offers:

1. A four year integrated course at the end of which students are awarded simultaneously the degrees of B.A., or B.Sc. and B.Ed.

2. A sequential course of one year which may be taken by students who have already completed a B.A., B.Sc., or B. Comm. degree course or otherwise fulfill the requirements for admission to the B.Ed. programme, and at the end of which the degree of B.Ed. is awarded.

The instruction offered in the education classes in the sequential and integrated programmes is substantially the same in both courses. In the integrated course, the classes in education are integrated with academic classes in the second, third, and fourth years, the first year being confined to the regular classes required for the B.A. or B.Sc. degree or Kings' Foundation Year. A student wishing to enter the integrated course may apply to the department during the first or second year of his/her programme.

2. Dentistry

Detailed requirements for admission are set forth in the Calendar of the Dalhousie University of Dentistry. Candidates are encouraged to proceed to a Bachelor's degree before seeking admission.

2.1 Entrance Requirements
The minimum academic course must include university classes in English, biology, general chemistry, organic chemistry and physics, each of an academic year's duration. The science classes must include laboratory instruction or seminar periods. Credit for the remaining five classes may be obtained in either of the following ways:

(a) by the successful completion of three classes chosen from the humanities and the social sciences plus two other elective classes.

(b) by Bachelor's degree. If an applicant has a Bachelor's degree in a course acceptable to the Faculty of Dentistry, it is assumed that a suitable selection of courses has been included in the degree programme.

Note: The Foundation Year Programme may be substituted for the course in English and two of the required three classes in humanities and social science.

2.2 Dental Aptitude Tests
All Canadian applicants must submit the results from the Canadian Dental Association Dental Aptitude Testing Programme. Information regarding the Dental Association Aptitude Testing Programme may be obtained from the office of the Registrar, or by writing to the Administrator, Dentistry Aptitude Test Programme, The Canadian Dental Association, 234 St. George Street, Toronto, M5R 2P2.

Applicants from other countries may submit the American Dental Association Dental Aptitude Testing Programme results. While this information will not be a final or deciding factor in selection it will be used as an additional criterion by the Admissions Committee when evaluating student qualifications.

3. Medicine

Detailed requirements for admission are set forth in the Calendar of the Dalhousie University Faculty of Medicine. The majority of students accepted for admission to that Faculty have a bachelor's degree, but this is not a requirement.

3.1 Entrance Requirements
At a minimum, applicants pursuing a premedical course in the Faculty of Arts and Science to which they have been admitted on the basis of Nova Scotia Senior Matriculation (or the equivalent) including credits in English and mathematics, are required to have completed ten classes in a regular degree programme prior to June 10 of the year of expected entrance.

(a) Five of these classes are imperative, namely: English 100, Biology 1000 or 2000, Chemistry 110, 240 or 241 and Physics 100, 110 or 130 or any equivalent classes.

(b) The remaining five classes must include at least two in a single subject. Ordinarily these five electives should be chosen from the following: anthropology, biology, chemistry, classics or classical languages, economics, English, history, mathematics, modern languages, philosophy, physics, political science, psychology or sociology.

Note: the Foundation Year Programme may be substituted for the required English course and two of the five electives.

All elective classes should, if possible, be selected so as to conform to the degree requirements of the applicant's university.

3.2 Medical College Admission Test
Results of this test must be submitted by all applicants.

4. Architecture

Qualification for entrance to the School of Architecture at the Nova Scotia Technical College is the satisfactory completion of at least two years at a university or equivalent institution recognized by the Faculty of Architecture. A university course in mathematics is prerequisite, except that the applicant may instead be required to take a written examination in this subject.

Providing it has been undertaken at a recognized university, virtually any course of studies, including arts, fine arts, engineering and other technologies, science, agriculture, social science, education, medicine, is acceptable.

A candidate for admission to the first year in architecture should submit to the Assistant Dean of the Faculty of Architecture of Nova Scotia Technical College by July 1 the following documents;
(a) an application form obtained from the Faculty of Architecture;
(b) an official transcript of his university record;
(c) a letter of recommendation from some person of academic rank, preferably the Dean or Head of Department, with close personal knowledge of his academic background.

5. Design

Students successfully completing one year of a B.A. programme in the Humanities of Dalhousie may be admitted into the second year of the four-year programme leading to the Bachelor of Design degree in Communication Design or Environmental Design at the Nova Scotia College of Art and Design.

DIVINITY

Director of Parish Field Work and Divinity Secretary
Rev. Canon J. H. Graven, M.A. (Dal.), L.Th. (Vind.).

With the establishment of the Atlantic School of Theology during 1974, the work of the Faculty of Divinity of the University of King's College was transferred to that School and the Faculty dissolved as a teaching component of King's College.

Divinity scholarships awarded by King's College are tenable at the Atlantic School of Theology.

Details of the basic course requirements and offerings of the Atlantic School of Theology are given in a bulletin published separately, and available from the School or from the King's Registrar on request.

Master of Sacred Theology (M.S.T.)
In conjunction with the Institute of Pastoral Training, the University of King's College offers the degree of Master of Sacred Theology in the field of pastoral care. Particulars concerning regulations for this degree may be obtained from the Executive Director of the Institute of Pastoral Training at the University of King's College. A degree in Divinity is a prerequisite.

INSTITUTE OF PASTORAL TRAINING

University of King's College
Atlantic School of Theology
Acadia Divinity College
Medical Faculty of Dalhousie University

The organization of the Institute, by collaboration of University of King's College , Pine Hill Divinity Hall, the Divinity School of Acadia University, Presbyterian College, (Montreal), Medical Faculty of Dalhousie University, pioneered this modern development in theological education on the Canadian scene. It is the objective of the Institute to bring pastors and theological students face to face with human misery as it exists both in and out of institutions, principally through courses in Clinical Pastoral Education in both

general and mental hospitals, reformatories and juvenile courts, homes for the aged, alcoholism treatment centres, and other social agencies. In this connection, the Institute now sponsors courses in Clinical Pastoral Education, usually commencing mid May, at the Nova Scotia Hospital, Dartmouth (mental), the Victoria General Hospital, Halifax, the New Brunswick Provincial Hospital in Lancaster, N.B., King's County Hospital, Waterville, N.S., Springhill Medium Correctional Center, Springhill, N.S., and the Abbie Lane Memorial Hospital, Halifax, N.S.

While the above mentioned courses aim primarily at increasing the pastoral competence of the parish minister or church worker, students of particular aptitude and interest can be guided in further theological training to become qualified teachers of these subjects in theological courses, directors of Clinical Training Courses, and institutional chaplains; also, in certain cases, to become experts in particular specified fields, such as ministering to the mentally ill or alcoholics, where the church may have a significant role to play in partnership with other helping professions.

A recent development in this field was the formal constitution in December 1965 of "The Canadian Council for Supervised Pastoral Education". In 1974 the Canadian Council for Supervised Pastoral Education officially adopted the shorter and now more appropriate title of Canadian Association for Pastoral Education which seeks to co-ordinate training across Canada, establishing and maintaining high standards, accrediting training courses, and certifying supervisors. The Institute of Pastoral Training has links with the Council, a former Executive Director served as President of the Council and as a member of the Board of Directors, and members have served on the Council's Committee on Accreditation and Certification.

Other goals of the Institute include the production of teaching materials, the promotion of workshops, and the establishment of a library and reference center at the Institute office.

One to four day workshops are held in various localities in the Maritimes, and information as to what is involved in setting one of these up may be obtained from the Secretary of the Institute.

All enquiries concerning courses offered should be addressed to the Executive Secretary of the Institute of Pastoral Training, University of King's College, Halifax, N.S. Board and lodging can usually be arranged, and some bursary assistance is forthcoming. Academic credit is given by certain Canadian and American colleges, including the Atlantic School of Theology, for satisfactory completion of Clinical Pastoral Education courses. Applications to attend the courses from bona fide enquirers belonging to other professions are welcomed and receive equal consideration.

EXTENSION COURSES

Extension courses are given in the evenings at the University of King's College. These courses are available in a number of topics. All extension courses are designed for their general interest and are not taken as credits in degree programmes. Academic requirements for admission are not necessary, the expectation being simply that persons who enrol in the courses will do so on the basis of their interest in pursuing the topic. Specific courses to be offered are announced in the Fall.

Registration for all courses will occur on the evening of September 28 from 7:00 to 10:00 p.m., fees being payable at that time.

1977-78 Courses

A. Public Relations (A Survey of the Entire Field) Instructor: G. Hancock, B.A., Dip. Journ. 25 sessions of 2 hours each, October to April.

These lectures attempt a practical application of the theory of communications. Subjects discussed include History and Philosophy of Public Relations, communications research (persuasion and public opinion), interpretation of problems, planning and action evaluation, improving PR standards, image, language of public relations, the publics (shareholders, employees, customers, the community), PR for business and industry, utilities, welfare agencies, churches, schools, government; technique of communications (mass media, printed and spoken word, films, speeches, displays, advertising), case histories. Seminar discussions include letter writing, human conflicts and publicity.

B. Journalism Instructor: G. Hancock, B.A., Dip. Journ.

This course consists of 25 evening sessions of two hours each. While there is some review of the material given in the general course, Journalism A, the main focus of Journalism B is the study of the human interest feature story. The student is instructed in the technique of researching story material and in writing stories for publication. The course is recommended for those who wish to test their writing skills and evaluate their potential as professional writers. Academic qualification is waived, the only prerequisite being a sincere interest in writing.

DEGREE PROGRAMMES

1. Courses of Study

Bachelor of Arts/Bachelor of Science
General
Honours

2. Subject Grouping

A. Languages
French
German
Greek
Latin
Russian
Spanish

B. Humanities
Classics
Comparative Literature
English
History
Mediaeval Studies
Music
Philosophy
Religion
Theatre

C. Social Sciences
Anthropology
Economics
Political Science
Psychology
Sociology

D. Sciences
Biochemistry
Biology
Chemistry
Geology
Mathematics
Microbiology
Physics

Classes are offered also in other subjects: African Studies, Architecture, Art History, Computer Science, Education, Engineering, Engineering-Physics, Oceanography and Humanistic Studies in Science.

3. Numbering of Classes

The Faculty is in the process of reviewing its system of numbering classes. Most classes are numbered with a three digit number; others, however, are numbered with a four digit number. The following general criteria apply to both kinds of numbering. Students are urged to consult the relevant departments if they are confused by any specific numbering system.

Classes are numbered to indicate their general level and the year of study in which they may first be taken. The first digit in either a three or four digit number normally indicates the year of study. Thus, classes in the 100+ series are introductory and can normally be taken by fully matriculated students without any special prerequisites. Completion of a 100-level class is normally a prerequisite for admission to further classes in the subject. Classes in the 200+ series, 300+ series and 400+ series are normally taken in the second, third and fourth years respectively.

Certain classes in the 200, 300, or 400 series are restricted to Honours students and may not be taken by students in the General Degree programmes, except with special permission of the instructor.

Classes in the 500+ and 600+ series are normally regarded as graduate classes; however, some may be open to senior undergraduates with the permission of the department or instructor concerned.

The Letters A and B denote classes given in the fall and winter terms respectively. The symbol A/B indicates a class given in the first term and repeated in the second term. The letters C and R denote classes spread over both terms, i.e., given in the regular academic year. An R class carries one full credit or more, and a C class less than one full credit. The letters S and T denote classes given in the first and second summer session respectively, regardless of the credit value of the class.

Classes with numbers below 100 do not carry credits but may be prerequisites for entry to credit classes for students whose matriculation backgrounds are deficient.

4. Programme Advice

4.1 Entering Students

Any student who wishes to declare his major at initial registration must consult with the department concerned regarding his first-year programme.

Students entering the King's Foundation Year Programme should consult the Director of the Programme before registration.

4.2 Students who have Completed the First Year

Every student entering the second year is assigned a Faculty advisor with whom he must consult regarding his programme. Normally the department concerned assigns an advisor to a student once he has declared his major subject. Students seeking to enter an Individual Programme (section 5.2.3 below) or an Unconcentrated Honours Programme (section 5.3.5.2 below) must approach the Chairman of the Programme Advisory Committee which will assign an advisor or advisors and which must give approval to programmes of these types.

4.3 Prospective Teachers

Students considering teaching as a profession should before registering consult the Chairman of the Department of Education regarding their programme of study. Those considering music teaching should consult the Chairman of the Department of Music.

4.4 Part-Time Students

Part-time students may follow most of the programmes offered by the Faculty. For such students the normal requirements and regulations apply, it being understood that the first five classes taken by the student will constitute his/her first year of study, the second five classes his/her second year of study, etc. For example, paragraph 5.1 below applies to the first five classes for a student working for a B.A. or a B.Sc., and paragraph 5.2 applies to the next ten classes of such a student.

5. Bachelor of Arts/Bachelor of Science

General: three years — 15 classes required[1]
Honours: four years — 20 classes required

For the degree of B.Sc.: All students entering for the first time in September 1976 and subsequent years are required to have at least one full university class in mathematics.

5.1 The First Year

5.1.1 Requirements

(a) Each full-time student planning to take a B.A. or a B.Sc. will in the first year normally take five classes or the equivalent, chosen from groups, A, B, C, and D. (The King's Foundation Year Programme is equivalent to four classes for B.A. candidates or three classes for B.Sc. candidates).

(b) No student may in his first year take for credit more than the equivalent of two full-credit classes in a single department.

(c) One of the five classes chosen must be selected from a list of classes in which written work is considered frequently and

in detail. These classes are approved by the Curriculum Committee and are listed below.

Classics 101, 102, 103, English 100, German 100, 105, History 1400, 1990, Philosophy 101, 102, 103, 107, Political Science 1103, Religion 101, Spanish 110A, 111B and Theatre 100.

[1] Application of Regulations to students who entered in 1972 or earlier.
All students who entered a General B.A. or General B.Sc. degree programme prior to 1973 must meet the requirements as outlined in Sections 5.2 and 5.1.1(a) above; if beyond the first year they will be considered to have been in an Ordinary Programme.

5.1.2 Recommendations
These recommendations do not apply to students entering the King's Foundation Year Programme.

(a) Students should seriously consider choosing a class from a list of classes which deal with a formal subject. This list is in the Programme Planning Guide and has been approved by the Curriculum Committee.

(b) Students should consider becoming fluent in French.

(c) It is recommended that one class be chosen from each of the groups A, B, C, and D.

5.1.3 Special Options
(a) A first-year student may (but need not) declare his intended major department and may be accepted by the chosen department at initial registration. Such a student must consult with the department concerned regarding his first-year programme.

(b) The King's Foundation Year Programme offers the first-year student in Arts and Science an integrated introduction to the humanities and social sciences through study of some of the principal works of western culture. To take advantage of this Programme the student must be enrolled at King's. Details are to be found in the Calendar of the University of King's College, and advice may be obtained from the Director of the Programme.

5.2 General B.A. and B.Sc. — Requirements for the Second and Third Years
A student who has successfully completed the first year may pursue a programme toward a general degree or—if qualified—enter an honours programme. (Honours programmes are outlined in section 5.3 below.) In the second and third years, three types of options are open to the candidate for a General B.A. or General B.Sc.:

(a) *Ordinary Programmes,* which may be pursued in any department in which it is possible to obtain a General B.A. or B.Sc. In such a programme, the student must select a major subject, but the structure of study in the major and elective classes may be relatively loose;

(b) *Co-ordinated Programmes,* offered by some departments or groups of related departments, each programme requiring either one or two years of relatively concentrated study in the departmental or interdepartmental area of specialization; and

(c) *Individual Programmes,* for students whose academic needs are not met by the foregoing options.

The rules governing each of these options are outlined below.

5.2.1 Ordinary Programmes (B.A./B.Sc. General)

5.2.1.1 The ten classes making up the course for the second and third years must meet the following requirements:

(a) at least seven classes shall be beyond the 100 level;

(b) at least one class shall be in each of at least three subjects;

(c) (i) at least four and no more than eight classes *beyond the 100 level* shall be in a single area of concentration (the major). (ii) up to two of the classes in the major subject must be selected in accordance with departmental or interdepartmental requirements outlined in the Calendar under Programmes of Study. These requirements may also designate particular offerings of the department (e.g. service classes) as unacceptable in constituting a part of the major specialization.

5.2.1.2 On registration in his second year the student must declare his major and have it approved by the department concerned.

5.2.1.3 For the B.A., the major may be chosen from Anthropology, Classics, Economics, English, French, German, Greek, History, Latin, Music, Philosophy, Political Science, Religion, Russian, Sociology, Spanish or from any of the B.Sc. major subjects.

5.2.1.4 For the B.Sc. the major subject must be chosen from Biology, Chemistry, Geology, Mathematics, Physics, or Psychology.

5.2.1.5 Students may choose electives from any of the classes listed in the Arts and Science Calendar, subject to the following restrictions:

(a) Selections in Education are limited to a maximum of three classes from the Education Foundation Offerings (Education classes with numbers below 4500).

(b) Students enrolling in electives are required to meet all normal class pre-requisities.

Note: Students are also permitted to take up to three electives from the Commerce offerings of the School of Business Administration. This regulation is currently under review.

5.2.2 Co-ordinated Programmes (B.A./B.Sc. General)
A student may in his second and third years follow a two-year or two one-year - integrated programme(s) of study. If two one-year programmes are chosen, they may be in different departments. All such co-ordinated programmes have been explicitly approved by the Curriculum Committee. A department or group of departments offering co-ordinated programmes may structure them as it wishes, consistent with sound academic practice and subject to the following guidelines:

(a) that the equivalent of five class units constitute a normal year;

(b) that the function of each programme form part of the Calendar description of each programme;

(c) that each two-year programme permit the student at least one class of his own choice in each of the second and third years;

(d) that two-year programmes normally not be exclusively in a single discipline.

(e) that the normal prerequisite for entry into a departmental one-year or two-year programme be the introductory class of the department in question, or an equivalent that the department considers acceptable, and not more than one introductory class in a related subject.

A student considering a Co-ordinated Programme should consult as early as possible with the departments concerned.

5.2.3 Individual Programmes (B.A./B.Sc. General)
Students whose academic needs are not met by the programme offered under paragraphs 5.2.1 and 5.2.2 may present two one-year programmes, or a two-year programme, of their own choice to the Curriculum Committee for scrutiny and approval. The Dean shall act as the Advisor for such students and neither registration nor subsequent class changes may be made without his prior approval.

5.2.4 Transfer Between Programmes
A student who transfers at the beginning of his third year from or into an Ordinary Programme must meet the requirements under either paragraphs 5.2.1 or 5.2.3, and may declare a new major subject.

5.3 Honours Programmes
Able and ambitious students are urged to enter an Honours Programme. These programmes entail a higher quality of work than that required for the general bachelor's degree. There are two types of honours courses: concentrated, involving a major concentration in a single discipline or a combined concentration in two related disciplines; and unconcentrated, involving breadth of study in several related disciplines. A student may transfer from the honours to the general programme without serious inconvenience. To this end the Honours candidate must include among his first year classes one selected from a list of classes in which written work is considered frequently and in detail. (See 5.1.1 (c)). Of classes in the second and third year, at least one class shall be in each of three subjects. *Students considering an honours course are advised to consult as soon as possible—preferably before their first registration—with the departments in which they may wish to do their advanced work.*

5.3.1 Acceptance
Honours students in a concentrated programme must be accepted by the major department concerned, which will supervise their whole programme of study. Honours students in an unconcentrated programme must be accepted by the Programme Advisory Committee, which will appoint an interdisciplinary advisory committee of two or more Faculty members to supervise the programme of study.

5.3.2 Application for Admission
Application for admission to an honours course must be made in triplicate on forms that are available from the Registrar's Office. Students desiring to pursue a concentrated programme must submit these forms to the head of the department concerned.

5.3.3 Conversion to Honours of a General B.A., or B.Sc. Degree
A student who has received a General B.A. or B.Sc., degree from Dalhousie and who is not enrolled in a programme of study in another Faculty, may apply for admission into an Honours B.A., B.Sc. B.Sc. (Eng. Phys.), programme. Regulations in paragraphs 5.3.1 and 5.3.5 (or the regulations regarding the B.Sc. with Honours in Engineering Physics) must be met. On satisfying the requirements of the Honours degree programme, the student will receive a certificate which converts his General degree to an Honours degree.

5.3.4 Joint Honours: Dalhousie-Mount Saint Vincent
Special arrangements exist under which students may be permitted to pursue an honours programme jointly at Dalhousie and Mount Saint Vincent. Interested applicants should consult the appropriate department of their own university and must be accepted by the major departments concerned at both institutions: These departments will supervise the entire programme of study of accepted applicants. Paragraph 5.3.5.1 applies fully to such joint programmes.

5.3.5 Requirements for the Second, Third, and Fourth Years

5.3.5.1 Concentrated Honours Programme
(a) Honours in a *major programme* are based on the general requirement that the 15 classes beyond the first year of study comprise:
(i) A normal requirement of nine classes beyond the 100 level in one subject (the major subject). A student may, with the approval of the department concerned, elect a maximum of eleven classes in this area. In this case (iii) below will be reduced to two or three classes.
(ii) two classes in a minor subject satisfactory to the major department; and
(iii) four classes not in the major field.

(b)Honours in a *combined programme* are based on the general requirements that the 15 classes beyond the first year of study comprise:
(i) A normal requirement of eleven classes beyond the 100 level in two allied subjects, not more than seven classes being in either of them. A student may, with the approval of the departments concerned, elect a maximum of thirteen classes in two allied subjects, not more than nine classes being in either of them. In this case the requirement in (ii) below is reduced in two classes.
(ii) four classes in subjects other than the two offered to satisfy the requirement of the preceding clause.

(c) At the conclusion of an honours programme a student's record must show a grade which is additional to those for the required twenty classes. This grade may be obtained through a comprehensive examination, the presentation of a research paper (which may be an extension of one of the classes), or such other methods as may be determined by the major department (subject to the approval of the Committee on Studies). The method by which this grade is obtained will be referred to as the honours qualifying examination.

(d) Departments may elect to use a pass-fail grading system for the honours qualifying examination.

In order to be awarded a degree with honours, students must attain B⁻ or better in at least eight of the advanced classes (See (a) (i) and (ii), above) that comprise their honours programme, including at least five with a grade of B or better.

In order to obtain First Class Honours, students must obtain A- or better in at least eight of the advanced classes that comprise their honours programme, including at least four classes with a grade of A or better, alternatively they must attain A or better in six and B or better in the remaining advanced classes.

In departments which do not use a pass-fail grade for the honours qualifying examination, students must attain a grade of not less than B⁻ in the honours qualifying examination; attainment of a grade of at least A⁻ in the honours qualifying examination is required to obtain first class honours.

Details of specific departmental honours programmes will be found under departmental listings of *Programmes of Study*.

5.3.5.2 Unconcentrated Honours Programme
(a) Honours in the unconcentrated programmes are based on the general requirement that the fifteen classes beyond the first year of study comprise:
(i) twleve classes beyond the 100 level in three or more subjects. No more than five of these may be in a single subject; no less than six and no more than nine may be in two subjects.
(ii) three other classes.

(b) Requirements for an Unconcentrated B.A. (Honours)

At least ten classes of the twenty required must be selected from groups A, B, and C.

(c) Requirements for an Unconcentrated B.Sc. (Honours)

At least eight classes of the twenty required must be selected from biology, chemistry, geology, mathematics, physics, and psychology, and at least six additional classes must be selected from groups C and D.

(d) At the conclusion of an Unconcentrated Honours programme a student's record must show a grade which is additional to those for the required twenty classes. This grade may be obtained through a comprehensive examination, the presentation of a research paper (which may be an extension of one of the classes), or such other methods as may be determined by the committee or departments supervising the student's program (subject to the approval of the Committee on Studies). The method by which this grade is obtained will be referred to as the honours qualifying examination.

(e) Departments may elect to use a pass-fail grading system for the honours qualifying examination.

In order to be awarded a degree with honours, students must attain B⁻ or better in at least eight of the advanced classes (see (a) (i), above) that comprise their honours programme, including at least five with a grade of B or better.

In order to obtain First Class Honours, students must obtain A⁻ or better in at least eight of the advanced classes that comprise their honours programme, including at least four classes with a grade of A or better; alternatively, they must attain A or better in six and B or better in the remaining advanced classes.

In departments which do not use a pass-fail grade for the honours qualifying examination, students must attain a grade of not less than B⁻ in the honours qualifying examination; attainment of a grade of at least A⁻ in the honours qualifying examination is required to obtain First Class Honours.

PROGRAMMES OF STUDY AND CLASSES OFFERED

African Studies

Professors
J.E. Flint (History)
K.A Heard (Political Science)
Z.A. Konczacki (Economics)
R.I. McAllister (Economics)
A.M. Sinclair (Economics)
R.J. Smith (English)
J.B. Webster (History — on leave 1977-78)

Associate Professors
J.H. Barkow (Anthropology — sabbatical 1977-78)
E. Gold (Law)
P.D. Pillay (History)
T.M. Shaw (Political Science — on leave 1978-80)

Assistant Professors
L. Osberg (Economics)

Foreign Service Visitor
Georges Charpentier

Senior Killam Fellow
Gordon Haliburton

Killam Fellow
Nicola Swainson

The programme in African Studies offers students an opportunity to integrate classes from a number of disciplines. The central focus is Africa. Students wishing to read towards a B.A. with a concentration on African Studies should note the following recommendations and regulations.

1. It is strongly recommended that in the first year students should read three of: Anthropology 100, Economics 100, English 100, History 199, Political Science 1100 or Sociology 100.

2. In the second and third years at least seven of the ten classes required for a degree must be chosen according to the following regulations:
a) African Studies 200 (compulsory)
b) Four classes to be chosen from List I below (direct focus on Africa)
c) A further two classes must be chosen from List I or List II, the latter list being classes concerned with the problems of development and underdevelopment.
d) Two of the ten classes must be at the 300 level.

200 — Introduction to Contemporary Africa

This class is intended to provide a general and comprehensive introduction to contemporary issues and institutions in Africa. It is taught by two or three faculty members and concentrates on the current political, social and economic scene. Topics to be discussed include contemporary history, social change, problems of development, and prospects for unity. Illustrations will be drawn from sub-Saharan Africa, especially from eastern and southern Africa, although the course aims to provide an overview of current questions and concepts relevant to the continent as a whole. The class consists of two one-hour early evening sessions each week.

LIST I

(See respective disciplinary sections of the calendar for class descriptions).

Anthropology 316, Africa: Ethnography and Modernization, J.H. Barkow
Economics 234A, Pre-Colonial Economic History of Sub Saharan Africa, Z.A. Konczacki
Economics 235B, Economic History of Tropical Africa: Colonial Period, Z.A. Konczacki

Economics 337B, Recent Economic Developments in Sub-Saharan Africa, Z.A. Konczacki
English 217, African Literature, R.J. Smith (not offered 1978-79)
History 2410: Tropical Africa in the Nineteenth and Twentieth Centuries, J.E. Flint
History 2420: Tropical Africa before 1800, J.B. Webster
History 3440: African History from Oral Tradition, J.B. Webster
History 3450: History of South Africa, P.D. Pillay
History 3490: Studies in Decolonization, J.E. Flint

Political Science 3315A, African Politics
Political Science 3345B, South Africa: The Dynamics of Political Groups and Group Domination, K.A. Heard
Political Science 3535A, Towards a New World Order
Political Science 3540B, Foreign Policies of African States
Political Science 3544A, Conflict and Cooperation in Southern Africa

LIST II

Anthropology 210, Ecology and Culture, J.H. Barkow
Anthropology 226A, Culture and Political Behaviour, L. Kasdan
Anthropology 320 A & B, Readings in Anthropology, Staff
Anthropology 340, Ethnicity and Nationhood, L. Kasdan

Economics 331A, Environmental Economics, Z.A. Konczacki
Economics 333A, Theories of Economic Development, Z.A. Konczacki (not offered, 1978-79)

History 213, British Commonwealth and Empire, P. Burroughs

Political Science 2500, World Politics.
Political Science 3530, The United Nations in World Politics, R. Boardman and M.K. MccGwire.

Sociology 206, Social Change and Modernization, H.V. Gamberg
Sociology 306, Modernization and Development, J.J. Mangalam

Ancient History
See under Classics

Anthropology
See under **Sociology and Anthropology.**

Architecture
100 Introduction to Architecture, lect./sem.: 1hr. prac.: 2 hrs. L. Richards.
An introductory class showing architecture as a bridge between the Arts and Science that will provide an insight into professional architectural studies. In the first term discussion will centre around some components of architectural design; in the second term, architecture in present day life. Available as an elective in the general degree programmes in Arts and Science.

Art History

Classes Offered

101
Details not available at time of publication.

Biochemistry

Professors
C.W. Helleiner (Chairman)
S.J. Patrick
D.W. Russell
S.D. Wainwright

Associate Professors
A.H. Blair
W.F. Doolittle
M.W. Gray
C.B. Lazier
F.I. Maclean
C. Mezei
F.B. Palmer
J.A. Verpoorte

Assistant Professors
R.A. Singer
M.W. Spence
L.C. Stewart

Lecturers
J.T.R. Clarke
H.W. Cook
M.S. DeWolfe
E.S. MacFarlane
R.A. Mulroney

Biochemistry has been described as a search for the chemical basis of life. It began with attempts to isolate and characterize compounds obtained from organisms. Today, that approach is part of a broader study of the chemical nature and properties of structures seen in living organisms at all levels of resolution, from that of the naked eye to that of the electron microscope or X-ray camera.

Some groups of compounds, such as proteins, nucleic acids, lipids, and carbohydrates, are present in all living organisms. Biochemistry relies heavily on the principles of physics and chemistry in its attempts to isolate such materials and to relate their structures to their biological role. It also uses physicochemical principles in finding out how energy is released and used ("biochemical energetics") and how these processes are catalysed by enzymes. Study of the ways in which individual, enzyme-catalysed reactions are integrated into complex pathways for building and breaking down biological molecules ("intermediary metabolism") is another major field of biochemical endeavour.

As a biological science, biochemistry seeks to answer the question "How do living things work?" It is concerned with the ways in which individual reactions and reaction sequences are controlled in response to the changing environment of the cell, tissue, or organism. Drawing on the principles of genetics, the recently-developed discipline of "molecular biology" probes the nature of genes and the ways in which they are duplicated and expressed. In so doing, it offers us the prospect of more fully understanding the mechanisms that control all aspects of the phenomenon of life, including the origin of life itself.

Each of these interdependent facets of the science of biochemistry is introduced in Biochemistry 300, and is developed more fully in the Honours programmes of the department.

Degree Programmes

To study biochemistry one needs a prior knowledge of elementary biology, mathematics, and physics, and a good grounding in organic and physical chemistry. Accordingly, the honours programme in biochemistry is planned in such a way that these subjects are studied in an orderly manner before the study of biochemistry proper is begun. Students who are not specializing in biochemistry, but who wish to include a biochemistry class in their programmes, should plan to do so in their third or fourth year. They should ensure that the necessary background is studied in their earlier years. The outline of the honours programmes will serve as a guide in this respect. It should be noted particularly that a class in

organic chemistry is a prerequisite for the elementary class in biochemistry; introductory classes in physical and analytical chemistry are strongly recommended.

B.Sc. with Honours in Biochemistry

The honours programme in biochemistry aims to give students the background needed for graduate work in this and allied fields. It is also a suitable preparation for the study of medicine or dentistry and, because of the increasing chemical content of biology, for a career in many branches of that discipline also.

Three major programmes are outlined below, with minors in biology, physics, and mathematics. Students are advised to consult with the department early in their studies about selecting a programme suited to their needs and interests. The prescribed classes need not always be taken in the order given. Honours students must pass a comprehensive examination in biochemistry at the end of their period of study.

Year I

1. Elective (see section 5.1.1(c) of the General Regulations for Degree Programmes).
2. Mathematics 100 & 101.
3. Chemistry 110.
4. Biology 1000.
5. Physics 110. (Students whose minor is not physics may take Physics 130 instead).

Year II

6. Chemistry 231A & 232B.
7. Chemistry 240.
8. Elective (Group D).
9. Elective.

Minor in Biology

10. Biology class beyond 100 level.

Minor in Physics

10. Physics class beyond 100 level.

Minor in Mathematics

10. Mathematics class beyond 100 level.

Year III

11. Biochemistry 300.
12. Chemistry 220A & 211B.
13. Additional Chemistry class.
14. Additional class in minor subject beyond 100 level.
15. Elective.

Year IV

16. Two of: Biochemistry 430A, 431B, 432B, 433C.
17. Biochemsitry 460A & 461B.
18. Biochemistry 470A & 471B.
19. Additional Biochemistry or Chemistry class or Biology 4401.
20. Elective (Group D).

Classes Offered

300 Introductory Biochemistry, lect., 2 hrs., D.W. Russell/S.J. Patrick; tutorial, 1 hr., various staff members; lab., 3 hrs., C. Mezei/C.B. Lazier.

This class examines how the concepts of chemistry can further our understanding of life. About half of the time is spent in studying the properties of the types of compounds common to all living organisms, including enzymes and the ways in which their catalytic properties are modulated. Interwoven with this study of biochemical *form*, the remainder of the time is spent considering biochemical *process*: intermediary metabolism is illustrated by reference to the reductive synthesis and oxidative degradation of lipids and carbohydrates. This reveals how organisms obtain, store, and use energy. The interdependence of biochemical and other, non-biological chemical activities on this planet is exemplified by aspects of the carbon and nitrogen cycles in nature. The class includes an introduction to chemical aspects of heredity and biological individuality, and ends with a short discussion of biochemical control by hormones. Students explore one biochemical topic of their own choice by preparing a term paper.

This class, or an equivalent one, is a prerequisite for more advanced classes in biochemistry.

Prerequisite: a class in organic chemistry. A basic class in physical chemistry is highly desirable, since an elementary knowledge of thermodynamics and kinetics is assumed. Some acquaintance with analytical chemistry is also advantageous.

430 Series Intermediate Metabolism and Control

These half-classes are designed to complement and extend the study of metabolism begun in Biochemistry 300. Some more specialized topics of particular interest are also included. Emphasis is given to interrelationships between metabolic systems and, where possible, these systems are examined for mechanisms whereby metabolic control and direction are achieved. Students are expected to gain an appreciation of the kinds of evidence on which the concepts are based, and to interpret experimental data.

430A Biochemistry of Carbohydrates and Nitrogen Compounds, lect., 2 hrs; M.S. DeWolfe/F.B. Palmer.

An organism must have a controlled and integrated metabolism in order to function. The class seeks to illustrate this principle by studying several topics, starting with the metabolism of carbohydrates to supply energy and to form structural components. It includes a discussion of enzyme location, mitochondrial permeability, use of modified oxidative cycles, and the synthesis of oligosaccharides polysaccharides, aminosugars, and glycoproteins. Metabolism of aminoacids will be considered, with special reference to feedback and indirect methods of control. Pathways other than those leading to proteins, such as glycosaminoglycan formation and non-ribosomal peptide synthesis, will also be discussed.

Prerequisite: a basic class in biochemistry.

431B Biochemical Communication: membranes, neurotransmitters, and hormones, lect., 2 hrs., C. Mezei/C. Lazier.

The class will begin by considering the evidence for current concepts of membrane structure and assembly. A number of membrane-related phenomena will then be discussed. These will include mechanisms for transporting solutes across membranes, as well as effects, such as those involved in neurotransmission and peptide hormone action, that are mediated by receptors associated with membranes. In addition, regulatory mechanisms that are not associated with membranes, such as the action of steroid hormones, will be considered in detail.

Prerequisite: a basic class in biochemistry.

432B Biochemistry of Lipids, lect., 2 hrs., J.T. Clarke/H. Cook/F.B. Palmer/M.W. Spence.

The chemical and physical nature of insoluble lipids in an aqueous environment will be explored. This will include an introduction to current ideas of the physical states of lipids in biological systems and a consideration of the difficulties encountered when insoluble compounds interact with soluble and insoluble enzymes. The metabolism of a variety of lipids will be studied. Particular emphasis will be given to those for which special physiological functions are known or suspected, such as glycolipids, fatty acid derivatives including prostaglandins, sterol derivatives, certain phospholipids, etc.

Prerequisite: a basic class in biochemistry.

433C Biochemical Energetics, lect., 1 hr., F.I. MacLean.

Time is divided approximately equally among the following topics: thermodynamic principles of special importance to biochemistry and to biological "information"; fermentations; autotrophy and photosynthesis; oxidative phosphorylation; energy metabolism of protozoa and invertebrates.

Prerequisite: a basic class in biochemistry.

440 Protein Synthesis and Control Mechanisms, lect., 2 hrs., S.D. Wainwright.

This class deals with the cell components and reactions involved in the biosynthesis of proteins, with particular reference to mechanisms which control the rate of protein synthesis and the spectrum of proteins made. Emphasis is placed on individual study of research reports.

Prerequisite: a basic class in biochemistry and permission of the instructor.

Note: this class is not offered every year. Please consult the current timetable when you register.

443A/444B Molecular Biology of the Gene, lect. 2 hrs., various staff members.

These two half-classes consider the duplication, transfer, and expression of genetic material. Emphasis is placed on the basic experimental evidence on which current concepts of gene structure and function are founded. The classes are intended to acquaint students with the language of molecular biology and with the experimental techniques peculiar to it. The lecture material is presented in an historical perspective, so that an appreciation of the development of molecular biology as a discipline may be gained.

The two half-classes taken together will present a unified picture of the current state of the field: ordinarily, 444B may not be taken unless 443A has been successfully completed.

Prerequisite: a basic class in biochemistry.
Text: J.D. Watson, "Molecular Biology of the Gene".

443A Structure, Organization, and Replication of Genes.

Topics will include basic molecular genetics, the cell theory, the arrangement of genes on chromosomes, DNA replication, mutation, and recombination.

444B Gene Expression

Topics include the relationship between gene structure and function, transcription of DNA, translation of messenger RNA, the genetic code, and the regulation of protein synthesis.

Other topics that may be considered briefly in either half-class include virus replication, "molecular embryology" (the problem of cell differentiation), control of cell proliferation, antibody synthesis, and the viral origins of cancer.

460A Advanced Instrumentation Techniques, lab., 6 hrs., J.A. Verpoorte.

Instruction is provided for a limited number of advanced students in the uses of instrumentation. The principles and operation of the equipment will be discussed. The class topics include spectrophotometers, a spectrofluorimeter, atomic absorption spectrophotometer, spectropolarimeter, autotitrator, and centrifuges.

Prerequisite: a basic class in biochemistry.

461B Special Project in Biochemistry, lab., 6 hrs., various staff members.

A small laboratory investigation will be undertaken. Students will be expected to learn the basis of the project in depth and to carry out experiments to answer an appropriate question. The results will be interpreted, and a report written in the standard scientific manner.

Prerequisite: a basic class in biochemistry.

470A Physical Biochemistry, lect., 2 hrs., J.A. Verpoorte.

Selected aspects of the chemistry of biological macromolecules, such as proteins, will be considered. Topics include discussions of the relationship between structure and biological activity, the stabilizing forces that maintain structure, and chemical and physical methods for isolating and studying the properties of macromolecules.

Prerequisites: a basic class in biochemistry and a basic class in physical chemistry.

471B Enzymes, lect., 2 hrs., A.H. Blair.

This class will examine our current understanding of enzymic catalysis and the experimental approaches used in this field. The relationship between the structures of catalytic and regulatory sites and their functions will be considered for selected enzymes. A section will be devoted to a study of the kinetics of enzyme-catalysed reactions, and of how the binding of regulatory molecules influences kinetic behaviour. Such interactions are important for the control of cellular metabolism.

Prerequisite: a basic class in biochemistry.

480 Clinical Medical Biochemistry (Pathology 501), lect., 2 hrs., lab., 3 hrs.

This class is described in the Faculty of Graduate Studies Calendar.

Biology

Professors
C.M. Boyd (Oceanography)
M.L. Cameron
L.M. Dickie (Oceanography)
B.K. Hall (Chairman)
F.R. Hayes (Killam Senior Fellow)
O.P. Kamra
W.C. Kimmins
K.E. von Maltzahn
K.H. Mann
I.A. McLaren
E.L. Mills (Oceanography)
J.G. Ogden
E.C. Pielou
G.A. Riley (Oceanography)
L.C. Vining

Associate Professors
E.W. Angelopoulos
R.G. Brown
A.R.O. Chapman
J.V. Collins
R.W. Doyle
J. Farley
E.T. Garside
F.B. Goldsmith
L.E. Haley
M.J. Harvey
R.P. McBride

Assistant Professors
G.S. Hicks
P.A. Lane
R.W. Lee
J.A. Novitsky
R.K. O'Dor
D.G. Patriquin
J.H.M. Willison
E. Zouros

Adjunct Professors
D. Brewer
J.S. Craigie
D.P. Pielou

Instructors
L. Cooke
C. Coté
L. Crocker
A. Hicks
B. Joyce
W. Joyce
C. Knight
T. Mobbs
M.J. O'Halloran
P. Platt
S. Silcox
S. Singh
E. Tidmarsh
E. Wangersky

Research Associates
R. Ackman
J.D. Castell
D.C. Gordon
B.T. Hargrave
J. Kerekes
I. Kurobane
G. McLelland
G. Newkirk
T. Platt
A. Taylor
D.M. Ware

Postdoctoral Fellows
B. Bernstein
D. Hildreth
P. Hertz
W. Hart

The programme offered by the department gives a basic training in the biological sciences which may serve as a preparation for graduate and professional work in biology, medicine, dentistry, pharmacy, the health professions, bio-engineering and education; agriculture, aquaculture, forestry and environmental architecture and engineering.

Degree Programmes

The department offers classes leading to the General B.A. and B.Sc. degree in biology and to a concentrated or combined Honours B.Sc. programme. A student intending to study biology as his main subject should consult the department early in his course so that a proper programme can be worked out.

Honours Biology and Preparation for Graduate Study.
For entrance to graduate school an honours degree or equivalent four-year background is required. Some graduate schools require a reading knowledge of French, German or Russian. A thorough grounding in mathematics and physical sciences is as important as advanced undergraduate training in biology.

Students reading for a Bachelor of Science degree with honours in biology must satisfy the general requirements for honours degrees and must arrange their course programmes as early as possible in consultation with the department. In the fourth year a programme will normally include Biology 4900.

For some graduate programmes, a combined or unconcentrated honours program may offer the best preparation. Advice on this matter may be obtained in the department.

Students having a special interest in Marine Ecology are advised to obtain a good undergraduate training in general biology, mathematics and physical sciences, and to specialize in marine work in graduate school.

Honours students must attend a weekly Honours Seminar in their fourth year. Combined honours students doing thesis work in the Microbiology Department may participate in a Microbiology seminar series (weekly) in lieu of the Biology Department Honours Seminar.

Unspecialized Programme
Students wishing to obtain a broad overview of biology without specializing in any particular area are advised to take as many 2000-level core classes as possible, perhaps adding 3000- and 4000-level classes as their interest dictates.

Areas of Specialization
Many classes are available to students wishing to concentrate their studies in particular areas of biology. In some cases, the order in which classes are taken is important, but cannot be rigidly specified here because students may vary widely in their interests and requirements. For this reason, students are strongly urged to consult with an advisor in the biology department, whether they are planning a 3-year, 2-year or only 1-year programme in biology. Faculty advisors are available in the following fields (among others): *Molecular Biology,* W.C. Kimmins, L.C. Vining; *Microbiology,* R.G. Brown, J. Novitsky, M. Willison; *Genetics,* R.W. Lee, L.E. Haley, O.P. Kamra, E. Zouros; *Ecology/Environmental Studies,* R.W. Doyle, F.B. Goldsmith, P. Lane, K.H. Mann, I. McLaren, J.G. Ogden, E.C. Pielou; *Physiology/Cell Biology,* M.L.Cameron, J. Collins, R.K. O'Dor, D. Patriquin; *Developmental Biology,* B. Hall, G. Hicks; *General Studies,* J. Farley, R.P. McBride, K.E. von Maltzahn; *Plant Biology,* M.J. Harvey, A.R.O. Chapman, *Anmal Biology,* E.T. Garside.

Programme in Microbiology
The department of Biology and Microbiology offer both an Honours and a 2-year coordinated programme in Microbiology. These programmes are designed for students entering their second year of study. Students interested in these programmes are advised to consult either of the departments concerned at their earliest opportunity, faculty advisors are R.G. Brown (Biology Department) and D.B. Stoltz (Microbiology Department).

Classes Offered

Please note that except in very special cases Biology 1000 is the prerequisite for all other courses in the biology department. This rule takes effect in 1978-79 and applies to all students entering the department in or after the fall term, 1978.

A class number that is suffixed by one of the letters A, B or C is a half-credit class. See comments on these classes under the heading Numbering of Classes under Degrees and Courses.

Biology classes may be grouped into four general types:

1. **Introductory Biological Principles** — Biology 1000. This class is designed as an introductory university-level class in biology both for the student who has had no previous training in the subject and for those who have taken high school biology. It is required for entrance to all other classes in the department.

2. **Core Classes** These consist of two full-credit classes (Biology 2000 and 2015) and seven half-credit classes (Biology 2010-2060 and 2100). These classes are grouped into four categories as follows: *Category I,* Biol. 2010B, 2020A, 2015R;*Category II,* Biol. 2030A/B, 2050A/B; *Category III,* Biol. 2040A/B, 2060A/B; and *Category IV,* Biol. 2000R, 2100A/B. *Note that all biology major and honours students are required to take at least two and a half credits from among these classes and that these credits must be choosen from not less thatn three of the four categories.* The material in these categories represents the irreducible minimum of biology required for a major student's knowledge, and students are urged to take as many of these basic classes as possible. Students may not take more than one full credit in Category I.

3. **3000-Level Classes** Intermediate classes are mainly for second and third year students. No biology major will be allowed to register in any 3000- or 4000-level class without having completed, or being registered in, 2000-level core classes in biology totalling at least two full credits.

4. **4000-Level Classes** These classes are primarily for honours and graduate students. They are open to others with the permission of the instructor. Where biology courses are identified as being given in another department (e.g. Anatomy), that department should be consulted for details.

Introductory and Core Classes Offered

1000 Principles of General Biology, Study Centre 3 hrs.; Tutorial Quiz 1/2 hr.; Lecture Assembly 1 hr.; R.P. McBride, J.H.M. Willison, J.G.O. Ogden, Instructors, L.H. Cooke, E.R. Tidmarsh.

Biology 1000 is given in an audio-tutorial format with the study centre open on a come-any-time basis from 8:30 a.m. to 5:30 p.m. and evenings depending on demand.

The subject matter puts emphasis on those features common to all organisms. The course starts by considering the basic functions of whole organisms by studying a typical plant and a typical animal. Then the organism is examined in finer detail, considering the structure of cells, cell chemistry, energy needs, the coding system and protein synthesis. This leads to the topics of genetics, evolution, ecology, development and systematics in the second term.

Biology 1000, is the a basic introductory class in biology. It is suitable for students who may have had no previous training in biology and who do not intend to continue in biology. Biology 1000 is the prerequisite for all other courses in the biology department, regardless of previous backgrounds in biology. Under exceptional circumstances, students may apply to be exempted from taking Biology 1000.

2000 Diversity of Organisms, Study Centre 3 hrs.; Tutorial 1 hr. every two weeks; J. Farley, Instructors, L. Crocker, S. Silcox. (Category IV).

This class explores the great diversity of organisms on this planet by considering them in relation to the environments they inhabit. Four "environmental sets" of organisms are studied: the aquatic organisms, the terrestrial organisms, the symbiotic/saprophytic organisms and the ubiquitous organisms.

This class is taught through the audio-tutorial format, involving self-study in the Biology 2000 study center and no formal lectures. The study center is open on a come-any-time basis from morning to late evening.

2010B Molecular Biology, Lect. 3 hrs.; Lab. 3 hrs.; W.C. Kimmins, L.C. Vining, Instructor, C Coté. (Category I).

This class forms a bridge between biology and chemistry. Beginning with the structure and properties of the elements it explores the molecular organization of the living world in terms of physical and chemical laws. Students will acquire an introductory knowledge of the chemistry of cell constituents, and of the biochemical basis of life, growth and heredity. The structure and function of proteins and their role as enzymes catalysing essential cellular processes is developed in greater depth.

Molecular biology seeks to explain the complexity of living systems as a logical consequence of the fundamental properties of atoms. The laboratory section will introduce students to some of the equipment, techniques, and deductive reasoning used to explain biological phenomena at the molecular level.

Background in chemistry is essential.

2015 Cell-Molecular Biology, Lect. 2 hrs.; Discussion 1 hr.; Lab. 3 hrs.; R.K. O'Dor, J.V. Collins, W.C. Kimmins, L.C. Vining, Instructors, T. Mobbs, C. Coté. (Category I).

A fundamental unit of living systems is the cell; hence, our understanding of any organism must begin with a knowledge of the structure and functions of cells. Our ideas concerning the cell are summarized by the cell doctrine which in its simplest form states that the cell, consisting of a nucleus and cytoplasm, is the irreducible unit of biological activities; the cell is the unit of biological structure, of function, and of reproduction.

One of the major developments in cell biology during the past 30 years has been a growing belief that all the phenomena which characterize life processes can be explained in physicochemical terms. This "molecularization" of our approach to cell biology is sometimes referred to as molecular biology, and has produced the following hypothesis: Biological organization is explainable in terms of the laws of physics and chemistry and is based on the principle of minimum energy. One of the objectives of this class will be to examine this hypothesis. In doing so two concepts will become apparent: hierarchy of levels; and structure as determinant of function. A second objective is to determine the properties of cells and the structure, function and metabolism of cellular components. The third objective will be to introduce you, through the laboratory, to some of the equipment, techniques and deductive reasoning used to explain biological phenomena at the cellular level.

This is an integrated course covering the contents of both Biol. 2010B and 2020A.

2020A Cell Biology: Form and Function, Lect. 2 hrs.; Discussion 1 hr.; Lab. 3 hrs.; J.V. Collins, R.K. O'Dor; Instructor, T. Mobbs. (Category I).

The class introduces the basic concepts of cell structure and function, through lectures, laboratory sessions, demonstrations and films.

Lectures correlate the findings of light and electron microscopy with biochemistry.

Laboratory work is integrated with the lecture material and includes the theory and practice of light microscopy, staining and histochemistry, and observations on cell division and chromosome structure.

Students are expected to develop and show competence in expressing ideas in writing, in performing and recording observations in the laboratory, and in expressing themselves orally in group discussions.

Prerequisite: High school chemistry.

2030A/B Genetics, Lect. 1 hr.; Tut. 1 hr.; L.E. Haley, O.P. Kamra, R.W. Lee; Instructors, A. Hicks. E. Wangersky. (Category II).

The following three questions will be discussed in this class: (1) What is the nature of the genetic material, i.e. the structure and function of DNA; (2) How is the genetic information transmitted from one generation to the next; and (3) How does the genetic material act? Taught by audio-tutorial method.

Text: Patt & Patt, *An Introduction to Modern Genetics.*

2040A/B Evolutionary Biology, Lect. 3 hrs.; Tutorial 1 hr.; optional laboratory, time to be arranged; R.W. Doyle, E. Zouros; Instructor, S. Singh. (Category III).

A study of evolution as the interaction of genetic and ecological processes. The first half of the class introduces certain areas of population and quantitative genetics as means of understanding evolution at the genotypic and phenotypic level. In the second half of the class these ideas are applied to the problem of the origin of species, large-scale patterns in the fossil record of life on earth, and to aspects of human biological and cultural evolution.

There are two lectures and a tutorial every week with a problem set or paper due at each tutorial. A thorough grasp of Mendelian genetics at the senior matriculation or Biology 1000 level will be assumed from the beginning; experience indicates that the background provided by Biology 2030 may be helpful. An optional lab is offered.

2050A/B Developmental Biology, Lect. 3 hrs.; Lab. 3 hrs.; B.K. Hall, G.S. Hicks; Instructors, B. Joyce, W. Joyce. (Category II).

This class discusses the principles of both plant and animal development, emphasizing the experimental approach. Topics covered include: factors initiating development; embryogenesis; typical development patterns; analysis and regulation of growth and ageing; cell specialization and its possible reversal.

2060A/B Ecology, Lect. 3 hrs.; Lab. 3 hrs.; P.A. Lane; Instructor, C. Knight. (Category III).

The lectures offer an overview of ecology, considering the adaptations of organisms to their environment, the ecology of individuals, the regulation of numbers of single-species populations, various interactions among such populations, and finally the complex interactions involved in the structure, function, and development of ecosystems. The laboratories give some insight into techniques and modes of thought used by ecologists.

2100A/B Introductory Microbiology, Lect. 2 hrs.; Lab. 3 hrs.; D.B.Stoltz (course co-ordinator), R.G. Brown, G.C. Johnston, J. Novitsky. (Category IV).

This class introduces the basic concepts of microbiology through lectures, laboratory sessions, demonstrations and films. Subjects to be covered include the uniqueness of microorganisms, their structure, growth and genetic regulation, as well as their involvement in other fields such as medicine, industry and ecology.

Intermediate Classes Offered

Intermediate classes are mainly for second- and third-year students. They may be taken before completion of the core of classes described above. Please notice, however, prerequisites for the classes listed below. Students registering for these classes will have completed, or be registered in, a minimum of 2 full credits at the 2000-level.

Classes marked with an asterisk (*) are offered in alternate years. Consult timetable for current year.

3010A Metabolism I, Lect. 2 hrs.; Lab. or Tutorials; 1-3 hrs.; W.C. Kimmins, Instructor, M.J. O'Halloran.

The pathways of degradation and synthesis of molecules within the cell and the transformation of energy.

Prerequsite: Biology, 2010B or 2015.
Text: Lehninger, *Biochemistry,* 1975. (2nd Ed.)

3011B Metabolism II, Lect. 2 hrs.; Lab. or Tutorials: 1-3 hrs.; L.C. Vining; Instructor, M.J. O'Halloran.

Metabolic pathways information transfer and control of metabolism within the cell.

Prerequisite: Biology 2010B or 2015.
Text: Lehninger, *Biochemistry,* 1975. (2nd Ed.)

3023A Biological Ultrastructure, Lect. 2 hrs.; Lab. 3 hrs.; K.B. Easterbrook, M. Willison, D.B. Stoltz.

This class is designed to teach fundamental aspects of the architecture of biological entities (including viruses, bacteria, protists, fungi, plants, and animals) at the "ultrastructural" level. Ultrastructure is considered to include both intracellular and extracellar organization in the size range lying between macromolecules and whole cells. The relationship between structure and function is a recurrent theme, and special emphasis is placed on selected organisms of general importance. Laboratories are designed primarily to familiarize students with the interpretation of micrographs.

Techniques used in ultrastructure research are explained and demonstrated. Students wishing to be trained in particular techniques should subsequently register in Biol./Microb. 4024B.

Prerequisites: Biology 2015, or 2020A, or 2100A/B.

*** 3030B Molecular Genetics of Prokaryotes,** Lect. 2 hrs.; tutorial. L.E. Haley.

This course will cover selected topics of molecular genetics (DNA replication, repair, and genetic control) but will not deal with gene transfer or mapping in microbes.

Prerequisites: Biology 2030A/B.

3031B Molecular Genetics of Eukaryotes, Lect. 2-3 hrs.; Tut. 2 hrs.; R.W. Lee.

After a brief survey of bacterial and viral gene control mechanisms, this class will review our current understanding of the organization and expression of genetic material in eukaryotes. Emphasis will be placed on how this information was gained and on how it might relate to models on the genetic basis of differentiation and development in higher organisms.

Prerequisites: Biology 2030A/B and either Biology 2010B, or Biology 2020A or Biology 2015.

*** 3032B Cytogenetics,** Lect. 2 hrs.; Lab. 3 hrs.; O.P. Kamra.

Detailed consideration of certain genetical and cytological mechanisms in relation to chromosomal modifications, gene mutations and evolution.

Prerequisite: Biol. 2030A or B, and Biol. 2020A or Biol 2015.

3033A Microbial Genetics, (Microbiology Dept.)

*** 3034B Biological Effects of Radiation,** Lect. 2 hrs.; Lab. 3 hrs.; O.P. Kamra.

The class consists of a survey of the current knowledge of the effects of ionizing radiation on biological material on three levels: physical, chemical and biological. In addition, methods of dosimetry, autoradiography, somatic and genetic effects, radiomimetic chemicals and biolasers are discussed.

Prerequisite: Consult Instructor.

3035A Population Genetics, E. Zouros; Lectures 2 hrs.; Tutorial 1 hr.; Seminar 1 hr.; Lab open.

Students are introduced to the theory of Population Genetics, which is then examined in the light of existing experimental evidence. Emphasis is placed on the origin and fate of genetic variation in natural populations as the raw material of evolution. A detailed discussion of the dynamics of change in gene frequencies and an attempt to account for the observed pattern of genetic variation in natural populations.

Prerequisites: Biology 2030A or B; Math 100 and Math 106 or permission of the instructor.

*** 3036B Developmental Genetics,** Lect. 2 hrs.; Tutorial 2 hrs.; L.E. Haley.

This class will deal with gene activation and control in eukaryotic development.

Prerequisite: Biology 2030A or B and 2050A or B.

3050B Development and Morphogenesis in Animals, Lect. 2 hrs.; Lab. 3 hrs.; B.K. Hall.

This class assumes the material of Biology 2050A/B as background and studies the mechanisms underlying the control of development, morphogenesis and growth in animals. Topics of studies include: descriptive embryology of invertebrates and vertebrates; mammalian development and its hormonal control; histogenesis and morphogenesis of tissues and organs; regeneration of lost body parts; growth; cellular differentiation; aspects of metamorphosis.

The laboratory classes emphasize the experimental approach to the lecture topics.

Prerequisite: Biology 2050A or B.

3060A Applied Plant Ecology Lect. 2 hrs.; Lab. 3 hrs.; F.B. Goldsmith.

An analysis of plant communities as a basis for identifying appropriate forms of land-use and resource management. Various applied topics supported by case-studies and field visits.

Prerequisite: Biology 2060A/B.

3061B Structure and Function of Ecosystems I, Lect. 2 hrs.; seminar 1 hr.; J.G. Ogden, M.J. Harvey, K.H. Mann.

Utilizing a systems approach to production, decomposition, respiration, and nutrient cycling in terrestrial and aquatic ecosystems, this class surveys both methods and results of studies in a variety of ecosystems. Seminars will be devoted to a review of specific investigations reported in the literature, emphasizing techniques and data manipulation.

Prerequisites: Biology 2040A or B and 2060A or B, Math 100 or 150.

*** 3063 Theoretical Ecology,** Lect. 2 hrs.; lab 3 hrs.; E.C. Pielou.

This class considers ecological problems whose solution entails mathematical reasoning. Discussion of recent research will illustrate, with a variety of examples from both plant and animal ecology, the whole sequence of steps that an investigation follows: this starts with formulating a problem and deciding what observations would lead to a solution; then follows the planning, performing and analysing of the observations and finally the drawing of conclusions. Emphasis is given to the overriding importance of judging how much (or how little) a particular set of field observations can contribute to general ecological theory.

Prerequisites: The class is intended for students who have done Mathematics 100 or 151. Other mathematical topics

will be explained as they arise; the time to be devoted to them will be adjusted to the needs of the class. For students who have not done a course in elementary statistics, N.T.J. Bailey's *Statistical Methods in Biology* is required reading. Biology 2060A or B.

Text: E.C. Pielou, *Population and Community Ecology.*

*** 3065A Ecological Sampling Techniques,** Lect. 2 hrs.; Lab. 3 hrs.; E.C. Pielou.

A practical class intended for those planning careers in ecology, theoretical or applied (forestry, entomology, conservation, wildlife management, parks administration, range management, fisheries etc.). It aims to give students a thorough grounding in techniques for estimating the numbers of individuals, or the biomass, in living populations of all kinds.

Prerequisites: Biology 2060A or B; Math. 106 or 206 or Psychol. 357.

3070 Animal Physiology I, Lect. 2 hrs.; Discussion 1 hr.; Lab. 3 hrs.; R.K. O'Dor, M.L. Cameron; Instructor P. Platt.

This class discusses the mechanisms which coordinate the activities of cells within multi-cellular organisms and permit such organisms to maintain a stable internal environment in a changing external environment. The emphasis will be on the mechanisms most widely distributed through the animal kingdom. The laboratories will be designed to illustrate these "principles of physiology" in a variety of organisms and to demonstrate the experimental approaches used to study physiology.

Prerequisites: Biology 2000 or 2015 (in which a minimum C grade is required).

3074 Plant Physiology and Development, Lect. 2 hrs.; Lab. 3 hrs.; D. Patriquin and G. Hicks.

An integrative approach to the physiology and development of higher plants, with emphasis on structure-functional relationships at different levels of organization. Topics areas to include at least the following.

Photosynthesis, water relations, growth regulation, long distance transport, germination, organogenesis, reproductive physiology, nitrogen metabolism.
Prerequisites: Biology 2010B and 2020A (or 2015) and 2050A or B recommended.

3111B Microbial Activities in Nature, Lect. 2 hrs.; Lab. 3 hrs.; R. Brown.

The class format will be lectures, tutorials and laboratory exercises. Microorganisms play a far more important role in nature than their small size would suggest. To illustrate this, the following topics will be considered at the cellular and molecular levels: epiphytic microorganisms of plants and animals, Koch's postulates, protective mechanisms of plants and animals, the function of microbes in ruminants and the rhizosphere, nitrogen fixation and the mineralization of organic matter including petroleum.

Prerequisite: Biology 2100A or 2100B.

3113A Bacterial Physiology, Lect. 2 hrs.; Lab. 3 hrs.; R. Brown, D. Patriquin.

Although the class will concentrate on the structure and function of the bacterial cell envelope, that is, the capsule, cell wall and cell membrane, other topics such as the physiology of obligate anaerobiosis, sporulation, motility etc. will also be covered.

Prerequisite: Biology 2100 A or B.

3114A Introduction to Virology, (Microbiology Dept.).

3115A Introduction to Immunology. (Microbiology Dept.).

3116 Mycology, R. Brown, D. Brewer.

Live cultures will be used extensively to give the student a working knowledge of the major fungal groups. In addition, laboratory projects will introduce the topics of fungal growth, chemistry and ecology.

Prerequisite: Biology 2100A or B.

3118B Systematic Bacteriology. (Microbiology Dept.).

3212A Algology, Lect. 2 hrs.; Lab. 3 hrs.; A.R.O. Chapman.

This class deals with algal organization at the cellular, organismic, population and community levels. A thematic approach is used and only passing reference is made to systematics.

Prerequisite: Grade B minimum in Biology 2000.

3214 Plant Design, Lect. 2 hrs.; Lab. or Tutorials 1-3 hrs.; K.E. von Maltzahn.

This class deals with the structural design of plants in terms of the functional performance of their parts and their integration at different levels of organization. Types of design are established on the basis of comparative studies of life forms seeking to find homologies between the elements of design. Design in relation to climate and habitat will be examined and integrated at the level of the landscape.

3215A Systematics of Higher Plants, Lect. 2 hrs.; Lab. 3 hrs.; M.J. Harvey.

This class has two main aims; first, to give consideration to current speculation on the evolution of the flowering plants, connecting this with the attempts over the years to produce a phylogenetic classification of the existing species; second, to go into some of the newer concepts of classification arising out of the 'computer revolution'. The latter is still in an experimental stage here and will involve some study of numerical taxonomy, automated identification and key construction.

Prerequisite: Biology 2000.

Text: Stebbins, *Flowering Plants - Evolution above the Species Level,* Cronquist, *Evolution and Classification of Flowering Plants.*

3216B Adaptation and Speciation in Higher Plants, Lect. 2 hrs.; Lab/Seminar 2 hrs.; M.J. Harvey.

This class deals with the discipline known as biosystematics or, alternatively, experimental taxonomy. The approach taken is the analytic one of considering particular examples and trying to deduce which peculiarities of their biology have contributed to their relative success. In this way the mechanisms which have caused particular species pairs to diverge are studied. Examples considered are many and range from evening primroses and irises, through bananas and maize, down to the humble, but complex, dandelion.

Prerequisite: Biology 2000.

Texts: D. Briggs and S.M. Walters, *Plant Variation and Evolution;* G.L. Stebbins, *Chromosomal Evolution in Higher Plants.*

Reference text: W. Williams, *Genetical Principles and Plant Breeding.*

3321 Invertebrates, Lect. 2 hrs.; Lab. 3 hrs.; I.A. McLaren.

An attempt will be made to understand how different groups of invertebrate animals live — what modifications they have incorporated that allow them to survive in environments or to assume a manner of life alien to their evolutionary predecessors.

Because there are so many kinds of invertebrate animals, certain morphological and functional changes will be considered in those animals where they are most pronounced or where they first occur. The course will progress chronologically through the phylogenetic series; the characteristics of the animals in a group will be considered and new physiological systems and morphological peculiarities will be emphasized.

A laboratory session each week will give students an opportunity to examine the morphology and life traits of live invertebrate animals through observation of feeding, respiration, locomotion, etc.

Prerequisite: Biology 2000.

3322B Animal Parasitology, Lect. 2 hrs.; Lab. 3 hrs.; E. Angelopoulos.

The class is intended to give students an understanding of parasitism, its diversity and ubiquity.

Prerequisite: Biology 2000.

3323 Vertebrates, Lect. 2 hrs.; Tutorial 1 hr.; Lab. 3 hrs.; E.T. Garside.

The main purpose of this class is to acquaint the student with the current state of knowledge and speculation concerning the evolution of vertebrate animals from an invertebrate ancestral line at least 500 million years ago.

The structure of vertebrates and their sequential deposition of fossils in progressively more recent formation of the superficial crust of the earth form an unparalleled and unequivocal exposition of organic evolution, the gradual, natural development, through the long expanse of time, of progressively more complex organisms. Those vertebrates which have survived the stresses imposed by the restless environment form a series of stages or steps, each characterized by several pronounced alterations in various organ-systems and in the general form of the body. Approximately three-quarters of the programme is given to an analysis, by procedures of comparison and contrast, of these changes and their relevance in the synthesis of the evolutionary pathway of vertebrates.

An appreciation of the classification, structure and evolution of vertebrates is essential to considerations of the development and functional capacities of vertebrates and of their relations with their surroundings and with each other.

The laboratory study of a broad array of vertebrates provides the core of this class and serves to familiarize the student with the gross anatomic features of these animals while giving instruction in the traditional approach to comparison and contrast. The background which is required for this study is not particularly extensive but should incorporate the rudiments of animal form and function and an introduction to the principles of evolutionary biology. Although this class is often considered to belong at the intermediate level, it can be mastered by any diligent student who has completed a basic class in biology.

Prerequisite: Biology 2000.

3324 Entomology, Lect. 2 hrs.; Lab. 3 hrs.; D. P. Pielou.

Entomology, the study of insects, is not only an important branch of academic biology; it is also one of the largest divisions of applied biology.

The class is an introduction to the study of insects and it deals with:

(1) The classification and evolutionary diversity of insects.

(2) The biology, ecology and behaviour of insects.

(3) Applied aspects — medical, agricultural and forest entomology; harmful and beneficial insects; the pros and cons of chemical control; other methods of pest control.
Prerequisite: Biology 2000.

3327B Medical and Applied Entomology, Lect. 2 hrs.; Lab. 3 hrs.; D.P. Pielou.

This course develops in greater detail the subject matter of item 3 in Biology 3324.
Prerequisites: Biology 2000, Biology 3324 is desirable.

3400 The History of Science (same as History 310 and Physics 340), Lect. 2 hrs.; J. Farley (Biology), P. Ravindra (Physics).

This class is designed to accommodate students of the arts as well as the sciences. There are no formal prerequisites although all students must have a strong background in either a science, history or philosophy. The class will stress the period from the 16th to the 20th centuries. It will deal not only with internal scientific concepts, showing how ideas of what constitutes an acceptable scientific explanation have changed over time, but also with the institutions of science, the professionalization of science and the general interaction of science with society.

*** 3611B Principles of Biogeography,** Lect. 2 hrs.; Seminar 1 hr.; E.C Pielou.

This class brings together descriptive biogeography (plant and animal; terrestrial & marine) and mathematical biogeography (methods of analyzing biogeographic data rigorously, so that hypotheses can be tested). The underlying theme is the continuous evolution, and dispersal, of all species of the biosphere, in an environment formed by the continuously changing lithosphere, hydrosphere and atmosphere.

Prerequisites: The class is for students who have done, at least, a year of calculus (e.g. Math 100) and a class of statistics (e.g. Math 106).

The following classes are primarily for honours and graduate students. They are open to others with permission of the instructor.

4010B Advanced Topics in Molecular Biology, W.C. Kimmins, L.C. Vining.

Prerequisite: Permission of instructor.

4020A Advanced Topics in Cell Biology, meetings twice per week, J.V. Collins and staff.

The class is open to any student with a background in cell biology (including molecular biology and advanced genetics) who is interested in studying cell physiology, morphology, and development. Students will be asked to discuss selected topics from a list provided, after they have read and written papers on these topics. Instruction will be primarily by student seminar and group discussion, with few or no lectures.

Prerequisite: Permission of the instructor.

4024B Microscopy, Lect. 2 hrs.; Lab. 3 hrs.; M. Willison, D.B. Stoltz, K.B. Easterbrook.

This class is a corollary to Biology 3023A. Instead of considering biological ultrastructure, the course deals with some of the principal methods involved in the study of cell structure. Both light and electron microscopy, including ancillary techniques, are considered in depth. The importance of a proper understanding of the physical and/or chemical principles governing technical procedures is emphasized. During laboratory periods students will have the opportunity to practise, or to watch demonstrations of, some of the techniques covered in the lectures.

Prerequisites: A grade of B- or better in (3023A).

4030A Advanced Topics in Genetics, Lee and staff.

A general topic from the current literature in genetics will be examined in seminar format. The nature of the topic and the instructor in charge of the class will vary from year to year. Students will be expected to present at least one seminar during the term.
Prerequisite: Permission of the instructor.

*** 4037B Plasmid Genetics,** (Microbiology Dept.).

*** 4038B Control of Cell Division,** (Microbiology Dept.).

4050B Seminar in Development, Seminar 2 hrs.; B.K. Hall.

Current concepts and models of cellular differentiation, organogenesis, morphogenesis and embryonic development. Emphasis on vertebrates.

Prerequisites: Biology 2050A or B, and Biology 3050B.

4064C Pleistocene Biogeography, Lab. 3 hrs.; H.B.S. Cooke, J.G. Ogden, III.

Lecture, discussion, and laboratory experience in the reconstruction of environmental change during the Pleistocene epoch. Laboratory and field experience will pay particular attention to the environmental history of the Maritime region, including environmental changes caused by man. Techniques of pollen analysis, plant and animal macrofossil study, dendrochronology, geochemical and isotopic dating methods will be explored. Field and laboratory work include a class problem in an area in the Halifax region.

Prerequisites: At least two credits in Biology or Geology. This class is to be taken in conjunction with Geology 457 Pleistocene Geology. Permission of the instructors, May be counted as Biology or Geology half-credit.

4070C Animal Physiology II, Lect. 2 hrs.; Lab. 3 hrs.; R.K. O'Dor, M.L. Cameron; Instructor P. Platt.

This class is designed as an extension of Biology 3070 (Animal Physiology I) and will deal in greater depth with topics considered there. However, emphasis will be on the diversity of mechanisms used in different animals to solve similar problems. Practical work in the laboratory will also be emphasized and students will be encouraged to follow their interests and develop their own experimental approaches.

Prerequisite: Biology 3070.

4100A Marine Microbiology, Lect. 2 hrs.; seminar, discussion, and laboratory, 2 hrs.; J.A. Novitsky.

This class focuses on the role of microorganisms in the marine environment. Some of the topics that are discussed include: the effect of the ocean environment on, and the determination of, microbial biomass and activity; the role of bacteria in nutrient regeneration and the fertility of seawater, geomicrobiology; and the interactions between microorganisms and higher forms. The flexible format of lectures, seminars, and laboratory demonstrations and projects is intended to direct the course material toward the students' interests and backgrounds. The course is intended for serious students of biology, oceanography or marine science; successful completion of the course will give the student an understanding and working knowledge of the microbiology of the oceanic environment even if previous knowledge of microbiology is limited.

Prerequisite: Permission of the instructor.

4114B Virology, (Microbiology Dept.).

4115B Immunology, (Microbiology Dept.).
Prerequisite: Biology 3115A.

*** 4214 Physiology of Marine Algae,** Lect. 2 hrs.; J.S. Craigie.

A comparative study of the physiology and biochemistry of the various algal classes will be conducted. This will include studies of carbohydrates, proteins, fats, pigments and nutrition.

Prerequisites: Biology 2010B or 2015, 3010A.

4324 Advanced Entomology, Seminar and discussion, 2 hrs.; plus necessary time on project work; D.P. Pielou.

A course of directed reading, discussion, and practical projects—not necessarily the same for each student in the class. Readings and projects will be chosen to suit the individual student's interests, background, and future plans.

Prerequisites: Permission of the instructor and Biology 3324. Each prospective student must approach the instructor at the end of the preceding academic year, and, if accepted, make a synoptic collection of insects during the summer months.

4379A Ichthyology, Lect. 3 hrs.; E.T. Garside.

Evolution, systematics and structure, embryology, life history and distribution of fishes.

Prerequisite: Biology 3323.

4400 Ethology, Lect. 2 hrs.; Lab. or Field Work 3 hrs.; B. Rusak (Psychology Dept.).

The behaviour of animals is studied in the field and in the laboratory. These observations and other presented material will be discussed in the context of modern ethological theory.

4401 Pharmacology: Influence of Chemical Agents on Living Organisms, Lect.; Mon., Wed., Fri. 1:30; Lab.: Wed. 2:30-5:00 p.m.; D.J. Echobichon (Pharmacology Dept.).

This introductory class is designed to acquaint students with the actions of drugs on physiological and biochemical functions of man and lower animals. The basic mechanisms of action and structure-activity relationships of various groups of pharmacological agents will be stressed and, wherever possible, discussed at the molecular and macro-molecular level of cell organization. Factors influencing the absorption, distribution, biotransformation, and excretion of drugs will be discussed, as will potential uses.

The lecture course will be augmented by a practical laboratory course designed for student participation in the demonstration of basic principles of pharmacology.

4403 Human Physiology, Lect. 3 hrs.; Lab. 3 hrs.; B. Issekutz (Physiology/Biophysics Dept.).

A class dealing with the physio-chemical basis of the physiological processes in man.

Prerequisite: Introductory classes in Chemistry and Physics. Permission of the instructor is required.

*** 4454A Dynamics and energetics of complex real systems,** Lect. 3 hrs.; I.W. Richardson (Physiology/Biophysics Dept.).

Be it physical or biological, any system which manifests itself in the real world through motions under impressed forces is dissipative. Neither the classical mechanics of ideal frictionless systems nor Gibbsian thermostatics is sufficient for the study of such systems. This lecture course is a development of irreversible thermodynamics augmented by field theory and dynamical systems theory. The resulting field thermodynamics is a powerful tool for the analysis of complex dissipative phenomena such as membrane transport, energy utilizing systems in general and their underlying hierarchical structure.

*** 4455A Biological Control Systems;** H.K. Wolf (Physiology/Biophysics Dept.).

Control is ubiquitous in biological systems, occurring at all levels from the subcellular to the communal. This class will include the general mathematical techniques required for the analysis of such systems.

Prerequisite: Permission of the instructor.

*** 4456B Electrical Activity of the Heart;** W.J. Elfler, B.A. Horacek (Physiology/Biophysics Dept.).

The aim of this class is to establish the relationship between measured electrocardiographic body surface potentials and the underlying electrical phenomena of the heart.

Prerequisite: Permission of the instructor.

*** 4459B Electrical and Mechanical Activty of Cardiac Muscle,** A.Y.K. Wong, T.F. McDonald (Physiology/Biophysics Dept.).

Mathematical characterization of the mechanics and energetics of muscle.

Prerequisite: Permission of the instructor.

4650A Advanced Ecology Seminar, Consult Dept.

4651B Advanced Ecology Seminar, Consult Dept.

4660B Introduction to Biological Oceanography, Lect. 3 hrs.; J.S. Wroblewski.

A survey of marine populations and their relationships with their physical environment and with each other. Permission of the instructor is required.

4666A Benthic Ecology, (Oceanography Dept.).

4800 Special Topics.

4806A/4807B Special Projects, staff.

4900 Honours Research and Thesis.

3401A The History of the Biological Sciences, J. Farley.

This class is designed for 3rd and 4th year students majoring in biology or geology. It will deal mainly with selected topics in 19th and 20th century biology, geology and medicine.

3410B Man in Nature, Lect. 2 hrs.; Tutorials 1 hr.; K.E. von Maltzahn.

This class is an introduction to the science of nature which deals with structural order within organic nature, i.e. the relationships of different beings to each other including man within nature as a whole. The ideal of man's self-realization through his emancipation from nature is discussed. The class is not concerned only with man's biological requirements but also his aesthetic and rational requirements and how these different needs affect one another. It inquires into the consequences which these needs may have upon man's judgements and actions *and* the well-being of nature as a whole.

This class will be prepared for students in the arts and sciences and does not have special prerequisites. Students are, however, expected to be willing to deal seriously with questions which the class is concerned with. The class is also designed for students in biology who wish to obtain a broader framework of knowledge in biology. General degree students may not include this class in the 4 required for a Biology major. Honours students may count it towards their Biology requirements.

3421 Comparative Vertebrate Histology, D.M. Chapman, (Anatomy Dept.).

An advanced histology course surveying the whole range of vertebrate tissues and organs.

Prerequisites: Biol. 2020A or 2015 and permission of the instructor.

3610B Ecological Genetics and Evolutionary Theory, Lect. 2 hrs.; Tut. 1 hr.; R.W. Doyle.

The first part of the course will be devoted to mathematical concepts of relative fitness and evolutionary change in age-structures populations. Emphasis will be placed on the interpretation of demographic, biometrical and isoenzyme data from natural populations in the light of modern evolutionary theory. Following this introduction several case studies of micro-evolutionary change will be examined including the development of pesticide resistance in insects and rodents. The course will also introduce students to the speculative research literature on the evolution of optimal life histories, niche compression and expansion, the effect of microevolution on ecosystem stability and statistical analyses of the fossil record.

Prerequisites: Biology 2040A or B, 2030A or B, 2060 A or B. Without a background in calculus and statistics (first-year level) students will find the course very difficult.

Canadian Studies Programmes

Who are eligible

Dalhousie students who are planning to do, or are at present doing, major programmes in any of the following six departments, are eligible.

The six departments are: Economics, English, History, Political Science, French, and Sociology.

Aim

The purpose of the programme is to allow such students to concentrate part of their work on Canadian studies both within their major field, and outside of it. For example, a student who is planning to major in Political Science would take at least 3 of his political science classes in classes designated as Canadian in the list appended below. He would in addition take four classes outside his major field in Canadian Economics, Canadian History, Canadian Literature (either English or French), or Canadian Sociology.

In other words, the Canadian Studies Programme does not attempt to establish a new major field. It seeks to use any one of six present departments in the Faculty of Arts and Science as a base around which a student may effectively cluster a number of classes in Canadian subjects.

Classes

Year I

Students who are interested in such a programme should plan in their first year to take at least four classes from the following:

(1) Three classes from:
Economics 120, Principles of Economics: An Historical Approach
English 100 (See English Department Supplement for sections with Canadian content.)
History 120 The History of Canada
History 199 Sections, 2, 9, 13 and 16
Political Science 1100 Sections 1, 2 and 4.
Sociology 100

(2) A student who wishes to develop a competent reading knowledge of French should take **French 102** or **French 106,** preferably in the 1st year.

A fifth class in the first year has been left as open option, but students might consider doing **Geology 140** as a useful environmental base.

Year II

Students should plan to take at least one class within their major department from the list appended.

They should also plan to take two classes outside their major department from the same list, as follows:

English 207 Canadian Literature
English 231 Modern Canadian and American Novels

Economics 232 Canadian Economic History
French 202 Spoken and Written French, (Canadian Sections)
French 230 LeConte, 18th-20th Centuries
French 231 20th Century Theatre, French and French Canadian Texts
History 220 A People at Work: Social and Economic History of Canada
History 227 The Atlantic Provinces
Political Science 2200 The Canadian Political Process
Political Science 2510 Canadian External Relations
Sociology 205 Sociology of Religion
Sociology 211 Canadian Society
Sociology 220 Sociology of the Family

Year III

Students should take at least two classes within their major department in Canadian studies and two classes outside of it, from the following list:

Economics 325 Labour Economics
Economics 329 Urban Economics
Economics 326A Monetary Economics
Economics 426B Monetary Economics
Economics 432 Regional Economics
Economics 433B Inter-governmental Fiscal Relations
English 357 The Making of Modern Poetry in Canada
French 312 French and French Canadian Civilization
French 340 French Canadian Literature
History 324 Society, Economy, Conflict in the Canadas, 1791-1872
History 326 The Response to Industrial Capitalism in Canada, 1850-1935
History 327 The Nova Scotian Experience, 1815-1945
History 328 The Age of Macdonald and Laurier, 1850-1911
History 329 The Social Outcast in Canadian History
Political Science 3204 Politics, Government and Constitution of Canada
Political Science 3208 Canadian Provincial Politics
Political Science 3212 The Politics and Government of Nova Scotia
Political Science 3216A Local and Regional Government in Canada
Political Science 3220A Inter-governmental Relations in Canada
Political Science 3221B Case Studies in Intergovernmental Relations
Political Science 3228A The State and the Economy in Canada
Political Science 3570 Canadian Foreign Policy
Sociology 320 Social Change and Canadian Society

It should be possible for students to take a number of 2nd year classes in their 3rd year, and in a few cases, vice versa.

How to arrange it

Students wishing to discuss a Canadian Studies Programme, or wishing to take it, should get in touch with any of the following, within their respective departments:

Professor B. Lesser, Economics Department
Professor M.G. Parks, English Department
Professor Hans Runte, French Department
Professor P. Butler, Sociology Department
Professor J.M. Beck, Political Science Department
Professor P.B. Waite, History Department

Chemistry

Professors
W.E. Jones
(Chairman of Department)

W.A. Aue
W.J. Chute
J.A. Coxon
T.P. Forrest
K.E. Hayes
O. Knop
K.T. Leffek
D.E. Ryan

Associate Professors
T.S. Cameron
G.A. Dauphinee
J.S. Grossert
D.L. Hooper
L. Ramaley

Assistant Professors
R.J. Boyd
A. Chattopadhyay
T.B. Grindley
R.D. Guy
J.C.T. Kwak
P.D. Pacey
J.A. Pincock
R. Stephens
A. Terzis
C.H. Warren

Lecturer
M.L. Heit

Special Lecturers
R. Langler
J. Wasson

Demonstrators
D. Burkholder
J. Gabor
D. Groves
G. Matinopoulos
P. Renault
S. Sawler
P. Sherman
D. Silvert
M. Yeats

Research Associates
Z.M. Mielniczuk
D.A. Othen

Postdoctoral Fellows
H. Furue
F. Jackman
G. Krishnamurty
G. Matinopoulos
I.A. Oxton
M. Wang
N. Ward
W.J. Westerhaus

As one of the basic sciences, chemistry can help provide us with an understanding of the processes occurring in the materials surrounding us. A student considering an honours programme in chemistry should be competent in mathematics as well as chemistry, since mathematics is the language of the physical sciences. We say honours programme advisedly, for the honours B.Sc. is the minimum professional requirement for a chemist—the general B.Sc. with a major in chemistry has no professional standing. Chemists with honours degrees are employed in widely differing areas in industry and government, reflecting the diversity of fields in which chemistry plays an important role. For some students, a first degree in Chemistry will provide a background for further graduate work in medicine, law, business administration, biochemistry, oceanography, geology or other areas. Many students will proceed in further studies in chemistry, working toward the degree of M.Sc. or Ph.D. A postgraduate degree is essential for those who wish to engage in independent original research or in university teaching.

Chemistry 110 is an introduction to the discipline. Non-science students who elect to take chemistry to fulfill requirements for a degree will find that the subject provides a good insight into the scientific method. Many students who do not intend to become professional chemists are required to take introductory chemistry and may be required to take second and third-year classes in the subject as well. This group of students can include those taking courses in engineering, pre-medicine, pre-dentistry, dental hygiene, nursing and pharmacy. Engineering students contemplating chemical engineering should consult the Department of Engineering for advice on desirable classes in chemistry. All students intending to take classes in chemistry beyond the first year level should include classes in mathematics and physics in their first year, and final grades in these classes should not be less than C, if they are, the student is bound to find advanced classes in chemistry difficult and frustrating.

At the second year level the student is exposed to the four areas of specialization into which chemistry has been traditionally subdivided. Inorganic chemistry deals with all the chemical elements except carbon, and the compounds which these elements form. Organic chemistry is devoted to the study of the almost limitless number of compounds containing carbon. Analytical chemistry is concerned with the determination of the composition of substances, and with the detection of elements in quantities however minute. Physical chemistry is primarily devoted to the study of how and why chemical reactions occur and the rate at which they proceed. Beyond the second year level, a student's studies in chemistry become increasingly concentrated in one of these four areas. The student may also be introduced to biochemistry or the chemistry of living organisms, as well as such specialties as structural chemistry, radiochemistry, electrochemistry and theoretical chemistry.

Because advances in chemistry have been and continue to be published in many languages, those who look forward to postgraduate study and research are urged to acquire a reading knowledge of at least two foreign languages. These are usually chosen from among French, German and Russian.

Degree Programmes

General Degree with Major in Chemistry
In order to obtain as general a chemical background as possible, the student after taking Chemistry 110, should include in his program the classes 211B, 220A, 231A, 232B and 240, which give exposure to the four areas of specialization in chemistry. The remaining requirements in chemistry may be chosen from the third and fourth year classes depending on the student's major interests. Each student who plans to major in chemistry should consult with his or her departmental advisor each year regarding his or her programme of study. The student's programme should also include Mathematics 100 and 101 and Physics 110.

B.Sc. with Honours in Chemistry
This programme is intended to provide a broad training in chemistry while at the same time it makes provision for the individual interests of students. All honours students are required to consult annually with the Chairman of the Department, and to obtain his approval of their course selection.

Year I will normally consist of:
1. Chemistry 110
2. Mathematics 100 and 101
3. A foreign language at the 100 level
4. One of Biology 1000 or 2000 Geology 100 or Physics 110
5. Elective

Years II, III and IV must include:
1. Chemistry 211B, 220A, 231A, 232B, and 240
2. Six full classes from Chemistry 300 and 400 levels. Chemistry 300A, 311A, 312B, 321A, 322B, 330A, 331B, 341A, and 342B are required classes. In addition the non-credit courses 388 and 488 must be taken.
3. Mathematics 200 or 220 a prerequisite for Chemistry 300A, 330A and 331B.
4. Five other classes. These must be chosen as follows:
a) If Physics 110 or a foreign language were not taken in Year I, they must be taken in Years II-IV.
b) Two classes beyond the 100-level must be taken in a minor subject. Minor subjects allowed for this degree are biochemistry, biology, geology, mathematics or physics.

It is suggested that these five other classes be chosen according to the future plans of the student. For example: those planning future study in physical chemistry should take additional mathematics and physics classes; those planning future study in organic chemistry should take one or more biology classes; those planning future study in geochemistry should take one or more geology classes.

B.Sc. Combined Honours Programs
The department has designed a number of programmes which allow a student to obtain a Combined Honours Degree in Chemistry with one of Biology, Geology, Mathematics or Physics. Students who contemplate this type of program should consult with the Departmental Chairman.

Classes Offered

A/B indicates that the class will be offered in either the A or B term. The names of professors are those teaching the classes in 1977/78 and not necessarily those for 1978/79. Consult the timetable for up to date details.

105 Chemistry For Dental Hygiene Students
lect.: 3 hrs.; lab.: 3 hrs.; G.A. Dauphinee.

This class is taken by dental hygiene students in their first year. It will not serve as a prerequisite to second-year chemistry classes and is only a credit course in the School of Dental Hygiene. Organic chemistry is discussed in the second half of the year, since the regular programme of the students does not include further study of chemistry. The subjects discussed in the first term include atomic structure, solution equilibria and simple inorganic chemistry. Laboratory experiments are integrated with the material discussed in lectures. Quantitative aspects of chemistry are not emphasized in this class.

110 General Chemistry, lect.: 3 hrs.; lab.; tutorial: 3 hrs.; W.A. Aue, R.J. Boyd, T.S. Cameron, A. Chattopadhyay, W.J. Chute, G.A. Dauphinee, R.D. Guy, K.E. Hayes, M.L. Heit, D.E. Ryan, J. Wasson, A Terzis.

This is an introductory class in college chemistry with lectures and tutorials on a number of topics in physical and structural chemistry. Included are stoichiometry, acid-base and oxidation-reduction reactions, gases, liquids and solids, solutions, thermochemistry, equilibrium, chemical kinetics, and atomic and molecular structure.

Emphasis is placed on the formulation of theories which will be useful in the correlation of experimental facts, rather than on the memorization of the facts themselves. Wherever possible, such a theory is derived using standard mathematical methods from basic physical principles. In tests and examinations students are expected to demonstrate their knowledge of the basis of these theories and of their limitations and to show a logical approach to the solution of numerical problems.

It is assumed that students entering this class will have some knowledge of elementary chemistry, mathematics and physics. The minimum background in chemistry is the equivalent of Nova Scotia Grade XI with emphasis on its numerical aspects. It is important that students be able to use exponents and logarithms, proportionality and variation, and be able to solve quadratic and simultaneous equations.

211B Introductory Inorganic Chemistry, lect.: 2 hrs.; lab.: 3 hrs.; optional tutorial: 2 hrs.; O. Knop.

The material covered includes principles of nomenclature, radioactive disintegration and its applications, electronic structure of atoms, elements of molecular-orbital theory and inorganic stereochemistry, principles of crystal chemistry, and a certain amount of systematic chemistry of inorganic compounds. The preparation and analysis of inorganic compounds will be the laboratory assignments.

Prerequisites: Chemistry 110 and Mathematics 100 and 101 (or equivalents). These classes cannot be taken concurrently with Chemistry 211B.

220A Introductory Analytical Chemistry, lect.: 2 hrs.; lab.: 3 hrs.; L. Ramaley.

Chemistry 220 provides a thorough introduction to the techniques used to analyze the major components of a sample and a brief introduction to methods of separation. Those aspects of solution equilibria important to these analytical techniques will also be covered. Specific topics include theory of titrations; gravimetric analysis; acid-base, precipitation and redox equilibria; and chromatography. Examples of the subjects covered in the lecture are used in the laboratory. These involve the qualitative, semi-quantitative and quantitative analysis of unknowns.
Prerequisite: Chemistry 110

231A Introductory Chemical Thermodynamics, lect.: 3 hrs.; lab.: 3 hrs.; C.H. Warren.

Thermodynamics, one of the major areas of physical chemistry, is essentially a study of energy and is applicable to energy changes associated with chemical reactions, as well as physical, biological and geological processes. The position of chemical equilibrium is one of the major concerns of chemical thermodynamics. The lecture periods include discussions of the following topics: three laws of thermodynamics and their application, free energy, chemical equilibrium, colligative properties, phase diagrams and electrochemistry. The laboratory sessions will give students an opportunity to perform experiments which illustrate many aspects of the above topics with modern techniques and apparatus.

Prerequisites: Chemistry 110 and Mathematics 100 and 101

232B Introduction to Kinetics and Photochemistry, lect.: 3 hrs.; lab. 3 hrs.; J.A. Coxon

This class will introduce the student to the fundamentals of kinetics and includes methods of measurement, basic rate laws, mechanisms and theories of reaction rates. Specific examples of some simple and complex reactions in the gas phase and in solution will be discussed. Elementary aspects of the kinetic molecular theory, molecular spectroscopy, statistical mechanics and photochemistry will be also presented.

In the laboratory, the student will be exposed to various experimental techniques used in the fields of kinetics, photochemistry and spectroscopy.

Prerequisites: Chemistry 110 and Mathematics 100 and 101. Although not essential, Chemistry 231A is recommended.

240 Introductory Organic Chemistry, lect.: 3 hrs.; lab.: 3 hrs.; T.P. Forrest, J.S. Grossert, T.B. Grindley, D.L. Hooper, R. Langler, J.A. Pincock.
This class will provide a broad introduction to the chemistry of carbon compounds, including molecular shapes and bonding, characteristic reactions and the way in which they take place, and the application of spectroscopy to organic chemistry.
Prerequisites: A good comprehension of the principles studied in Chemistry 110. In particular, the student is required to understand the relation between carbon and the other elements of the periodic table; valence; covalent and ionic bonding; electronic orbitals; orbital hybridization and the determination of molecular geometry by all types of s and p atomic orbital hybridization; electronegativity; the physical chemistry of solutions; chemical equilibria; velocities of reactions; oxidation-reduction; acids and bases.

243 Introductory Organic Chemistry with Biochemistry, lect.: 2 hrs.; lab.: 3 hrs.; W.J. Chute.
This class is taken by nursing students. It will not serve as a prerequisite to third-year classes in chemistry and is only a credit course in the School of Nursing. During the first term a basic introduction to the chemistry of carbon compounds is given. In the second term students transfer to the Biochemistry Department.

300A Introductory Theoretical Chemistry, lect.: 2 hrs.; R.J. Boyd.
This class provides an introduction to quantum mechanics and its application to spectroscopy and the electronic structure of atoms. The postulates of quantum mechanics are presented and then applied to some simple physical systems including the particle in a box, rigid rotor, and simple harmonic oscillator. This is followed by a discussion of the rotations and vibrations of molecules, and the electronic structure of atoms. The class concludes with the solutions of the H atom problem and the independent electron approach to many electron atoms.

Prerequisites: Mathematics 200 or 220 and Chemistry 211B or 231A or 232B.

311A Chemistry of the Main Group Elements, lect.: 2 hrs.; lab.; 3 hrs.; T.S. Cameron.

The aim of the class is to undertake a systematic study of the chemistry of the main group elements, with particular emphasis on the nonmetals of the first and second row elements. Appropriate use will be made of modern bonding concepts such as molecular orbital theory and multi-centred bonds.

The laboratory will introduce the students to synthetic procedures for the preparation of inorganic compounds and will include a study of their reactions. In general, these require special handling techniques, such as controlled atmosphere, very high temperature or vacuum line manipulation.
Prerequisite: Chemistry 211B.

312B Chemistry of the Transition Metals, lect.: 2 hrs.; lab.: 3 hrs.; A. Terzis.

This class deals with the transition elements and their complexes. Use is made of modern bonding theories, i.e. crystal field and ligand field theories, with a view towards unifying the chemical and physical properties of these substances.

In the laboratory the experiments are chosen to demonstrate the principles and uses of high temperature techniques, non-aqueous solvents, crystal growth; the role of metals in life processes. Use is made of several spectroscopic methods (NMR, UV, VIS, IR) for the characterization of the compounds that are synthesized.

Prerequisite: Chemistry 211B.

321A Solution Equilibria and Analytical Spectroscopy, lect.: 2 hrs.; tutorial: 1 hr.; lab.: 3 hrs.; A. Chattopadhyay

Chemistry 321A is organized into three units:

1. Introduction and statistics — elementary concepts, stoichiometry, the evaluation of analytical data.

2. Chemical equilibria and their analytical applications — fundamental concepts, aqueous acid-base reactions, equilibria calculations, buffers, titration curves, fractional distribution curves, effect of structures on acidity, non-aqueous solvents and acid-base titrations, metal-ion titrations, equivalence point detectors (indicators).

3. Spectrochemical methods of analysis — electromagnetic radiation and interaction with matter, measurements, fundamental laws, UV-visible molecular spectroscopy, molecular luminescence spectroscopy, infrared and raman, atomic elemental analysis (flame emission, atomic absorption).

The program of laboratory experiments is designed to illustrate the above techniques with practical examples.

Prerequisite: Chemistry 220A

322B Analytical Electrochemistry and Separations, lect.: 2 hrs.; tutorial: 1 hr.; lab.: 3 hrs.; R.D. Guy.

Chemistry 322B deals with the application of electrochemical and separation techniques to chemical analysis. The basic chemical and physical principles are explained, applications to analytical problems are examined and instrumentation is described. The material on electrochemistry starts with a review of oxidation-reduction theory and equilibria and a description of redox and ion selective electrode behaviour. Next the potentiometric use of these electrodes is described. Finally the various types of coulometry and polarography are examined. The material on separations includes sections on separation by precipitation, solvent extraction, and all forms of chromatography. Emphasis is placed on thin layer, high speed liquid, and gas-liquid chromatography.

The laboratory work is concerned with practical examples of the above techniques in both qualitative and quantitative analysis.

Prerequisite: Chemistry 220A

330A Chemical Thermodynamics, lect.: 2 hrs.; lab.: 3 hrs.; K.E. Hayes.

This class, while primarily intended for Chemistry Honours and major students should prove of interest to students in the fields of Biology, Biochemistry and Geology.

The class will proceed via a review of the laws of thermodynamics as applied to ideal closed systems, to consider the problems of real gases and open systems. Extensive use is made of the chemical potential and the various Maxwell relationships. Specific topics to be covered include, free energy and equilibria, phase equilibria, fugacity, activities and activity coefficients, solutions of electrolytes and the Debye-Huckel theory, partial molar quantities and E.M.F.'s and the thermodynamics of ions. At appropriate times throughout the term the statistical approach to thermodynamics will be introduced and the entropy, heat capacity energy and free energy will be discussed in terms of partition functions.

The laboratory, where students must complete five or six experiments through the term, is open at all times. The laboratory work is designed to help the student gain confidence in results that he may obtain in any laboratory. Four of the experiments will be written up during the term as formal reports, following the format of the Canadian Journal of Chemistry.

Prerequisites: Chemistry 231A and Mathematics 200 or 220.

331B Chemical Kinetics, lect.: 2 hrs.; lab.: as needed; W.E. Jones.

This class deals with the rates and mechanisms of chemical reactions. Topics will include the treatment of experimental kinetic data obtained from simple and complex reactions, both catalysed and non-catalysed, the steady state approximation and its application, the Rice-Herzfeld approach to complex reactions, photolysis, luminescence and special techniques for studying fast reactions. Examples will be drawn from reactions in the gas phase, at the gas solid interface and in liquid solutions. An understanding of the mechanism of chemical reactions will be sought by usng the methods of Absolute Reaction Rate Theory.

The laboratory will be open at all times. Each student is expected to complete at least five experiments.

Prerequisites: Chemistry 232B and Mathematics 200 or 220.

341A Identification of Organic Compounds, lect.: 3 hrs.; lab.: 3 hrs.; T.P. Forrest.

The purpose of this class is to introduce the student to the techniques necessary for the identification of organic compounds. Although there will be some presentation of the classical, wet, qualitative analysis methods the main emphasis will be on modern spectroscopic techniques, such as nuclear magnetic, infrared and ultraviolet spectroscopy and mass spectrometry. The course will be built on the framework of the functional group classification developed in introductory organic chemistry courses. The laboratory section of the class will involve identification of unknown substances by the methods covered in the lecture material. Students must work independently in the laboratory in order to solve their own individual problems.

Prerequisites: Chemistry 240 (or equivalent)

342B Pathways of Organic Chemistry, lect.; 3 hrs.; lab.: 3 hrs.; J.A. Pincock.

This is an intermediate class in organic chemistry with the aim of extending the student's knowledge of functional groups and their reactions. The class will begin with a brief outline of the principles of these reactions which will then be used as the basis for the understanding of synthetic organic chemistry. The subject will be presented so that the student sees how individual reactions are applied to multi-step organic preparations. In the laboratory section, students will work individually using many standard techniques for the preparation of organic compounds. Both single-step and multi-step procedures will be undertaken so that a good understanding of the practical problems involved in organic synthesis will be attained.

Prerequisites: Chemistry 240 (or equivalent)

343A/B Bioorganic Chemistry, lect.: 3 hrs.; T.P. Forrest.

Since molecules in nature operate under the same rules as govern molecules in an organic laboratory, one can apply those principles which have been elucidated in the organic laboratory to the study of the behaviour of organic compounds in nature. In order to cause a reaction to occur in the laboratory it might be necessary to alter functional groups and provide other conditions necessary to induce reactivity of a particular type. An analysis of the requirements for reactivity, methods by which these can be achieved and the influence of various factors on the outcome of reactions serve as the basis of this course.

Reactions to be analysed will be selected from sources such as primary metabolic pathways, biosynthetic pathways, metabolism of chemotherapeutic agents, and co-enzyme functions. The class will be built on a framework of types of reactions and factors controlling reactivity rather than a survey of compounds found in nature.

This class may *not* be included in the nine chemistry credits required for an honours chemistry degree (Degree Programmes 5.3.5.1 (i)). It may however be taken by honours chemistry students in addition to these nine.

Prerequisites: Chemistry 240 (or equivalent)

388 General Topics in Chemistry. A non- credit seminar course to be given by invited speakers which must be taken by all 3rd year honours Chemistry students.

400B Theoretical Chemistry, lect.: 2 hrs.; C.H. Warren.

The class is a continuation of 300A. Molecular orbital theory and its applications will be examined in greater detail. Group theory will be introduced and applied to spectroscopy and molecular orbital theory.

Prerequisite: Chemistry 300A.

411A Symmetry and Group Theory, lect.: 2 hrs.; compulsory tutorial: 3 hrs.; O. Knop.

This class will be concerned with the elements of the theory of abstract groups and their representations, crystallographic and non-crystallographic point groups, and an introduction to the theory of space groups. Examples from stereochemistry, crystallography, and spectroscopy will be used to illustrate the theory. Knowledge of elementary manipulations of matrices and determinants is desirable.

Prerequisites: Chemistry 211B and Mathematics 200 or 220, or consent of instructor.

412B Solid State Chemistry, lect.: 2 hrs. lab.: 3 hrs.; O. Knop.

All chemical elements and compounds can exist as crystalline solids, and most of them normally do. The arrangements of atoms and molecules in such solids, known as crystal structures, closely reflect the bonding properties of the constituent elements. They can be studied by methods that do not destroy or modify the crystal structure. The aim of this class is to acquaint the student with the methods most frequently employed for this purpose and with the principles of solid state chemistry in general.

Prerequisites: Chemistry 211B, 330A, and 411A (or equivalents) or consent of instructor.

420A/B Analytical Instrumentation, lect.: 2 hrs.; lab.: 3 hrs.; L. Ramaley.

This course deals with the design and operation of modern instruments used for the qualitative and/or quantitative identification of an analytical sample. Basic principles of electronics are covered, starting with the operation of individual circuit elements (resistors, capacitors, transformers, diodes and amplifying elements), and are used to show how typical control and signal processing circuits operate. Associated devices such as the transducers required to obtain a signal from an analytical sample, spectrometer optical systems etc. are also discussed.

Prerequisites: Chemistry 321A and 322B or permission of instructor.

421A/B Methods of Instrumental Analysis, lect.: 2 hrs.; lab.: 3 hrs.; W.A. Ave.

A detailed study of the operating principles of modern analytical instrumentation is given. Instruments are divided into 3 sections, covering elemental analysis, the analysis of organic molecules, and separations. Techniques covered include atomic spectroscopy with both flame and non-flame cells, arc and spark methods, X-ray fluorescence, neutron activation analysis, visible/UV spectroscopy, mass spectroscopy, nuclear magnetic resonance, and chromatography (GLC, liquid and thin layer).

Prerequisites: Chemistry 321A and 322B or permission of instructor.

430A/B Introductory Statistical Thermodynamics, lect.: 2 hrs.; R.J. Boyd.

An introduction to the principles of statistical thermodynamics and quantum statistical mechanics including: ensembles, the postulates of statistical mechanics; Boltzmann, Fermi-Dirac and Bose-Einstein statistics; ideal, monatomic, diatomic and polyatomic gases, and transport phenomena. Wherever possible the application of statistical thermodynamics to chemical systems as well as physical and biological processes will be emphasized.

Prerequisite: Chemistry 330A or permission of the instructor.

431A/B Electrolyte Systems, lect.; 2 hrs.; lab.: 3 hrs.

This class can be taken in the 3rd or 4th year of study, and provides a theoretical and practical introduction necessary for the application of the physical chemistry of electrolyte solutions in life sciences and medicine. Topics include equilibrium and transport properties of solutions, especially electrolyte solutions with applications, colloid chemistry and electrokinetic phenomena as applied to e.g. electrophoresis and centrifugation, and a description of membrane transport and coupled transport with examples of biological importance. Laboratory experiments emphasize the measurement of electrical potential differences in low and high impedance systems, microelectrodes, redox-electrodes and selective-ion electrodes, as well as thermodynamic and transport properties of electrolyte solutions.

Prerequisite: Chemistry 231A, 232B, or permission of instructor.

432A/B Spectroscopy and Photochemistry, lect.: 2 hrs.; lab.: 3 hrs.; W.E. Jones.

This class is designed to introduce the student to the

theoretical and practical aspects of atomic and molecular spectroscopy and the application of this information to photochemical problems.

The discussion of all topics will begin at an introductory level.
Prerequisite: Chemistry 231A, 232B or permission of instructor.

440A/B Spectroscopy of Organic Molecules, lect.: 2 hrs.; lab.; 3 hrs.; D.L. Hooper.

This class includes an introduction to the theory of mass spectroscopy and nuclear magnetic resonance spectroscopy, however the focus of the class is the application of these techniques as well as infrared and ultraviolet spectroscopic methods in the structure determination of organic compounds.
Prerequisite: Chemistry 341A, or equivalents, or permission of instructor.

441B Stereochemistry and Synthesis in Organic Chemistry, lect.: 2 hrs.: lab.: 3 hrs.; J.S. Grossert.

Stereochemistry and synthesis, illustrated in considerable part with examples taken from the field of natural products. Laboratory experiments will be chosen to incorporate modern advanced synthetic techniques and principles.
Prerequisites: Chemistry 341A, 342B or equivalent, or permission of instructor.

442A Organic Reaction Mechanisms, lect.: 2 hrs.; lab.: 3 hrs.; K.T. Leffek, T.B. Grindley

In this class, methods for determining the mechanisms of organic reactions are discussed from the viewpoint of the physical organic chemist. Topics to be considered include applications of kinetics data, isotope and salt effects, linear free energy relationships and acid and base catalysis.

The laboratory will illustrate the variety of methods used to study the above topics.
Prerequisites: Chemistry 341A, 342B and Chemistry 232B or equivalents, or permission of the instructors.

488 Advanced Topics in Chemistry.

A non-credit seminar course to be given by invited speakers which must be taken by all 4th year honours Chemistry students.

499 Honours Examination

This is an additional class required of all Honour students in Chemistry in order to satisfy requirements 5.3.5.1 (c). It should be taken in the final year of a concentrated chemistry honours programme. In the case of a combined or unconcentrated honours programme the student should consult with the Departmental Chairman as to the method of satisfying regulation 5.3.5.2 (d).

Graduate Studies.
The department offers graduate classes leading to the degrees of M.Sc. (both Full Time and Part Time) and Ph.D. Details relating to admission, scholarships and fellowships, requirements for the degree, classes of instruction, etc., can be found in the Calendar of the Faculty of Graduate Studies.

Classics

Professors
A.H. Armstrong
R.D. Crouse
J.A. Doull
T.E.W. Segelberg

Associate Professors
J.P. Atherton (Chairman)
R. Friedrich

Assistant Professors
D.K. House
J.M.P. Lowry

Special Lecturers
W.J. Hankey
C.J. Starnes

Visiting Professor
P.F. Kussmaul

Classics is the study of our origins - how the Christian-European tradition to which we belong arose out of the ancient civilizations of the Mediterranean area. The fundamental ideas and beliefs of Europeans and North Americans, by which we are distinguished from Chinese, Indians, and those of other traditions, were formed in the meeting of Greek and Oriental cultures in ancient times. To understand fully our own contemporary culture, we must study its historical origins.

Classics is much more than the study of ancient languages. Languages are not learned for themselves, but because they are necessary for the scientific study of ancient history, literature, religion, mythology and philosophy. The Classics Department at Dalhousie provides instruction both in these subjects and in ancient languages. While previous preparation in one or more ancient languages is desirable, it is nevertheless quite feasible for a student who discovers an interest in classics to begin his language studies during his university course.

A student taking classics at Dalhouise can approach the study of ancient cultures through literature or through history and the study of social structures or through the study of Greek and Christian philosophy. Honours courses are offered which concentrate on any one of these three approaches.

The department also offers combined honours courses in Greek and German and in Latin and French. These courses take account of the exceptionally close links between French culture and Latin literature on the one hand and between German and Greek poetry and philosophy on the other.

Students of classics usually learn Greek and Latin. Instruction may also be had in Hebrew, Coptic, Syriac and Arabic.

It is obvious that classics is worth studying for its own sake by students who wish to obtain a better understanding of the common assumptions and beliefs of our society. This knowledge has always been regarded as pertinent to a career in politics and the higher levels of the civil service. For those who are thinking of the clergy, classics is the most relevant preparation.

Classical studies also prepare students for a life of teaching and scholarship in several directions. Now that Canada is no longer a colony culturally, but responsible for its own culture, we have great need of scholars and teachers who know about our origins. Teachers of classics for schools and universities are hard to find in Canada. Classics is also the best preparation for the study of non- European cultures (Chinese, Indian, Islamic, etc.), and there is a growing need for specialists in these fields. For the older history of philosophy, and for the history of Christian belief until, and including, the Reformation, a knowledge of classics is indispensable. The same may be said for mediaeval studies in general. Classics leads also to ancient Near Eastern Studies (Jewish, Babylonian, Egyptian, etc., and to archeology.

Degree Programmes

General B.A. and B.Sc.
Of classes offered by the department, Classics 101,102,103, 200 and 207 and those classes in Ancient History and Religions and Ancient and Medieval Philosophy not having a Language prerequisite should be especially useful to students taking a general degree. All classes beyond the 100 level are available for *major and minor programmes* in classics, and the Department will be glad to assist students in working out programmes according to their interests.

Honours Programmes
The candidate may choose between three programmes: B.A. with Honours in Classics (Ancient Literature), B.A. with Honours in Classics (Ancient History), or B.A. with Honours in Classics (Ancient Philosophy). *In each case, it is highly desirable, but not essential, that the student begin the study of at least one of the classical languages during the first year of study.* For purposes of meeting grouping requirements, Ancient History and Ancient and Medieval Philosophy classes may be counted either as Classics credits, or as History and Philosophy credits, respectively.

To receive an HONOURS degree in Classics:
(1) Students must complete nine to eleven classes in Classics beyond the 100 level chosen in accord with the general Faculty regulations for HONOURS.
(2) The programme must include work in either Greek or Latin Language and Literature to the 300 level and work in the other language to an appropriate level as determined by the Undergraduate Advisor.
(3) The programme must be approved by the Undergraduate Advisor.

Whether the HONOURS degree is awarded in Ancient Literature, History or Philosophy will depend on the area of the Department's offerings in which a larger part of the work is done.

Combined Honours
Classics may be taken as part of a combined honours programme with French and German. Students interested in either of these programmes should consult with the chairmen of the respective departments.

Undergraduate Advisor
The programmes of all students majoring or honouring in the Department must be approved by the Undergraduate Advisor. Currently Professor House holds the position.

Classes Offered
Literature, History and Philosophy

Note: The Introductory classes, and the more elementary classes in Ancient History and Religions, and Classical Philosophy listed below do not require knowledge of the ancient languages. However, students who plan to do advanced work in any of these areas are advised to begin study of the appropriate languages as early as possible.

Introductory: Origins of the West

Classics 101 Ancient History: An Introduction to the Cultural History of the Ancient World, lect.: 2 hrs.; D.K. House, J.M.P. Lowry.

The first term will be devoted to a study of the major pre-classical civilizations (Sumer, Egypt, etc.) in which attention will be paid to the art, religion and social forms of these cultures as well as their political development; in the second term the civilizations of Greece, Rome, and Israel will be studied, and their issue in the Early Christian world considered.
As the class is intended as an introductory one, no special preparation is expected, and there is no foreign language requirement.

Classics 102 Archeology and Art, lect.: 3 hrs., W.J. Hankey, J.P. Atherton.

This is a study of Greco-Roman civilization from its origins to its dissolution primarily through its visual art. By a study of sculpture, mosaic, painting and architecture and a reading of some crucial literary texts we will attempt to see how the classical picture of the cosmos emerged and developed. The transformations in the view of nature and space will be considered up to the Renaissance.
This is an introductory class; no special preparation is expected and there is no foreign language requirement.

Classics 103 Introduction to Ancient Philosophy, lect.: 2 hrs., A.H. Armstrong, J.P. Atherton.

An introduction to classical culture through a study of its philosophical ideas. The ideas will be presented in the religious, literary, and social context of their historical development.

Classics 200 Classical Literature, lect.: 2 hrs.; C.J. Starnes and others.

An introduction to classical civilization by way of the literature, read in English translations. Authors studied will be Homer, the Greek Dramatists, Plato, Vergil and St. Augustine.

Classics 207/Comp. Lit. 207 Ancient Drama in relation to Modern Drama I, lect.: 2 hrs.; R. Friedrich.

Greek Theatre (production, the Dionysian festival, the origins of drama in the Dionysian ritual etc.) and a number of Greek plays by Aeschylus, Sophocles, Euripides, Aristophanes and Menander will be studied first; then Plato's critique of drama and Aristotle's defence of it in the *Poetics,* the first systematic theory of drama. This will lead to a study of the influence which Greek drama and in particular Aristotle's theory of drama had on the formation of modern European drama from the renaissance to the 20th century. This course is open to first year students. There is no foreign language requirement.

Ancient History and Religions

Classics 222 Greek History, lect.: 2 hrs.; D.K. House. Given alternately with Classics 223.

Classics 223 Roman History: The Cultural History of the Roman World, lecture/seminar, 2 hrs., D.K. House. Given alternately with Classics 222.

Classics 228/528 Christian Beginnings and the Early History of the Church, seminar 2 hrs.; E. Segelberg.

The subject of this seminar for 1978-79 will be the early Church with special emphasis on ministry and authority.

Classics 229/529 Greek Religion, seminar: 2 hrs.; E. Segelberg.

The history of Greek Religion, with particular attention to the interpretation of myth. (Not offered in the period covered by this edition of the calendar).

Classics 226/526 Roman Religion, seminar: 2 hrs.; E. Segelberg. (Not offered in the period covered by this edition of the calendar).

Classics 227/527 Near Eastern Religion, seminars: 2 hrs.; E. Segelberg. (Not offered in the period covered by this edition of the calendar.)

Classics 230 History of Christian Doctrine to Augustine, lect.: 2 hrs.; C.J. Starnes, W.J. Hankey.

The class will consider the meaning of Christian doctrines in relation to their Jewish and Greek origins and their development in the classical world. The basic text will be Augustine, *The City of God.*

Given alternately with Classics 341.

Classics 252/552 Seminar on Problems of the Hellenistic Period, seminar: 2 hrs.; E. Segelberg. Religions in the Hellenistic Period.

Classics 253/553 Seminar on the Roman Empire and the Rise of Christianity, seminar: 2 hrs.; J.P. Atherton, P.F. Kussmaul.

Selected topics from the transition from Classical to Christian culture will be studied. Particular attention will be paid to the connection between religious innovation and the effect of the new beliefs on literature, art and philosophy.

Classical Philosophy

Classics 336 Ancient Philosophy from its Beginning to the Sixth Century A.D. (Same as Philosophy 336), lect.: 2 hrs.; A.H. Armstrong.

Classics 336 surveys the whole history of ancient Greek philosophical thought from its beginnings in Ionia in the sixth century B.C. to the end of the public teaching of Greek philosophy by non-Christians in the sixth century A.D. Proper attention is paid to the great classical philosophies of Plato and Aristotle studied in their historical context: and much emphasis is laid on the Greek philosophy of the first centuries A.D. and its influence on developing Christian thought.

Classics 337 From Augustine to Calvin: History of Christian Doctrine II, W.J. Hankey. (Not offered in the period covered by this edition of the calendar).

Classics 338 Medieval Philosophy, (Same as Philosophy 338), lect.: 2 hrs.; R.D. Crouse.

Classics 338 (Philosophy 338) studies the development of philosophy in the formative age of European civilization and examines related political, institutional, literary and theological concerns. An attempt is made to show how the legacy of classical and Christian antiquity was appropriated and reformed to constitute the ideology of mediaeval Christendom.

The class will be devoted mainly to the study and discussion of a few fundamental texts, beginning with Boethius' *Consolation of Philosophy.* Special attention will be given to Anselm's *Proslogion* and the first few questions of Thomas Aquinas' *Summa Theologica.* It will be the object of lectures to present the continuity of the historical development and to emphasize the broad implications of the philosophical doctrines presented in the texts. In the later part of the class some attention will be given to late mediaeval Platonism and Mysticism, so that something can be shown of the beginnings of Reformation and modern philosophical and religious thought.

Classics 340 The Dialogues of Plato, seminar: 2 hrs.; D.K. House.

This class presupposes some knowledge of the history of Ancient Philosophy and some knowledge of Greek.

Given alternately with Classics 350.

Classics 341 St. Augustine's Confessions, seminar: 2 hrs.

This class presupposes some knowledge of the history of Ancient Philosophy, and some knowledge of Latin.

Given alternately with Classics 230.

Classics 345/German 365 Hegel's Philosophy of Nature, J.A. Doull, W.J. Hankey.

Hegel's Philosophy of Nature and its relation to ancient physics and modern science. The course will endeavour to discover in what sense a thinking of nature is essential continuity with ancient physics is currently possible or in what sense modern natural science constitutes a philosophy of nature.

Given alternately with Classics 420.

Classics 350 Aristotle, seminar: 2 hrs.; D.K. House, W.J. Hankey.

This class will study a treatise of Aristotle usually the *DeAnima* or the *Physics.* It presupposes some knowledge of Ancient Philosophy and some knowledge of Greek.

Given alternately with Classics 340.

Classics 420/567 Ancient Practical Philosophy, seminar: 2 hrs.; J.A. Doull, W.J. Hankey.

Given alternately with Classics 345.

Classics 430/560 Seminar on the Philosophy of Aristotle, seminar: 2 hrs.; J.A. Doull.

(Not offered in the period covered by this edition of the calendar).

Classics 431/561 Seminar on the Philosophy of Plato, seminar: 2 hrs.; J.A. Doull,

(Not offered in the period covered by this edition of the calendar.)

Classics 432/562 Ancient and Modern Dialectic, seminar: 2 hrs.; J.A. Doull.

Dialectical method in Fichte, Schelling and Hegel in relation to Plato and Aristotle.

Classics 440/570 Seminar on the Philosophy of the Church Fathers, R.D. Crouse.

Given alternately with Classics 445.

Classics 445/564 Medieval Interpreters of Aristotle, seminar: 2 hrs.; J.P. Atherton, R.D. Crouse.

Given alternately with Classics 440.

Classics 450/580 Seminar on Neoplatonism, seminar: 2 hrs.; A.H. Armstrong.

Topics from the history of Neoplatonism and its relation to the theology of the Greek Church will be studied.

Classics 486/586 Departmental Seminar, Seminar, 2 hrs.

Classical Languages and Literature

Greek 100 Introductory Greek, lect.: 4 hrs.; D.K. House.

This is the beginners' class in the Greek language, and no previous knowledge is required. The aim of this class is to teach the student to read a Greek text. After he has become accustomed to the new alphabet - which does not take long - the study of grammar is introduced along with reading and translation of Texts from original Greek literature.

Greek 200 Intermediate Greek, lect.: 3 hrs.; staff.

Greek 200 is a continuation of Greek 100. The aim of the class is to develop the student's ability and to read and translate prose as well as poetic Greek texts. At the beginning of the class there will be systematic review of Greek Grammar. This will be followed by the reading of texts of Plato, Herodotus and Homer.

Greek 300 Advanced Greek, seminar: 2 hrs., J.A. Doull.

This class which will read both a prose and a poetic work is the normal third class in Greek.

Prerequisite: Greek 200.

Greek 301/501 Greek Epic, seminar: 2 hrs.: staff.

Prerequisite: Greek 300.

Greek 302/502 Greek Lyric, seminar: 2 hrs.: staff.

Prerequisite: Greek 300.

Greek 303/503 Greek Drama: Tragedy, seminar: 2 hrs; staff.

Prerequisite: Greek 300.

Greek 304/504 Greek Drama: Comedy, seminar; 2 hrs.; R. Friedrich.

Prerequisite: Greek 300.

Greek 305/505 Greek Philosophical Texts I, seminar: 2 hrs.; staff

Prerequisite: Greek 300.

Greek 306/506 Greek Philosophical Texts II, seminar: 2 hrs.; staff.

Prerequisite: Greek 300.

Greek 307/507 Greek Philosophical Texts III, seminar: 2 hrs.; staff.

Prerequisite: Greek 300.

Greek 308/508 Greek Historians, seminar 2 hrs.; staff.

Prerequisite: Greek 300.

Greek 309/509 Greek Literary Criticism, seminar; 2 hrs.; R. Friedrich

Prerequisite: Greek 300.

Greek 410/510 Reading and Research, staff.

Latin 100 Introductory Latin, lect.: 3 hrs.; C.J. Starnes.

This is an introduction to Latin through the study of its basic grammar.

Latin 200 Prose and Poetry of The Roman Republic, P.F. Kussmaul.

A study of the literature of the Republic through a selection of texts: particular attention will be paid to improving the students command of the grammar and syntax of the Latin language.

Given alternately with Latin 201.

Latin 201 Poetry and Prose of the Roman Empire, P.F. Kussmaul

A study of the literature of the Empire through a selection of texts: particular attention will be paid to improving the students command of the grammar and syntax of the Latin language.

Given alternately with Latin 200.

Latin 204 Latin Philosophical Texts, lect.: 2 hrs.; R.D. Crouse.

The purpose of this class is to give students experience in reading philosophical Latin. Various authors will be read from Cicero to the late Middle Ages.

Prerequisite: Latin 100 or Senior Matriculation in Latin.

Latin 206 Latin Historical Texts, lect.; 2 hrs.; J. P. Atherton.

Latin 350/550 Roman Satire, seminar, 2 hrs.; staff.

Latin 351/551 A Study of Vergil, seminar, 2 hrs.; J.P. Atherton

The purpose of this class is to study the development and importance of Vergil's basic themes and ideas that are embodied in the *Aeneid.* In the first part of the class special attention is given to his early work the *Bucolics,* where his themes begin to appear, and their development is then followed through the relevant parts of the *Georgics.* The main part of the class is devoted to the reading and discussion of the chief themes of the *Aeneid,* especially as they illustrate

Roman political, religious and social ideas which have greatly influenced our own beliefs and institutions.

Prerequisite: A class in Latin at the 200 level.

Latin 352/552 Advanced Reading in Latin Literature, staff.

Latin 400/500 Reading and Research, staff.

Near Eastern Languages

The classes in Hebrew, Coptic, Syriac and Arabic, are available as electives at the discretion of the Department, only in relation to the needs of the particular student.

Note: The classes in Hebrew and Arabic are taught by the Atlantic School of Theology.

Hebrew
101 Elementary Hebrew and Introductory Readings, J.B. Hardie.

202 Intermediate Hebrew, J.B. Hardie.

303 Advanced Hebrew, J.B. Hardie.

Coptic
101 Introduction to the Coptic (Sahidic) Language and Literature, E. Segelberg.

200 Reading of Selections from other Coptic Dialects, E. Segelberg

301 Selected Coptic Texts, E. Segelberg

402/502 Reading of Coptic Texts, E. Segelberg.
Partly Nag Hammadi Papyri, and partly Manichaean texts.

Syriac
100 Introduction to the Syriac Language and Literature, E. Segelberg.

200 Syriac Language and Literature, E. Segelberg.
Reading of some early writers such as Aphrates and Aphrem, the famous hymnographer.

300 Advanced Syriac, E. Segelberg.

Reading of selected Patristic texts.

Arabic
Students wishing to take a class in Arabic must consult with the Department before registering for the class.

100 Introductory Grammar and Reading of Texts.

200 Intermediate Arabic

Graduate Studies
The department offers an M.A. Programme in classical literature, in ancient history and in ancient and medieval philosophy and a Ph.D. programme in Hellenic and Hellenistic Studies. For details, see the Calendar of the Faculty of Graduate Studies.

Comparative Literature

Teaching Staff
S.A.M. Burns (Philosophy)
R. Friedrich (Classics)
F. Gaede (German)
S. Jones (Spanish)
A. Kom (French)
J. Lowry (German)
N. Maloff (Russian)
R.M. Martin (Philosophy)
S. Mendel (English)
N. Nevo (Russian)
N.S. Poburko (English)
A. Ruiz Salvador (Spanish)
H.R. Runte (French)
R. Runte (French) (Committee Head)
M.C. Sandhu (French)
H.G. Schwarz (German)
D. Steffen (German)
S. Villani (French)
G.F. Waller (English)
H.S. Whittier (English)

The Departments of Classics, English, French, German, Philosophy, Russian, Spanish and Theatre offer the following classes in Comparative Literature. Classes which are cross-listed may form part of an area of concentration. All lectures are given in English and works are read in English translation unless otherwise noted.

100 Introduction to Comparative Literature

This is an introduction to an understanding of man's approach to the problems of life through the study of selected masterpieces of European literature which may include works by Dante, Chaucer, Cervantes, Shakespeare, Molière, Goethe and others.

Note: English 100 or Classics 100 is acceptable as an equivalent to Comparative Literature 100.

Not offered in the period covered by this calendar.

203 Masterpeices of Western Literature, H.S. Whittier

This class is intended to provide the student with the opportunity to do intensive reading of selected major works from Western literature. The intensive reading is designed to broaden the student's outlook on literature and also to increase his familiarity with works that are not only stimulating in themselves but also comprise the basis for the development of English and other literatures.

Note: This class is cross-listed as English 203.

204 The European Novel, S. Mendel

This class is devoted to an intensive study of about a dozen representative European novels of the last two hundred years. The method of approach and the character of tests and examinations are such as to render it necessary for the student to attend most of the lectures. A considerable amount of attention is paid to the philosophical ideas which bulk large in many of the novels studied.

Note: This class is cross-listed as English 204.
Not offered in the period covered by this calendar.

207 Ancient Drama in Relation to Modern Drama I, R. Friedrich

Greek theatre (production, the Dionysian festival, the origins of drama in the Dionysian ritual etc.) and a number of Greek plays by Aeschylus, Sophocles, Euripides, Aristophanes, and Menander will be studied first; then Plato's critique of drama and Aristotle's defense of it in the Poetics, the first systematic theory of drama. This will lead to a study of the influence which Greek drama and in particular Aristotle's theory of drama had on the formation of modern European drama from the renaissance on. This course is open to first-year students.

Note: This class is cross-listed as Classics 207.

209A Women in Latin America, S. Jones

"Even before the dawn of history, man became the ruler of the roost, establishing the design for living that generally prevails today. Everywhere, even if women are highly regarded, the activities of men are valued more than those of women. It matters not a whit how a society allocates roles and tasks between the sexes; those that belong to men inevitably count for more in the eyes of the whole community. In societies where men fish and women do beadwork, fishing brings greater prestige; where women fish and men work with beads, it is beadwork that matters." If this statement is true, then it follows that women's accomplishments have been largely underrated and are due for reevaluation. The class will explore the achievements of women in Latin America and will attempt to assess their contributions objectively.

Note: This class is cross-listed as Spanish 209A.

210 Theories and Manifestations of Love in Medieval Europe, H.R. Runte

A literary and anthropological study of major poetic, romanesque, and dramatic works by English courtly poets, French troubadours, and German Minnesänger, with special emphasis on their relation to our time.

Not offered in the period covered by this calendar.

212 Realism and the 18th Century English and French Novel. R. Runte

Novels by such authors as Marivaux, Richardson, Prévost, Fielding, Rousseau, Diderot, Smollett and Laclos will be studied. Aspects of realism in style and structure will provide the basis for comparison/contrast of the works read.

214 Arthurian Romances, H.R. Runte

A historical, archaeological, cultural and literary investigation of French, English, and German Arthurian texts dealing with the medieval legend of King Arthur and the Knights of the Round Table. All readings in modern English translations.

215 Women in Literature and Society, R. Runte and G.F. Waller

A panel of professors will present women as authors and the role of the woman and her portrait in literature as a reflection of society in England and France with appropriate references to Italy and Germany. The development of the woman's image will be studied chronologically with reference to contemporary themes and problems.

Not offered in the period covered by this calendar.

216 Bertolt Brecht and the Tradition of Drama, F. Gaede

217 Faust—a Secular Path to Salvation, J. Lowry

A lecture and seminar class on Goethe's Faust (Parts I/II)—a literary work in which a total world view is expressed in language both beautiful and appropriate. Students may, if they wish, study independently another work, such as, Homer's Odyssey, Kazantzakis' Odyssee, Mann's Doktor Faustus and Hesse's Magister Ludi (Glasperienspiel) in relation to the Faust test.

218 Germanic and Greek Mythology, J. Lowry

All people have myths. Through them they first grasp the origin of the world, the order that govern it and their destiny within it. In this course we will study the two main forms of western mythology– the Greek and Germanic–and the relation of religion and secularism in the modern world to myth.

Not offered in the period covered by this calendar.

Note: This class is cross-listed as German 235.

237 Restoration and 18th Century Comedy

A comparative study of English and French plays by such authors as Wycherley, Etherege, Congreve, Steele, Sheridan, Molière, Lesage, Marivaux, Voltaire and Beaumarchais. Critical essays on comedy will be studied with a view to defining the universal, national and temporal nature of comic elements in the works read.

270 Philosophy in Literature, R.M. Martin

This is an introduction to some issues in philosophy through the reading of some important literary works. Much modern literature is heavily influenced by philosophical trends; sometimes, in fact, the reader cannot fully appreciate such works unless he has an understanding of the Philosophical issues and traditions involved. The class is designed for two sorts of students: those with literary interests who wish to learn about and discuss some of the more important philosophical influences on modern literature; and those interested in philosophy who would like to investigate literary occurrences of philosophical ideas. In addition to the regular two hour weekly meeting, there will be optional discussion meetings at various times to be announced during the year. Readings may include short works by Dostoyevski, Melville, Kafka, Beckett, Checkhov, Sartre, Camus, Hemingway, Peter Weiss, Brecht, and Margaret Atwood.

Note: This class is cross-listed as Philosophy 270.

308 Petrarchanism, G.F. Waller

This class will study Petrarch and *Petrarchismo* in European love poetry, c. 1450-1650. Students will be expected to read poetry in at least two of the Italian, French and English languages.

Not to be offered in the period covered by this calendar.

Computer Science

W. Bitterlich, Assistant Professor (N.S.T.C.)
G. Finke, Associate Professor (N.S.T.C.)
R. Holmes, Assistant Professor (Math.)

The following classes are accepted for credit by both N.S.T.C. and Dalhousie. These classes are taught on the Dalhousie Campus.

240 Introduction to Computer Science, lect.: 3 hrs.

Comprehensive Fortran class with selected applications from various areas. History of computation, number systems and coding. Description of computer systems, logical design. Introduction to machine code with exercises in Compass. Random numbers and simulation. Elementary search and sort methods. Complexity of algorithms. Introduction to further high-level languages with emphasis on Algol and Apl.

Prerequisite: Mathematics 101 or 110, or consent of instructor.

335 Data Processing, lect.: 3 hrs.

Review of Fortran. Basic concepts of data. Arrays, lists and strings. Storage allocation. Files management, updating, searching, merging and sorting. Report generators. Cobol programming with applications to payrolls, accounting, sales analysis, business statistics and inventory control. Simulation of industrial processes. Management games.

Prerequisite: Computer Science 240.

340 Computer Science, lect.: 3 hrs.

Algorithms. Basic concepts, single and multiprecision arithmetic. Implementation of mathematical functions. Combinatorial and enumerative algorithms. Random number generation and transformations.

Data structures. Lists, strings, arrays and trees. Storage media and allocation. Symbol tables. Updating and searching. Core sorting algorithms and external sorting and merging. Computer architecture. Operating systems. Batch processing, multiprogramming and time-sharing.

Introduction to selected advanced topics: heuristic programming, learning algorithms, pattern recognition and picture processing. Elements of abstract languages and compilers.

Prerequisite: Computer Science 240.

Further information concerning computer science classes can be obtained from the chairman of the Mathematics Department.

Economics

Professors
R.L. Comeau
J.L. Cornwall
R.E. George
J.F. Graham
J.G. Head
Z.A. Konczacki
R.I. McAllister (Chairman)
G.E. McClure
N.H. Morse
A.M. Sinclair

Associate Professors
F.M. Bradfield
M.G. Brown
P.B. Huber
E. Klein
C.T. Marfels
U.L.G. Rao

Assistant Professors
M.L. Cross
S. DasGupta
G. Kartsaklis
B. Lesser
L. Osberg
T.A. Pinfold

Special Lecturers
E. Gunther
A.S. Harvey
W.A. MacLean

1. "A businessman would not consider a firm to have solved its problems of production and to have achieved viability if he saw that it was rapidly consuming its capital. How, then, could we overlook this vital fact when it comes to that very big firm, the economy of Spaceship Earth and, in particular, the economies of its rich passengers?"

That question is asked by Schumacher in his recent book, *Small is Beautiful.* It will increasingly be asked in the coming decades as major nations search for new sources of energy and other raw materials, in the face of dwindling supplies of conventional inputs. If you are interested in global issues, an economics underpinning is an essential ingredient to your education.

2. Should the Canadian federal budget run a substantial deficit in 1978 in the face of potential high levels of unemployment? What would that do to the balance of payments and to inflation? Would that be more likely to cause the Canadian dollar to increase or decrease value in relation to the U.S. dollar? The most influential economist of this century wrote: "If the Treasury were to fill old bottles with banknotes, bury them at suitable depths in disused coalmines which are then filled up to the surface with town rubbish, and leave it to private enterprise on well-tried principles of laissez-faire to dig the notes up again...there need be no more unemployment and, with the help of the repercussions, the real income of the community, 'and its capital wealth also, would probably become a good deal greater than it actually is. It would, indeed, be more sensible to build houses and the like; but if there are political and practical difficulties in the way of this, the above would be better than nothing."

Examination of many government inspired projects might suggest that Keynes has been taken more literally than he dared hope! Is there a core of wisdom to his prescription and could it be relevant in 1978? An understanding of economics is critical if one is to understand why governments often adopt the policies they do and, at the same time, if one is to appreciate the real constraints they often face. At the same time, an historical appreciation is frequently imperative, as is a socio-political awareness. That is why economics blends integrally with the study of a number of other disciplines and requires a constant review of lessons to be drawn from other systems, such as those of China, Yugoslavia, the United States and Sweden.

3. If you were mayor of Halifax, would you build a bridge across the North West Arm or a sports complex in the heart of the business district? If you were premier of Nova Scotia, what would you attempt to do in Cape Breton, given the high unemployment rates and problems of the steel plant? If you were a foreign aid official working in the Caribbean, Tanzania or Pakistan, how would you advise on project design or select one project over another? How would you, if you were a medical adviser, develop a programme in preventive medicine that was not merely medically sound, but also economically efficient? If you are a lawyer, attempting to wrestle with problems of the law of the sea or of anti-combines legislation, economics—as in the above examples—is an essential input to a balanced analysis of the issues.

Economics will provide you with a body of theory that equips you to deal with such questions and applied courses in economics permit you to study any of these questions in detail. The offerings in Economics allow considerable breadth and variety in order to accommodate a variety of interests on the part of students. Students will find that they can major in Economics exclusively or that economics goes hand in hand with work in sociology, political science, engineering, public and business administration, accounting, history, geology, biology and medicine. Students who wish to gain a more intensive and broader knowledge of economics may want to take the Honours Programme.

Students graduating in economics find many well-paid and interesting opportunities for employment in teaching, research and administrative positions in universities, business, government and international organizations.

General Degree Programmes

The Department offers undergraduate and graduate programmes in economics. Students should consult the timetable and the Department at the time of registration for changes in or additions to the classes listed here.

Economics can be taken as the major subject in a general B.A. or B.Com. degree programme, and it may also be taken in conjunction with major programmes in subjects such as mathematics, accounting, political science and history.

The necessary core courses for a major in Economics are: Economics 220 (A or B), Economics 221 (A or B), and Economics 222 or 228.

As a guide to the student who is majoring in Economics, the following outline represents a course structure for a typical well-rounded programme.

Recommended course Structure
Year I
1. Economics 100, 110 or 120.
2. Mathematics 110, or equivalent.
3-5. Three classes chosen from fields other than Economics.

Year II
6-7. Economics 220 (A or B); Economics 221 (A or B), Economics 222 or 322.
8. One other class in Economics.
9-10. Two classes chosen from fields other than Economics.

Year III
11-13. Three classes in Economics.
14-15. Two classes at least one of which is not in Economics.

Students considering economics as an area of concentration should consult the Department about their programme.

Although students may offer fewer classes in economics than the seven suggested, this number is deemed necessary to provide a basic knowledge of the discipline and should be regarded as the minimum for preparation for a graduate programme in economics.

Students must satisfy the overall requirements for the degree programme in which they are registered. (B.A., B.Com., B.Sc., etc.)

Ghana Programme
Dalhousie Economics Department and G.I.M. P.A., Programme for Planning, Project Management and Finance Officials of the Government of Ghana.
R.K.O. Djang, Co-ordinator—Ghana
M. Gardner, Instructor—Ghana
R.E. George, Advisor—Canada
E. Langille, Ghana Project Administrative Officer—Dalhousie
R.I. McAllister, Advisor—Canada
G.E. McClure, Advisor—Canada
J.W.D. Pudney, Team Leader and Financial Advisor—Ghana
A.M. Sinclair, Coordinator—Canada

At the request of the Government of Ghana and funded jointly by the Canadian International Development Agency and the Ministry of Economic Planning, Government of Ghana, the Department of Economics, Dalhousie has developed a series of courses in cooperation with the Ghana Institute of Management and Public Administration, Ghana. These courses are run at G.I.M.P.A. on the outskirts of Accra for officials in ministries and corporations with responsibility for planning, project and programme management, financial planning. In addition appropriate overseas senior management training has been organized through this programme at such agencies as the Federal Business Development Bank and Treasury Board, Government of Canada and Economic Development Institute, World Bank, Washington (in this last case funded by the E.D.I.).

A substantial cadre of experienced officials from the Government of Ghana, International Development Agencies and Canadian Government Agencies and Departments participate in various instructional phases of the programme. Considerable emphasis is on field projects in Ghana. For further information, contact Ms. E. Langille

Concentrated Integrated Programme
The Department is now offering an alternative course structure which may be of interest to students who wish to prepare themselves for a two-year M.A. programme or for work as an economist. The Concentrated Integrated Programme differs from the normal course of study since students will work on the one class at a time, rather than the usual five, during either the second or third year. In other words, the year consists solely of a set of economics classes taken in sequence rather than in parallel.

Students who are interested in applying to enter the programme in September 1978, or who wish to find out more about it, should contact the Department of Economics before April 30, 1978. The programme is designed for a maximum of 20 students and a minimum of 10 students.

African Studies Programme
The Department is cooperating with several other Departments in offering an African Studies Programme. Interested students should contact Professor Z.A. Konczacki.

Other Programmes
The Department is prepared to assist students who may wish to devise their own programmes under the present curriculum regulations. Interested students should consult the Undergraduate Co-ordinator.

Honours Degree Programme

The necessary core courses for an Honours Degree in Economics are: Economics 100 or 110; Economics 220 (A or B); Economics 221 (A or B); Economics 320A; Economics 321B; Economics 228; Mathematics 110 or equivalent; a course in Economic History; a course in the History of Economic Thought.

The following course structure is recommended:

Year I
1. Economics 100 or 110.
2. Mathematics 110 or equivalent.
3-5. Three classes in fields other than Economics.

Year II
6. Economics 220 (A or B) and 221 (A or B).
7. Economics 228.
8. Economics 232 or other economic history class.
9-10. Two classes chosen from fields other than Economics.

Years III and IV
11-16. Six economics classes including 327, 320A, 321B.
17-20. Four classes in other areas chosen in consultation with the Department.

The student's programme will be chosen in consultation with the Department and must have the approval of the Department.

Honours students must pass a comprehensive examination at the end of their fourth year, or write a series of short papers, at their option.

Of the classes selected outside of economics in the third and fourth year, students must include at least two classes above the elementary level.

Students are advised that mathematics is required for graduate work in most good graduate schools. The value of econometrics and of additional mathematics is therefore stressed.

In some instances, the Department may permit students to take classes in other subjects in lieu of classes in economics and may permit minor variations in the required classes.

Students must be careful in arranging their courses to ensure that they satisfy the overall requirements for the General B.A. degree.

Combined Honours
Combined honours programmes may be arranged with other departments. For combined honours programmes with economics where the major concentration is in the other discipline, students should consult the other departments concerned.

Classes offered

100 Principles of Economics, lect. 2 hrs., tutorial 1 hr., various members of staff.

This class serves as an introduction to economics for students with no previous background in economics, and can be taken as the first in a series of classes in economics or as an elective for students wishing some background in the subject. The emphasis in the class is on developing the basic analytical tools and applying them in the context of contemporary, and generally Canadian, economic problems. Sections 5 and 6 of Economics 100 differ in offering a problem oriented framework in which the analytical tools are developed by examination in each term of a question such as the multinational firm in Canada, urban economics, Canadian government and the economy, and the economics of inflation.

110 Principles of Economics: A Mathematical Approach, lect.: 2 hrs., tutorial 2 hrs., T. Pinfold.

This is an introductory class for students with a background in mathematics. Similar to Economics 100, the class is designed to provide a general introduction to economic science and to introduce students to the way in which economic analysis can be applied to resolve economic problems. However, the approach taken to the material will be more rigorous. Mathematical tools will play an integral role in developing the theorems and proofs. A knowledge of differential calculus would be helpful.

120 Principles of Economics: An Historical Approach, lect.: 2 hrs., tutorial 1 hr. B. Lesser.

This course will analyse a number of episodes from Canada's past as a means of illustrating and developing the principles of economic analysis.

Episodes such as the economic factors leading to Confederation, the development of the Prairie wheat economy, the building of the CPR, the beginnings of U.S. investment in Canada, and the Great Depression will be examined as a means of developing the basic analytical principles of economics.
Note: Economics 120 is not open to Commerce students needing to satisfy their Economics 100 requirements.

220A/B Micro-Economic Theory I, lect.: 3 hrs.; (offered both terms).

Microeconomics deals with the economic behaviour of households as purchasers of output and suppliers of input services, and of firms as producers of outputs and purchasers of inputs, as well aswith the behaviour of groups of households and firms. This class covers material in this area which may be required for other classes in economics at the 200 to 400 level. Geometry and a limited amount of high-school algebra are employed.
In addition to standard topics such as consumer and producer behaviour under various market structures, an introductory treatment of general equilibrium, external economies, and welfare economics is included. Although the major emphasis is on theoretical ideas, applications of these ideas are considered, in order to illustrate the range and power of micro-economic theory in dealing with practical economic issues.
Prerequisite: Principles of Economics.

221 A/B Macro-Economic Theory, lect.: 3 hrs.; (Offered in both terms).

This class is intended to provide a sufficient treatment of macro-economic theory to serve as a basis for other classes in economics which require a knowledge of macro-economics. The class is not mathematical in its treatment of the material. Topics covered include: national income accounting; the theory of employment, interest, money, and prices; and the theory of economic growth. Both "open" and "closed" economies are considered. Major emphasis is placed on the development of the theoretical ideas.
Prerequisite: Principles of Economics.

222 Economic Statistics I (same as Commerce 204), lect.: 3 hrs.; workshop 2 hrs.; various members of staff.

Topics studied include the definition, functions and sources of statistics; the design and execution of statistical enquiries; statistical tables; graphs and diagrams; measures of central tendency, dispersion, skewness and kurtosis; curvefitting; probability (estimating mean and proportion in population from samples, and testing hypotheses about means and proportions); quality control; index numbers; time series analysis; elementary correlation.

Background knowledge that is essential for this class includes: algebra at approximately Grade XI level; some experience of constructing and interpreting graphs; the ability to think quantitatively which is usually gained by the study of geometry and algebra at the high school and university level; familiarity with national accounting concepts.

228 Intermediate Statistics, lect.: 3 hrs.; U.L.G. Rao.

The student who is familiar with the basic statistical theory can appreciate econometric technique better than one who has had a formal training in statistics, which involves training in computational aspects of statistical measurements but which does not give the student any understanding of fundamental theory. The purpose of this class is to equip the student with the basic theory of mathematical statistics. Statistics in its applied form has become a basic tool in all fields; recently, statistical techniques, suited to tackle economic problems, have become increasingly sophisticated. This class is designed as an introduction to econometrics; it is presumed that advanced techniques of econometrics can be understood by the student who has taken this class.

This class concentrates on the theory of Probability, building from an axiomatic point of view, mathematical expectation, moment generating function, and statistical inference.

Multiple linear regression models will be discussed and a critique of various problems that arise consequent to violations of the assumptions of the general linear model will be presented. This will prepare the student to undertake applied econometric work; besides, it would provide a springboard for the student to take up advanced econometrics.

The student is expected to have at least a one-year class in calculus (Mathematics 110 or equivalent) and preferably linear algebra too. Introductory Economics is also required.

231B Health Economics, lecture and seminar, 3 hrs.; M.G. Brown.

This course examines the allocation of resources to and within the health care sector of an economy. Characteristics claimed to be unique to the health care sector are analysed within an economic framework. Determinants of demand, supply and utilization of health services are examined with particular reference to the organization and evolution of Canada's health care system.
This one-term survey course consists of a literature review, lectures, and student seminar presentations on selected topics. To accommodate part-time students the class will meet during late afternoon or evening one day per week.
Prerequisites: Principles of economics; Economics 220A/B is desirable.

232 Canadian Economic History, lect.: 3 hrs.; (same as History 222); N.H. Morse.

This survey is development of Canada from the age of discovery to the present. However, as Canada from the beginning has formed part of a larger system, the approach taken in the class is to present Canadian economic history in relation to the larger system which can be broadly described and analyzed in terms of the relationships between the Old World and the New. The class therefore covers areas of economic history that are considered to be relevant to an understanding of the economic development of Canada. The aim is to make the class a unit as much as possible by using themes of trade, commodity, technology, vested interests, institutions, and so forth, as a means of developing the argument. As the class proceeds, the focus shifts more and more towards Canada, but the general subject matter deals with the penetration of Europeans coming from across the Atlantic and across Siberia into the Western Hemisphere. The class therefore is a study in the formation and breakup or change in empires, the shifting balance of power between countries and regions, the role of the Caribbean areas, the rise of the United States to a position of pre-eminence, and Canadian responses to these changes and to internal problems as well.
More theory is introduced toward the end of the class than is used in the earlier parts, as some theory is helpful in discussing Canadian problems and policies, especially in the twentieth century. However, no strict prerequisites are required, although a class in economic principles and some knowledge of history would be beneficial.

233A The Industrial Revolution in Europe, lect.: 2 hrs.; Z.A. Konczacki and P.B. Huber.

This class examines and compares the transitions from pre-industrial to industrial economies in England, France, Germany and Russia. This review of the development of the European economy forms a broad background for understanding the roots of our contemporary society; it is of particular relevance for those who are interested in the economic history of Canada, the United States and other countries which formerly were part of the colonial system.
Emphasis is placed on the economic, social, and technical changes which preceded and accompanied these industrial "revolutions" in an effort to disclose common elements in the experience of industrialization. Accordingly, the initial focus is on population changes and improvements in agriculture, as preconditions of industrialization. Then technical change in transportation, mining, and industry are considered along with increases in the rate of capital formation and shifts in the structure of production and consumption. Attention is also devoted to trends in factor shares, the role of international trade, and the development of an urbanized labour force.
Prerequisite: Introductory Economics or permission of Instructor.

234A Pre-Colonial Economic History of Sub-Saharan Africa, lect.: 2 hrs.; Z.A. Konczacki.

The object of the class is to introduce the student to the most important problems of African economic history, with particular concentration on the pre-colonial period, and to prepare him for further reading in this area of study.

The topics considered include: methodology of African economic history; the significance of environmental differentiation; some speculations on economic prehistory; economic contacts between distinct ecological regions and different cultures; introduction and spread of agricultural crops; land-holding systems; mining and metal-working; long-distance trade routes and trade centers; overseas trade; slavery and slave trade; Arab and European penetration and its economic impact.

The discussion concentrates primarily on tropical Africa and it is carried up to the times of the partition of the Continent by the European powers in the late nineteenth century.

No prerequisites are required, although Introductory Economics and some knowledge of history is desirable.

235B Economic History of Tropical Africa: Colonial Period, lect.: 2 hrs.; Z.A. Konczacki.

This class deals with an era which began with the "scramble" for African colonies, and ended with the coming of independence. A survey is provided of colonial economic policies, prior to World War II, problems of their implementation and eventual introduction of the "development and welfare" approach. More specifically, the topics discussed include: development of transport; mining; agriculture and trade; some aspects of investment and technological diffusion; growth of labour force and the problems of migrant workers; colonial planning; socio-economic impact of European colonization on Africans and African response to economic incentives.

No prerequisites are required, although Introductory Economics and Economics 234A are desirable.

239B The European Economy in Historical Perspective: After the Industrial Revolution, lect.: 2 hrs.; P.B. Huber and Z.A. Konczacki.

This class is self-contained and may be taken separately from Economics 233A, which deals with the chronologically preceding period. It examines the contrasting development patterns of various industrialized European countries after their respective industrial revolutions and up to about 1960. Considerable attention will be devoted to the transformation of the economic life of Europe since the First World War, culminating in the evolution of the Common Market and COMECON. An important focus of the class is on the development of hypotheses regarding the causes and effects of differences in the experience of growth of mature economies.

Prerequisite: Introductory Economics or permission of the instructor.

241A Comparative Economic Systems: National Economies, seminar: 2 hrs., P.B. Huber.

The object of this class is to sharpen the student's ability to think about problems of economic organization and control, to improve his skills in writing and speaking with respect to these problems, and to provide him with a broad background of institutional material on the structure and performance of a variety of economies. Reading on specific countries provide the basis for several short papers, but there is no written examination.

The student taking this class must understand the interrelated character of economic activity and have a good grasp of the way in which the price system operates. Preliminary reading should have included *The Making of Economic Society* by R.L. Heilbroner.

Prerequisite: Introductory Economics.

242B Comparative Economic Systems: Economic Organization and Planning, seminar: 2 hrs., P.B. Huber.

Initially, this class examines the economic behaviour of organizations and the ways in which this behaviour can be controlled. This provides the basis for consideration of the theory and practice of economic planning at micro-economic and macro-economic levels in various institutional contexts. Readings include selections from Dahl and Lindblom, Galbraith, Mishan, Tinbergen, and Ward.

Prerequisite: Introductory Economics, plus an additional half-class in Economics.

250 Applied Development Economics, seminar: 2 hrs. and tutorials, R.I. McAllister and G.E. McClure.

Purpose. This class enables participants to review some key lessons from economic development theory and comparative country and area experience, and to apply elements of this background in tackling case studies and current development problems in project teams.

Content. The class has three main components, which often run concurrently. They are:

1. *Economic Development in Practice.* An appraisal of key lessons from the development experiences of a selection of countries and regions, including the Atlantic Provinces. The purpose of this selection will be to give perspective. Often the development problems and programmes of regions and countries are viewed as unique; in practice they are frequently monotonously similar, but inadequate attention has been paid to investigating comparative experiences and so the same mistakes are unnecessarily and expensively repeated.

2. *Development Plans, Strategies and Programmes.* Particular attention will be given to the utilization of Canadian case studies undertaken by the class participants, balanced by lessons from the experiences of agencies such as the World Bank, in order to strengthen the class participants' own appreciation and capability as to how they could themselves be effective members of planning, programme and project teams.

3. *Projects and Development.* The cutting edge of many development plans and programmes is the development project—be it a steel mill, fish plant, container port or training programme. Through field work and the use of case material, participants will be taken through the project cycle and introduced to the strengths and limitations of such techniques as cost-benefit analysis, critical-path scheduling and planning, programming, budgeting systems. As a consequence, the participants will rub shoulders with project personnel with a range of disciplines including engineering, law, economics, accounting, sociology, and management skills. The focus will always be on 'doing the task' and not simply on talking about it.

Class Membership
The class is provided for two main groups of people:—

1. Students interested in applying their background in economics and related subjects (e.g. political science, commerce, sociology) in a working environment, as part of a team that will include colleagues who already have some experience of development economics in practice.

Persons who are presently working in government agencies and business, who have an interest in reviewing how they might learn from comparative development experience lessons of value to their present, or future, work situations.

Prerequisites: Introductory Economics in all cases. For those taking the class at the 440 and 532 levels, either substantial additional economics or a background in political science, business and public administration, sociology, engineering or law are required.

Resources. Experienced advisers from government and private agencies will add further perspective and guidance by participating in some aspects of this class.

320A Micro-Economic Theory, lect.: 3 hrs.; G.A.B. Kartasaklis.

This class is mainly concerned with the theory of the firm. The discussion centers around managerial motivation and the equilibrium of the firm in theory and practice. Selected topics include the alternatives to profit maximization, break-even charts, cost-plus pricing, and the pricing of factors of production. This is followed by a discussion of problems of market conduct under oligopoly: collusive behaviour, administered prices, and basing-point prices are the main issues in this part. The last part of the class covers problems of resource allocation and of welfare economics. This class will be of particular value for students intending to do graduate work in Economics. A knowledge of calculus would be useful.

Prerequisites: Mathematics 110 or equivalent and Economics 220A/B which may not be taken concurrently.

321B Macro-Economic Theory, lect.: 3 hrs.; G.A.B. Kartsaklis.

This is a class for persons who wish to do relatively advanced work in economic theory, possibly with the thought of going on to do graduate work in economics. The class will assume some knowledge of calculus. Topics covered include: classical models of income and employment; Keynesian models of income and employment; the theory of economic growth (including two-sector models); and trade cycle models.

Prerequisite: Economics 221A/B and Mathematics 110 (or equivalent).

342 Public Finance, lect.: 2 hrs.; tutorial 1 hr., J.G. Head

Economics 324 is concerned with the principles of public finance and their application. The first part of the class deals with the objectives of public policy and the reasons for market failure. This section provides the elements of a theory of public expenditure which is illustrated by reference to the major economic functions of government.

The second part of the class is concerned with the theory of taxation in relation to the objectives of public policy. This section explores the possible role of a sample of important taxes in the design of a good tax system. The third section examines the role of public finance in relation to economic stabilization. The final section considers the special problems of public finance in a federal system. The analysis of the various sections will be illustrated from and applied to the fiscal systems of Canada and other countries.

Prerequisite: Introductory Economics, Economics 220A/B and 221A/B are desirable.

325 Labour Economics, lect. and seminar: 3 hrs.: L. Osberg.

Some nine million Canadians are directly dependent upon wages and salaries for a living, and their earnings constitute about 65% of the National income. Over two million of these workers belong to trade unions in critical sectors of our economy. Economic analysis of the factors affecting wages and salaries, employment and unemployment, the conditions of labour, and the labour market is therefore important to an understanding of the economy as a whole.

The subject is introduced by reviewing: the emergence of the labour problem; the development and structure of the labour market; the growth, structure and outlook of trade unions; and the historical and legal foundations of labour relations.

Most of the year is spent in:
(a) Analysis of the supply of and demand for labour, opening with a review of classical wage theory.
(b) Examination of the theory and practice of collective bargaining, exploring also the interaction and relative strengths of market (economic) forces, and institutional (government-union-employer) forces.
(c) Study of labour's share of the national income and the relative effect of unions on it.
(d) Analysis of the determinants of employment in the macro-economic sense, and of the measurement and problems of unemployment.

We conclude with a review of public policy with respect to labour, and an effort is made throughout to relate current events to the theoretical framework.

The class structure is intended to be flexible; however, as a base it has two lectures and one seminar (in which student teams of four each provide the materials) each week.

Prerequisite: Introductory Economics and an interest in social science and its methods. Economics 220A/B and 221A/B are desirable.

326A Money and Banking, lect.: 3 hrs.; R.L. Comeau.

This class is concerned with the nature and operation of the financial system, with particular reference to Canadian examples and experience. As such the class is concerned with financial instruments and institutions and with those processes whereby the social control of the supply of money and credit in the system is effected. The class is complete in itself, but is complemented by Economics 426B which continues the analysis with a consideration of the theory and effectiveness of monetary policy.

Prerequisite: Introductory Economics; Economics 221A/B is desirable.

327 History of Economic Thought, lect.: 3 hrs.; N.H. Morse.

The approach taken in this class is to study "the intellectual efforts that men have made in order to understand economic phenomena". A brief survey of mediaeval and mercantilist literature is followed by an examination of English classical political economy and Marxian economics together with that of other socialists. The focus then shifts to the marginalists, neo-classicists, and the institutionalists. Problems of economic instability and depression, especially in this century, require that some attention be given to Keynesian economics and its extensions. The time allotted to the study of European writers and schools and of various contemporary writers and current topics depends in part on the interests of students. It is recognized that the tremendous expansion of the literature and the emergence of highly specialized fields in economics makes it necessary to select from recent sources only a relatively small sample of writings which relate this class to others which the student may be taking. The links can be forged, nevertheless, by means of a number of topics such as the following: the theory of value, the treatment of money, the theory of economic growth, the theory of distribution, and the relationship between growth and distribution.

Although this class is intended to supply a background for several other classes in economics, it is also true that other classes serve as background for this one. It is considered essential, however, that students in this class have taken a class in economic principles. A class in micro-economics (price theory) and in macro-economics (income determination) would be helpful. The presentation, except for a few specific points, is largely non-mathematical. Therefore, the main requirement of students is an ability to read and assimilate a certain body of literature rather quickly.

Prerequisite: Economics 220A/B and 221A/B are recommended.

328 Industrial Organization, lect.: 2 hrs.; C. Marfels.

Industrial Organization is the application of the models of price theory to economic reality. In a specific industry, the problems of a firm competing successfully with its rivals in order not only to survive but to acquire a higher market share are far more complex than those in price-theory where we have to deal with more or less simplified assumptions to find a solution at all. The traditional approach to the analysis of the competitive process in an industry is divided into three parts: market structure, market conduct, and market performance. These are the three main parts of the class.

Briefly, market structure refers to the number and size distribution of firms in general and to economic concentration in particular; in market conduct the pricing process is discussed; market performance concerns the problem of the degree of optimality of allocation of resources. The latter part includes a discussion about whether a reallocation of resources is necessary, and this involves looking at the basic elements of public policies directed towards business.

Prerequisite: Economics 220A/B or equivalent micro-economics course.

329 Urban Economics, lect.: 3 hrs.; T.A. Pinfold.

Urban Economics is essentially the application of tools of economic analysis to the problem of urban areas. Urban area is loosely defined so as to include small towns as well as large cities. Topics discussed include: the origin of cities, factors affecting urban economic growth, the goals of an urban area, problems in intraurban resource allocation, urban transportation, production of public goods in urban areas, and urban planning. Flexibility in selecting class content is considered important. Topics suggested by students are welcome. Students are expected to present papers on topics of their choice.

Prerequisites: It is strongly recommended that students have a sound background in both macro-and micro-economics. Economics 220A/B and 221A/B, or their equivalent would be a minimum. The class is designed as an application of theoretical tools. No theory will be taught. Students will also find a knowledge of calculus useful, but not necessary. If a prospective student is unsure about the suitability of his background, he should consult the instructor.

330A International and Interregional Exchange, lect.: 2 hrs.; P.B. Huber.

This class considers the causes of international and inter-regional exchange of goods and services and analyzes the effects of international integration on the incomes and growth rates of national economies. The theory and practice of commercial policy and other restrictions on trade are considered after the pure theory of international trade and its implications have been explored. Depending upon class interest and availability of time, the subjects of economic integration and of Canadian commercial policy may be discussed in some detail.

Prerequisite: Introductory Economics and 220A/B.

331A Environmental Economics, lect.: 2 hrs.; Z.A. Konczacki.

The approach taken in this class reflects an economist's view of the relationship between environmental questions and his own discipline. The main emphasis is on the problems of the industrial countries. Topics considered include: the causes of the environmental crisis, an introduction to the general systems theory and some problems of research methodology, the measurement of costs and benefits, policies for environmental protection, the implications of a steady state model and the relation between economic development and ecosystems in the less and the more developed parts of the world. This class provides a general background for Economics 332B.

Prerequisites: Introductory Economics. Economics 220A/B, 221A/B and 333A are desirable. Students may also be admitted by permission of the instructor.

332B Resource Economics, lect.: 2 hrs.; N.H. Morse.

This class is concerned with an analysis of the physical and economic characteristics of renewable and non-renewable resource industries and of environmental philosophy. Selected case studies of resource management in Canada and elsewhere will be discussed.

Prerequisites: Introductory Economics. Economics 220A/B, 221A/B and 331A are desirable.

333A Theories of Economic Development, lect.: 2 hrs., Z.A. Konczacki. (Not offered in 1978).

The purpose of this class is to provide a theoretical framework for the understanding of the process of economic development in the more and the less developed countries with a view to an eventual application of this framework to the solution of practical problems.

Topics considered include: basic definitions and distinctions; measurement of economic magnitudes; characteristics of the less developed countries; selected theories and models of economic development and their appraisal. The concluding seminars are devoted to the problem of the foundations of the theory of economic development, and the distinction between the concepts of unilinear and multilinear evolution is discussed.

Prerequisite: Introductory Economics. A class in macro-economics equivalent to Economics 221A/B, and History of Economic Thought is desirable.

336B Regional Development, seminar 2 hrs.; and tutorials; R.I. McAllister.

This class enables students to examine the process, prospects and problems associated with regional development in Canada in particular and in the more industrialized countries in general. The interdependence of economic, political and social forces is markedly in evidence in the evolution of regional policies, and while this class will be oriented largely from a concern with the economic forces underlying the process—these other factors will be taken into consideration. The approach will contain main elements: (a) the application of economic 'principles' in the context of regional development; (b) a comparative review of regional development experiences and policies of a number of industrialized countries; (c) Canadian regional development experiences, with particular focus on the Atlantic region; (d) regional field case study; each student will examine the background and the role of one pertinent project such as D.E.V.C.O. in Cape Breton, the Newfoundland centralization program, the Saint John multi-industry complex. The class will visit several such projects over the period.

Prerequisite: The class is intended very largely for graduates (not necessarily in economics), who already have a number of years work experience on problems associated with regional development. A limited number of other students (with a substantial background in economics and/or political science) will be admitted.

337B Recent Economic Developments in Sub-Saharan Africa, lect.: 2 hrs.; Z.A. Konczacki.

This class centres on the last decade of development. Topics discussed include: impact of colonial heritage, present structure of African economies, infrastructure, agriculture, mineral development, industrialization with particular emphasis on import substitution, trade: overseas and intra-African, foreign investment and aid programmes, economic planning, and the prospects for the future of development and co-operation between African economies. This class cannot be taken by the students who already have a credit in Economics 236A or B.

Prerequisites: Introductory Economics. Economics 234A and 235B are desirable.

338 Econometrics, lect.: 3 hrs.; U.L.G. Rao.

This class attempts to introduce econometric theory at a fairly advanced level and is designed mainly for one who likes to work on theory or model building.

A review of the general linear model will be made. Violations of the assumptions crucial for least squares estimation brings in various problems. The following problems will be discussed in detail: Stochastic regressions, generalized least squares, autocorrelation, heteroskedasticity, distributed lags and dummy variables. All these problems are single equation problems.

Simultaneous equation problems occupy an important place in econometric model-building. A critical analysis of the problem of identification and single equation bias will be made.

Limited information methods and full information methods of estimation will be discussed.

Monte Carlo methods as alternatives to analytical techniques will be discussed. This class requires a high level of work. Minimum prerequisites will be an undergraduate statistics course and undergraduate work in micro- and macro-economics. The prerequisites are Economics 220A/B and 221A/B and Economics 228.

Economics 340B Models of Communication and Transportation, seminar, 2 hrs.; P.B. Huber.

The influence of space and time as well as the interpersonal interaction involved in communication introduces modifications into micro-economic demand and supply models in these industries. In addition regulation imposes constraints. This class reviews some of these issues, and time permitting, also examines cost and benefit calculations in these industries.

Prerequisites: Economics 220A/B and 221A/B.

426B Monetary Policy, lect.: 3 hrs.; R.L. Comeau.

This class assumes that students have a basic knowledge of monetary institutions and macro-economic theory and develops out of this a critical analysis of the objectives and effectiveness of monetary policy, with particular attention to Canadian experience. The class reviews the instruments of monetary control and the theoretical framework of monetary policy and then considers the effectiveness of Canadian monetary policy in recent years.

Prerequisites: Economics 221A/B. It is advantageous for students to have completed Economics 326A as well.

Economics 431B International Payments, seminar: 2 hrs.; A.M. Sinclair.

Selected topics in recent international monetary history are examined, the causes of and remedies for external imbalance in national economies are considered, and the reorganization of the international monetary system is discussed. Depending upon class interest, certain issues of international development finance and problems of instability and growth in the international economy may be discussed in detail.

A substantial proportion of class time is devoted to the discussion of papers prepared by students. A comprehensive reading list is distributed.

Prerequisites: Economics 221A/B and Economics 330A, or Economics 220A/B and Economics 326. Albegra and geometry and limited amounts of calculus are employed.

English

Professor Emeritus
C.L. Bennet

Professors
A.R. Bevan
J. Fraser
J. Gray
M.G. Parks
M.M. Ross
R.J. Smith (Chairman)
S.E. Sprott
D.P. Varma

Associate Professors
S.A. Cowan
R. MacG. Dawson
A.J. Hartley
A. Kennedy
M.A. Klug
S. Mendel
C.J. Myers
G.F. Waller
H.S. Whittier

Assistant Professors
R.S. Hafter
R.M. Huebert
P. Monk
H.E. Morgan
N.S. Poburko
R.L. Raymond
H.D. Sproule
J.B. Stovel
R.R. Tetreault

Post Doctoral Fellows
R. Hayley
R. Osmond

The study of English literature at Dalhousie is not just the study of the literature of England. To be sure, it is largely concerned with the rich written heritage of the British Isles, but ranges far beyond their shores to include the study of writing in Canada, the United States, parts of the English- speaking Commonwealth and indeed, some European countries, in translation.

It ranges widely in time, too, from early Anglo-Saxon works of the eighth century through thirteen centuries of changing ideas and language to the still-changing thoughts, feelings and expression of the 1960s and 70s. The many forms that the written word may take — poetry, fiction, drama, essay history — are read, not only for an understanding of the literary evolution that brings them to be what they are, but also for an understanding of that which is temporary and that which is more enduring in the values and ideas that they embody.

Indeed, the purpose of English studies at Dalhousie, briefly stated, is the enjoyment and understanding of the written word. Since the word is the principal link between the individual heart and mind and the rest of the world, such studies naturally touch upon philosophy, politics, religion and the fine arts as well. At the same time, the student is himself required to think, and to use language with clarity, judgement and imagination.

In more detail, the goals of English studies are to perceive that reading is a source of pleasure, knowledge and wisdom, to sharpen the powers of discrimination between what is good and bad in literature and ideas, to gain some understanding of the process by which great writing is achieved and indeed to inspire the student to his own best expression.

In the first year, English 100 is required by all students who wish to take further English classes. There are some twenty different sections ranging from historical surveys to more specialized studies of periods or themes. To enable students to choose the one most suited to their inclinations and needs the English Department and the Registrar's Office have an English 100 supplement which includes the aims and reading lists of each section. Only in unusual circumstances is exemption from English 100 granted.

Classes numbered from 200 to 231 are especially suited for students who are concentrating in English, studying it as a complement to their main area, or taking an elective,and classes beyond 250 are designed as studies of specialized areas for Honours students. Honours classes are open to General students with permission of the Chairman and the professor concerned.

Faculty Advisors
As soon as possible in the academic year, each student who intends to concentrate on English is given a Faculty Advisor who will aid in the arrangement of a programme to suit individual interests. All students in the study of the English language and literature should notify the Department of this interest in order that this Advisor may be assigned.

Degree Programmes

The General B.A. in English
Students should consult with their Faculty Advisors about their choice of classes. The Department expects General students to form coherent programmes of four to eight classes beyond English 100. Students should note that:

(1) of the classes beyond English 100 required to constitute a programme in English for the general B.A. degree, not more than three should be drawn from any one of the following three groups of classes:
(a) 203, 214, 218, 224
(b) 206, 208, 215, 216
(c) 209, 212, 213, 217, 301

(2) classes numbered from 201 to 231 (excepting 201, 206, 218) are not accepted as preparation for Graduate Studies in English. Students who may desire to change to an Honours Programme or continue in Graduate Studies should arrange with their Advisor and with the Chairman of the Department to complete several Honours classes before graduating with a General B.A. It is possible to enter a two-year M.A. course on completion of a General B.A. degree, but only if the student has completed four or five Honours rather than General classes for his concentration and has attained at least a second-division average in them.

The B.A. with Honours in English (Major Programme)
The Honours course in English offers a systemic study of the subject which acquaints the student with the major writers and trends from mediaeval times to our century. It is therefore of particular relevance to the student who is interested in detailed study of English as a basis of a liberal education, to the prospective high-school teacher of English who needs a comprehensive understanding of the subject, and to the student intending to proceed to the graduate study of English and to complete in one year the requirements for the M.A. degree.

Students intending to enter the Honour course in Year II must consult the Department in advance to plan their course and be formally enrolled. In the subsequent years, Honours students are encouraged to seek advice of the Department in choice-of classes.

The Honours course consists of nine classes (in addition to English 50A and 50B) beyond English 100. At least one class must be taken from each of the following six sections:

Section A. English 252 (recommended for third year)
Section B. English 253; English 351
Section C. English 251; English 352
Section D. English 254; English 356
Section E. English 354; English 452; English 457
Section F. English 453; English 455

The student may choose his three remaining classes from those not already chosen in Sections B to F, or from Section G.
Section G. English 201, 206, 207, 357, 218, 454

English 50A (Bibliography) and English 50B (Practical Criticism), non-credit classes which meet one hour per week, are required of all Honours students and are to be taken in the first year of the Honours course. (See page 37 for details.)

The Honours student must meet the requirements for the General B.A. degree. He is advised to select a minor from one of the subjects listed under either Group A or Group B in the "Degrees and Courses" section of the Calendar.

B.A. with Combined Honours

There are several *Combined Honours programmes:*

English and French	English and Philosophy
English and German	English and Spanish
English and History	English and Theatre

Students interested in any of these combinations or any other that involves English and another subject should consult with the Departments concerned.

A Joint Honours programme, involving cooperation between the Departments of English at Mount Saint Vincent and Dalhousie, has been established. Students interested in this programme are advised to consult the Department for further details.

Classes Offered

100 Introduction to Literature, lect.: 3 hrs.; Members of the Department.

Since English 100 consists of sections taught by many different instructors, statements about its objectives and approach must be confined to generalizations. All instructors of English 100 have these two broad objectives in common:
(a) to involve the student in the serious study of literature as a crucial part of education;
(b) to involve him in the discipline of words so that he will be a more critical and responsive reader and a more exact and imaginative writer.

The subject matter varies from section to section. Detailed syllabi of all sections are available. Practice in writing is carried on throughout the year in fortnightly essays.

Each section attends three lectures per week. In addition, the tutors attached to each session conduct small discussion groups and personal interviews with students.

Classes for General Degree

Successful completion of English 100 is the pre-requisite for entry into Upper-Year classes.

For a more complete description of classes and of texts students should consult the Departmental Supplement for Upper-Year classes.

(Tentative List)

200 Advanced Composition, lect.: 3 hrs.; P. Monk

This is an advanced composition course open to English majors and honours students, but intended especially for students of education; it is open to other students only if space permits (enrollment being limited to 25). English 100 is a pre-requisite for this course, which is NOT a remedial course, but is designed for people who already have some competence and interest in language and composition.

201 The English Language, lect.: 2 hrs.

This class is not prerequisite to, but is useful as an introduction to, English 253 and 351 (Old and Middle English).

202 History of the English Language, Lect.: 2 hrs.; R.C. MacG. Dawson.

This course provides an introduction to the historical development of the English language. The growth of our "word-hoard," the evolution of word meanings, the changing patterns of speech sounds, of word forms and of syntactic structures, the distinction of dialects and literary styles are studied through analysis of selected literary texts. English 201 and 202 are complementary courses.

203 Masterpieces of Western Literature, lect.: 3 hrs.; H. Whittier.

This class is intended to provide the student with the opportunity to do intensive reading of selected major works from Western literature. The intensive reading is designed to broaden the student's outlook on literature and also to increase his familiarity with works that are not only stimulating in themselves but also comprise the basis for the development of English and other literatures.

204 The European Novel, lect.: 2 hrs.; S. Mendel

This class is devoted to an intensive study of about a dozen representative European novels of the last two hundred years. The method of approach and the character of tests and examinations are such as to render it necessary for the student to attend most of the lectures. A considerable amount of attention is paid to the philosophical ideas which bulk large in many of the novels studied.

206 American Literature of the Nineteenth Century, lect.: 2 hrs.; S. Cowan.

This class is an introduction to the American Literature works by major writers from 1800 to 1900. Some of the writers studied are Cooper, Hawthorne, Poe, Emerson, Melville, Whitman, Dickinson, and Twain.

207 Canadian Literature, lect.: 2 hrs.; H.D. Sproule, P. Monk.

This course follows the development of prose and poetry in Canada from pre-Confederation to the present day through extensive samplings of the major writers in the various genres. Each section has its own emphasis and choice of texts.

208 The English Novel to 1900, lect.: 2 hrs.; A.J. Hartley, A.R. Bevan, D.P. Varma.

The class is designed primarily to acquaint students with the chief landmarks of eighteenth and nineteenth-century fiction and to present a survey of the origins and developments of the English novel.

209 Twentieth-Century Fiction, lect.: 2 hrs.; H. Whittier, R.J. Smith.

This class is intended as an introduction to the main thematic

and technical trends in the modern novel. Each section has its own emphasis and choice of texts.

212 British Literature of the Twentieth Century, lect.: 2 hrs.; N.S. Poburko.

This class is a survey introduction to the past seventy-five years of British fiction, drama, and poetry.

213 American Literature of the Twentieth Century, lect.: 2 hrs.; R. Hafter.

The reading for this class includes short stories, poetry, novels and one play written by American authors during the past fifty years. Classes will be conducted largely by discussion, with some lectures, and students may be expected to give one classroom presentation or lead a discussion, which could then serve as the basis for a paper.

214 Shakespeare, lect.: 2 hrs.; C.J. Myers, G.F. Waller.

This class is designed for students in the General course who wish to study selected plays by Shakespeare. The aim of the class is simply to discover what the plays are about. Only minimal consideration is given to textual variations, sources and influences.

215 Poetry of the Romantic Period, lect.: 2 hrs.; A.J. Hartley.

A class which will focus on the poetry of Wordsworth, Coleridge, Byron, Shelly, and Keats. At the outset some attention will be directed to the pre-Romantic poets and to the intellectual background of the Romantic poets and to the intellectual background of the Romantic movement.

216 The Gothic Novel, lect.: 2 hrs.; D.P. Varma.

This class will survey the origins and development of *The Tale of Terror and Supernatural* during the later half of the eighteenth century and its various manifestations and influences in succeeding fiction. Not only the chief landmarks of gothic fiction will be charted, but the students will also explore the various chambers of horror-literature.

217 African Literature/African Studies, lect.: 2 hrs.; R.J. Smith.

This is a class on African Literature written in English. Novels, plays, and poems will be discussed. The bulk of the material will be by Southern African and West African writers. Works to be studied will mainly be modern, and will reflect the attitudes of various African cultures towards racism, colonialism, and African nationalism.

218 Mediaeval Literature, lect.: 2 hrs.; H.E. Morgan.

This survey is based on study of selected medieval literary works of northern Europe, with major emphasis upon the Arthurian legend as found in Malory. Beginning with a look at Nordic, Celtic and Frankish background materials (in translation), one goes on to focus upon late-medieval developments in saga and romance, concluding with a look at some post-medieval uses of the inherited matter in Tennyson, Morris, Lewis and Tolkien.

220 English Drama, lect.: 2 hrs., R.M. Huebert.

Beginning with selected mystery plays and concluding with some contemporary playwrights, the class offers a survey of major landmarks in English drama. Some attention is given to staging practices in Medieval, Renaissance, Restoration and Modern drama. Primary emphasis is given to plays by such leading dramatists as Marlowe, Webster, Wycherley, Shaw, O'Casey, and Pinter.

224 Renaissance Poetry, lect.: 2 hrs.

This class will introduce students to English poetry from the early sixteenth to the mid-seventeenth century. Given the scope of the course, the focus will be on the development of poetic genres and conventions such as the pastoral, the elegy, and the sonnet, rather than on a detailed study of the works of major authors. Class sessions will combine lectures and discussions.

225 Epic, Romance, and Fantasy, lect.: 2 hrs.; P. Monk.

This class offers a consideration of epic, romance, and fantasy. Starting with a consideration of primary epics it will then go on to take a look at some literary epic spirit as manifest in modern works.

226 Tragedy, lect.: 2 hrs.; R.R. Tetreault.

This class will give students an opportunity to study the nature and method of tragedy in literature. Examples will be taken from Greek, Shakespearean, and modern drama, as well as from poetry, and from novels.

227 Comedy and Satire, lect.: 2 hrs.; J.B. Stovel, A. Kennedy.

The comedian and the satirist are interested in both the laughable and the deplorable antics and eccentricities of human nature. This class will concern itself with their points of view, as expressed in such varied forms as stage comedy, graphic satire, the comic novel, and the humorous essay.

228 Short Poems in English, lect.: 2 hrs.; S.E. Sprott.

Forms and themes in the short poem are studied by means of critical reading of poems written in English. Topics may include the following: the self in the short poem; other persons; public events; love; nature; the city; the machine; wit; myth; traditional forms; free verse; the hokku; lyric as song; spoken poetry; poetry in print; concrete poetry; and possibly other topics to suit the class.

Recommended Preliminary Reading: C.B. Wheeler, *The Design of Poetry,* New York: Norton, 1966.

229 Victorian Literature, lect.: 2 hrs.; C.J. Myers.

This course provides an introduction to Victorian Literature with an emphasis on the literature of social criticism.

231 Modern American and Canadian Novels, lect.: 2 hrs.; A.R. Bevan, M.A. Klug, A. Kennedy.

This class deals with an equal number of American and Canadian novels. The novels will be treated as related "pairs," and the instructors will divide their time equally between the two sections.

232 Modern Drama, lect.: 2 hrs.; R.M. Huebert.

This class outlines major developments in drama from Ibsen to the present. Special attention is given to changes in dramatic style and to the growth of modern theatrical movements. The playwrights represented include Strindberg, Shaw, Pirandello, Brecht, Genet, Ionesco, Pinter, Albee, and Stoppard. A few recent Canadian plays are chosen to provide a focus for discussion of contemporary trends.

233 Science Fiction and Fantasy, lect.: 2 hrs.; S.A. Cowan

Selected works of speculative fiction will be read for pleasure and studied for understanding. The study will focus on analysis and evaluation of the works as literature. Some major classifications of speculative fiction will be suggested, and recurring themes will be identified. The approach will be largely through discussion, though some lecturing may be expected. Each student will give oral reports to the class, will participate in panel discussions, and will write term papers, tests, and a final examination. Non-majors are welcome.

301 Modern Poetry in English, lect.: 2 hrs. S.E. Sprott.

A study of the creation and development of modern poetry in English is based on the seminal poets Yeats, Pound, and Eliot, with some attention to Auden, Dylan Thomas, W.C. Williams, Stevens, and others, including Canadians.

Classes for the Honours Degree
(Tentative List)

50A Bibliography, lect.: 1 hr.; (first term only), R.L. Raymond.

This class is a departmental (i.e., non-university and non-credit) technical class for honours and graduate students. It is planned to acquaint the student with certain research tools in the library that are most frequently used by students of English (bibliographies, catalogues, indices, digests, journals, dictionaries, microfilms), many of which the student is unlikely to stumble upon himself in his own research. The class also includes instruction in the technical aspects of writing papers (planning, research methods, footnotes, bibliographies), and some discussion of the history of printing insofar as it relates to the establishment of texts, particularly older ones.

The class meets one hour a week during the first term only and includes the assignment of an exercise to be done in the library.

English 50B Practical Criticism, lect.: 1 hr. (second term only); R.L. Raymond.

This is a non-credit class designed to give the student practice (supplementary to that of his regular classes) in the evaluation and understanding of the purpose and significance of literature, largely poetry. The class includes some discussion of recent and current attitudes to literature, but the emphasis is upon the practice of criticism on both well-known and obscure or unpublished work.

251 Sixteenth-Century Non-Dramatic Literature, lect.: 2 hrs.; G. Waller.

The class will study the literature of the English Renaissance, concentrating on Sidney, Spenser, and Shakespeare's poetry. Some attention will be given to the cultural context, including the court, music, and art, and to influential continental writers like Castiglione and Machiavelli. Classes will be conducted by a mixture of lecture and discussions, and there will be frequent use made of slide and other illustrative material.

252 Shakespeare and the Drama of His Time, lect.: 2 hrs.; S.E. Sprott.

About fifteen plays by Shakespeare, some by choice of the class, are read in the context of representative plays by his earlier and later contemporaries, especially Marlowe and Jonson. Students should consult the instructor for a list of plays and suggested preliminary reading.

253 Old English, lect.; 3 hrs.; R. MacG. Dawson

An introduction is given to the Old English language (700-1100 A.D.), followed by a study of some of the prose and minor poems, and , in the second term, of *Beowulf.* Students will also be introduced to some aspects of Old English art and archaeology. Some knowledge of a classical or modern European language (preferably German) is desirable, though not essential, and an understanding of traditional grammatical terminology will be helpful. This class is not recommended, except in unusual circumstances, to those who are not thoroughly fluent in modern English.

254 Restoration and Eighteenth-Century Literature, lect.: 2 hrs.; H.D. Sproule.

In this class the emphasis will be placed upon three great satirical authors (Dryden, Pope, and Swift), upon a study of Restoration comedy and tragedy, and upon major works of Samuel Johnson. Since the literature of the period is related exceptionally closely to the men and manners of the age, some time will be spent in class on the contemporary climate of opinion that is revealed in the works of a number of writers representative of literary, political, social, and philosophical points of view: Hobbes, Halifax, Pepys, Rochester, Butler, Addison and Steele, Mandeville and Shaftesbury.

351 Middle English, lect.: 2 hrs.; H.E. Morgan.

This class offers an introduction to Middle English language and literature through study of Chaucer's poetry and of major literary works by Chaucer's near-contemporaries. Through his readings, the student should gain some historical sense of the language, of the social milieu and especially of the late-mediaeval social tensions which contributed to the literature's brilliance.

Preparatory reading: Chaucer's poetry and H.S. Bennett, *Chaucer and the Fifteenth Century* (Oxford History of English Literature, vol. II, 1); W.F. Bolton (ed.), *The Middle Ages* (Sphere pbk.); J.B. Morrall, *The Medieval Imprint* (Penguin); M. Keen, *History of Medieval Europe* (Penguin).

352 Seventeenth-Century Non-Dramatic Literature, lect.: 2 hrs.; G.F. Waller.

This class is a study of representative works of Bacon, Donne, Jonson, Browne, Burton, Herrick, Herbert, Crashaw, Vaughan, and Milton. The aim of the class is, through a study of representative writers, to provide the student with an introduction to both the individual and traditional characteristics of poetry and prose of the period. Classes are conducted by a combination of lecture and discussion. Students present brief reports to the class that establish starting points for discussion. A paper of moderate length is written each term. There are examinations at Christmas and in the Spring.

354 Victorian Novel, lect.: 2 hrs.; S. Mendel.

This class is designed to give the student the opportunity of studying the novels of the period from Scott and Austen to Hardy.

356 Literature of the Romantic Period, lect.: 2 hrs.; R.R. Tetreault.

A study of the major poetry of Wordsworth, Coleridge, Byron, Shelley, and Keats, supported by a survey of the genesis and development of the romantic movement as well as by representative prose of that period.

357 The Making of Modern Poetry in Canada, lect.: 2 hrs.; P. Monk.

This course concentrates on the development of poetry in Canada from approximately 1867 to 1967.

452 Nineteenth-Century Thought, lect.: 2 hrs.

453 Twentieth-Century English Literature, lect.: 2 hrs.; J. Fraser.

This seminar is primarily for honours students and for M.A. students in their make-up year. Each member of the seminar writes two papers to serve as starting-points for the class discussions. There are no examinations, but regular attendance is expected in the interests of effective debate. The following prose works will be discussed, in approximately the order given: Shaw, *Major Barbara*, Conrad, *The Secret Agent*, Joyce, *Portrait of the Artist*, Woolf, *To the Lighthouse*, Lawrence, *The Rainbow*, Forster, *Passage to India*, Greene, *Stamboul Train*, Orwell, *Homage to Catalonia*, Cary, *The Horse's Mouth*, Beckett, *Endgame*, Pinter, *The Homecoming*, Durrell, *Justine*, Deighton, *The Ipcress File*, Lessing, *Briefing for a Descent into Hell*, Burgess, *A Clockwork Orange*. Interspersed with these will be selections from a variety of poets, includings Yeats,Hopkins, Eliot, Auden, Larkin, Gunn, and Hughes.

454 Literary Criticism, lect.: 2 hrs.; R. Hafter.

This class is intended for senior honours students. It involves the history, theory, and practice of literary criticism from Aristotle to the present.

455 Modern American Literature, lect.: 2 hrs.; M.Klug.

This class will study the growth of American literature over the past seventy years. The first term will be devoted to poetry and will centre on readings from Frost, Eliot, Lindsay, Stevens, Williams, Crane, Lowell, and Roethke. Through the second term we will be working with fiction: Dreiser's *Sister Carrie*, Fitzgerald's *Great Gatsby*, Hemingway's *The Sun also Rises*, Faulkner's *Light in August*, Ellison's *Invisible Man*, Bellow's *Adventures of Augie March*, and Mailer's *American Dream*. The classroom work will involve lecture and discussion. Each member of the class will write one paper in the fall and spring term on a topic of his own choice. A final examination on the year's reading will be set.

457 Victorian Literature, lect.; 2 hrs.; M. Ross.

A study of the major Victorian poets and prose writers (other than novelists). Attention will be given to the changing philosophical, scientific and social pressures of the period. The main emphasis of the class will be on the poetry of Tennyson, Arnold and Browning and the prose of Carlyle, Ruskin Newman, Arnold and Pater.

Changes and Additions

As the Calendar goes to press before all plans for the next academic year are completed, there may be significant changes in the classes listed above. Students should consult the Registrar's office and the Departmental Supplement for revised class and text lists.

Graduate Studies
The Department offers graduate classes leading to the degrees of M.A. and Ph.D. Details relating to admission, scholarships and fellowships, requirements for the degree, classes of instruction, etc., can be found in the Calendar of the Faculty of Graduate Studies.

French

Professors
H. Aikens
P. Chavy
J.R. Lawler
H.R. Runte
R. Runte
M. Sandhu
K. Waterson

Associate Professors
J. Brown (Chairman)
R. Kocourek
D.W. Lawrence

Assistant Professors
E. Boyd
T.P. Carter
P.F. Cintas
B.E. Gesner
W.T. Gordon

Lecturers
M. Bishop

Lecturers (part-time)
H.E. Bednarski
M. Ross

People choose to study French for a variety of reasons — desire to gain understanding of one of the world's richest cultures, interest in the language for its own sake, preparation for certain careers (teaching, translating, etc.), or serving the cause of Canadian unity. The Department offers an excellent opportunity for pursuing such study to those whose interest is strong enough to make them willing to devote a good deal of their time and energy to it.

In general, students are expected to acquire a good knowledge of spoken as well as written French. As students' skill grows, French is used more and more in classes. The accent aimed at is "international"; that is, recognized as standard both in France and in French Canada. Much use is made of the language laboratory in the acquisition of oral skills. The object of our language instruction is to provide, through the judicious use of modern methods, a solid basic training that will enable students who spend a few months consolidating their knowledge in a French-speaking community to develop fluency rapidly and with precision.

Two *Maisons Françaises* provide living accommodation for a limited number of students who wish to live in a francophone environment. For details (rates and availability), write to Les Maisons Françaises, French Department, Dalhousie University, Halifax, N.S. B3H 3J5.

Les étudiants qui souhaiteraient habiter dans une des deux "Maisons Françaises" sont priés d'écrire à l'adresse suivante: Les Maisons Françaises, Département de Français, Dalhousie University, Halifax, N.S. B3H 3J5.

Some students wish or are required only to gain a reading knowledge of French. Provision is also made for their needs.

If your tastes and abilities lie in the direction of French studies, you should consider the possibility of taking a Bachelor's degree with Honours in French or with Honours in French and another subject combined. Those who wish to do so, or to take French as an area of concentration in a General Bachelor's degree course, are encouraged to discuss the matter at any time (but the earlier the better) with a member of the Department. An Honours degree is normally required for access to graduate studies.

French Degree Programmes

General Bachelor's Degree
With French as the main area of concentration.

First Year
1000 or 1020.

Subsequent Years
French 1000 or 1020 is the pre-requisite for courses at the 2000 level and above.

The Department encourages majors to take *eight* courses in French beyond the first year. Students should take a minimum of three French courses in their second year.

Majors who are enrolled in a general bachelor's degree programme must take at least one French course at the 3000 level.

Bachelor of Arts with Honours in French
A decision regarding admissibility to Honours is not usually made until the end of the student's second year in the Department. Details of the Honours program in French in the Third and Fourth Years are to be arranged by consultation with the Department. Honours standing for courses taken at the 2000 level is B- or higher.

Students in the Honours programme with French as main subject are encouraged to take the maximum of *eleven* courses in French beyond the first year; concentrated honours students are *required* before graduation to:

Either: write an Honours essay under the supervision of a member of the Department in an area connected with the programme,

Or: write a comprehensive examination.

Bachelor of Arts with Combined Honours in French and Another Subject
Programmes may be arranged by consultation (as early as possible) with the departments concerned. Students planning a combined Honours course should consider, however, that the number of classes taken in either subject might be insufficient for admission to many graduate programmes without at least an extra year's work.

Notes
(1) A student may, with the permission of the Department, be admitted to a French course at an advanced point because of prior knowledge of the language. Such a student, however, (except as he may be granted transfer credits in the usual way), must normally take the same total number of classes as other students in the same course.

(2) A student admitted to a French course at an advanced level who obtains credit for a class at that level, may not later take a French class at a lower level for credit except with the express permission of the Department.

French Classes Offered

Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered.

1000 level
Students interested in French studies are encouraged to enroll in either French 1000 or French 1020 plus French 1050 in their first year. (Note, however, that French 1050 by itself is not a basis for further study.)

First-year French Language Courses
As may be observed below, the French Department offers two separate first-year French language courses, French 1000 and French 1020, which are mutually exclusive. It should be noted that there are certain differences between the two courses with respect to the following: general level of attainment demanded for registration (French 1000 may, in certain cases, accept beginners and French 2000A would be desirable for complete coverage of basic structures of spoken French; French 1020 is a complete review course catering to students with a high-school background in French), skills taught (French 1000 stresses principally speaking and listening skills; French 1020 whilst also devoting considerable attention to these skills, develops reading and writing proficiency in addition), methods of teaching (French 1000 involves rigorous and varied oral training and frequent usage of language lab facilities; French 1020 offers a lab programme, but classes, conducted primarily in French, remain the principal place of an oral performance applied to a wide range of situations and short readings). Full details of each course will be found below.

French 1000, Basic Spoken French (Part 1). lect.: 3 hrs. and language lab, 3-6 hours per week according to individual needs.

This course is designed for those who wish to acquire a solid background in spoken French, whether or not they have studied French before. It is thus suitable for serious beginners as well as for those whose previous training in oral French has been slight (students who already have good command of the spoken language will be advised early to take another class in the Department). The focus of this class is an oral (spoken) grammar, phonology (pronunciation), controlled expression (through oral translation and a variety of other exercises), listening comprehension and free expression. Written work will be included only in so far as students will learn to write what they learn to say. Assessment will be based largely on frequent oral tests.

The method used is essentially self-instructional. Students are expected to come to each class for further practice in the structures they have already learned and practiced in the language laboratory. A sense of self-discipline and willingness to spend the requisite time in the language laboratory (at hours of the student's own choosing) are therefore indispensable. An aptitude test will help determine students' capacity for second-language acquisition.

Sections of French 1000 are limited to fifteen students each and there is a limited number of sections, so early registration is advisable.
N.B. The language laboratory is open all day and most evenings from Monday to Friday, and for shorter periods on Saturdays and Sundays. Students work in the lab individually, and as long as they wish, at hours of their choice.

1020, Spoken and Written French in Review, lect.: 3 hrs.; language lab, 1-3 hrs per week.

This class proposes to develop proficiency in speaking and listening skills as well as in reading and writing. These aims will be achieved through a variety of reading materials upon which will be based oral and written exercises, discussions and some compositions. A largely self-instructional lab programme will be available to reinforce basic oral performance. Testing will reflect the balance among the four skills.

This is the normal first-year course for those whose knowledge of French has been developed to the normal high school level. A basic knowledge of all verb tenses, placement of object pronouns, subjunctive mood, etc. will be assumed, since these and other structures will be dealt with as review items. Students having little or no acquaintance with such structures should take French 1000.

1060 French for Reading, lect. 3 hrs.

Concentrates on developing the ability to read contemporary French prose with ease and accuracy. Emphasis is placed on the acquisition of skills which facilitate reading. Students are encouraged to become familiar with the best French-English dictionaries and to use them judiciously, to learn large blocks

of vocabulary by recognizing word families, and to grasp the meaning of unknown words from context whenever possible. Classroom work involves a grammar review, study and discussion of a wide variety of readings as well as correction of prepared translations and sight translations (from French to English only). French 1060 is given in English and is not suitable for students who plan to major in French or who might consider doing so. It may, however, be taken by those with no prior training in French.

1070 Contemporary Literature in Translation, lect.: 3 hrs.

This course provides the student having little or no knowledge of French with the opportunity of reading and discussing selected major works in modern French and French-Canadian literature. Lectures, readings and discussions will be designed to broaden the student's outlook on literature as well as to probe the philosophical and artistic significance of texts which are not only stimulating in themselves but representative of modern literary trends.

Lectures, readings and class discussions will be in English. Open to students in all departments, whether or not they have any prior knowledge of French. Students will be evaluated on class papers and essays (three per term).

2020A/2021B Practice in Language Skills, lect.: 3 hrs.

Each section of French 2020A/2021B concentrates on a specific content area, as listed below. All classes and assignments are entirely in French, and evaluation is based on a balance of progress in language skills and basic comprehension of course content. Work may be assigned in the language laboratory. Students are encouraged to consult with the instructors concerned for further details about each section.

All sections of French 2020A/2021B are mutually exclusive for a given term, i.e. students may enroll in no more than one A or B section per term for credit. Students who have not taken French 1000 or 1020 at Dalhousie must obtain written permission from the course coordinator in order to enroll in 2020A/2021B. All sections are limited in size to 15 students, so early registration is advisable. Students must register for French 2020A and French 2021B separately.

Topics may be chosen from the following list of titles (N.B. Most topics are offered at different times, so it will be necessary to arrange student schedules accordingly.)

2020A Du Livre à la Scène
Le Roman policier
2021B La Compréhension auditive
Etudes africaines
Le Deuxième Sexe
Actualités et Réalités

2040 Composition, lect.: 3 hrs.

The aim of this course is to clarify grammatical elements acquired earlier and to place them in a logical frame of reference. Selections representing the different literary genres, discussions, and exercises in translation are integral parts of the course.

2200 Introduction to French Literature: lect.: 3 hrs.

A critical introduction to the literature of France and French Canada, from Molière and Voltaire to Apollinaire and Sartre.

3000B Advanced Oral French, lect.: 3 hrs.

Class discussions will focus on the problems of modern society. Oral presentations made by the students will also provide the basis for further discussions.

3010 Phonetics, lect.: 3 hrs.

An introduction to the study of the sounds of language, with special reference to English and French: how these sounds are perceived and produced, their classification, practice in the use of phonetic symbols, basic phonemic theory (information on French pronunciation, but not primarily a class in remedial pronunciation).

Prerequisite: familiarity with the spoken forms of English and at least one other language.

3020 Linguistics, lect.; 3 hrs.

The topics discussed include the nature of human language; branches and applications of language study, including various approaches to foreign language teaching; relation between sound and meaning and problems of translation; relationship between speech and writing; linguistic diversity, bilingualism, and standard language; linguistic change, related language families, and major world languages. Emphasis will be placed on the non-historical aspects of language structure (words, sentences, sounds).

3040A & B Composition, lect.: 3 hrs.

Detailed and comprehensive coverage of grammar with emphasis on acquiring skill in composition. Supplementary written exercises consist in translating selected French and English texts.

3070 Applied Linguistics for Teachers of French, lect.: 3 hrs. Same as Education 4520.

This class is intended for students in Education. Enrollment requires the written consent of the instructor. See description under Education 4520.

3080 Methods of Teaching French, lect. 3 hrs.: same as Education 4840.

The course deals with traditional and, especially, contemporary theory and practice of teaching French as a second language. Students may register for this class only with the consent of the instructor.

3100 Civilization of France and French Canada, lect.: 3 hrs.

An attempt, through talks, reading and discussion, to understand and to suggest fruitful ways of studying, from an English-speaking Canadian point of view, what is essential in French (and French-Canadian) culture and outlook.

Prerequisite: good basic knowledge of spoken and written French.

2110A/2111B Civilization of French Canada, lect.: 3 hrs.

This course will examine French Canada from a socio-political viewpoint with focus on the ideology of the major historical periods and also on various social groups.

*** 3200 Literary Appreciation,** lect.: 3 hrs.

This class is an approach to the critical reading of modern French prose, poetry and drama. It will study representative works of major authors of the nineteenth and twentieth centuries by way of close textual analysis. It will also include some discussion of recent and current theories of literature.

*** 3300A Introduction to Medieval French Lit.,** lect.: 3 hrs.

Textual analyses of selected works representing the major literary genres (epic, romance, theater, poetry) from the *chansons de geste* to Francois Villon (most texts in modern French translations). The discussion of the origins and the development of a national French literature will provide a convenient introduction to critical approaches to literary texts.

*** 3401 Introduction to 16th Century French Lit.,** lect.: 3 hrs.

Reliving the awakening, bloom and decline of the Renaissance period in literature and language through the works of Marot, Rabelais, DuBellay, Ronsard, Montaigne and the poets of the *baroque*. The century's concern with the French language will provide a convenient introduction to the study of the development of modern French.

*** 3500A Introduction to 17th Century French Literature,** lect.: 3 hrs.

The theatre in seventeenth century France: an examination of representative works by Corneille, Racine and Molière; an attempt to define these dramatists' vision of man and the world and to assess their contribution to the history of ideas and the development of French theatre.

3601B Introduction to 18th Century French Lit., lect.: 3 hrs.

Basic survey course designed to introduce the student to the literature of the 18th century which includes works by such authors as Voltaire, Rousseau, Diderot and Marivaux. The Enlightenment (from the death of Louis XIV to the French Revolution) will be discussed in terms of its philosophical, historical and social impact.

3700A Introduction to 19th Century French Lit. lect.: 3 hrs.

An introduction to the main literary movements of the 19th century: Romanticism, Realism, Symbolism. Focus will be placed on representative authors and/or texts belonging to one or more of these trends.

3801B Introduction to 20th Century French Lit., lect.: 3 hrs.

Poetry and Theatre: 1900-1975

3900A/3901B Introduction to French-Canadian Literature, lect.: 3 hrs.

This course concentrates on the in-depth study of a few major works of French Canadian literature with emphasis on the period from 1945 to the present day.

3910A The Development of Acadian Literature, lect.: 3 hrs.

Critical investigation into the historical, socio-cultural, linguistic and literary significance of past and present Acadian writing. (may be preceded by 2000 A/B).

*** 4000 History of the French Language,** lect.: 3 hrs.

This introduction to Old French, followed by a study of Middle and Classical French, should enable students to approach texts from any literary period. Phonetic and grammatical changes will explain many so-called oddities of today's language. Attention is given to dialects, past and present, including Canadian French. Some knowledge of Latin is desirable, though not essential.

4011B Lexicology, lect.: 3 hrs.

Lexicology studies lexical units, such as simple, derived and compound words (route, routier, autoroute) and phrases (autoroute à péage). This course will look at the forms and meanings of contemporary French lexical units, with emphasis on their functioning in texts, their presentation in dictionaries and on lexical creativity resulting in new-coined expressions.

4010A Evolution of Modern Linguistics, lect.: 3 hrs.

Development of language study from early times to the present day. Emphasis is on the interpretation of selected French texts of important writers on language. The second term is entirely devoted to twentieth-century authors.

4015 Advanced Translation into English, lect.: 3 hrs.

A two-term course dealing with the difficulties and techniques of French-English translation.

4040 Composition, lect.: 3 hrs.

Continues the work of 3040 at a higher level.

Prerequisite: French 3040.

*** 4300A/4301B,** lect.: 3 hrs.

A) *Le Roman courtois*
A close literary analysis of medieval French Arthurian romances. Texts in bilingual (Old French/ French) editions.

B) *La Poésie courtoise*
A stylistic and socio-cultural study of French courtly love poetry from the ninth to the fifteenth centuries. Early texts in modern French translations.

4400A/4401B Sixteenth Century French Literature, lecture-seminars: 3 hrs.

This course surveys the development of Humanistic thought, the poetics of the Pléiade, tragedy, comedy and the plastic arts in the French Renaissance. In seminars, a close textual study will be made of the major writers: Clément Marot, Marguerite de Navarre, Scève; Rabelais, Ronsard, Du Bellay, Montaigne.

4500A/4501B Literature of the Seventeenth Century, lect.: 3 hrs.

A) Major seventeenth century "moralistes" (i.e., keen observers of man, society and the human condition): Pascal, LaRochefoucauld, LaBruyère, La Fontaine.
B) Molière

4600A/4601B French Literature of the 18th Century, lect.: 3 hrs.

This is an in-depth study of the French Enlightenment which will treat some of the longer works by major authors, as well as introduce the student to secondary authors whose works are also of significant literary, philosophical or historical value. The study will be unified by an examination of recurring philosophical ideas: utopia, happiness and good/evil, and literary themes important to understanding the development of new genres and styles.

4700A/4701B French Literature of the 19th Century, lect.: 3 hrs.

4700A, *Romanticism:* Romanticism is viewed primarily as a rebellious and creative force which greatly contributed to reshape traditional society. The origins, main themes and trends of the movement are studied with an attempt to show Romanticism as a European movement, the impact of which

was felt in fields beyond the boundaries of literature (painting, music, socialist theories etc.) Classes are conducted as seminars — entirely in French; students are required to do a great deal of personal research, to prepare exposés and participate in class discussions. The choice of texts depends largely on the students' previous experience; they include works by Mme de Staël, Chateaubriand, Lamartine, Hugo, Vigny, G. Sand and others.

4701B, *La Crise du Vers et le Poème en Prose:* Traditional French poetry underwent a crisis in the 19th century which led poets to seek out or invent new forms of expression. The *poème en prose* is an attempt to create a new poetic language; as such, it serves as a formal transition between traditional and modern poetry. This seminar will focus on the prose poems of the following authors: Bertrand, Baudelaire, Rimbaud, and Mallarmé.

4710A French Poetry from Mallarmé to Char, lect.: 3 hrs.
The object of this class is to study the evolution of the language of poetry over the past one hundred years. It will take as its starting point Stéphane Mallarmé, who discovers a wholly new role for the poet. Other poets to be discussed and critically analysed will include Valéry, Claudel, Apollinaire and René Char.

4800A/4801B French Literature of the Twentieth Century, lect.: 3 hrs.

A) The Theatre of Camus and Claudel.
In all, eight plays are studied, four from each author. The works offer a contrast in philosophical content and reveal technical problems involved in their stage presentation.

B) Anti-novels of the 20th Century.
In this course we are mainly interested in fictional techniques: how the author creates his illusion. Each of the works selected for detailed study is important due to the author's rejection of conventional ideas regarding the form of the novel.

4810B French Poetry from Mallarmé to Char, lect.: 3 hrs.

See description for 4710A.

4994A/4995B; 4996A/4997B; 4998A/4999B (460A/B), Independent Research for Honours Students.

Graduate Level Courses
Courses in the 5000 series are for graduate students. Their subject matter, century designation, etc. correspond to 4000 level courses (e.g. French 5800 will deal with some aspect of 20th century French literature). Special seminars will be offered on a variety of topics (please consult the Graduate Advisor) in addition to the following:

5124 Linguistics Seminar

5200 A, B, C Research Methods

Practical introduction for honours and M.A. students to reference works, journals, libraries, bibliographies and publications in the students' field of specialization. Actual application of methods concerning editing, reviewing, abstracting and the writing of papers and articles related to the students' thesis work.

5994A/5995B; 5996A/5997B; 5998A/5999B Independent Research for Master's Thesis

Geology

Professors
H.B.S. Cooke (Carnegie Professor)
J.M. Hall
M.J. Keen (leave of absence)
G.C. Milligan (Undergraduate Advisor)
P.E. Schenk (Graduate Co-ordinator)

Assistant Professors
M. Zentilli

Instructor
N.A. Lyttle

Associate Professors
F. Aumento
D.B. Clarke
F. Medioli
G.K. Muecke
D.J.W. Piper (jointly with Oceanography)(Chairman)
P.H. Reynolds (jointly with Physics)

Geology is for those who wonder about the earth. How was it made? What changes it now? Where do we seek oil? Or nickel? What moves continents? Its study is of enormous economic importance to Canada - and of course to the world as a whole - and is intellectually exciting.

Its economic importance is by now self-evident. Mankind has used more fossil fuels - oil, natural gas and coal in the last twenty-five years than in all its previous history; the world's reserves of oil and gas are counted in terms of two decades or so. Production of all minerals, including fossil fuels, counts for a very substantial part of Canada gross national product. This importance is recognized by all governments in Canada; the federal government maintains a large geological survey, and the provincial governments maintain comparable organizations. Its environmental importance is also self-evident. We cannot plan a pipe line from the Arctic without considering the properties of the rocks through which, or over which, it will run. We cannot design cities without concern for the sources of building materials and of aggregates for roads, and for water supplies and sewage disposal.

The intellectual excitement of the study of the earth has been enormous in the past ten years and promises to continue so in the next. During this time scientists studying the earth have shown that the continents really do drift - that North America and Africa really were once together; indeed, part of Nova Scotia may be really parts of Africa, left behind! The questions *now* are of the sort: What has caused these vast motions on the surface of our globe? When did they start in the history of the earth? Does knowledge of them help us in our search for minerals? Many of the recent exciting discoveries about the earth have come from the study of the earth beneath the sea, and scientists from Dalhousie have been leaders among Canadians in this work. But the earth cannot be thought of in isolation from the other planets and the sun, and all sorts of new discoveries important to an understanding of the earth have come from the studies by space probes of the solar system.

Halifax and Dartmouth together have facilities which make the region one of the best places in Canada in which to study the earth. The departments of geology, oceanography and physics at Dalhousie are all involved in one way or another, as is the department of mineral engineering at Nova Scotia Technical College. The Atlantic Geoscience Centre at Bedford Institute is an arm of the Geological Survey of Canada, responsible for their work offshore. The government of Nova Scotia is involved through its Departments of Mines and Environment, and the Nova Scotia Research Foundation.

Classes in geology are offered for different types of students. Some will want to make a career in some aspect of the study

of the earth - as geologists, geochemists, geophysicists, oceanographers or teachers. Some may need instruction in geology as an aid to other disciplines; for example, a mining engineer; or a physicist interested in X-ray diffraction spectrometry; or a chemist interested in crystallography; or a biologist interested in protozoa. Students may be interested in a geology degree before they take a professional qualification such as law or business administration. Those whose prime interest is the humanities or social sciences will find that the introductory class in geology stimulates their awareness of their surroundings, and their appreciation of the many facets of science.

Careers open to geologists are many and varied. The largest number of job opportunities is provided by industry, primarily in the search for the production of raw materials such as metals, petroleum and water. Geologists competent in mathematics, or indeed mathematicians with some background in geology, might be involved in processing and analysing data using digital computers; those interested in going to sea might work with the Federal Government's marine institutions. The federal and provincial governments employ geologists in their geological surveys and Departments of Mines; the Canadian government is responsible for supplying geologists to agencies such as UNESCO to work in underdeveloped countries. A graduate with a geology degree and a reasonable background in other sciences would find teaching in high school challenging.

High School Preparation
Students in high schools who plan a *career* in sciences involving the earth, such as geology or geophysics, should note that it is sensible to try to have the following subjects in Grades XI and XII:

Grade XII mathematics, plus two of Chemistry, Physics and Biology. (The third should have been taken in Grade XI if possible).

Note that these are *not* prerequisites, but we do strongly advise them. The student should aim to make up deficiencies in his or her high school preparation in the first year at Dalhousie. Note too that at present Grade XII Geology is *not* counted as equivalent to a Geology 100 level class (in Geology) at Dalhousie.

UNDERGRADUATE PROGRAMMES
These fall into three categories: (1) Programmes and courses for those not majoring in geology, (2) Honours programmes - concentrated, or combined with other subjects, (3) Three-year degree programmes with a major in geology.

(1) Programmes and courses for those whose major is not geology
These courses are specially designed for those who want to know something about the earth, but whose major field of study at Dalhousie will lie elsewhere: an economics student, concerned with resources; a history student, interested in the role played by Canada's geological frame in the development of transportation; a biology student whose fauna and flora inhabit the mud of the sea floor.

These courses are:
(i) Geology 102, especially designed for students in the humanities and social sciences. Geology 101 and 140 (an evening class) are also suitable introductory classes.

(ii) Two-hundred level classes taught in the evening: 240, 241B, 242A, open to all with 100, 101, 140 or high grades in 102. These are not normally suitable for students whose major is geology.

(iii) For engineering students and science students in other disciplines:
Biologists: 223B, 240, 241B, 242A, 423
Chemists: 201, 425, 310, and 424 with extra work.
Engineers: 103B
Physicists and mathematicians: 103B, 313A, 427A, 428B, 429.

(2) Honours programmes
Honours programmes are designed for students who want a thorough training and think that they are likely to use this training in their careers. An honours degree is almost essential for any professional work in the earth sciences, and for graduate study.

Honours programmes fall into three groups,
(a) concentrated, with a major in Geology
(b) combined with another subject,
(c) unconcentrated, combined with two subjects.

The tables which follow are not considered rigid requirements, *but are a guide.* All students in honours programmes *must* consult the Chairman or the undergraduate advisor each year.

TABLE 1
(a) Concentrated Honours with a Major in Geology: A Typical Programme

Year 1	Geology 100 (note (1), (d))
	Mathematics 100/101
	One class in two of Physics, Chemistry and Biology
	An elective (note (1), (a))
Year 2	Geology 201
	Geology 202A and 223B
	One class in two of Physics, Chemistry, Biology and Mathematics
	An elective
	Field Camp (Note (2))
Year 3	Geology 310, 311A, 312B, 313A, 314B
	One class in Physics, Chemistry, Biology or Mathematics
	An Elective
Year 4	Geology 420 (note (3))
	Three 400 level classes in Geology
	An elective
	A comprehensive examination (note (3))

Notes to Table 1

(1) Classes in Other Subjects
(a) The elective of first year must satisfy the faculty requirements for a class in which the ability to write is emphasized; see the Programme Planning Guide. Students are advised that their ability to write clear and concise English will be an important part of all Geology classes.

(b) A student must normally complete one class in each of Biology, Chemistry, Physics, and Mathematics by the end of his second year, and a second class in one of these subjects, normally mathematics. The recommended first classes are: Physics 110, Chemistry 110, Mathematics 100/101, Biology 1000 or 2000. Recommended second classes are: Biology 2000 or 3321, Chemistry 211B, 220A, 231A, 232B, Physics 221 or 230, Mathematics 200, 220, 206 (or 106/107), 225/227.

(c) Students should choose electives using as guidelines that an elective should be enjoyable, or interesting, or useful or,

hopefully, have all these characteristics. They should appreciate that they live in a bilingual country, that they will have to write and read many reports in their careers, and deal with businesses and governments. Consequently, classes in English, French, Economics and Political Science may be thought of as useful courses. Such classes may also be interesting and enjoyable.

(d) Exceptionally a student may offer Geology 101 in place of 100.

(e) A student who decides at the end of first year to take honours in Geology but has not taken Geology 100 in that year may offer Geology 100 and 201 in Year 2, if he or she has a B+ standing in Year 1. A student who has taken Geology 100, but whose program does not meet the other requirements should consult the department.

(f) Students with a good background in high school Biology are permitted to take Biology 2000 in their first year (see: Biology). If this is done it cannot be counted as one of the classes beyond the 200 level required for an honours degree (this is no disadvantage, but you should know it when planning).

(2) Field Camps
Students in a concentrated honours programme must complete one field camp at the end of second year, and another at the beginning of the third year. Both are integral parts of Geology 311A. The first is a 10-day session early in May in cooperation with other Maritime universities, is held at St.Francis Xavier University, Antigonish, and is designed to introduce the simpler techniques used in geological mapping. The second is a small independent mapping project conducted during registration week in September in the Halifax area. A third field camp at the beginning of the fourth year is an integral part of Geology 420. Field work elsewhere may be substituted for the third field camp, but only with departmental approval. This will normally require a letter from the field supervisor, describing the kind and variety of work done.

Field excursions are a part of several classes and are conducted at appropriate times during the session.

(3) Thesis and Comprehensive Examination
A student may choose one of three options: (a) A thesis as Geology 420, followed by an oral examination based on the subject area of the thesis, (but not necessarily restricted to the thesis topic itself). This oral examination will count as the honours comprehensive examination.

(b) He or she may choose not to have an oral examination on the thesis, but to write a written comprehensive examination. This written examination will reflect the content of the 300 and 400 level classes which the student has taken.

(c) He or she may write the honours thesis in addition to four 400 level classes in the fourth year. In this case the thesis will count as the honours comprehensive examination.

Theses must be completed by the second Monday in March of the fourth year (to ensure adequate time for preparation for examinations in other classes). Students who complete them after this date and before May 31, will have to graduate in the fall, not the spring. After May 31, the student must re-register for Geology 420 and pay the fees for that class. A thesis submitted after September 1st following the fourth year will not be accepted, and a general, rather than an honours degree will be awarded. Only in special circumstances is it possible for a student to receive an honours degree if the thesis is completed after September 1st, and in these cases payment of full fees for Geology 420 is required.

(b) Combined Honours and Unconcentrated Honours Programme
Honours programmes with other disciplines such as Physics, Chemistry, Biology and Mathematics are often arranged. Such programmes are useful for students who decide to specialise in Geophysics, or Paleontology (as examples.) Students must consult with the departments concerned. Possible programmes are shown in the table. The following general comments apply.
A normal first year programme would be:
Geology 100
Math 100/101

Two classes from Physics 110, Chemistry 110 and Biology 1000 or 2000, which will include the field or fields with which the combination is being made.
An Elective

In the second and third year the student must normally include Geology 201, 202A and 223B. In the third and fourth year the student will normally take at least one full credit from Geology 310, 311A, 312B, 313A and 341B, and sufficient 400 level classes to meet the requirements. The faculty requirements for a comprehensive examination will normally be met by meeting the requirements for students in concentrated honours programmes established by any of the departments concerned. Students in combined honours and unconcentrated honours programmes will normally attend the field camp which is a part of Geology 311A, whether or not they register for 311A. This may be taken at the end of second, or third year; the second is best.

The tables following give possible programmes. They are *only suggestions*. Timetable problems may make them difficult to follow precisely.

TABLE 2
Combined honours with Biology

Year 1	Geol 100
	Math 100/101
	Biol 1000/2000[2]
	Elective[1]
	Elective
Year 2	Geol 201
	Geol 202A and 223B
	Biol 2040A or B
	Biol 2060A or B
	Chem 110 or Phys 110
	Elective
Year 3	Two from Geol 310-314
	Biol 2000 or 3321 or 3323[5]
	A class in Phys, Chem, or Math[4]
	Elective
Year 4	Geol 420 or Biol 4900[3]
	One from Geol 310-314
	One from Geol 421-423
	Biol 3321 or 3323
	Elective
	Comprehensive[3]

TABLE 3
Combined honours with Chemistry

Year 1	Geol 100
	Math 100/101
	Chem 110
	Phys 100 or Biol 1000 or 2000
	Elective[1]
Year 2	Geol 201
	Geol 202A and 223B
	Chem 211B, 220A
	Chem 231A, 232B or 240
	Math 200 or 220
Year 3	Geol 310
	One credit from Geol 311-314
	One 300 level credit in Chem
	Phys 110 or Biol 1000 or 2000
	Elective
Year 4	Two 400 level classes in Geol
	Two 300 level credits in Chem
	Elective
	Comprehensive[3]

TABLE 4
Combined honours with Mathematics

Year 1	Geol 100
	Math 100/101
	Two from Phys 110, Chem 110, Biol 100 or 2000
	Elective[1]
Year 2	Geol 201
	Geol 202A and 223B
	Math 200, 220 or 250
	Math 203 and 204, or 213
	One from Phys 110, Chem 110, or Biol 1000 or 2000
Year 3	Math 300 or 350
	Math 206
	Two from Geol 310-314
	A class in Phys or Chem
Year 4	One from Geol 310-314
	Two credits from Math 335, 462 337, 320, 402
	A class in Phys or Chem
	Elective
	Comprehensive[3]

TABLE 5
Combined honours with Physics

Year 1	Geol 100
	Phys 110
	Math 100/101
	Chem 110
	Elective[1]
Year 2	Geol 202A and 223B
	Phys 230
	Phys 221
	Math 200
	Elective
Year 3	Geol 201
	Geol 311A, 312B
	Geol 313A, 314B
	Phys 320 or 335 or 300
	Math or Chem elective
Year 4	Geol 310 or 420
	Geol 427, 428B, 429
	Phys 321 or 335 or 320 or 416
	Math or Chem Elective
	Comprehensive[3]

Notes to Tables 2, 3, 4, 5

(1) This elective must satisfy faculty requirements - see Planning Guide.

(2) Biology 2000 should be taken if you are eligible - see Biology section of this calendar, and the notes following "concentrated honours".

(3) The thesis requirements and comprehensive examination requirements may be met by meeting the requirements of either department for students in concentrated honours programmes; consequently a student may, for example, choose to write a thesis as well as to take five classes in the fourth year (see notes following "concentrated honours").

(4) Suitable classes include organic, inorganic and physical chemistry, biochemistry, statistics, numerical analysis.

(5) Combined honours with Biology must include Biology 2000 or 3321 and 3323, and 2040A or B and 2060A or B.

(3) Three Year General Degree Programmes with a Major in Geology

Three year degree programmes with a major in Geology are suitable for students who intend to take further professional training (in Law or Business Administration, for example, or to enter fields where they are likely to need their geological training as background (as a business executive in the mining industry, or as a librarian in a science library, for example). Three year general degree programmes are of little value to students who plan professional careers in the earth sciences.

One programme recommended for students undertaking a general B.Sc. with a major in Geology is the first three years of the concentrated honours programme (see the table). This programme may not be suitable for all students, and others can be arranged. They must include Geology 201, 202A and 223B. Your attention is drawn to the Faculty regulations under which a student graduating with a general degree with a major in Geology may convert it to an honours degree by certificate. In this connection, you should note that although other 200 level classes may be taken as well as 201, 202A and 223B as part of the General Degree programme, they do not form a part of the core of the programme for concentrated honours in Geology, and cannot count as credits towards an honours degree. Students undertaking a general degree with a major in Geology must attend an approved field school, which will normally be the first of the two field schools offered by the department. It should normally be taken at the end of second year.

Classes Offered

100 Introduction to Geology, lect.: 3 hrs.; lab.: 3 hrs.; D.B. Clarke and Staff.

This is an introduction to geology for students who plan to take a degree in geology, in another science or in engineering. The course covers the whole field of geology, from the origin of the solar system and the Earth through Earth history to the details of the structure of the ocean floors and mountains, the ore and energy minerals of the Earth and the future responsibilities of geologists in a world suffering from increasing environmental pressures. The lecture programme combines the results of the most modern techniques used by geologists with the practical knowledge needed for geological mapping and rock and mineral identification, and

illustration using movies and geological samples is a strong point. The laboratory course takes the student into the field during the fall to look at the complex and interesting geology of the Halifax area. During the winter through handling samples, students become familiar with minerals, rocks, fossils and geologic maps and also benefit from videotaped field trips to more distant parts of the province.

101 Introduction to Geology, lect.: 3 hrs.; lab.: 3 hrs. (alternate weeks); F.S. Medioli and N.A. Lyttle

This is an introductory class for students who do not plan to major in geology but who are interested in the subject as a science elective or as the basis for taking it as a minor. Good students in Arts should not encounter serious difficulties. It covers the whole field of geology, emphasizing the concepts and ideas that make possible an interpretation of the world we live in.

102 The Earth and Man, lect.: 3 hrs; tutorial/ lab.: 1 hr.; G.C. Milligan and Staff.

This class is designed especially for students in the social sciences and humanities. It will deal briefly with the nature and structure of the earth and its crust in order to provide background, but it will not involve detailed study of rocks and minerals. Its objective is to consider the influence of geological factors on man's history and upon economic, social and political decisions of the past and future.

103B Introduction to Geology, Lect.: 3 hrs.; Lab.: 3 hrs.; G.C. Milligan.

This is a half-class in Geology designed for students in science and engineering who have taken Physics 110 (or equivalent), Mathematics 100/101 (or equivalent) and Chemistry 110. One purpose of the course is to show students in civil and mining engineering the principles of physical geology which apply in planning and design of mining and civil engineering works, and to introduce them to historical geology. This is designed as a service class for students in engineering, and is not normally acceptable as a class introductory to an honours programme in geology.

140 Introduction to Geology, lect.: 3 hrs.; (lect. and demonstration and lab. one evening per week); F. Aumento.

This is an evening class intended, like 101, for those interested in the earth, but who do not plan a career in professions involving geology. Examples from Canadian geology are stressed in this class. There are *no* science or math prerequisites for this class. Under normal circumstances a student cannot go from this class into Geology 201, 202A or 223B, but can enter Geology 240, 241A, and 242B.

201 Introduction to Mineralogy, Lect.: 3 hrs.; lab.: 3 hrs.; G.K. Muecke.

Accurate identification of minerals is one of the fundamental skills of the geologists. The laboratory of this class will be largely dedicated to learning the techniques of identification, whereas the lecture material will deal with other aspects of minerals such as their internal structure, chemical composition, mechanisms of growth, environments of formation, and importance as economic deposits.

202A Sedimentology and Historical Geology, Lect.: 3 hrs.; lab.: 3 hrs.; P.E. Schenk.

The first part of the course concentrates on the development of sedimentary rocks; by examining modern depositional environments, and applying this information to ancient sediments. Both ancient and modern sediments are examined on field trips. The second part of the course examines the geological evolution of the North Atlantic region, especially Nova Scotia. Emphasis is placed on the interpretation of the sedimentary rock sequences.

223B Biostratigraphy, Lect.: 3 hrs.; Lab.: 3 hrs.; H.B.S. Cooke.

The objective of this class is to provide a broad picture of the fossil record - the record of life - with emphasis on changes through time, and on methods of interpretation of the fossil record that are useful in stratigraphy. Studies of morphology and taxonomy will, in this class, be only at an elementary level. This class, and Geology 423 are suitable classes for Biology students who do not have a 100 level class in Geology.

240 Marine Geology and Geophysics, lect., lab. 3 hrs.; one evening per week, J.M. Hall.

This class presents the new ideas concerning the earth that have developed in recent years, largely through studies of marine geology and geophysics. It also attempts to show the range of marine geological work, and its relevance to other fields of science, as well as engineering, economics and politics. There is one day-long cruise on a Saturday or Sunday. The class may *not* be taken by students majoring in geology; it is suitable for students who have geology as their minor; and those who would simply like a second class in geology (including high school teachers, or interested professionals at government institutions).

Prerequisite: any first level class in geology.

241B Environmental Geology, lect., lab. and discussion: 3 hrs.; one evening per week, Staff.

Geology lies behind many of the environmental problems facing man today. In this class we consider topics such as energy and mineral resources, geological hazards such as earthquakes, landslides, and volcanic eruptions, the relevance of geology in the fields of foundation engineering, pollution and waste disposal, and the role that geology has to play in planning urban areas, especially in Nova Scotia.

Prerequisite: any first level class in geology.

242A Geomorphology, lect., lab. and discussion: 3 hrs. one evening per week. H.B.S. Cooke.

The surface features of the earth are undergoing constant modification, and their present form is the result of a variety of erosional and depositional processes, including the action of ice, rivers, the wind and the sea. In this class, we will examine the development of the land-forms of Canada, the importance of the last ice age, and the erosional processes still taking place today. We will examine the appearance of these land-forms in conventional, aerial, and satellite photographs, and in maps.

Prerequisite: any first level class in geology.

310 Igneous and Metamorphic Petrology, lect.: 3 hrs.; lab.: 3 hrs.; D.B. Clarke/G.K. Muecke.

The mineralogy and texture of rocks are the products of their environment and mode of formation; thus macroscopic and microscopic investigations of these rocks provide clues to the conditions prevailing at the time of their formation.

Igneous rocks will be discussed under such topics as mineralogical and chemical classification, methods of depicting chemical data, mechanisms of magma evolution and comagmatic provinces.

The mineralogical, textural and chemical changes in igneous and sedimentary rocks as a result of metamorphism will be discussed in the second term. Stability relations of minerals and mineral assemblages under varying temperature-pressure conditions and the concept of metamorphic series will be stressed.

311A Field Methods, lect.: 3 hrs.; lab.: 3 hrs.; G.C. Milligan and P.H. Reynolds.

This class is an introduction to field techniques useful to the practising geologist. Approximately half the work of the class deals with elementary surveying techniques, including the use of transit, plane tables, photogrammetric methods, and surveying astronomy. The other half deals with geochemical and geophysical exploration methods, such as gravity, magnetic, and seismic surveys. The field camps conducted at the end of the second year and the beginning of the third year are considered to be integral parts of this class.

312B Principles of Stratigraphy, Lect.: 3 hrs.; lab.: 3 hrs.; P.E. Schenk.

Stratigraphy is concerned with the interpretation of paleogeography as recorded in layered rock. This record is a complex of three dimensional rock masses to which a fourth dimension, time, must be considered for paleogeographic reconstruction. The scale of the layers varies from the millimeter-thick layers of stratified sediment to continental blocks and ocean-floor plates, whether of sedimentary, metamorphic, or igneous rock. Establishment of time-surfaces within this rock is essential for interpretation of complexes of depositional environments - the paleogeography. The purpose of the ocurse is to show how rock may be attacked for such reconstruction - whether for scientific, cultural, or economic purpose.

The first five weeks deals with stratigraphic principles, such as vertical variability, classification and nomenclature, lateral variability, and correlation techniques. The remaining eight weeks apply these principles to the geologic record. North America appears to have both gained and lost segments to other continents; therefore, some analysis of these other continents is necessary to explain the geologic evolution of Canada. Within this segment, four weeks are concerned with continental sequences, and the remaining four with mobile zones, including the Appalachian-Mauritanide (Africa), and Hercynian-Caledonian (Europe) belt, and the Cordillera.

Laboratory assignments involve statistical and stratigraphic map problems aided by the computer. Although statistics and machine-aids are introduced, some prior knowledge is helpful.

This class is suitable for those specializing in sedimentary rock, but especially for those in other areas of earth science, general course B.Sc., and emphatically earth science teachers.

313A Physical Properties of Rocks, lect.: 3 hrs.; lab.: 3 hrs. every other week; P.H. Reynolds.

To understand quantitatively the present mineralogical, lithological and structural state of the Earth's crust we need to know something of the physical properties of rocks. For example, knowledge of the heat capacity of a recently emplaced granite batholith, and the thermal conductivity of the country rock, will allow us to estimate the temperatures and times needed to produce the observed thermal aureole about the batholith. This example indicates that the course is not a dry catalogue of numbers, but is aimed at showing how specific rock physical properties, measured in the laboratory or the field, can be used to train the geologist to replace inspired guesses by reasonable quantitative estimates in assessing the phenomena he observes.

314B Structural Geology, lect.: 3 hrs.; lab.: 3 hrs.; G.C. Milligan.

This class is an introduction to the behaviour of rocks during deformation. It stresses the geometrical aspects of rock structures of the dimensions of those normally encountered by the exploration geologist, and their interpretation. The laboratory involves exercises in the construction and interpretation of geological maps and is designed to develop skill in the interpretation of structures in three dimensions, and in their graphical representation.

(Approximately one-half of the laboratory time of Geol. 313A will be devoted to the exercises of this class.)

420 Thesis

The B.Sc. thesis may be counted as a class in the normal geology programme. Special regulations govern this, and the student should consult the undergraduate advisor.

421B Siliclastic Sedimentology, lect.: 3 hrs.; lab.: 3 hrs.; P.E. Schenk.

This class will examine the physical processes of transport of granular sediments, and the transport and deposition of clays. This information will be integrated in a study of modern and ancient littoral and continental shelf sedimentation. In the lab, techniques for analysing and interpreting unconsolidated sediments will be learnt. (The content of this class changes substantially from year to year.)

Prerequisite: 202A. Students will find 312B, 313A and Oceanography 512A provide useful background material.

422A Carbonate Petrology, lect. 2 hrs.; lab.: 3 hrs.; P.E. Schenk.

Sedimentary rock consists of siliclastics (Geol, 421B and authigenic suites. This course deals primarily with depositional and diagenetic environments of carbonates, although other authigenics such as sulfates and chlorides are also reviewed. Carbonates are forming now in both the most beautiful, and also the harshest environments on earth. These environments are distinctive in their reliance on life — both plant and animal. The authigenic suites are of prime importance economically because they act as reservoirs for petroleum, natural gas, groundwater, and ore deposits (as at Gays River).

The course consists of four parts. Part One involves demonstrations of methods unique to carbonate petrology; Part Two is on physical chemistry of carbonates; Part Three on recent environments as Grand Bahama Bank, Bermuda, Florida and Cuba (humid environments) and the Persian Gulf

and Western Australia (arid environments); Part Four on diagenesis (6 weeks). Laboratories deal with field and lab techniques, binocular logging of drill chips, and description of Schenk's collection from the Bahamas, Bermuda, Florida, Cuba, Persian Gulf and Australia. Seminars on specific topics may be planned.

Text: Bathurst, *Carbonate Sediments and Diagenesis,* paperback edition, 1975.

423 Systematic Paleontology, lect.: 2 hrs.; lab.: 3 hrs.; F.S. Medioli.

This class comprises a systematic survey of the major phyla of fossil organisms. The emphasis will be on morphology and taxonomy of invertebrate phyla, including microfossils. The purpose of this class is primarily to enable the student to recognize at sight the members of the various phyla. However, it is intended also that he should learn how to tackle invertebrate fossil material so as to classify it accurately when the resources of a library and museum are available.

Prerequisite: Geology 201 and 223B or Biology 2000 or Biology 3321. Note this class is suitable for Biology students without previous geology classes.

424 Advanced Mineralogy and Petrology, lect.: 3 hrs.; lab.: 3 hrs.; F. Aumento, and Staff.

This course is subdivided into three parts. The first deals with some advanced techniques of mineralogy, including use of the universal stage, X-ray diffractometer and electron microprobe. In this section will also be discussed the crystal chemistry of the main rock-forming minerals. The second part deals with current topics of interest in the petrogenesis of igneous rocks. The origin of certain magma types will be considered in the light of recent information from the fields of experimental petrology, geochemistry, isotope geochemistry, and geophysics.

Topics in metamorphic petrology will generally include: metamorphic rocks as equilibrium systems; the role of fluids in metamorphism; metasomatism and mass transport; kinetics of metamorphic processes. Laboratory projects and special topics will be chosen to suit the student's interests.

425 Geochemistry, Lect.: 3 hrs.; lab.: 3 hrs.; G.K. Muecke and Staff.

The first term of the course will deal with general problems in geochemistry. The abundance of the elements and their distribution in the solar system, lithosphere, hydrosphere, and atmosphere will be investigated. The emphasis will be on demonstrating how principles of crystal chemistry, thermodynamics, solution chemistry, etc. can be applied to geological problems.

In the second term environmental and exploration geochemistry will be stressed. Geochemical surveys, exogenic element dispersions and the origin and evaluation of geochemical anomalies will be discussed in detail.

In the laboratory the student is introduced to methods of rock and mineral analysis and will be exposed to classical, spectrophotometric, flame photometric, atomic absorption, X-ray fluorescence, microprobe and neutron activation analysis.

Prerequisites: Geology 201 and 310, or a good background in Chemistry. Students wishing to take this class should have a good background in either geology or chemistry and should consult the instructor before registration. Note that this class may be taken by students with a good background in Chemistry who have taken no previous geology classes.

426 Hydrogeology, lect.: 3 hrs; T. Hennigar.

This class studies the occurrence, movement and distribution of water, as related to earth materials, with emphasis on the exploration, development, utilization of groundwater and related environmental issues.

The class work includes the principles of groundwater flow, aquifer hydraulics, water chemistry, hydrologic systems, i.e. groundwater-surface water interactions, and digital modelling. Problems regarding the ground-water flow system and natural and artificial contaminants will be discussed, including such items as solid waste disposal, land use relationships and contamination due to de-icing salts, oil and gas, fertilizers, pesticides, herbicides, and other pollution sources. The disruption of the natural groundwater flow system due to construction works will also be examined. Problems, literature reviews and assignments on special topics are an integral part of the class. Reference texts and pertinent periodicals for reading will be announced.

Should enrolment in this class prove excessive, preference will be given to geology majors and graduate students.

Prerequisite: prior consent of instructor.

427A Applied Geophysics, lect.: 3 hrs.; J.M. Hall.

This is a course in exploration geophysics which will expand on material offered in parts of 311A (Field Methods) and 312A (Physical Properties). Topics will include: seismic interpretation theory, potential field theory, reduction and interpretation of gravity data, reduction and interpretation of magnetic data, electrical prospecting methods, electromagnetic induction theory, methods and interpretation.

Assignment will be project-oriented and will attempt to involve the student in interpretation of realistic geophysical data via computer simulation, model laboratory experiments, etc.

Prerequisite: requires consent of instructor.

428B Marine Geophysics, lect.: 3 hrs.; lab and occasional trip on small boat to be arranged. J.M. Hall.

We study the principal techniques used by geophysicists working at sea, and some of the principal results obtained concerning the structure and evolution of the ocean basins.

The main topics considered are: navigation, sounding, seismic refraction and reflection at sea, gravity at sea, magnetic field measurements at sea. A background equivalent to Geology 427B or the first half of Geology 429, Mathematics 100/101 and Physics 110 will be assumed.

429 Solid Earth Geophysics, C. Beaumont (Oceanography).

This course is essential for geology, or physics students who intend to be geophysicists. The course covers the physical state and behaviour of the Earth as a whole, and shows how geomagnetism, Earth electrical conductivity, earthquake seismology, study of the gravitational field and of the loss of heat from the Earth yield our present detailed picture of the Earth's interior, while the methods of absolute age determination and other isotopic studies together with paleomagnetism allow us to follow aspects of the Earth's evolution to its present state. Taught concurrently with Physics 445. A good grounding in math and physics is a prerequisite and registration for the course requires the consent of the instructor.

430 Economic Geology, lect.: 3 hrs.; lab.: 3 hrs.; Staff.

The search, analysis and exploitation of geologic bodies and materials that can be utilized profitaby by man, including metals, nonmetallic minerals and fuels are the concern of a large proportion of professional geologists. In this class, many concepts of geology are brought together to explain the nature and distribution of their genesis. Ore associations are analyzed within their detailed and regional geological environments, taking into account relationships with petrological, stratigraphic, structural and geomorphological parameters, including the unifying theories of plate tectonics. Economically significant mining districts in Canada and elsewhere are used as examples. Aspects of legislation regulating the exploration and exploitation of mineral resources are covered briefly. Although metallic minerals are emphasized, some time is devoted to problems pertaining to the geology of fossil fuels.

The laboratories are an introduction to the methods and techniques used in the study of mineral deposits, the microscopy of opaque minerals, the writing of mine reports and elementary problems of ore reserve calculation.

A text is recommended, but a considerable volume of reading from technical journals is also required.

431A Marine Geology, lect.: 3 hrs.; lab and occasional trip on small boat to be arranged; F. Aumento.

We study the principal techniques used by geologists working at sea, and some of the principal results obtained concerning the geology of the ocean basins. We look at this geology from the point of view that the ocean basins are depressions created as igneous rocks form at mid-ocean ridges: these depressions are filled by sediment from the continents, and by sediment of biogenic origin. The distribution of sediment is dominated therefore by the interacting effects of the creation of ocean basins, and the properties of the water masses of the oceans themselves. A background equivalent to 300 level classes in Geology will be assumed; students without this level of geological knowledge may be admitted by permission of the instructor.

432 Advanced Structural Geology, lect.: 3 hrs.; G.C. Milligan.

By means of one or two projects, this class will investigate the tectonic history of selected regions as a means of study of the processes involved therein. To some degree this also involves the application of the student's knowledge of stratigraphy and other aspects of geology.

The class is taught as a colloquim and participants will be required to do considerable reading from the relevant journals.

Seminars
A department seminar is held once a week. Other specialized seminars are arranged on an ad hoc basis.

Graduate Classes
Some graduate classes may be suitable: examples are Micropaleontology and Pleistocene Geology. Please consult the Graduate Calendar and seek advice from the Department.

German

Professors
J. Doull
F. Gaede

Associate Professor
D. Steffen
R. Friedrich

Assistant Professors
J. Lowry
A. Roulston
H.G. Schwarz

Lecturer
G. Josenhans

Special Lecturer
Colin Starnes

German studies are the investigation of German culture and its place in the formation of the modern world. By concentrating on significant aspects of the literary and intellectual culture of the Germanies, the Department, far from following an idle interest in the past, aims to understand the nature of our contemporary world.

Many Canadian students take German to become fluent in one of the more useful languages. German is generally understood in Central and Eastern Europe. German is also needed in many fields of study, such as Classics, History, Music, Philosophy, Religion, and the social and natural sciences.

The literary and intellectual culture of the Germanies is immediately present to us in the many ways the thoughts of Karl Marx, Nietzsche, and Freud have moved men and nations to change the course of the modern world. Revolutionary Marxism, nationalism, and the influence of Existentialism and Psychoanalysis on contemporary conceptions of human freedom have led to the divisions of the modern world. As we try to overcome the divisive forces so prominent in the contemporary world we have to understand their relative truth. We are thus led to an inquiry into the very nature of the Modern Age. The Reformation gave the first expression to its principle: the freedom of man in and through faith. The Enlightenment of the 18th century developed this principle, but it ended with the seemingly irreconcilable opposition of man and nature, and of one man's freedom with the freedom of all other men. The German Idealists struggled with these oppositions, and they offered a resolution that appears in the music of Bach and Beethoven, in the writings of Goethe and the Romanticists, and in the philosophy of Kant and Hegel. These men of the 18th and early 19th centuries developed in the Arts, in literature, and in speculative thought a profound understanding of the Modern Age. The course of history since the Revolutions of the 18th century is the history of this freedom, both in the Old and New World, in the East and in the West. Revolutionary Marxism and Existentialism, in its religious and secular form, take hold of a particular aspect of freedom. By concentrating on the Age of the Reformation, the intellectual conflicts of the Enlightenment, and the literary and philosophical achievements of the Idealists, German studies aim to contribute to a profound understanding of our world.

Degree Programmes

General B.A. in German
Students concentrating on German should take a minimum of four German classes beyond the 100 level.

B.A. with Honours in German
Students considering an honours course are advised to consult the Department of German.

Combined Honours
It is possible for student to take an honours degree combining German with another subject. Any student intending to take such a combined honours degree should consult with the two respective departments to arrange the details of such a programme.

Programme for Future Teachers of German.

The Department also offers a special one-year programme in conjunction with the Department of Education for third year students of German. All courses under this programme must be taken as a unit. Any student desiring to pursue this programme should consult with the Department.

1. *Prerequisite:* Successful completion of an intermediate German Class (such as German 200) or equivalent.

2. *Structure of Programme.*
a) intensive language training
b) philology and linguistics
c) teaching methods
d) work in German civilization

German Language Studies

Introductory Classes Offered

100 German for Beginners, lect.: 3 hrs.; G. Josenhans, A. Roulston.

German 100 is a seminar class for beginners, and no previous knowledge other than a reasonable background of English grammar is required. Its equivalent is two years of German in high school with a final mark of 75% or better.

The class is taught mainly in German, emphasizes the spoken language, and provides the student with the knowledge of basic grammar.

Language laboratory work and attendance of small conversation groups is required.

The class or its equivalent is a prerequisite for all classes on the 200 level.

105 German Reading Course for Beginners, lect.: 3 hrs.; A. Roulston.

The students will acquire a knowledge of basic vocabulary and grammatical structure sufficient to understand newspapers and texts in the humanities and sciences. No previous knowledge of German is required. The class is taught in English. For purposes of admission to advanced classes in German it is equivalent to German 100.

100/105 Intensified German, lect.: 5 hrs.; lab.: 2 hrs.

The combination of G100 and 105 is recommended to students who desire rapid progress in the German language.

Intermediate Classes Offered

Intermediate classes are based on German 100, high school German Grade 10, 11, 12 or an equivalent basic knowledge.

A combination of German 200 and German 202 serves as an accelerated Intermediate German course and is designed for students who want to make rapid progress in the language.

200 Intermediate German, lect.: 3 hrs.; G. Josenhans, H.G. Schwarz, A. Roulston.

The main aim of this class is to develop a certain degree of speaking fluency as well as reading and writing skills.
Language Laboratory work is required. Small conversation classes once a week as an aid to speaking fluency are compulsory.

201 Scientific German, lect.: 3 hrs.; A. Roulston.

This is primarily a reading and translation class designed to enable science students to read scientific papers, reports, and articles in scientific journals in the original language. A reading knowledge of German is a prerequisite for many Ph.D. degrees.

Prerequisite: German 100 or equivalent.

202 Exercises in Translation and Composition, lect.: 2 hrs.; G.Josenhans.

English and German texts from various periods of different types will be translated.

These translations will lead to the discussion of specific difficulties of grammar and construction. Students must prepare translations or compositions for each class. Dictations are given once a week. The class will be conducted mainly in German.

Prerequisite: German 100 or equivalent.

Advanced Classes Offered

203 Advanced German, lect. 3 hrs.; G. Josenhans.

Readings and discussions will promote fluency in the language.

Prerequisite: German 100 or equivalent.

Study of German Literature

210 Bertolt Brecht and the Tradition of Drama, lect.: 2 hrs.; R. Friedrich.

Brecht's drama and dramatic theory will be studied in relation to the tradition of Western Drama and its theory as laid down in Aristotle's *Poetics*.

215 Goethe's Faust. Lect.: 2 hrs.; J. Lowry.

A lecture and seminar class on Goethe's Faust (Parts I/II) - a literary work in which a total world view is expressed in language both beautiful and appropriate. Students may, if they wish, study independently another work, such as, Homer's Odyssee, Kazantzakis' Odyssee, Mann's Doktor Faustus and Hesse's Magister Ludi (Glasperlenspiel) in relation to the Faust text.

German 220 Introduction to German Literature lect.: 2 hrs.; H.G. Schwarz.

A study is made of texts representing major periods of German Literature since the 18th century. Special emphasis is given to the interaction between literature, society and the other forms of art. The class also serves as an introduction to literary crticism.

This course will be taught in German.

310 German Literature and Thought from Reformation to Enlightenment, lect.: 2 hrs.; F. Gaede.

The class studies German literature between the 16th and 18th centuries as a direct reflection of the important religious, social and philosophical developments after the Reformation and during Absolutism.

315 Goethe and the Enlightenment lect.: 2 hrs.; D. Steffen.

A study is made of German literature and thought of the time which preceded and witnessed the great revolutions of the 18th century.

320 Goethe and Romanticism lect.: 2 hrs.; D. Steffen. Nof offered in 1978-79.

324 Literature of the 19th Century, lect.: 2 hrs.; F. Gaede. Not offered in 1978-79.

325 Modern German Literature lect.: 2 hrs.; F. Gaede.

This class will study the plays of Bertolt Brecht and selected prose texts of Kafka and Thomas Mann.

335 Hegel's Aesthetics and the Ancients, Sem. 2 hrs.; F. Gaede.

Study of German Culture
Aesthetics, Philosophy, Religion

230 In pursuit of Freedom: from Luther to Nietzsche. lect.: 2 hrs.; J. Lowry.

Beginning with an examination of both the Notion of Freedom and the Principles of the Modern World, the course aims to investigate the peculiar form of Freedom in the modern world.

235 Germanic and Greek Mythology, Lect.: 2 hrs.; J. Lowry. Not offered in 1978-79.

All people have myths. Through them they first grasp the origin of the world, the order that governs it and their destiny within it. In this course we will study the two main forms of western mythology — the Greek and Germanic — and the relation of religion and secularism in the modern world to myth.

240 Luther and Kierkegaard: Faith, Enlightenment and Modern Secularity. Not offered in 1978/79.

245 Kant and the history of German Idealism Sem. 2 hrs.; D. Steffen. Not offered in 1978/79.

A study of Kant's relation to modern Rationalism and Empiricism, and an inquiry into the principle of Idealism.

330 Seminar on the Philosophy of Kant, 2 hrs.; D. Steffen. Not offered in 1978-79.

A study of the three critiques.

340 Heidegger and German Idealism Sem.: 2 hrs.; J. Lowry.

A lecture and seminar class in which Heidegger's philosophy and views on the history of philosophy will be closely considered in relation to the phenomenon of German Idealism.

345 German, Hegel's Philosophy of Nature, J.A. Doull, W.J. Hankey. Not offered in 1978-79.

Hegel's Philosophy of Nature and its relation to ancient physics and modern science. The course will endeavour to discover in what sense a thinking of nature in essential continuity with ancient physics is currently possible or in what sense modern natural science constitutes a philosophy of nature.

350 Marx and German Idealism Sem.: 2 hrs. R. Friedrich

410 Aesthetic Theories, seminar, 2 hrs.; F. Gaede. Not offered in 1978-79.

420 Seminar on Hegel's Phenomenology of Spirit, 2 hrs.; D. Steffen.

The Phenomenology of Spirit, published in 1807, was Hegel's first major work. He intended to write an introduction to philosophy by demonstrating the necessity of the advance from the most immediate form of knowledge to absolute knowledge. To achieve this he had to write the Phenomenology as an introduction to his own philosophy.

425 Studies in German Idealism.

Graduate Studies
The department offers a graduate programme leading to the M.A. degree. Details of the M.A. programme are given in the Calendar of the Faculty of Graduate Studies.

Health Education

HE412 Human Sexuality and Educating About It, lect. and discussion: 3 credit hrs.; normally Spring; E. Belzer.

This class is concerned with basic knowledge and understandings regarding biomedical, psychosocial, historical, legal, religious, semantic and comparative cultural aspects of human sexuality from conception to senility. Consideration is given to adjustment needs and problems of children and adults in contemporary Canadian society and to educational efforts to help with them.

Prerequisite: Permission of the instructor.

History

Professors
P. Burroughs
M. Cross
J.E. Flint
P. Fraser
H.S. Granter
R.M. Haines
G.R. MacLean
P.B. Waite
J.B.Webster

Associate Professors
J.E. Crowley
J. Fingard
N.G.O. Pereira
P.D. Pillay (Chairman)
M. Reckord
L.D. Stokes

Assistant Professors
J.F. Godfrey
G.S. Kealey
J.T. O'Brien
D.A. Sutherland
G.D. Taylor

History as a Subject for Study at University
A sense of history is a primitive need felt by individuals and by groups. Just as a person needs to know who he is and how he arrived where he is, human groups, races, classes, states and nations need a sense of their own past as part of their culture. This primitive sense of history is revealed in myths and legends, when peoples embroider what has come to them from the past to create a comfortable set of beliefs about their own previous exploits and origins. There are still those who wish to use history in this way, as a means to soothe doubt and demonstrate the essential rightness of their own beliefs.

The academic study of history, however, is concerned to discover as much as possible of the reality of the past and to interpret human behaviour in its changes through time. It is a unique subject, scientific in the way it uses evidence, but still in art because the reconstruction of the past requires a disciplined imagination and an effective rhetoric for the communication of meaning.

The contemporary world is one of intensive specialization, in which the varieties of human knowledge have increased well beyond the capacity of any individual to command them all. These developments have reinforced the role of history as the foundation of a person's education, because history can never draw frontiers around itself to exclude any branch of human knowledge, although individual historians will want to select that portion of it especially relevant for them. History's field of study will always be the whole of human experience.

History is the study of how and why changes in human life occur, and with what results.

Aims of Teaching and Study
Many students entering university history classes have difficulty in adjusting to the university levels of study. The ability to repeat what has been heard in lectures and to memorize events which fall between dates at the end of the class title is of little value. Students should understand the nature of the problems which have been studied; they should also command the knowledge which has been gained, in the sense of being able to arrange it in significant patterns and to allow ideas to be tested against such knowledge.

The subject of history does not have a monolithic body of knowledge. Historical understanding is a matter of interpretation, of offering explanations for events and movements which are subject to constant revision by scholars. Arguments, scepticism and controversy are thus the very stuff of history. The history student does not merely acquire a particular mass of information; he learns to think for himself.

At all levels of study in history, students are guided through lectures and tutorials and encouraged to read books and articles which consider the same problems from different viewpoints. Dalhousie has an excellent collection of historical literature and the Killam Library provides students with good conditions for private study and reading. Students are encouraged to acquire gradually a small, well-chosen personal library from the large number of excellent books published in paperback form.

Degree Programmes

Classes in history are set out below. There are several levels of study. 100-level classes are primarily for first-year students; 200-level classes treat broad geographical areas over specified periods; and 300/400-level classes provide opportunity for specialized study and advanced work for the undergraduate.

The Department appoints advisors to counsel students. Before registration students should consult the departmental advisors concerning their programme of study and should secure departmental approval for admission to the particular classes they wish to take.

1. General Degree Programmes
Students who wish to major in history choose a 100-level class and at least five or six and no more than eight upper-level classes, of which two or three should be at the 300-level. First-year students may take two 100-level classes in history.

Students who wish to build up a greater specialization in history than the minimum requirements may do so by taking classes in ancient history from the Classics Department, in economic history from the Economics Department and in contemporary history from classes offered in Political Science. The Biology and Physics Departments also offer a class in the history of science. Such classes are listed in the Calendar under the heading of the department concerned.

2. Interdisciplinary Programmes
Mediaeval Studies Programme.
African Studies Programme (for details consult the Department).
Canadian Studies Programme.

3. Honours Degree Programmes
Students may choose from several honours programmes:

European: A selection of classes in Mediaeval, Early Modern, and Modern European history with emphasis, if desired, on the national history of a European country.

North American: A concentration of classes in the history of Colonial North America and in Canadian and United States national history.

African: Classes in African history may be combined with classes in British colonial history.

British and British Imperial: A concentration of classes in the history of England and of the British Empire and Commonwealth.

General: A wide selection of classes from North American, British and Imperial, African and European history.

All programmes include related studies in language, literature, philosophy, economics and political science.

Note: not all classes listed below will be offerd in 1978-79. Please consult the time-table for up to date information on current offerings.

Classes Offered at the 1000 Level

1050 Revolution, War and Society in Modern Europe, lecture, 3 hrs; G.R. MacLean

This course is a survey of the major events and movements in Europe from the time of the French Revolution to the present. Particular attention will be devoted to the character and influence of leading figures such as Napoleon, Marx, Bismarck, Hitler, Stalin and Churchill. Artistic and intellectual developments in the nineteenth and twentieth centuries will be illustrated by visual presentation in class.

1200 History of Canada, lecture, 3 hrs; P.B. Waite

This class will cover the development of Canada from prehistoric Indian cultures to Pierre Trudeau. It will have a central core of social and political history, but will range across economic history as well as Canadian literature. This is history for people who like Canada.

1300 The Land of Opportunity: A reassessment of the American Experience, 3 hrs; Staff

Americans like to think of their country historically as one which has provided a place of refuge for dissenters, the promise of security and advancement to the poor and ambitious, and the prospect of freedom for the individual to develop his or her capacities to the fullest extent, and to participate in the governing of the community. Others today see America as a society crippled by traditions of racism and social conservatism, where political and economic elites distort and manipulate the processes of government and avenues of opportunity. What has happened to America and its people over three and a half centuries? This course investigates the political, social and intellectual development of the American colonies and the United States, and seeks to address some of the fundamental problems in American history.

1400 Europe and the Third World, lecture/tutorial, 3 hrs; J.E. Flint

This class introduces students to university level work in history. It provides training in study habits, analysis of problems, and essay writing by examining six "units of study" in turn. These are: 1) The origins of European imperialism 2) Slavery and Empire 3) Penetration and annexation in the Tropics-Indian and Africa 4) Escape artists - Japan 5) Escape artists - Iran (Persia) and 6) Decolonisation - India and Africa. For each unit there are lectures and tutorials, and students write an essay each month in class time on each unit. The written work is then discussed in tutorials designed to improve the quality of the analysis and writing.

1990 Problems of Historical Study and Writing, seminar, 2 hrs.

This class is for first-year students only. It is intended to introduce the student to the problems of historical study, including the nature of historical evidence, how problems are analyzed, what is meant by such concepts as "causes" and "results", and especially how the student can learn to think for himself about historical problems and to express his thoughts in carefully organized written work. No lectures take place; instead, each student registers for a section dealing with the type of history which interests him. The sections are limited to fifteen students and meet once a week. Each student must write an essay per month. The general techniques of study and writing are thus acquired by consideration of particular problems in a field of special interest to the student. This is history for people who like history.
Some of the sections that may be offered:
(2) Indians in the Maritimes. (Fingard)
(8) British Imperialism and Nigerian Nationalism. (Webster)
(13) From Artisan to Worker: Canadian Working Class History. (Kealey)
(14) Dissent in the Soviet Union. (Pereira)
(16) The World Crisis. (Godfrey)
(19) The Canadian Rebellions. (Burroughs)
(20) Race Relations in Tropical Africa. (Pillay)

Classes offered at the 2000 level

History 1050, 1200, 1300, 1400 and 1990 provide appropriate preparation for 2000 level classes.

European History

2000 Medieval Europe, lecture/discussion/tutorial sessions, 2 hrs; R.M. Haines

Within a broader framework the class will give particular attention to the Age of Charlemagne, The Twelfth-Century Renaissance, and the concept of decline in the context of the Later Middle Ages.

2010 Early Modern Europe and its Expansion Overseas, tutorial, 2 hrs; J.E. Crowley

This class studies the following topics in European history, 1500-1800: the Reformation and Counter-Reformation, economic and cultural expansion overseas, social structure, and reactions to political centralization. The readings include writings and biographies of religious reformers, Europeans' first-hand accounts of exploration and colonization overseas, documents (such as diaries, leases, marriage settlements, population statistics) which reveal social organization within particular communities, and a juxtaposition of early modern political theory with historians' accounts of political change.

2011A Renaissance and Reformation Europe, 1450-1650, seminar, 2 hrs; J.E. Crowley

This class investigates the major changes in Western Europe from its economic and political recovery after the Black Death to the crisis of centralized rule and economic growth in the mid-seventeenth century. Among the topics studied are the economic, social and political contexts of the development of humanism in fifteenth-century Italy and religious reform movements in transalpine Europe, the loss of Mediterranean predominance in Europe commerce, the centralization of authority by national monarchies and the rebellions lodged against them, and the subjection of urban culture and commerce to court dominance.

2012B Absolutist and Revolutionary Europe, 1650-1800, seminar, 2 hrs; J.E. Crowley

This class studies Western Europe during the rise of the absolutist state as an agency expected to direct the economy

and shape the social structure. The class will gauge the state's effectiveness in this role against Enlightenment writers' ideologies for social and economic reform; it will also consider how susceptible to deliberate change an agrarian, pre-industrial social order could be. Among the topics studied are the court of Louis XIV, the development of a world-wide sphere of European conflict, peasant revolts and urban popular protest, the seigneurial regime, and autocratic reform in Spain and central Europe. Particular attention is given to the characteristic sources of social conflict in France's Old Regime and their relation to the course of the Revolution.

2020 Eastern Europe to 1700, lecture/tutorial, 2 hrs; N.G.O. Pereira

This class is an historical survey of Eastern Europe, (Russia, Ukraine, Poland, and Lithuania) from the 9th century. It focuses upon the common origins of the states which emerge in the area and attempts to trace the patterns of Great Russian dominance.

2021 Modern Russia, lecture/tutorial, 2 hrs; N.G.O. Pereira

This class is a survey of Russian history from Peter the Great to Leonid Brezhnev. Elements of institutional continuity, especially in politics and society, are stressed.

2030A Germany in the 19th Century, discussion/tutorial, 2 hrs; L.D. Stokes
2031B Germany in the 20th Century, discussion/tutorial, 2 hrs; L.D. Stokes

These classes examine selected topics in the history of Germany during the past two centuries, including the growth of nationalism and liberalism, the role of Prussia, industrialization, Bismarck and the political parties, civil-military relations and the rise and destruction of Nazism. A reading knowledge of German is not necessary. Evaluation in each class will be based upon a written essay and optional examination, class attendance and participation in discussion.

2040 Europe in Two World Wars, lecture/tutorial, 3 hrs; G.R. MacLean

This class examines the causes, course and aftermath of the two World Wars as they relate to European political history in the first half of the twentieth century. In addition to a review of the major political movements of the period, there will be a close examination of the role and character of key individuals such as Hitler and Churchill. While this is not a class in military history as such, major strategic and tactical developments will be studied in some detail. Lectures will concentrate on some of the lesser known aspects of the wars (for example, the Balkan intrigues of 1914 in World War I and the underground resistance to the Nazis in World War II). Students will be expected to gain their general knowledge of the period through a text to be assigned. Lectures will be supplemented by selected readings and the frequent use of audio-visual material.

2041 Political and Military History of the Second World War, lecture/tutorial, 3 hrs; G.R. MacLean

This class will consist of an examination of the causes and consequences of the Second World War. The domestic histories of particular states will be included to the extent that these are important for an understanding of the international situation. Major military campaigns, selected battles, and popular myths regarding such subjects as the development of the atomic bomb, the politics of resistance, the role of espionage, and the destruction of the Jews, will be studied in some detail. The character and influence of leading figures, e.g., Hitler, Mussolin, Stalin, Roosevelt, Churchill, Rommel, Montgomery and Eisenhower, will receive special attention.

British and British Imperial History

2100 The History of England, lecture/tutorial, 3 hrs; H.S. Granter

The main features of English history, from Anglo-Saxon times to the present are given selective treatment and put in historical focus. The emphasis is on the development of a society and culture which, though similar to Western European, has its own particular and peculiar characteristics.

2110 Modern Britain, lecture/tutorial, 3 hrs; P. Fraser

This class has six themes, chosen to reveal some of the forces which have created the modern world. They are: (1) The emergence of parliamentary government from Wilkes to the Reform Act of 1832; (2) The rise of Britain to industrial preeminence from Robert Owen to the Great Exhibition of 1851; (3) The formation of the British working class from Tom Paine to the first Labour government; (4) The development of the popular press and modern modes of publicity and agitation; (5) The expansion of England and the meaning of empire in its heyday and (6) The experience of Britain in two world wars.

2130 British Empire and Commonwealth, lecture/tutorial; 2 hrs; P. Burroughs

This class examines a series of topics and themes, chosen principally in the period from the American Revolution to the present, to illustrate the character and motivation of British expansion overseas. Changing British attitudes and policies towards the empire, problems created by the contact of white settlers and indigenous populations, colonial revolts and independence movements will be discussed. A section of this class may be given in the evening.

North American History

2200 A People at Work: Social and Economic History of Canada, lecture: 1 hr; discussion: 2 hrs; G.S. Kealey, M. Cross

A broad perspective on Canadian social and economic development, from New France to the 1950's, this course will consider such themes as social classes and social conflicts, immigration, the role of women, organized and unorganized labour, and the processes of economic change. There will be one interpretative lecture and a two-hour seminar each week.

2210 The Social History of Canada, seminar, 2 hours; M.S. Cross

This evening sesssion will survey the development of Canadian society from the beginnings to the present. Among the themes considered will be social classes, the role of women, how people worked and how they lived, conflicts such as rioting and rebellions, and specific case studies such as Indian-white relations, the Winnipeg general strike and the troubles of industrial Cape Breton. The course probably will operate as a two-hour seminar meeting once a week.

2220 Canadian Economic History, lecture, 3 hrs; (for details see Economics 232).

2230 Canada in the Twentieth Century, 3 hrs; lecture/tutorial, M.S. Cross, G.S. Kealey, P.B. Waite

A survey of the roots of contemporary Canada, this course will study the origins of our current issues and problems. Attention will be focussed on Canadian political developments, as well as on economic and social structures, French-English relations and provincial and regional disparities.

2240 French Canada, 1867 to 1967, lecture/tutorial, 3 hrs; P.B. Waite

This class will be given in English, for English-speaking students, although French-speaking students are welcome. It will examine French-Canadian society at the time of Confederation with brief reference to the events from 1760 to 1837. In the main it will deal with the development of French-Canadian political and social life from 1867 to the "Quiet Revolution" of the 1960's, including both federal and provincial aspects as well as French-Canadian developments in the West, Ontario and the Maritimes.

Prerequisite: One general course in Canadian history.

2270 The Atlantic Provinces, lecture/tutorials; 3 hrs; D. Sutherland, J. Fingard.

Through a combination of lectures and tutorials, students will be offered a survey of Maritime and Newfoundland history from the beginnings of European penetration to the triumph of Canadianization. Attention will be given to the interaction of environment and culture which has given rise to a durable but nevertheless vulnerable regional character. The class will seek to define internal patterns of social change and social conflict while simultaneously placing regional development within a broader national and international context.

2300 American History, lecture; 2 hrs; J.T. O'Brien, G.D. Taylor

The focus of this class is on the emergence of an American society and economy and the impact of these developments on political ideas and institutions. Within this framework certain basic themes and issues will be examined, such as: how did regional differences in social and economic arrangements affect the way in which people viewed one another in the British imperial system, and later the American nation? How closely did ideas about American social equality and economic opportunity reflect the realities of the emerging society? How did the rise of an industrial and urban nation alter the values and ways of life of a people whose traditions were shaped in small town, city neighborhoods and rural communities? The class will emphasize basic changes and tendencies in American history.

2320 Dissent and Reform in America, seminar, 2 hrs; J.B. Crowley

This class investigates American history from the colonial period to the twentieth century by paying particular attention to those people who looked for alternatives to its character and those movements which sought to change its course. The general themes of the class are the relations between desired reforms and objectives circumstances, the usefulness of politics for social change, the resistance to reform and the protection offered to dissent by civil liberties. Specific topics are the Puritans and sectarian perfectionists, the republican and egalitarian consequences of the American Revolution, the institutionalization of public welfare, philanthropy and education, utopian experiments, anti-slavery movements, the Populists, and the political regularization of reform by the Progressives and the New Deal. In its examination of these movements the class will assess their liberating and regulatory motives and consequences.

2330 Do You Sincerely Want To Be Rich? Wealth, Power, and the American Dream, seminar, 2 hrs; staff

Since the Spaniards took the Aztec gold, the Englishmen sought it in vain in the forests of Virginia, the lure of property, material gain, wealth beyond imagining, fueled American growth and expansion. Indeed, the development of American society and the United States as a nation paralleled the triumph of commercial and industrial capitalism over agrarian and feudal traditions in the Western world. Amerian businessmen with European capital harnessed technology, and transformed conditions of work and life to create a new society dominated by powerful corporate structures, where business values permeated political, social and cultural institutions. This class will trace these developments and assess the role of business in the shaping of American civilization.

2340 Workers in the Republic: A Social History of American Labor, seminar, 2 hrs; J.T. O'Brien

The United States in 1800 was an agrarian republic, but by 1900 it had become the world's leading industrial nation. The pace and scope of the country's industrializing process was unparalleled. Millions of rural countrymen and immigrants were swept into this process which changed them and radically altered their customary rhythms of work, leisure, and family life. In this course we shall study the industrializing process, the adaptation of an increasingly sophisticated technology to production, the changing nature of work in industrializing America, and the responses of American workers to the new forces that shaped their world. Close attention will be paid to the relations between American and immigrant workers, the fierce conflicts that erupted between capital and labor in the years from 1800 to the Great Depression of the 1930's, the development of union and protest movements among American workers, and the success or failure of indigenous American radicalism including Socialism. Attendance and class participation are required. Students will be asked to take two one hour tests and write two short papers.

2370 Age of Imperialism 1870-1970, seminar, 2 hrs; M. Turner

The class will deal with the last hundred years in terms of the activities of the imperial powers, their impact on the world, their rivalries among themselves and the resistance they provoked on every continent. Different forms of conquest will be discussed and illustrated: the shifting power balance among the imperial powers will be traced and the growth of national resistance movements and their ideologies will be investigated. The class will give particular emphasis to the role of the United States as the most important imperial power of the period, and to the nationalist and socialist ideologies which inform resistance movements. Illustrations of imperial penetration will be drawn from Asia, Africa, North and South America.

2410 History of Tropical Africa in the Nineteenth and Twentieth Centuries, lecture/tutorial, 2 hrs; J.E. Flint

In lectures and tutorials students will be enabled to grasp and absorb some of the major themes of African pre-colonial history by a study of the internal politics and developments of African states and societies such as the Yoruba empire, Ashanti and Dahomey in West African, and African states like Buganda around the East African great lakes. The theme of cultural contact and its effects will be prominent in considering Muslim revolutions in West Africa, and Arab penetration in East Africa, as well as the impact of Christian missionaries in both areas. The second term will deal mainly with the impact of European colonial rule; the partition of Africa, the establishment of differing types of European rule, and African responses, resistance and nationalism which culminated in the emergence of independent African states.

2420 Tropical Africa Before 1800, lecture/tutorial, 2 hrs; J.B. Webster

This class examines the themes and problems of African history before 1800. It begins with a discussion of the origins of man in Africa, and the emergence of ethnic and linguistic groups. The coming of agriculture, iron technology and long distance trade will be discussed in relationship to the formation of the medieval civilization of the west savanna. Other themes include the expansion of the Bantu, the creation of forest kingdoms, the impact of the Portugese, and the effects of the slave trade on African societies.

Classes offered at the 3000 level
European History

3000 Mediaeval Civilization, seminar, 2 hrs; R.M. Haines

History 2000 provides the appropriate background for this class. Each year a number of topics is chosen, wide enough to be used as central themes in the context of which mediaeval civilization can be studied; for instance, monasticism, universities, papal government, and architecture. Such topics will be studied in depth, with the help of original documents (in translation) where these are available, and using periodical literature. Students are expected to master the basic work in certain areas, but will also be encouraged to develop special interests of their own. Class discussion will be used to unravel more difficult aspects and all students will be expected to contribute in this way and in the writing of a small number of well argued and documented papers. Some general books should be read before starting the class. Suggestions of this kind, with a list of the topics and appropriate explanation and bibliography will be available well in advance.

3030 Topics in Russian Intellectual History, seminar, 2 hrs; N.G.O. Pereira

Normally open to students who have done 2020 or 2021. This is a seminar which attempts to articulate some major themes in Russian social thought of the past 150 years.

3040A The Weimar Republic, seminar, 2 hrs;

3041B The Third Reich, seminar, 2 hrs; L.D. Stokes

These classes examine in detail the history of Germany between 1918 and 1945. Their purpose is to acquaint the student with the principal problems and historiography of Weimar and Nazi Germany. While the focus is upon political and social developments, in particular the collapse of parliamentary democracy and the establishment of a totalitarian dictatorship, intellectual, cultural and other aspects of the "German problem" are also treated. A reading knowledge of German is useful but not necessary. Evaluation in each class will be based upon a written research paper and optional examination, class attendance and participation in discussion.

3060 Modern France, seminar, 2 hrs; J.F. Godfrey

English History

3104 England Under the Tudors and Stuarts, seminar with occasional lectures, 2 hrs; H.S. Granter

This class will deal with such topics as the religious reformation in England; the rise of the gentry; the age of Elizabeth; the agrarian revolution; Anglican, Catholic and Puritan; the Civil War and the restoration of the establishment; parliamentary monarchy and the rule of law, and the growth of individual liberty.

3106 England in the Nineteenth Century to 1867, seminar, with occasional lectures, 2 hrs; H.S. Granter

The Nineteenth century was England's century, the Victorian Age, the time of England's greatness. The class is devoted primarily to the study of the making of Victorian England, examining the impact of new machinery and new ideas on an older agricultural aristocratic society.

3110 Late Victorian and Edwardian England, seminar, 2 hrs; P. Fraser

The class will examine selected aspects of political, social and intellectual history, such as the transformation of the Liberal party under pressures from Socialist groups, the Labour movement and the varied forces of Imperialism; the ideals and policies of special movements associated with temperance, social reform, imperial federation, tariff reform, women's suffrage, national service and defence; and the methods of political organization (whether of central or local government), parties, electioneering or campaigns in the press.

3111 Britain in Two World Wars, seminar, 2 hrs; P. Fraser

This class covers the special problems of wartime Britain—political leadership, military direction, social adaptation, morale and censorship, controls and compulsion, all related to the varying fortunes of the country at war. The central figures are Asquith, Kitchener and Lloyd George, Chamberlain, Churchill and Attlee. Attention will be concentrated on the important episodes, both political and military or diplomatic.

3230 Canadian Working Class History I, 1850-1914, seminar, 2 hrs; G.S. Kealey

The transition to industrial capitalist society in Canada and the creation of a working class are the general themes of this course. Topics will include pre-industrial work, the development of trade unions, strikes, immigration, poverty, violence, women at work, working class culture, labour in politics, and the emergence of socialism. Students will be expected to write research papers based on primary sources. There are no formal prerequisites but History 2230 or 2270 would be helpful.

3231 Canadian Working Class History II, The Twentieth Century Experience, seminar, 2 hrs; G.S. Kealey

This course will study the development of the Canadian working class movement from 1896 to the present. Topics will include the degradation of work, the question of international unions, labour in politics, women and trade unions, the role of the state in industrial relations, and working class culture in mass society. Students will be expected to write research papers based on primary sources. There are no formal prerequisites but History 2230 or 2270 would be helpful.

3232B The Response to Industrial Capitalism in Canada, 1850-1935, seminar, 2 hrs; G.S. Kealey

3240 Violence and Order in Canada, 1815-1939, tutorial, 2 hrs; M.S. Cross

There has been a running theme of violence in Canadian life—revolutions, riots, strikes, crime, Saturday night brawls. This course will attempt to uncover the causes of violence, to analyze its types and forms, and to assess the responses of authority to different kinds of disorder. Original documents will be employed as well as more conventional sources. Useful preparatory reading is Hugh Davis Graham and Ted Robert Gurr, ed., *Violence in America: Historical and Comparative Perspectives* (New York, 1969)

3250 Canada within the Empire, 1760-1896, seminar, 2 hrs; P. Burroughs

This course examines the political, commercial and cultural relations of Canada with Britain from conquest to nationhood, the changing attitudes of Canadians and Englishmen to the development empire, and the interplay of imperial policies and colonial conditions.

3270 The Nova Scotia Experience, 1815-1945, seminar, 2 hrs; J. Fingard

The first term is to be taught in a lecture/discussion format and will survey provincial history from the Napoleonic era to the Second World War. The second term will be conducted in a seminar format in which student papers are presented for group discussion. Given the nature of the second term work load, students taking this course should be history majors with previous background in Canadian History.

3290 The Social Outcast in Canadian History, seminar, 2 hrs; J. Fingard

This class will examine the plight and flight of the poor and oppressed, the transient and the shunned, focussing in particular on the predicament of such elements in Canadian society as Indians, Blacks, immigrants, sailors, navvies, the delinquent and the diseased. The emphasis will be on the 19th Century and opening years of the 20th Century. A major research paper will be required.

3340 Early America, 1600-1800, seminar, 2 hrs; J. Crowley

This class examines American colonial and national experience during the exploratory and commercial ventures of the Elizabethans, the development of permanent colonies, the consolidation of mercantile and imperial organization, the American Revolution, and the establishment of republican culture and national economic and government institutions.

3350A Family and Community in America, 1600-1900, seminar, 2 hrs; J.E. Crowley

This class studies the family in American history from the period when the family was a model for social relations to the time when it was seen as a private refuge from society at large. The historical demography of early modern Europe is drawn on to provide historical background and conceptual models for the analysis of changes in population size and family structure. Among the topics considered are the role of the family in rural and urban communities; the demographic transition from high fertility and morality; the constriction of the family's responsibilities in economic life and education; the role of ideology in shaping sex roles and childrearing; and the relations of family and community according to ethnic group, class and economic setting.

3360 Enslavement and Emancipation: Afro-Americans in the U.S. South to 1900, seminar, 2 hrs; J.T. O'Brien

This class begins with English colonization of the south Atlantic coast in the 17th century, the gradual evolution of a system of racial enslavement, and the quickening pace of the traffic in slaves that brought increasingly large numbers of Africans to the colonies. It continues through the American Revolution, which brought independence for some without loosening the slaves' chains, to the Civil War. We shall examine slavery as a system of racial subordination and economic exploitation. We shall look closely at the social, familial, and cultural life of the slaves. We shall also inquire into the role of slavery in shaping southern nationalism and national racial beliefs. Finally, we shall examine and assess northern efforts to reconstruct the South after the Civil War, the part blacks played in this process, and the responses of white southerners to such changes.

3370 Empire and Revolution in the Caribbean, seminar, 2 hrs; M. Turner

The Caribbean islands have always produced wealth; sugar, bananas and bauxite have made fortunes for the few. Consequently the Caribbean has always been an area where imperial powers have struggled with one another. But most of the people in most of the islands have remained poor most of the time. This course investigates why this situation developed and what efforts have been made to alter it. Special attention will be given to the struggles of the slaves to overthrow slavery, the efforts of the people to achieve independence and, in the case of Cuba, to make a socialist revolution.

3380A The American Century Revisited: The United States as A World Power, 1918-1973, seminar, 2 hrs; G.D. Taylor

The United States emerged from World War I not only as a major military power, but also as the creditor of most of the rest of the industrial world, and this economic hegemony persisted despite political isolationism in the 1920's and depression in the 1930's. During and after World War II, Americans sought to use their military and economic might to refashion a desirable world order. The frustrations of the Cold War, the corrosive effect of Vietnam, and the changing balance of economic power have taken their toll although the United States remains today inevitably a major factor in the world. This class will review the structure and development of American foreign policy and economic influence during this

era and consider the impact of American power on international affairs.

3390 The United States in the Twentieth Century - The Architecture of Complexity, seminar, 2 hrs; G.D. Taylor

This class investigates the response of American political and economic institutions to the problems of industrialization and urbanization. Study focuses on patterns of organization: the growth of public and private corporate forms of bureaucracy; the emergence of new interest groups; and the impact of these developments on the traditional American political and social structure. The class will emphasize discussion and individual research by the student within this general framework.

3391A From Homestead to Lordstown: Work and Authority in American Industry, 1892-1972, seminar, 2 hrs; G.D. Taylor

This class traces the development of labour-management relations in the American economy, and its political and social ramifications. Topics include scientific management and welfare capitalism, the growth of unions and their internal problems, and the impact of the Cold War and the rise of multinational corporations on American labour. Student evaluation is based on class discussion and term paper.

3440 African History from Oral Tradition, seminar, 2 hrs; J.B. Webster

History 3440 is designed for an elite, for those students who did well at the 2400 level and who have a keen interest in African history. The course concentrates upon a restricted geographic area and considers myths of origin, allegory and symbolism in oral traditions, how political leaders become national deities through ancestor worship and how feminist movements of the past have been handled by male chroniclers. In addition the course concentrates upon dating oral traditions through genealogies, eclipse-references, famines and cross referencing.

3450 History of South Africa, lecture/tutorial, 3 hrs; P.D. Pillay

History 2130 provides an appropriate background for this class, or History 2200 for students wishing to make comparative studies with themes from Canadian history. The class concentrates on the period since the British acquisition of Cape colony and examines the development of relations and tensions between the English and Afrikaans speaking groups, and between the white population and other races. The main topics considered are the rise and fall of the Zulu nation, the opening up of the interior, the imperial factor and its effects on Cape and Transvaal politics of the late nineteenth century, South African Union, Afrikaner nationalism and the development of apartheid.

3490 Studies in Decolonisation, seminar, 2 hrs; J.E. Flint

The class is intended for third year students, who have taken second year classes in British, British Imperial, European, or African history. It will be conducted as a seminar, and students will be asked to make written and oral presentations of the topics to be discussed. These will be case studies of the events leading to the transfer of power from Britain to former colonial or pseudo-colonial territories. Examples will be chosen in consultation with the class, but could include Nova Scotia, the Dominion of Canada, South Africa, Ireland, Egypt, Ceylon, India and Pakistan, Palestine, Ghana, West Indian examples, Nigeria, Kenya, Uganda and Tanzania. Through comparison of case studies consideration can then be given to some general themes such as the nature and power of colonial nationalism, the decline of imperialism, the impact of the British Labour party on colonial policy, the relationship of colonial rule to economic and strategic interests, the concept of neo-colonialism, the reception of British institutions overseas, and the emergence of dictatorships, and military governments.

3600 Bread and Roses: Women and Society, 1789-1968, seminar, 2 hrs; J. Fingard and M. Turner

Women have been "hidden from history" for even longer than workers and blacks. In this course we shall investigate why this has been the case and what women's role in fact has been and is now. Study will focus on the ideology of women's oppression and of women's liberation and the practice of these ideologies in economic, social and political life. Work will be organised to permit investigation of key periods in the development of women's struggles from the Industrial revolution to the Chinese Cultural Revolution. This will be a seminar course and opportunity will be given for students to present research papers in areas of special interest.

3980A/5980A Canadian Historiography, seminar, 2 hrs; G.S. Kealey

This class will explore the history of English-Canadian historical writing. Historians under consideration will include Frank Underhill, Harold Innis, Donald Creighton, Arthur Lower, and W.L. Morton. Other topics will include Canadian regional traditions and the development of new historical approaches. This course is primarily for M.A. students in Canadian history and for honour students in North American history. Others interested should see the instructor.

3990 Great Historians, seminar, 2 hrs; P. Fraser

Examples of the works of great historians from Thucydides to the present will be considered. Schools of historiography will be identified, their characteristics examined, and their relationship to contemporary societies explored. The "history of history" will be traced, with emphasis on the emergence of the modern discipline of history in the nineteenth century with its classical writers, its theorists, and its impact on the modern world. Canadian and American historiography will be covered, according to the interests of students, as well as British and European.

4990 Honours Essay, Staff

All history honours students and those in combined honours courses in which history is their principal subject, must write a substantial essay on a topic to be chosen in consultation with the Undergraduate Committee. The essay will be related to one of their 3000 or 4000 level classes and will be supervised by the appropriate staff member.

Graduate Studies

M.A. and Ph.D. programmes in history are offered. For details of these programmes, see the Calendar of the Faculty of Graduate Studies.

Humanistic Studies in Science

Attention is drawn to the following classes, offered in several departments. All of these classes are concerned with the humanistic aspects of scientific thought and its development.

History of the Sciences

Biology 3400/History 310, The History of Science; J. Farley, (Biology), R. Ravindra (Physics).

Biology 3401A History of the Biological Sciences, lect. 2 hrs.; tutorials; J. Farley.

German 345, Hegel's Philosophy of Nature, J.A. Doull, W.J. Hankey. Not offered in the period covered by this editon of the Calendar.

Psychology 458, History of Psychology; J.W. Clark.

Philosophy of Science

Biology 3410B, Man in Nature, lect.: 2 hrs.; tutorials: 1 hr.; K.E. von Maltzahn.

Philosophy 465, Topics in the Philosophy of Science, T. Vinci.

Psychology 353A or B, Philosophy of Science and Experimental Psychology, W.K. Honig.

* **Religion 351, Religion and Science,** R. Ravindra.

Sociology of Science

Details of the above classes will be found under the appropriate departmental listings.

* (Not offered every year; please consult the Department.)

Linguistics

The departments of French, German and Spanish each offer classes in linguistics, details of these classes will be found under the departmental listing.

Mathematics

Professors
E. Blum
M. Edelstein
P.A. Fillmore
H. Radjavi
R. Rosen
A.J. Tingley

Associate Professors
H. Brunner
D.S. Chehil (N.S.T.C.)
J.C. Clements
C.A. Field
G. Finke (N.S.T.C.)
L.A. Grünenfelder
R.P. Gupta
C.S. Hartzman
E.L. Heighton
R. Paré
S.N. Sarwal (N.S.T.C.)
W.R. Smith
P.N. Stewart (Chairman)
W.R.S. Sutherland
S. Swaminathan
K.K. Tan
H.J. Thiébaux
A.C. Thompson

Assistant Professors
J. Borwein
Y.P. Chaubey
K. Dunn
G. Gabor
R.D. Holmes
L.L. Keener
E.B. Mercer
J. Phillips
W. Schelter
L. Weldon
G.N. White

Senior Killam Research Fellow
J.C. Robson

Lecturer
L. Robson

Killam Postdoctoral Fellow
S. Power

Postdoctoral Fellows and Research Associates
B.M. Baker
C. Bleeker
R. O'Brien

Degree Programmes
One full credit in mathematics is required for a B.Sc. degree.

Mathematics is an area of concentration.
Students who plan to major in Mathematics should arrange a programme in consultation with the department.

Majors in Mathematics are required to obtain at least four Mathematics credits beyond the 100 level. Amongst these, the following are required: Math 200 (or 250 or 220), 203-204 (or 213), and at least one credit beyond the 200 level.

The department offers courses in Applied Mathematics, Pure Mathematics and Statistics. The Mathematics Major Information Booklet contains detailed information about Mathematics programmes and career opportunities. Students may obtain a copy of this booklet from the Mathematics Department.

Those students who wish to arrange inter-disciplinary programmes (with such fields as Computer Science, Physics, Chemistry, Biology, Psychology and Economics) are invited to discuss their interests with the department.

Honours in Mathematics
The following programme will normally be followed by students who plan to take honours in mathematics.

Entering students who have a strong interest or background in mathematics, or who contemplate taking honours, should enroll in one of the special sections of Math 100 and 101.

Year II
Mathematics 213 and 250. Mathematics 213 may be taken in Year I by well-qualified students with the consent of the instructor, in which case another class may be selected in Year II.

Year III and Year IV
Mathematics 303, Mathematics 350 and five additional classes at least two of which will be numbered 400 or above.
Students may choose programmes with a concentration in Applied Mathematics, Pure Mathematics or Statistics. Further requirements will depend on the concentration chosen. All honours programmes must be approved by the Chairman of the Mathematics Department.

Honours Comprehensive Examination
The Honours Comprehensive examination will be a verbal presentation of a suitable topic requiring comprehensive knowledge. The topic is to be selected in January of the graduating year for presentation in March.

Combined Honours
Students interested in taking honours in mathematics and another subject as a combined programme should consult the chairman of the department through whom a suitable course of study can be arranged.

A combined honours programme may be appropriate for many. Students contemplating a combined honours course in mathematics and another subject should, however, bear in mind that the work in either subject would probably be insufficient for admission to a regular graduate programme. A qualifying year would usually be necessary.

Classes Offered
The listed prerequisites indicate the mathematical background expected of students entering any class but may be waived with the consent of the instructor.

Course description for computer science can be found in the calendar under Computer Science.

In any one academic year, the mathematics department offers only a selection of the classes described here. The student should consult the 1978-79 university timetable or the department to determine those classes which are given in 1978-79.

001R Fundamentals of Mathematics, lect., 3 hrs. (non-credit course)

This class may be offered in place of senior matriculation mathematics as a prerequisite for first year classes at the University. Normally, junior matriculation mathematics as taught in Grade XI in Nova Scotia is expected as a background but mature students or others who are well motivated are able to cope with the work of this class. After a review of elementary algebra, functions (exponential, logarithmic and trigonometric) and analytic geometry are studied. In addition to preparing students for the calculus, the class should be useful for those wishing to build up their knowledge of the fundamentals of mathematics for other reasons.

The following two classes, *Mathematics 100 and Mathematics 101*, are designed to introduce the basic ideas of the calculus and together constitute a solid foundation for study in the Sciences, (Physics, Chemistry, Biology, Economics, etc.) as well as for further study in Mathematics.

These two half-classes are offered in both terms.

Students who are contemplating an honours programme in mathematics or some related subject should inquire at registration about special sections.

100A/B Differential and Integral Calculus, lect.: 3 hrs. (Half-course)

Mathematics 100 is a self-contained introduction to differential and integral calculus. The topics include: functions, limits, differentiation of polynomial, trigonometric, exponential and logarithmic functions, product, quotient and chain rules, applications of differentiation, antiderivatives and definite integrals, integration by substitution.

A sequel to this class is Math 101.

Students are expected to attend tutorials at least one hour per week.

Prerequisite: Senior High School Mathematics.

Credit will be given for only one of Math 100 and Math 112.

101A/B Differential and Integral Calculus, lect.: 3 hrs. (Half-course)

Mathematics 101 continues the study of calculus with topics including: techniques of integration, elementary differential equations and applications, Riemann sums, parametric equations and polar coordinates, sequences and series, Taylor series.

A sequel to this class is Math 200 (or 250 or 220).

Students are expected to attend tutorials at least one hour per week.

Prerequisite: Math 100.

No more than one credit will be given for Math 100-101, 110, 128-129.

102R Mathematics for Liberal Arts Students, lect.: 3 hrs.

This class is intended for students who wish to become acquainted with mathematics as an art rather than as a tool for the sciences. It will discuss some of the more elementary yet interesting aspects of the subject with an emphasis on the historical origins of the various topics.

These topics will include elementary number theory; finite and infinite sets; graph theory; colouring problems; elementary topology; topics from geometry.

Prerequisite: Senior High School Mathematics.

106A/B Introductory Statistics for Non-Mathematicians, lect.: 3 hrs. (Half-course).

Through extensive use of illustrative real-life examples, the student is introduced to the basic concepts of statistics: data reduction, estimation, and hypothesis testing. These examples will be drawn from a wide variety of disciplines. The emphasis of the course will be on statistical concepts, rather than mathematical manipulations. The course is open to students of any year.

The principal aim of the course will be to enable students to identify and formulate the statistical aspects of real-life problems and to become familiar with the statistical vocabulary most commonly used in scientific journals. The student requiring a more extensive exposure to the statistical methods of scientific experimentation are encouraged to follow this course with Math 107.

Topics will include descriptive statistics, elementary probability and distributions, estimation, hypotheses testing and regression.

Math 107 is a natural sequel for this course.

Prerequisite: High school algebra.

Not more than one credit will be given for Math 106-107 and Math 206.

107B Statistical Techniques of Scientific Experimentation, lect.: 3 hrs. (Half-course).

This course extends the introduction of statistics provided by 106 to include a collection of techniques that are widely used in the experimental sciences. Topics will include regression and correlation analysis, analysis of variance, and curvefitting techniques. The presentation of these topics will include consideration of the statistical aspects of experimental design.

The objectives of this course are:
1) to explain what information can be obtained from experiments through use of these techniques,
2) to explain the assumptions that must be satisfied before these techniques can be applied,
3) to illustrate the nature and methods of the necessary computations.

Prerequisite: Math 106.

Not more than one credit will be given for Math 106-107, 206. Students planning to take higher level statistics courses are strongly advised to take Math 206 instead of 106-107. However, students with a B- standing in Math 107 plus Math 100 may then take Math 334, 335, 338 or 339.

110R Mathematics for Commerce and Economics, lect.: 3 hrs.

The class provides a survey of mathematical techniques which are useful in analyzing mathematical models in economics and management. The material covered in the class is similar to that presented in Mathematics 100 and 101. However certain topics (such as Taylor's series, volumes of revolution) included in Mathematics 101 are not covered in Mathematics 110. In their place Mathematics 110 includes an introduction to matrix algebra, maximization of functions of two variables and Lagrange multipliers.

This class is intended as a survey class for students who are not going to take further work in mathematics. Students who are going to take other mathematics classes should take Mathematics 100/101 rather than Mathematics 110 as Mathematics 100/101 uses a more rigorous mathematical approach. Throughout the class, applications of mathematical techniques to economic and management problems will be stressed.

Prerequisite: Senior High School Mathematics.

112A Introductory Calculus for Pharmacy Students, lect.: 3 hrs. (Half-Course).

This course is designed primarily to fit the specifications of the Department of Pharmacy. Elementary calculus is taught and computational techniques are stressed. These techniques are extensively applied to those functions which occur most often in pharmacy; namely power function, exponential functions and logarithmic functions. Topics studied include limits and continuity, the derivative, the definite integral, elementary differential equations and applications of these to pertinent examples.

Prerequisite: Senior High School Mathematics.

Credit will be given for only one of Math 100 and Math 112.

128A/129B Differential and Integral Calculus for the Four-Year Engineering Programme

Mathematics 128A has three lecture hours and two tutorial hours each week. It includes a review of precalculus mathematics, an introduction to vectors and complex numbers, functions, limits, continuity, differentiation and integration of polynominals, exponential, logarithmic and trigonometric functions. Applications to finding areas, graphing, maximum-minimum problems and related rate problems are included.

Mathematics 129B has four lecture hours and two tutorial hours each week. Topics include techniques of integration, numerical integration, lengths of curves, vectors, lines and planes in three dimensions, surfaces of revolution, parametric equations and polar coordinates.

Prerequisite: Senior High School Mathematics.

200R Intermediate Calculus, lect.: 3 hrs.

It is assumed that students taking this class have already acquired some knowledge of calculus. Conceptual aspects will be treated, while stress is laid on manipulative techniques which lend themselves readily to applications.

Topics include: continuous functions and their fundamental properties, partial derivatives and applications, the double integral, functional determinants, geometry of Euclidean vector spaces with emphasis on three dimensions, elementary differential equations.

Prerequisite: Math 101.

Credit will not be given for more than one of Math 200, 220, 228 and 250.

202R Basic Concepts of Mathematics, lect.: 3 hrs.

Basic concepts from set theory and logic form the basis of this course. Symbolic logic is introduced and a working knowledge of the logical connectives, including the universal and existential quantifiers, achieved and used to make precise certain statements in mathematics. The concepts of a tautology and a proof are studied. The number systems are constructed from a Peano System and sufficient abstract algebra is introduced to make these constructions self contained.

Prerequisite: Math 101.

203A/B Matrix Theory, lect.: 3 hrs. (Half-course).

Topics will include the following: solutions of systems of linear equations, matrices and matrix algebra, equivalence, rank, inversion, determinants, and applications of matrix techniques to other branches of mathematics as well as to social sciences and other disciplines. An introduction to linear algebra will be given with applications to matrix algebra.

Math 204 is an appropriate sequel for this course.

Prerequisite: Senior High School Mathematics.

Not more than one credit will be given for Math 203-204 and 213.

204B Linear Algebra, lect.: 3 hrs. (Half-course).

Topics will include the following: vector spaces, bases, dimension, linear transformations, representation of linear transformations by matrices.

Prerequisite: Math 203.

Not more than one credit will be given for Math 203-204 and 213.

205R Geometry, lect.: 3 hrs.

This course is intended to be an introduction to modern geometry. The topics discussed in any year will depend on the interests and background of the students involved and will be chosen from among the following: modern Euclidean geometry, transformational geometry, projective geometry, non-Euclidean geometry, Euclidean constructions, the foundations of geometry.

Prerequisite: Math 203 or concurrent registration in 203.

206R Probability and Statistics, lect.: 3 hrs.

This class provides a basic introduction to the concepts of probability and statistics. The subject matter will be developed systematically with an emphasis on results of an important practical nature. The course is well-suited for any student with a knowledge of calculus who wants a basic understanding of statistical procedures and tests.

This class is recommended for any student with a knowledge of calculus or for any student interested in taking higher level statistics courses.

Topics include: Probability, discrete and continuous random variables, sampling, sampling distributions, estimation, tests of hypotheses, regression, analysis of variance, general experimental design.

Prerequisite: Math 100.

A natural sequel for this class is Math 334, 335. Math 338 and Math 339 may also be taken following Math 206.

Not more than one credit will be given for Math 106-107 and 206.

213R Linear Algebra, lect.: 3 hrs.

This class is designed for students who are interested in a broader and more basic understanding of the theory and techniques of linear algebra than is provided by 203 and 204. Topics include: the material of 203 and 204, canonical forms including the Rational Form and Jordan Form, inner product spaces including the Spectral Theorem for normal operators on finite dimensional vector spaces, linear programming and further topics in pure and applied linear algebra. This course provides an excellent background for further study in Mathematics. See the prerequisites for Math 250, 302, 303, 305, 330 and 350.

Prerequisite: Math 101 or consent of instructor.

Not more than one credit will be given for Math 203-204 and 213.

220R Applied Mathematics, lect.: 3 hrs.

This class is designed with the needs of science and engineering students in mind. It includes the topics: functions of several variables, vector analysis, line and surface integrals, integral theorems, differential equations, series, complex analytic functions.

Prerequisite: Math 101.

Credit will not be given for more than one of Math 200, 220, 248-249 and 250.

225A/B Introductory Numerical Methods and Fortran Programming, lect.: 3 hrs. (Half-course).

This class provides an introduction to the use of desk calculators and to the Fortran computer language, which is in wide use throughout the sciences. Examples and applications are included. Particular emphasis is placed on numerical techniques appropriate to linear algebra.

Prerequisite: Senior High School Mathematics.

227B Numerical Methods, lect.: 3 hrs. (Half-course).

This class provides an elementary introduction to some of the numerical methods used in almost all fields of the sciences. The numerical techniques studied include those for the solution of polynomial equations, the approximation and interpolation of functions, some methods for numerical integration and differentiation and differential equations. These techniques are applied to a variety of problems chosen from the physical and social sciences. A knowledge of Fortran programming to the level of Math 225 is assumed.

Prerequisites: Math 101 and 225.

230B Introduction to Operations Research, lect.: 3 hrs. (Half-course).

This class provides an elementary introduction to some of the numerical methods which are being applied to problems in business, economics and the sciences. These methods generally determine a best, or optimal, solution to a model of the original problem. Using digital computers it becomes feasible to consider some of the actual applications of these methods.

The mathematical methods studied include optimization techniques from the calculus, solution of polynomial equations, the simplex method for linear programming and the special versions of the assignment and transportation problems, as well as methods for dynamic and random processes as in inventory and queueing problems. These techniques are applied to a variety of problems chosen from business, government and the sciences.

Prerequisites: Math 101 and 225.

248A/249B Intermediate Calculus for the Four-Year Engineering Programme, lect.: 3 hrs., tutorial: 3 hrs.

Topics in Mathematics 248A include functions of several variables, partial derivatives, multiple integrals, indeterminant forms, improper integrals, matrices and linear equations.

Topics in Mathematics 249B include infinite series, power series, Taylor and MacLaurin series, complex valued functions, ordinary differential equations and an introduction to Laplace transforms.

Prerequisite: Math 129.

Credit will be given for only one of Math 203 and Math 238.

250R Introductory Analysis, lect.: 3 hrs.

Mathematics 250 is an approximately parallel course to Mathematics 200 and is designed for honours students and other serious students of mathematics. This course forms the first half of a 2 year sequence in analysis and advanced calculus; Mathematics 350 completes the sequence.

Topics included in the course: Real and Complex numbers, Set Theory, elementary topology of Euclidean Space, limits and continuity, differentiation of functions of several variables, the Riemann integral, line and surface integrals, Green's, Gauss' and Stokes' theorems, power series.

Prerequisites: Good standing in Math 101 and concurrent registration in Mathematics 213.

Credit will not be given for more than one of Math 200, 220, 248-249 and 250.

254B Basic Set Theory, lect.: 3 hrs. (Half-course).

This course is intended as a simplified introduction into basic topics of set theory. Matters discussed will include: sets and relations, countable and uncountable sets, cardinality in general; partial order, maximal and minimal elements; functions and operations on them; elementary topology of the real line, continuity and related topics.

Prerequisite: Consent of instructor.

260B Theory of Interest, lect.: 3 hrs. (Half-course).

This course will examine in detail the theory of simple and compound interest. The syllabus will include the material on which the theory of interest portion of Exam 3 in the Society of Actuaries examination series is based. Some of the topics discussed are: nominal and effective rates of interest and discount, force of interest, annuities, perpetuities, price of bonds, callable bonds, special topics.

This course should appeal to students in mathematics, economics and commerce. Students interested in an actuarial career should take this course and are urged to consult the department for guidance in course selection and additional information. The sequence Math 225A-Math 260B is suggested as good preparation for Exam 3 in the Society of Actuaries examination series. Sequels to this course may be available in future years.

Prerequisite: Mathematics 101 or 110.

300R Advanced Calculus, lect.: 3 hrs.

This course will continue the study of functions of several variables as introduced in Math 200. Topics will include: implicit and inverse function theorems, the derivative of a function of several variables (Jacobians), multiple integration (especially transformation of double and triple integrals), Stokes theorem and the divergence theorem.

Additional topics will be taken from: series, series of functions, uniform convergence, Fourier series, complete orthonormal sets, calculus of variations, partial differential equations.

Students who intend to take honours in mathematics, or do graduate work in mathematics, should take Math 350 not Math 300.

Prerequisite: Math 200.

Not more than one credit will be given for Math 300, 328, 350.

301A Mathematical Logic, lect.: 3 hrs., (Half-Course).

Symbolic logic is introduced first so that students who have not had any previous experience handling connectives, quantifiers and tautologies will have an opportunity to practice using them. Next propositional logic is studied. This system of mathematical logic affords the opportunity of studying a formal language which is quantifier-free and so introduces, in a relatively uncomplicated setting, the background for predicate logic. The work is carried as far as Henkin's Extended Completeness Theorem.

Prerequisite: Consent of the instructor.

302A Set Theory and Foundations of Analysis, lect.: 3 hrs. (Half-course).

This course concerns the basic objects of mathematics and the proper way of dealing with "infinity". It is essential for a clear understanding of most modern aspects of mathematics. The topics for discussion include: operations with sets, countable and uncountable sets, cardinal numbers, Ordered sets, Well-ordering, Ordinal numbers, Axiom of choice and its equivalents, and axiomatics in set theory.

Sequels to this course: Math 304, 332.

Prerequisites: Math 200 and 213 (or 204).

303R Abstract Algebra, lect.: 3 hrs.

In this first course in abstract algebra the following topics will be treated: groups, sub-groups, factor groups, homomorphisms, rings, ideals, Euclidean domains, polynomial rings, fields, unique factorization, irreducible polynomials, Sylow theorems, solvability of polynomial equations, Galois theory, and the Jordan canonical form.

Prerequisite: Math 204 or Math 213.

304B Metric Spaces and Elementary Topology, lect.: 3 hrs. (Half-course).

The topics discussed in this class will include: metric spaces; bounded, totally bounded, compact and complete sets in metric spaces; Lipschitz and contraction mappings; topological spaces; open and closed sets, bases; continuity, compactness, connectedness.

Prerequisites: Math 200 and 213 (or 204).

305R Differential Geometry and Tensor Analysis, lect.: 3 hrs.

The material presented in this course will consist of two parts. The first part will discuss the theory of curves and surfaces in three-dimensional Euclidean space. Topics treated will include: Theory of curves, surfaces, first and second fundamental forms, Gaussian and mean curvature, formulae of Weingarten and Gauss, geodesic curvature and geodesics. The second part will consist of an introduction to Riemannian Geometry and, if time permits, an introduction to general relativity as an application of Riemannian geometry. Topics

treated will include: Foundations of tensor calculus, differentiable manifolds, foundations of Riemannian geometry, absolute differentiation and connexions.

Prerequisites: Math 200 and 213 (or 203 and 204).

307B Theory of Numbers, lect.: 3 hrs. (Half-course).

Congruences and residues; elementary properties of congruences; linear congruences; theorems of Fermat, Euler and Wilson; Chinese remainder theorem; quadratic residues; law of quadratic reciprocity; Legendre, Jacobi and Kronecker symbols. Arithmetic functions; algebraic fields; algebraic numbers and integers; uniqueness of factorization, definition and elementary properties of ideals; ideal classes and class number.
Properties of binomial and Q-Binomial coefficients.

Prerequisite: Consent of instructor.

308A Introduction to Complex Variables, lect.: 3 hrs. (Half-course).

Math 308A is a half course on the basic elements of complex analysis. Topics include: complex numbers, functions, differentiation and integration in the complex plane, some special mappings. Series in general, Taylor and Laurent Series. Residues, some principles of Conformal Mapping Theory.

Prerequisite: Math 200, 250 or permission of the instructor.

311A Differential Equations, lect.: 3 hrs. (Half-course).

One of the aims of this course is to give the student the ability to analyze and solve a number of different types of differential equations.

Wherever possible, applications are drawn from the fields of physics, chemistry, biology, and other areas. The course is intended mainly for mathematics students interested in applications and for science students who wish to be able to solve problems arising in their major area of interest.

Prerequisite: Math 200.

312B Differential Equations, lect.: 3 hrs. (Half-course).

The topics discussed in this course are of great importance to any student interested in applied mathematics. Areas treated include Euclidean spaces, Fourier series, orthogonal polynomials, Sturm-Liouville problems, the classical partial differential equations, and some applications to physics, chemistry and engineering.

Prerequisite: Math 311.

320R Introduction to Numerical Analysis. lect.: 3 hrs.

One aim of this class is to derive efficient methods for the numerical solution of problems from various branches of mathematics. The other, more important, aim is to provide an understanding of these methods by using rigorous mathematical analysis: under what conditions does a particular algorithm work, and, perhaps even more essential, when and why does it fail to yield the desired results.

The class will cover the following topics: Iterative solution of nonlinear algebraic equations (and systems of such equations), direct and iterative methods for systems of linear algebraic equations, iterative methods for eigenvalue problems of matrices, linear approximation of functions (interpolation, least squares approximation, Chebyshev approximation, approximation by spline functions), numerical differentiation and integration, linear difference equations, finite difference methods for ordinary differential equations (initial-value problems and boundary-value problems).

Prerequisite: Math 200.

328R Applied Mathematics for Engineers, lect.: 3 hrs.

This course is intended for engineering students in the third year. Throughout the course special emphasis will be placed on using the mathematics developed to solve problems of interest in engineering. Topics covered include:
(a) linar algebra including vector spaces, matrix theory and determinants, systems of linear equations and eigenvalue problems,
(b) vector fields and vector differential calculus,
(c) ordinary differential equations, linear differential equations and Laplace transforms,
(d) complex analytic functions, Cauchy-Riemann equations and Laplace's equation.

Prerequisite: Math 220 or Math 200.

Credit will not be given for more than one of Math 300, 328, 350. Credit will not be given for both Math 328 and Math 203.

330A Linear and Integer Programming, lect.: 3 hrs. (Half-course).

Linear programming, at its simplest, consists of a procedure for finding the optimal allocation of scarce resources. It is perhaps the most widely used technique in Operations Research and has been applied to a wide range of problems in business, government, and even to proving theorems in linear algebra.

In this class, the mathematical structure of the LP model will be studied and several solution methods developed. The duality theorem and its uses will be emphasized. An economic interpretation of LP models will be presented using activity analysis concepts (or possibly game theory). The efficiency of several solution methods will be compared by using computerized packages on certain applied problems. Finally the cutting-plane method will be developed for the all-integer problem.

Prerequisite: Math 200 and 213 (or 204).

331B Discrete and Dynamic Programming, lect.: 3 hrs. (Half-course).

This class extends the variety of optimization models of Math 330. Initially the study of integer LP problems is continued with the assignment and transportation models. This leads into the general network problems and to matching problems in graph theory. The basic theory of convex programming and the method of Lagrange multipliers is presented. This is followed by an introduction to models of dynamic and Markovian programming. Finally some special methods for large scale problems are considered. In each topic, applications will be presented. These include capital budgeting decisions, production scheduling and multi-period planning models.

Prerequisite: Math 330.

332B Applied Group Theory, lect.: 3 hrs., (Half-course).

This interdisciplinary half course is intended for third year undergraduate and first year graduate students majoring in either Physics, Chemistry or Mathematics. The topics covered will include: Fundamentals, normal subgroups, homomorphisms, representations, character, orthogonality, symmetry groups in crystallography, symmetry groups of the Hamiltonian operator and its representation. Applications to quantum mechanics.

Prerequisite: Math 213 (or 204).

This course can be combined with Math 302 or Math 311.

333B Graph Theory and Combinatorics, lect.: 3 hrs. (Half-course).

Elements of graph theory, paths and cycles, Eulerian graphs, trees, planar graphs and the Euler polyhedral formula, Hamiltonian graphs, chromatic numbers, the five-colour theorems; items to be selected from the following topics to suit class; graphs and matrices, graphs and groups, extremal problems, and enumeration problems.

Prerequisite: Consent of instructor.

334A Regression and Analysis of Variance, lect.: 3 hrs., (Half-course).

An introduction to regression with emphasis on the practical rather than the theoretical aspects. Topics include fitting a straight line in matrix terms and fitting of general linear models, analysis of residuals, transformation of data, correlation, multiple and polynomial regression, weighted least squares, indicator variables, selecting the best regression equation. Also includes analysis of variance models and an introduction to non-linear least squares.

This course will make extensive use of existing computer packages.

Prerequisite: Math 206 or Math 106/107 with a grade of B or better and Math 100. Some knowledge of matrices will be assumed also.

335B Applied Multivariate Analysis, lect.: 3 hrs., (Half-course).

The course deals with stochastic behavior of several variables in systems where their interdependence is the object of analysis. Greater emphasis is placed on practical application than on mathematical refinement. Topics include classification, cluster analysis, and categorized data; analysis of interdependence; structural simplification by transformation or modeling; and hypothesis construction and testing.

Prerequisite: Math 206 or Math 106/107 with a grade of B or better and Math 100.

336A Probability, lect.: 3 hrs. (Half-course).

This course is intended to engender an understanding of the basic concepts of probability, compatible with the student's mathematical background, and to illustrate the great variety of practical applications of probability to science and industry.

Topics covered will include:
(a) fundamentals and axioms used in the construction of models;
(b) the classical models: binomial and hypergeometric, the multinomial distribution, the Poisson and exponential, and the uniform distribution;
(c) definitions of random variables, independence, functions of random variables, and distributions of sums of independent random variables;
(d) conditional events and their probabilities;
(e) the uses of conditional probabilities in modeling real processes;
(f) laws of large numbers and the Central Limit Theorem.

Examples chosen to illustrate the applicability of probabilistic formulations will be taken from the natural and physical sciences.

Prerequisite: Calculus to at least the level of Mathematics 200.

337B Stochastic Processes, lect.: 3 hrs. (Half-course).

This course will develop the concepts of
(a) Markov Chains and continuous time Markov processes,
(b) vector independence and the multivariate normal distribution,
(c) stationary time series,
with an emphasis on practical applications. The ability to translate from a physical context into the language of a probability model will be stressed.

This course is a natural sequel to Math 336. Here, the notions of time and space indexing of probability models are introduced, and conditional probability techniques are developed to deal with models of natural phenomena.

Prerequisite: Mathematics 336.

338A Sample Survey Methods, lect.: 3 hrs., (Half-course).

Development of design and analysis techniques for sample surveys. Topics include simple, stratified and systematic random sampling; ratio and regression estimation; sub-sampling with units of equal and unequal size; double, multistage and multiphase sampling; non-sampling errors and non-respondents, etc.

Prerequisite: Math 206 or Math 106/107 with a grade of B or better and Math 100, or consent of instructor.

339B Non-parametric Methods, lect.: 3 hrs., (Half-course).

This course is intended to equip students with enough knowledge of non-parametric methods to be able to perform the statistical analysis themselves and to interpret results. Topics include basic tools, order statistics, goodness of fit tests, location problems on one and two samples including signed rank tests, Mann-Whitney, Wilcoxon procedures, Kruskal-Wallis test, inference on scale parameters, confidence interval procedures, tests of randomness and association analysis. Also includes comparison of more than two treatments including randomized complete blocks.

Prerequisite: Math 206 or Math 106/107 with B and Math 100.

350R Intermediate Analysis, lect.: 3 hrs.

Mathematics 350 continues the analysis sequence begun in Mathematics 250.

Topics included in the course: Number systems, metric spaces, compactness, continuous functions on metric spaces, Stone-Weierstrass Theorem, Arzela-Ascoli theorem, sequences and series of functions and their properties, inverse and implicit function theorems, extrema, co-ordinate transformations, Analytic functions, Cauchy-Riemann equations, Cauchy's theorem, Power series, Laurent series, residues.

Prerequisite: Math 250 and 213 or consent of instructor.

Credit will be given for only one of Math 300, 328 and 350.

401A Introduction to Measure Theory and Integration, lect.: 3 hrs. (Half-course).

This class will discuss Lebesque's theory of measure and integration on the real line. The topics covered will include: the extended real number system and its basic properties; the definition of measurable sets, Lebesque measure and the existence of non-measurable sets; the Lebesque integral; differentiation of monotonic functions (e.g. the Cantor function); differentiation and integration; absolute continuity; the classical L^p spaces; Fourier series.

Prerequisite: Math 350.

402B Analytic Function Theory, lect.: 3 hrs. (Half-course).

Math 402B is a second half-course in complex function theory. Topics include: Review of the basic properties of analytic complex functions, including relevant topological properties of the plane. An incisive discussion of certain families of functions; e.g. Möbius mappings, exponential, logarithmic, trigonometric and related functions. Integration and the Cauchy theorem. Cauchy's integral formula, residues, harmonic functions, analytic continuation, entire and meromorphic functions, the Euler r-function and the Riemann S-function. Some results of conformal mapping; e.g. the Riemann mapping theorem.

Prerequisites: Math 308A, Math 300 or 350.

403R Advanced Abstract Algebra, lect.: 3 hrs.

This second course in abstract algebra deals with the structure of groups, rings, fields and modules. Topics which may be discussed include Sylow theorems, tensor products, Ext and Tor, modules over a principal ideal domain and Galois Theory.

Prerequisite: Math 303.

405R Introduction to Algebraic Geometry, lect.: 3 hrs.

Introduction to the basic concepts of algebraic geometry, starting from the classical point of view to the way in which algebraic geometry is done today. Many concrete examples will be studied. Some topics are: irreducible algebraic sets, the Zariski topology, affine varieties, pre-varieties, dimension, spec, affine schemes, pre-schemes.

Prerequisite: Math 303.

406R Statistical Inference, lect.: 3 hrs.

Sampling statistics are generally used to obtain information concerning an unknown group character of a population. Such generalization from sample to universe is statistical inference. When we reach a conclusion by inference from sample data, we do so at the risk of being in error. This risk can be calculated numerically. It is the purpose of this course to describe methods which lead to valid inferences and to calculation of the risk of error in those inferences. Tests of hypothesis will also be derived regarding these inferences. Treatment will be of a mathematical nature. Students will be able to apply statistics competently in all fields, with this course, and every branch of statistics will be open for further study.

The topics covered will include the the following: point estimation, consistent, sufficient, efficient and unbiased parameters, method of maximum likelihood, method of least squares, method of moments, method of minimum X^2 minimum variance unbiased estimation, interval estimation, minimax and Bayes' estimation, Neyman-Pearson Lemma, composite hypotheses, goodness-of-fit tests, likelihood ratio tests, critical region, locally most powerful tests, non-parametric tests.

Prerequisites: Math 200 and 206.

410R Decision Theory and Theory of Games, lect.: 3 hrs.

In the last few years, statistics have been formulated as the science of decision-making under uncertainty. Decision theory applies to statistical problems the principle that a statistical procedure should be evaluated by its consequences in various circumstances. This model for decision theory is a special case of game theory. A game is characterized by a set of rules having certain formal structure, and governing the behaviour of certain groups.

The central ideas and results of game theory and related decision-making models will be studied in this class: general decision problems, Bayes and minimax solution of decision problems, construction of Bayes decision rules, sequential decision estimation rules, empirical decision rules and testing as aspects of decision theory, rectangular games, games in extensive forms, games with infinitely many strategies, continuous games, separable and cooperative games, zero sum and non zero sum n person games.

Prerequisite: Consent of Instructor.

412R Ordinary Differential Equations, lect.: 3 .

The course is intended to be of interest to physicists and biologists as well as mathematicians. No previous course in differential equations is necessary. The course will introduce the qualitative theory of ordinary differential equations and several applications. Included are existence and uniqueness theorems, systems of linear and non-linear equations, stability theory, perturbation theory, Poincare-Bendixson theorem & non-autonomous equations.

Applications included are RLC circuits, the n body problem and Hamiltonian mechanics, and mathematical ecology. The applications are designed to illustrate some of the qualitative information that may be derived about mathematical models from the theory developed. The latter part of the course will be devoted to reading several original papers the subjects of which will depend upon the interests of the students.

Prerequisite: Consent of the instructor.

414A Introduction to Functional Analysis, lect.: 3 hrs. (Half-course).

An introduction to the basic principles of functional analysis including the following topics: infinite dimensional vector spaces, normed spaces, inner-product spaces, Banach and Hilbert spaces, linear and continuous linear functionals, the Hahn-Banach Theorem, the Principle of Uniform Boundedness, dual spaces, weak topology, weak* topology and the Alaoglu Theorem, the Open Mapping and Closed Graph Theorems, and consequences and applications.

Prerequisites: Math 213 and 304.

415B Functional Analysis, lect.: 3 hrs. (Half-course).

Topological vector spaces, locally convex spaces, normability, function spaces, strict convexity, uniform convexity, reflexive spaces, support functionals, geometry of convex sets and other topics.

Prerequisite: Math 414.

416B Operator Theory, lect.: 3 hrs. (Half-course).

An introduction to the theory and applications of continuous linear operators on Hilbert spaces, culminating with the Spectral Theorem, and including such topics as spectrum; adjoint; symmetric, self-adjoint, unitary, and normal operators; polar decomposition; differential and integral operators; C* algebras; Gelfand Theorem; spectral theorem.

Prerequisites: Math 401 and 414.

417A Introduction to General Topology, lect.: 3 hrs. (Half-course).

Topological spaces, examples. Classification in terms of cardinality of bases, separation, etc. Product spaces, Tychonoff Theorem. Compactness, Compactifications, Tychonoff Spaces. Metrization.

Prerequisite: Math 304.

418B Introduction to Algebraic Topology, lect.: 3 hrs. (Half-course).

Homotopy type and the Fundamental Group, geometry of simplicial complexes. Homology theory of complexes, chain complexes, homology groups for complexes, subdivision, induced homomorphisms, applications. Axioms for algebraic topology. Singular homology, the singular complex. Properties of cell complexes.

Prerequisite: Math 417.

421R Introduction to Partial Differential Equations, lect.: 3 hrs.

In the first term, attention will be focused on the classical theory of partial differential equations. This will include the classification, study and solution (by the methods of eigenfunction expansions, Fourier and Laplace transforms, etc.) of partial differential equations of applied mathematics. The second term will involve the introduction and study of the concepts of modern numerical analysis as they apply to the solution of scientific and engineering problems involving partial differential equations. Examples of some specific applications to current problems will be examined.

Prerequisite: Math 311.

430A Optimal Control Theory and Applications, lect.: 3 hrs. (Half-course).

This class retraces the historical path in the search for optimal solutions using methods from differential calculus. Initially the calculus of variations will be studied and the sufficiency conditions emphasized. A constructive solution of the Euler equations will be presented. Then the modern theory of optimal control will be developed using techniques of mathematical programming. This approach will be applied to a variety of problems such as economic growth theory, inventory control and regulator problems. Numerical methods will also be presented.

Prerequisites: Math 300 and 331.

431B Nonlinear Programming, lect.: 3 hrs. (Half-course).

This class presents a complete treatment of the mathematical theory which underlies the general problem of optimization of a real-valued function subject to a system of constraints. Examples and exercises of an Operations Research nature are used to illustrate the theory. The material studied in this course is a basic prerequisite for understanding and contributing to recent developments in mathematical programming.

Prerequisite: Math 300.

462R Data Analysis and Design of Experiments, lect.: 3 hrs.

Many aspects of the application of statistics to research problems do not arise naturally out of technique-oriented courses in statistics. This course is a problem-oriented approach to statistical design of experiments and data analysis. The problems discussed will be based on consulting experiences of the members of the Statistical Consulting Service of the Mathematics Department, although an attempt will be made to expose the general principles that underlie each specific case.

Students will be encouraged to develop novel approaches to solve the design and analysis problems of the case studies. It is expected that the students will work intensively on the problem(s) that interest them most. This work may be on case studies, themselves, or it may be a mathematical development motivated by the case studies. Students will be required to make formal presentations of their work during regular class hours.

Prerequisites: Statistical techniques which may be useful as background for this course would include any techniques covered in Math 206, 334, 335, 336, 337, 338 or 339 although it is not necessary to have taken all of these as prerequisites. Admission to the course is by consent of the instructor.

Mediaeval Studies

The period commonly called the Middle Ages (approximately A.D. 400-1500) offers a unique opportunity to study Western culture as a whole. Indeed, any attempt to study a part of this period in isolation leads to a conviction that such an investigation can never be satisfying and that the walls between disciplines must be broken down and the literature seen in relation to the philosophy, the philosophy in relation to the history, and the history in relation to the languages. No matter what the vernacular tongue of any geographical area, there was one common language throughout Europe and one church, and the study of these leads inevitably to a consideration of paleography, art, architecture and music.

The field is a very large one and could become a fascinating and rewarding area for a certain type of student — the one who likes to immerse himself in his work and who feels that university studies need not involve storing knowledge in separate pigeon-holes because his language course has nothing in common with the social science he is required to take.

The regulations for the Honours degree permit a structured programme to be set up in Mediaeval Studies which cuts across traditional departmental lines while allowing considerable freedom in choice of classes.

The professors currently involved in this programme are: R. Crouse, J. Doull, E. Segelberg (Classics); R. Dawson, H. Morgan (English); H. Runte (French); R. Haines (History); J. Aitchison (Political Science). A student who is interested in entering the programme in Mediaeval Studies should speak to one of these faculty members, who will then refer him to the Administrative Committee for the planning of his course.

Structure

The Honours degree in Mediaeval Studies must have a major field consisting of 9 classes, selected from those with Mediaeval Studies numbers, which will include at least one in each of: a literature, history, philosophy and Latin. Other classes will depend on the individual student's interests, but all four disciplines must be represented. The minor field may be varied to suit the taste of the student: he may wish to continue into later periods in his favourite discipline or he may wish to acquire another language to help him in his work. No class in the minor field may be from the Mediaeval Studies group. The four classes not in the major field may be widely scattered: one or more of them may be 100-level prerequisites which may be necessary for later mediaeval work, e.g., introductory German or Latin or Political Science.

Some sample programmes which might be followed are:

Literary: English. Major: Med. Stud. 201, 202, 203, 204, 211, 301, 302, 401, 261. Minor: 2 classes in English, possibly English 251 and 252. Four additional classes: possibly Philosophy in Literature (Phil. 270), History of England (Hist. 210), German for Beginners (German 100), and Intermediate German (German 200).

Literary: non-English. Major: Med. Stud. 211, 212, 214, 204, 301, 303, 210, 402. Minor: 2 additional classes, possibly in French or German. Four additional classes: possibly Latin 100, Philosophy 100, plus another Latin and another Philosophy.

Historical: Major: Med. Stud. 301, 302, 303, 304, 311, 401, 414, 202, 201. Minor: History 210, and 314. Four additional classes: possibly introductory and intermediate Latin and two French.

Philosophical: Major: Med. Stud. 401, 402, 403, 414, 301, 302, 204, 211, 201. Minor: possibly two classes in the earlier or later history of philosophy. Four additional classes.

Classes

The classes available from which a mediaeval grouping may be formed are given below. Some of them are on an *ad hoc* basis, depending on the needs of students in any given year. Staffing problems may require the omission of certain classes from time to time: students are referred to the Mediaeval studies prospectus at the time of registration. The numbering of the classes reflects subject and department, rather than order of difficulty or of priority.

201 History of the English Language (English 202)

202 Old English (English 253)

203 Medieval Literature (English 218)

204 Middle English (English 351)

210 Introduction to Mediaeval French (French 3300A)

211 History of the French Language (French 4000)

212 French Mediaeval Literature (French 4300A/4301B)

214 Arthurian Romances (Comparative Literature 214)

301 Mediaeval Life and Thought (History 1990/5)

302 Mediaeval Europe (History 2000)

303 Mediaeval Civilization (History 3000)

304 Roman History: The Cultural History of the Roman World (Classics 223)

306 The Mediaeval Church (History 3020)

311 Paleography (History 4000)

401 Mediaeval Philosophy (Classics/ Philosophy 338)

402 Latin Philosophical Texts (Latin 204)

403 Seminar on the Philosophy of the Church Fathers (Classics 440/570)

404 Western Religious Experience (Religion 201)

414 Political Philosophy from the Stoics to the End of the Fifteenth Century (Poli. Science 2405, not offered 1977-78.)

Microbiology

Professors	Associate Professors	Assistant Professors
K.R. Rozee (Head)	J.A. Embil	G.C. Johnston
K.B. Easterbrook	S.H.S. Lee	R.S. Martin
L.S. Kind	D.E. Mahony	E.S. McFarlane
C.E. vanRooyen	C. Stuttard	D.B. Stoltz

The field of Microbiology includes the activities of such organisms as bacteria, viruses, fungi and algae. The Microbiology programme is designed to provide the student with an understanding of microorganisms—their structure, function, diversity, and contribution to the biosphere, and attempts to give a basic training which may serve as preparation for graduate or professional work in microbiology as it relates to Medicine, Dentistry, the Health Professions, the Food Industry, Agriculture and Environmental Management. The Department of Microbiology is located in the Sir Charles Tupper Medical Building and offers microbiology programmes in the Faculties of Medicine, Health Professions, Arts and Science and Graduate Studies. Its members take part in teaching in all faculties and the research done by the faculty members is relevant to both general and special fields of Microbiology.

Degree Programmes

The Department, in conjunction with the Biology Department, offers both a coordinated 2-year programme and a combined honours programme in Microbiology. These programmes are designed for students entering their second year of study and lead, respectively, to the *general* B.Sc. and the *honours* B.Sc. degree. Combined Biology/Microbiology honours students doing thesis work in the Microbiology Department will participate with graduate students in a special seminar program in lieu of the Biology Department Honours Seminar series. Where possible, such students are also expected to attend the weekly Microbiology Department seminar program (Mondays, 1-2 p.m.). Students intending to specialize in microbiology are urged to consult the departments concerned at their earliest opportunity; faculty advisors are: D.B. Stoltz (Microbiology Department) and R.G. Brown (Biology Department).

As a general rule, students will have previously taken a comprehensive class in introductory biology (Biology 1000) prior to embarking upon any programme in Microbiology. It should also be noted regarding the class offerings listed below that Microbiology 2100 is a prerequisite for all classes given in this Department except Microbiology 302 and 3023A. Except for 302, all Microbiology classes listed in this calendar are cross-listed with the Biology Department, which means that students can register in 2100, e.g., as either *Microbiology* 2100 or *Biology* 2100.

A number of classes offered by the Biology Department have been approved as part of the joint Biology/Microbiology undergraduate programme in Microbiology. These are:

Biology 3111B, Bacteria in Nature

Biology 3113A, Bacterial Physiology

Biology 3116R, Mycology

Biology 4066B, Microbial Ecology

Class descriptions for these will be found in the Biology Department listings in the calendar.

Classes Offered

N.B. Students wishing to do advanced work in microbiology are advised that in some instances a grade of C or better in specific 2-3000 level courses may be specified as prerequisite to particular 3-4000 level courses. Several classes have a limited enrollment of 30 or less. Consult with relevant faculty or course coordinators.

2100 A/B: Introductory Microbiology; lect., 2 hrs.; labs, 3 hrs. D.B. Stoltz (course coordinator), R.G. Brown, G.C. Johnston, J.A. Novitsky.

This class introduces the basic concepts of microbiology through lectures, laboratory sessions, demonstrations and films. Topics to be examined include the structure, ecology, growth, genetics and physiology of microorganisms, as well as their involvement in disease. This course is a prerequisite for all the other microbiology classes listed below, with the exception of 302. For the convenience of all concerned, no student will be registered into 2100 after the first laboratory session. It should be noted that students wishing to acquire extra experience in microbiology could take 2100A followed by Biology 3111B in the same academic year.

Prerequisite: Biology 1000.

302: General Microbiology; lect., 2 hrs.; labs, 3 hrs. S.H.S. Lee

This class is intended to provide a general knowledge of microbiology at an introductory level for students in the Health Sciences; the class is *not* considered to be part of the Biology/Microbiology combined honours programme. The lecture topics to be discussed are broadly divided into three sections. The first of these introduces the microbial world, the basic concepts and facts of structure and function, growth, genetics, and immunology. The second comprises a systematic survey of the medically important groups of microorganisms, with special emphasis on host-parasite relationships. The third section is concerned with the application of microbiology in health sciences, industry and ecology. Laboratory work is designed to complement the lecture materials and to provide experience in the isolation, identification, cultivation and control of microorganisms.

Prerequisite: Biology 1000.

3023A: Biological Ultrastructure; lect., 2 hrs.; labs, 3 hrs. K.B. Easterbrook, D.B. Stoltz, M. Willison (course coordinator)

This class is designed to teach fundamental aspects of the architecture of biological entities (including viruses, bacteria, protists, fungi, plants and animals) at the "ultrastructural" level. Ultrastructure is considered to include both intracellular and extracellular organization in the size range lying between macromolecules and whole cells. The relationship between structure and function is a recurrent theme, and special emphasis is placed on selected organisms of general importance. Laboratories are designed primarily to familiarize students with the interpretation of micrographs. Techniques used in ultrastructure research are explained and demonstrated. Students wishing to be trained in particular techniques should subsequently register in Biology/ Microbiology 4024B.

Prerequisite: Biology 2015, or 2020, or 2100.

3033A: Microbial Genetics; lect., 2 hrs.; labs, 3 hrs. C. Stuttard and G.C. Johnston

This class is concerned with the study of heredity in microorganisms - especially bacteria and their viruses. Although there will be some discussion of the chemical basis of mutation, DNA replication, recombination and repair, the main emphasis will be placed on mechanisms of gene transfer in microbes, gene mapping and the use of microbes as model systems for the study of general genetic phenomena.

Prerequisites: Microbiology 2100 and Biology 2030.

3114A Introduction to Virology; lect., 2 hrs.; labs, 3 hrs. E.S. McFarlane

This class is designed to provide an introduction to Virology, and will to some extent discuss all kinds of viruses - animal, bacterial, insect and plant. Important concepts relating to the isolation, biophysical characterization, classification and replication of viruses will be considered.

Prerequisite: 2100 or 302.

3115A: Introduction to Immunology; lect., 2 hrs.; labs, 3 hrs. L.S. Kind

This class will deal with the structure, synthesis, regulation of production, detection and measurement of antibodies. Also to be discussed are topics in the fields of transplantation, tolerance, hypersensitivity, tumour immunology, complement and the genetics of the immune response.

Prerequisite: 2100 or 302 or permission of instructor.

3118B: Systematic Bacteriology; lect., 2 hrs.; labs, 3 hrs. D.E. Mahony

This class consists of a broad survey of the major bacterial groups. Attention is given to those criteria which are regarded as important in the classification of bacteria, and to the techniques used to identify particular species.

Prerequisite: 2100 or 302.

4022 A/B: Microbial Ultrastructure Project; K.B. Easterbrook and D.B. Stoltz

A research project using one or more of the skills acquired in Biology/Microbiology 4024B, selected by the student in consultation with the instructor.

Prerequisites: 3023A and 4024B.

4024B: Microscopy; lect., 2 hrs.; labs, 3 hrs. K.B. Easterbrook, D.B. Stoltz and M. Willison (course coordinator)

This class is a corollary to Biology 3023A. Instead of considering biological ultrastructure, the class deals with some of the principal methods involved in the study of cell structure. Both light and electron microscopy, including ancillary techniques, are considered in depth. The importance of a proper understanding of the physical and/or chemical principles governing technical procedures is emphasized. During laboratory periods students will have the opportunity to practise, or to watch demonstrations of, some of the techniques covered in the lectures.

Prerequisite: A grade of B- or better in 3023A.

4037B: Plasmid Genetics; lect./discussion, 2 hrs. C. Stuttard

Temperate bacteriophage Lambda (λ) and the conjugative plasmid FL of *E. coli* serve as model systems for discussion of dispensable components of the bacterial genome. Lysogeny and analogous plasmid-host associations are examined, as are the regulation of λ development and restricted gene transfer (specialized transduction and sexduction). The course also includes consideration of plasmid gene structure and functions such as transfer and immunity; plasmid recombination; the role of transposable DNA in phage and plasmid evolution, mediation of infectious multiple drug resistance, and bacterial pathogenicity.

Prerequisite: 3033A

Texts: B. Lewin: "Gene Expression 3. Plasmids and Phages". S. Falkow: "Infectious Multiple Drug Resistance". Offered biennially, commencing January 1979.

4038B: Control of Cell Division; lect./seminars, 2 hrs. G.C. Johnston

The physiology and genetics of cell division of both prokaryotic and eukaryotic cells will be discussed. The major purpose of this course will be to increase our overall understanding of how cells divide and how this division is regulated. Emphasis will be placed on experimental support for various models of how cells integrate and coordinate their overall growth, DNA implication and division. Topics will include: coordination of seemingly unrelated processes in division; regulation of cell size; sequencing of gene activity, relationship between cell cycle control and cancer; intercellular communication; and growth control.

Prerequisite: 3033A.

Offered bienially, commencing January 1980.

4114B: Virology; lect., 2 hrs.; labs, 3 hrs. E.S. McFarlane

A class for advanced students in virology. Several aspects of virology will be discussed in detail; e.g., virus structure and replication, viruses and cancer, viral genetics, virus-cell interaction, etc.

Prerequisite: 3114A.

4115B: Immunology; lect., 2 hrs.; L.S. Kind

Students will read and be prepared to discuss articles from the current immunological literature. While all major areas of immunology will be included, the emphasis will be on topics previously studied in 3115A.

Prerequisite: 3115A.

4900: Honours Research and Thesis.

Music

Teaching Staff
Ray Byham - Piano and Music History
Kève Dimock - Music Education
Philippe Djokic - Violin
Kenneth Elloway - Band Instruments
Dennis Farrell - Theory and Composition
Clifford Ford - Theory and Composition
Elvira Gonnella - Voice
Jacquelyn Harmer - Music Education
Walter Kemp - History (Chairman)
Harmon Lewis - Harpsichord and Organ
Ann Manicom - Music Education
Jeff Morris - Voice
Lynn Stodola - Piano
Steve Tittle - Theory and Composition
William Tritt - Piano
William Valleau - 'Cello
Carol van Feggelen - Guitar and Lute
David Wilson - History

Part-Time Applied Skills Instructors
Patricia Cooper - Saxophone
Elizabeth DuBois - Flute
Priscilla Evans - Recorder
James Faraday - Percussion
Alban Gallant - Clarinet
Anne Krabill - Oboe
David Krabill - Bassoon
Sheila Piercey - Voice
Joseph Riedel - Trombone
Brian Robinson - Double Bass
Roland Starr - French Horn
Jeffrey Stern - Trumpet

There is a great difference between loving music and electing to embark upon full time musical training: the difference between a profitable relaxation open to all and a singular concentration on specialized skills, open only to those with talent and specific pre-university training. The resources of the Music Department are geared towards providing a thorough musical training for those wishing to specialize in music, but they are equally available to the many non-specialist students who wish to increase their musical awareness and involvement.

In the Bachelor of Music Programme, the Department offers training to the prospective professional musician: performer, composer, theorist, historian or critic. Future teachers instructing in the elementary and secondary school classroom are provided with methods, skills and field experience in the Bachelor of Music Education Programme. In our society today there are many vocations in which a working knowledge of various aspects of music is a desirable part: librarianship, media programming and production, arts management, recreational and therapeutic work, to name only a few. A carefully chosen B.A. (General) or combined Honours programme could furnish a basic equipment for further studies in preparation for such professions. The truly contemporary listener, too, must acquire style-specific tools, if there is to be an informed response to the musical experience.

Thus the University's Music Department must be ready to serve many needs within a general standard of excellence. Crafts and skills, history and practice must be presented in an equilibrium flexible enough to be useful to each student's identity as a musical person.

If teachers or performers are to excite others with music, they themselves must be constantly excited by music. This excitement is usually born out of an increasing critical insight, and a continuing discovery of music, new and old. It must be the first obligation of a university music department to inspire ever improving performance standards and a curiosity and wonder about music through ensemble playing, creativity, informed inquiry into musical trends and styles, and a critical awareness of the living musical scene.

Degree Programmes in Music

Admission

Students wishing to enrol in a degree programme offered by the Department of Music must fulfil the following admission requirements:

a) satisfy the requirements for admission to the Faculty of Arts and Science
b) demonstrate their proficiency as instrumental or vocal performers in an audition-interview.
c) demonstrate knowledge of the basic rudiments of music theory (equivalent to Grade II Theory of the Royal Conservatory of Music of Toronto) in a written diagnostic test, to be arranged to coincide with the audition-interview.

Applicants failing to demonstrate a satisfactory proficiency in the audition would be required to enrol in Music 050 during their first year with the understanding that this might delay the completion of their degree programme for one year.

Applicants failing their written rudiments test would be advised to take preparatory lessons in music theory before entering a university music programme and/or be placed in a remedial section of Music 120.

When making application for admission to the University, prospective music students should request the supplementary application form for the Department of Music.

Applications to the Department should be received by the end of April; audition procedures should be completed by the end of June.

Bachelor of Arts (Major in Music)

The *B.A. (General)* with a major in music is a three year course, subject to the regulations described in the section *Arts and Science: General Faculty Regulations (Item 3)* and *Degree Programmes (Item 5).* Students are required to include Music 100, 101, 120, 130C and 131C in their programme. Other classes, to a maximum total of 10 (6 above the 100 level) may be selected in consultation with the Department to suit a student's individual needs and interests. Music Education courses are not considered applicable to this degree. Students in the B.A. (General) programme enrolled in Applied Skills courses are required to pass a jury examination at the end of the academic year.

Students with an appropriate undergraduate degree from another institution may apply to take a one-year course leading to certification of the Nova Scotia Department of Education.

B.A., B.Ed. (Major in Music)

This is a four year integrated course run cooperatively between the Music and Education Departments. Students do not normally decide to enter this until their third year. Details are available from the Music Department.

Classes for Non-Majors

Classes offered as arts electives for non-majors are as follows:

135R	Introduction to Music
207R	Guitar and Lute
226R	Experimental Music
235A&B	History of Musical Styles
333R	The Contemporary Scene

Applied Skills courses are open to non-majors only with special permission of the Department, are subject to enrolment quotas, and require the successful completion of an audition-interview.

Classes Offered

A. History and Literature of Music

1.) *History:*

101 Survey of Music Literature, lect: 3 hrs.

An introduction to the styles and forms of Western music, with some reference to music in non-Western cultures.

Prerequisite: A basic knowledge of musical notation and terminology equivalent to Grade II Conservatory.

296 History of Music I, lect: 3 hrs.

A study of the history, literature, craft and practice of music in the Middle Ages, Renaissance and Baroque.

Prerequisite: 101, or permission of the Department

396 History of Music II, lect: 3 hrs.

A study of the history, literature, craft and practice of music after 1750, the age of tonaltiy; Classicism and Romanticism in music.

Prerequisite: 296, or permission of the Department

346R Music in Canada, lect: 3 hrs.; C. Ford

An historical survey of music in Canada with emphasis on the socio-economic factors essential to the successful transplantation and growth of European musical culture in Canada.

The class is also designed to give students practical experience in research skills as they pertain to the specialized area of Canadian music. Students will be required to research and compose reports on both historical and contemporary topics.

Prerequisite: 101, or permission of the Department

343 History of Opera, lect: 3 hrs.

An historical and analytical survey of operatic compositions from 1600 to the present day; opera as drama; changing tastes in operatic productions; operetta and musical comedy.

Prerequisite: permission of the Department

496A&B Special Studies

Individually directed research and writing under the supervision of an appropriate member of the Department.

Prerequisite: 296 and 396

497 Graduation Thesis

2.) *Literature Studies*

The purpose of these classes is to enable students to study in depth the history and repertoire of a specific performance idiom. During the classes, the student will be encouraged to apply his own skill as a performer.

Each class is 2 hours, with permission of the Department as a prerequisite.

340B The Organ and its Literature

341A Early Keyboard Instruments and their Music

342B Piano Literature

335A Chamber Music I

345B Chamber Music II

B. *Theory and Composition*

1.) Theory and Related Skills

120 Music Theory I, lect: 3 hrs.; D.M. Farrell

In the first term a thorough knowledge of musical rudiments is presumed. The course begins with a survey of musical phenomena in general, subsequently of tonal music in particular. The material in this survey is immediately applied to two- and three-part writing, stressing both the harmonic and contrapuntal dimensions.

In the second term, there is a concentration upon a complete grounding in the traditional four-part writing skills. This culminates in the study of the dominant seventh and elementary modulation.

Prerequisites: permission of the Department; a basic knowledge of music notation and terminology equivalent to Grade II Conservatory.

130C Aural Perception I, lab: 3 hrs.; D.M. Farrell

A class designed to correlate with 120 and 131C. Melodic, Harmonic, Rhythmic, Textural and Stylistic factors are visualized, performed and dictated systematically. Labwork in ear-training and sight-singing is done three times per week. Each student is a member of a small working section.

Prerequisite: permission of Department

131C Keyboard Skills I, lab: 2 hrs.; R. Byham

The development of basic skills in sight reading and harmonized accompaniment at the keyboard.

Prerequisite: permission of Department

220 Music Theory II, lect: 3 hrs.; C. Ford

This class is a continuation of 120, covering the study of a complex modulation, altered chords and chromatic harmony. Emphasis is placed upon concepts of functional tonality by means of both written exercises in four-part harmony and analysis of late and post Romantic literature. An introduction to 16th century counterpoint in two voices will be offered to develop skill in polyphonic writing.

Prerequisites: 120, 130C, 131C

202C Aural Perception II, lab; 2 hrs.; C. Ford

This class is designed to provide the student with further practice in melodic and harmonic dictation and sight-singing; it will correlate with 220.

Prerequisites: 120, 130C, 131C

231C Keyboard Skills II, lab: 3 hrs.; R. Byham

A continuation of 131C

Prerequisite: 131C

347C Counterpoint, lect; 2 hrs.; C. Ford

Continuation of 16th century counterpoint in three voices, using canonic techniques. An introduction to 18th century counterpoint: inventions, canons, and fugal expositions, etc.

Prerequisite: 220

348C Orchestration, lect: 2 hrs.; C. Ford

A survey of the development of the orchestra and the orchestral instruments with an introduction to acoustics. Technique in the deployment of instrumental combinations will be emphasized through practical exercises in scoring for a medium-sized orchestra common in the 20th century.

Prerequisites: 220, 202C

447C Advanced Harmony and Counterpoint, lect: 2 hrs.

The application of acquired harmonic and contrapuntal technique to various instrumental and vocal textures and forms; chorale prelude and fugue.

Prerequisites: 220 and 347

448C Form and Analysis, lect: 2 hrs.

Analytic study of the form and content of selected compositions in various styles and idioms.

Prerequisites: 220 and 347

2) Composition

310, 410 Composition I, II

Particular works from any period of history will be analysed to serve as a springboard for original composition by the students. Students' work will be evaluated in small group discussions and in individual sessions with the instructor. Students will be encouraged to include in their work compositions for performance by students and compositions in a contemporary style that are relevant to the school classroom situation.

Prerequisites: permission of the Department and an interview with the instructor.

498 Graduation Composition

See also *226: Experimental Music,* under *Classes Available to Non-Majors*

C. *Performance*

050 Remedial Applied Skills

A non-credit class restricted to students proposing to enter a degree programme in music but who in their audition-interview did not demonstrate standards of performance sufficient to enrol in an Applied Skills class at the 100 level

Through a jury examination at the completion of the class, the student must satisfy the admission standards of the Department in order to qualify for enrolment in the sequence of Applied Skills classes. This class may be taken only once.

100, 200, 300, 400, 301, 401 Applied Skills

Offered in all orchestral instruments, saxophone, guitar and lute, piano, organ, harpsichord, voice.

Normally all students receive one hour weekly individual lesson in their major performance idiom. In addition, and appropriate to the idiom, group instruction in technique, and master classes may be constituent parts of the course (e.g., scale classes for solo instruments, repertoire classes for voice).

The various levels of applied study indicate the year of study in the Department and are not intended solely as an assessment of standard. Term gradings are based on progress as well as an actual performing standard displayed in the jury examinations.

348A & 349B, 448A & 449B Opera Workshop, lab: 4 hrs.; J. Morris

Study and performance of selected operatic scenes. Students have the opportunity to participate in two staged productions of complete operas per season.

Prerequisites: permission of the Department; concurrent vocal studies

Operas presented in the 1977-78 season included Menotti's *Amahl and the Night Visitors* and Puccini's *Gianni Schicchi.*

431C Advanced Improvisation and Keyboard Harmony, lab: 2 hrs.;

Intended for keyboard students, the class involves the development of skills in transposition, score reading, and continuous realization.

Prerequisites: permission of the Department, and the interview with the instructor

499 Graduation Recital

D. *Music Education*

All classes:

Prerequisite: permission of the Department; interview with a designated member of the Music Education faculty.

1.) *Core Classes*

344 Band Instruments and Techniques, lect: 2 hrs.; K. Elloway

Work will include a practical introduction to the flute, clarinet, saxophone, horn, trumpet, trombone, tuba and percussion; elementary scoring for band, basic conducting routines, rehearsal methods, study of band literature, care and maintenance of instruments, purchase of instruments and the historical background of the wind band. This class is normally open to students majoring in wind, brass and percussion instruments.

350 Classroom Teaching Methods, lect: 4 hrs.; K. Dimock

Exploration of different methods of teaching music in class with emphasis on the elementary school. Work will include creativity, Orff and Kodaly methods, song material and presentation and the integration of music with other subject areas.

360 Classroom Field Experience

Practical application in elementary schools of skills explored in 350, including observation.

450C Secondary Teaching Methods, lect: 2 hrs.; J. Harmer

Exploration of different methods of teaching the various facets of music in the secondary school.

451A Band Teaching Methods, lect: 2 hrs., K. Elloway

Exploration of specific methods of teaching band instruments and rehearsing bands in schools.

452C Field Projects

Under supervision, students will design a project that will result in an in-depth study of the theoretical and practical aspects of a particular area of music education. The project entails library research as well as working with specialists in the field.

460C Classroom Field Experience

Four weeks of supervised classroom teaching practice prior to and at the end of the academic year.

2.) *Electives*

454C Choral and Band Arranging

455C Teaching Music Appreciation and Theory

456C Contemporary Music in the Classroom

457A Choral Literature and Conducting

459C Classroom Instruments

Classes Available to Non-Majors

135 Man and His Music, lect: 2 hrs.; W.H. Kemp

This class is designed for the interested listener who desires to acquire an informed response to musical experiences. A knowledge of musical notations and terminology is not a prerequisite to this class. The class includes a survey of the evolution of music from primitive cultures to the modern age; music in contemporary society; music in non-Western civilizations; music and image; music and the related arts; the art and psychology of listening.

207 Guitar and Lute, class: 2 hrs., ensemble; C. vanFeggelen

For students with a serious interest in classical guitar playing and for whom it is not possible to provide individual instruction. Basic playing technique and the history of fretted instruments.

Prerequisite: personal interview with instructor

226 Experimental Music, lab: 2 hrs.; J.S. Tittle

Group inprovisation and composition in a contemporary medium using the percussion and electronic resources of the sound studio. Students will explore basic musical structures and learn the use of synthesizers, special recording techniques and tape mixing and editing. Detailed knowledge of music will be of less use in this class than imagination and an interest in contemporary culture and in electronics.

Prerequisite: personal interview with instructor

235A&B History of Musical Styles, lect: 3 hrs.

An in-depth study of composers and their styles in relation to their lives and cultural backgrounds. Essentially for students who have already taken a 100 level class in music or who can demonstrate a correspondingly wide background of listening and musical knowledge.

Prerequisite: 135 or permission of instructor

333 Contemporary Scene (see Courses - Music History)

Ensembles

The Dalhousie Chorale, directed by Walter H. Kemp, meets on Monday evenings and performs at least two concerts a year with orchestra. Membership to the choir is open to all the University and civic community. Works performed in the 1977-78 season included Purcell's *Dido and Aeneas* and Bach's *St. Matthew Passion.*

The Dalhousie Wind Ensemble, directed by Kenneth Elloway, meets on Thursday evenings and performs two concerts a year.

Other ensembles sponsored by the Department include the Dalhousie Brass Ensemble (Director, Jeffrey Stern), the Chamber Choir (Director, Clifford Ford), several instrumental chamber ensembles such as a woodwind quintet and saxophone quintet, and a stage band.

Oceanography

Oceanography is an inter-disciplinary science that includes studies of tides and currents, the chemistry of sea water, plants and animals that live in the sea, and ocean bottom sediments and underlying crustal structures. Career oceanographers are employed in Canada in a few universities, in various federal laboratories that are engaged in both basic research and applied problems which meet a national need, such as fisheries investigations, exploration for offshore mineral resources, and studies of ice in navigable waters, and in a number of private companies interested in marine environmental protection or exploration.

A good background in basic science is a necessary prerequisite to entering the department. Properly prepared undergraduates are permitted to take one or more graduate classes as electives. There are graduate introductory classes which survey the entire field and advanced classes in each of the major specialties — physical, chemical, geological and biological oceanography, and fisheries biology.

In addition, one undergraduate class is offered.

185R Introduction to Oceanography, lect.: 3 hrs., R.O. Fournier.

This class surveys the field of Oceanography in general and shows how the oceans, which account for more than 70% of the earth's surface, function as a dominant environmental force. Consideration also will be given to man's impact on this ecological system.

This class is designed to give the student a background or feeling for the ocean, what oceanography is, and what oceanographers do. It is not a good "background to science" course, since little feeling will be obtained for scientific techniques which would otherwise be acquired in a laboratory class. Most of the material which will be covered will be descriptive rather than basic, inasmuch as it is impossible in the time allowed and the material covered to also teach the basic required sciences.

Prerequisite: Restricted to second year, or more advanced students

Philosophy

Professors	Associate Professors	Assistant Professors
A.H. Armstrong	S.A.M. Burns	P. K. Schotch
D. Braybrooke	R.M. Campbell	S. Sherwin
F.H. Page	W.F. Hare	T, Tomkow
R.P. Puccetti	I.A. MacLennan	T. Vinci
	R.M. Martin (Chairman)	

Beginning in Philosophy

Everything people do or think about has a philosophical aspect, so there are many different ways of beginning in philosophy. Students new to philosophy can begin with any Exploratory Class.

First Year Students are encouraged to take classes at the 100-level. These exploratory classes are:

101 Great Philosophical Problems
102 Great Philosophers
103 Death and the Mind
107 Justice, Law, and Morality

These classes will share some meetings with corresponding classes in the 200-level, but students who take them at the 100-level will receive different assignments, may meet in tutorials for special attention and advice, and will be graded by standards appropriate to a first-year class. These classes are designed to fulfill the Faculty "Writing Requirement".

All Students in *any* year may begin with any Exploratory Class in the 200-level. These classes have no prerequisite, and are designed to be appropriate for students who have taken no philosophy as well as for students who have already done other Exploratory Classes. The 200-level Exploratory Classes are:

201 Great Philosophical Problems
202 Great Philosophers
203 Death and the Mind
207 Justice, Law, and Morality
211 Symbolic Logic
213 Principles of Logic
215 Language and Reasoning
216 Philosophical Issues of Feminism
217 Existentialism
218 Philosophy of Education
220 Philosophy of Religion
225 Religion and Human Behaviour
226A Philosophy and Art (half-year)
254A Does History Make Sense? (half-year)
255B The Marxist Approach to Historical Change (half-year)
266 Chance and Choice
270 Philosophy in Literature
280 Ethics and Medicine

Going On in Philosophy

Any of the classes in the Exploratory group will provide the student with a good introduction to philosophy. Students who wish to take more philosophy may take additional Exploratory Classes, or they may choose to take Core and Specialized Classes. Further Exploratory Classes will broaden the student's acquaintance with topics and issues in philosophy. Classes in Core and Specialized groups will deepen knowledge on particular topics, and develop skill in philosophical thinking.

Core Classes deal with issues that are fundamental to understanding philosophy. They allow students to pursue, in depth, issues raised in Exploratory Classes. The Core classes are:

305 Theory of Knowledge
309 Intermediate Logic
310 Ethics
330 Philosophy of Language
335B Ancient Philosophy
361A The Rationalists
362A The Empiricists
363B Kant
385 Metaphysics

Most Core Classes have the prerequisite of any Exploratory Class (see individual class descriptions below for particulars).

Specialized Classes are for advanced students; the usual prerequisite is at least one Core Class (but consult individual class descriptions below). The Specialized Classes are:

336	Ancient Philosophy from its Beginnings VI Century A.D.
338	History of Medieval Philosophy
408	Logics and Languages
419A	Topics in the History of Philosophy
445	Theory of Action
446	Mind and Brain
447A, 448A, 449B	Philosophy, Politics, & Economics Semina
451	Topics in the Philosophy of Language
460	Contemporary Theories of Religion
465	Philosophy of Science
499	Directed Reading

Degree Programmes

General B.A. with Major in Philosophy Students must take at least five classes in philosophy (or the equivalent if some are half-year), including at least two Core Classes, or one Core Class and one Logic Class. (Logic Classes are 211, 213, 215, 309, and 408.) All students planning to take a general degree in philosophy should talk to an undergraduate advisor in the department.

B.A. With Honours Students wishing to specialize in philosophy should take an honours course. It is the normal preparation for graduate study in philosophy. Its requirements are at least ten full-year classes in philosophy (or the equivalent), including at least one Logic Class (211, 213, 215, 309, or 408), three Core Classes, plus two further Core or Specialized Classes.

Class Descriptions

Exploratory Classes

101 Great Philosophical Problems Staff

An introduction to some of the important problems that have concerned philosophers during the ages. (Formerly Phil 100)

102 Great Philsophers Staff

An introduction to the history of philosophy. The class will examine some of the writings of great philosophers from ancient times to the present. (Formerly Phil 230)

103 Death and the Mind R.P. Puccetti

This class will deal with questions about the nature of death, the possible existence of immortality of reincarnation, and the relevance of our beliefs about death to the way in which we live our lives. (Formerly Phil 121)

107 Justice, Law, and Morality (Same as Pol. Sci. 2400) D. Braybrooke

An introduction to political philosophy and ethics. Plato, Hobbes, and other authors will be considered to help answer questions such as: What is justice? What is its role in society? (Same as Pol. Sci. 2400) (Formerly Phil 240)

201 Great Philosophical Problems Staff

See description for 101, above.

202 Great Philosophers Staff

See description for 102, above.

203 Death and the Mind R.P. Puccetti

See description for 103, above.

207 Justice, Law, and Morality D. Braybrooke

See description for 107, above.

The Exploratory Logic Classes (211, 213 and 215)

Logic is the science of reasoning, and like any science, may be studied in a variety of ways. There are three introductory logic classes which treat the subject from the viewpoint of pure science (211); a mixture of pure and applied science (213), and almost entirely from the viewpoint of application (215).

211 Symbolic Logic I.A. MacLennan

Students are introduced to an artificial language constructed so as to make the operations of reasoning more precise. (Formerly Phil 200)

213 Principles of Logic R.M. Campbell

Students cover the same material as in 211, while also devoting considerable attention to the relation between artificial languages and ordinary English, and to philosophical problems arising from the study of reasoning. (Formerly Phil. 210)

215 Language and Reasoning T. Vinci

Attention is devoted primarily to the study of reasoning in the English language. (Formerly Phil. 202)

216 Philosophical Issues of Feminism S. Sherwin

An examination of arguments for and against feminism, and of practical and theoretic issues associated with feminism, such as abortion and preferential hiring. Concepts to be studied include equality, justice, rights, freedom, and discrimination.

217 Existentialism I.A. MacLennan

An examination of works of four major philosophers in the existentialist tradition: Kierkegaard, Nietzsche, Sartre, and Heidegger.

218 Philosophy of Education Staff

An introduction to the philosophical problems of education: what is education? what ought to be its goals? who should decide what should be taught?

220 Philosophy of Religion F.H. Page

An introduction to the philosophy of religion, examining such questions as: why is religion so difficult to define? is it rational to believe in a divine being? can religious experiences be validated?

225 Religion and Human Behaviour F.H. Page

A study of religion as a form of human experience and behaviour. Topics include: naturalistic theories of religion, the personal development of religion, religious conversion, meditation, and mysticism.

226A Philosophy of Art Staff

Examines questions such as: what is art? are judgements of artistic value absolute or relative? by what standards should works of art be judged?

254A Does History Make Sense? D. Braybrooke

An examination of philosophical views, ancient and modern, of the meaning of history and the nature of historical explanation. Among the questions discussed: can the study of history be scientific? are there any historical laws? is history working toward some discernible goal? (Formerly Phil 357B)

255B The Marxist Approach to Historical Change D. Braybrooke

Understanding the views of Marx and his followers is essential to understanding the course of modern history. This class will discuss the origins, development, and varied fate of Marxism both as philosophy and as social science. (Formerly Phil 355A)

266 Chance and Choice Staff

An introduction to the principles by which we can make scientific predictions and choose, logically, between different courses of action. The class will examine the workings of chance, or probability, and the theory of games.

270 Philosophy in Literature R.M. Martin

A study of some philosophical themes in modern literature. All readings will be literary works.

280 Ethics and Medicine S. Sherwin

Modern medicine generates moral problems which cannot be settled on the basis of medical knowledge alone, but need to be considered in the light of moral philosophy. Among these problems, to be considered in this class, are: abortion, euthanasia, informed consent, confidentiality, paternalism, coercion, and the allocation of scarce resources.

Core Classes

305 Theory of Knowledge R.M. Campbell

A study of fundamental issues in the theory of knowledge. The class examines Skepticism, Rationalism, and Empiricism, and investigates the nature of knowledge, belief, meaning, evidence, and truth. Questions are raised about perception and memory and their relation to knowledge, as well as about our knowledge of ourselves and other people. Attention is given to ancient and modern authors. *Prerequisite:* Any Exploratory Class.

309 Intermediate Logic Staff

Devoted primarily to the study of formal semantics and its relation to symbolic logic. *Prerequisite:* Phil 213 or permission of instructor.

310 Ethics R.M. Campbell

The leading questions in this class are: can an ethical theory have a rational basis? can it ever provide a rational solution to practical ethical dilemmas? Readings from Hume, Mill, Kant, and contemporary authors. *Prerequisite:* Any Exploratory Class.

330 Philosophy of Language R.M. Martin

What does it mean to say that the elements of language have meaning? *Prerequisite:* Any Exploratory Class. (Formerly Phil 450)

335B Ancient Philosophy S.A.M. Burns

The beginnings of Western philosophy are studied in the writings of Plato, Aristotle, and their predecessors. *Prerequisite:* Any Exploratory Class. (Formerly Phil 235)

361A The Rationalists S.A.M. Burns

Descartes, Leibniz, and Spinoza. *Prerequisite:* Any Exploratory Class.

362A The Empiricists T. Tomkow

Locke, Berkeley, and Hume. *Prerequisite:* Any Exploratory Class.

363B Kant T. Tomkow

Special attention will be paid to Kant's metaphysics. *Prerequisite:* Phil 361A or 362A, or permission of the instructor.

385 Metaphysics T. Vinci

This class will study topics such as the nature of substance and change, body and mind, cause and effect, and the concept of existence. *Prerequisite:* Any Exploratory Class.

Specialized Classes

336 Ancient Philosophy from its Beginnings to the VI Century A.D. A.H. Armstrong

Special attention will be given to Plato and Aristotle, and to the Greek Philosophy of the first centuries A.D. and its influence on developing Christian thought. (same as Classics 336)

338 History of Medieval Philosophy R. Crouse

Anselm, Aquinas, Ockham, some XIII Century Augustinians and Averroists and late Medieval mystics will be studied most closely; attention will be given to related political, literary, and theological concerns. (Same as Classics 338)

408 Logics and Languages Staff

Intended as a formal counterpart to the philosophy of language, this class studied recent developments in approaching natural language using logic, linguistics, and other mathematical disciplines. To be considered are such topics as: deep structure and surface structure, meaning and synonymy, context dependence, and ambiguity. *Prerequisite:* Phil 309 or permission of instructor.

419A Topics in the History of Philosophy S.A.M. Burns

Subject will change from year to year; 78-9; Wittgenstein. *Prerequisite:* Any Core Class.

445 Theory of Action S. Sherwin

The class will investigate the nature of action, and seek criteria for individuating, describing, and explaining actions. Subjects will include: causation and action and the roles of volitions, intentions, motives, and reasons; theories of the mental-physical relation; responsibility for actions, and the concept of free actions. *Prerequisite:* Any Core Class or permission of instructor. (Formerly Phil 345A)

446 Mind and the Brain R.P. Puccetti

Topics are: The relation between the mental and the physical - can the former be exhaustively described in terms of the latter? What counts as a person - could a machine? The relevance of recent neuro-physiological developments on traditional problems of mind. *Prerequisite:* Any Core Class or permission of instructor. (Formerly Phil 346B)

447A Utilitarianism, Classical Liberalism, and Democracy D. Braybrooke

(Seminar in Philosophy, Politics, and Economics) The study of two beliefs characteristic of classical liberalism: that good government is strictly limited government, and that there is no standard for social policy beyond the comination of personal preferences. The two together constitute a dilemma for democratic government. *Prerequisite:* Normally, classes in philosophy or political science or economics: consult instructor (Same as Pol. Sci. 4479A and Econ. 447A)

448A Social Choice Theory D. Braybrooke

(Seminar in Philosophy, Politics, and Economics) Arrow's theorem brings together the theory of voting and welfare economics, and evidently leads both (and the theory of democracy as well) to ruin. This class will consider how to cope with the problem. *Prerequisite:* See 447A. (Same as Pol. Sci. 4480A and Econ. 448A)

449B The Logic of Questions, Policy Analysis, and Issue Processing D. Braybrooke

(Seminar in Philosophy, Politics, and Economics) The application of the logic of norms to defining policies, and the logic of questions to defining issues. How political systems process issues and transform them (for better or worse) during processing. *Prerequisite:* See 447A. (Same as Pol. Sci. 4490B and Econ. 449B)

451 Topics in the Philosophy of Language T. Tomkow

The examination of recent work in the philosophy of language and semantics including writings by Frege, Russell, Quine, Davidson, Stalnaker, Lewis, and Kripke. *Prerequisite:* Phil 330 or permission of instructor.

460 Contemporary Theories of Religion F.H. Page

Present-day discussions of religion by well-known philosophers are studied. *Prerequisite:* Phil 220 or permission of instructor.

465 Topics in the Philosophy of Science T. Vinci

Induction, probability, and explanation will be studied, with special attention to the recent rationalist challenges to the objectivity of science from Kuhn and Feyerbend. *Prerequisite:* Any Core Class. (Formerly Phil 365)

499 Directed Reading Staff

Individual classes to suit special interests can be developed jointly by a student and an instructor. *Prerequisite:* Permission of instructor. Consult department for details.

Changes and Additions

As the Calendar goes to press before all plans for the next academic year are completed, there may be significant changes in the classes listed above. Students should consult the Department for names of instructors and revisions.

Graduate Studies

The Department offers graduate classes leading to the M.A. Details can be found in the Calendar of the Faculty of Graduate Studies, and by consulting the Department's Coordinator of Graduate Admissions.

Physics

Professors
W.J. Archibald
M.G. Calkin
C.K. Hoyt
M.H. Jericho
M.J. Keen (Oceanography and Geology)
G.F.O. Langstroth
R.H. March (Chairman)

Associate Professors
B.L. Blackford
J.G. Cordes
D.J.W. Geldart
D.F. Goble
D.B.I. Kiang
W. Leiper
B.E. Paton
R. Ravindra
P.H. Reynolds
A.M. Simpson

Assistant Professors
D.A. Tindall
C.G. White

Research Associate
C. Blaauw

Postdoctoral Fellows
G. Malmstrom
H. Nakagawa

Senior Demonstrator
F.M. Fyfe

Instructor
G. Stroink

We are surrounded by complex objects. A transistor radio is a typical example; their size and complexity varies enormously but the common element is the partnership of basic science and technology which has produced them.

We are also surrounded by simple and subtle phenomena not made by man. A rainbow, or the waves on the shore may cause us to look and, perhaps, cause us to wonder.

The science called 'physics' is for those who wonder. The teachers of physics will strive to impart not only basic knowledge. In addition, and often at the same time, students will be helped to develop the skills required to connect seeming unrelated events or observations, and via this connection to come to an understanding of a physical concept.

A physical concept is a powerful weapon for those who wish to mould their wonder and curiosity into a systematic scientific inquiry, whether this inquiry concerns a rainbow or a clinical diagnosis. For example, only a few concepts are required to understand classical mechanics — the study of force and motion. Material objects are found to behave predictably; they can be said to obey 'laws'. Waves of various sorts, such as light and sound, also obey laws and a knowledge of these laws will help us to understand the behaviour of an optic or acoustic system, or, more important, to predict the behaviour of an untried system.

Electricity and magnetism form an important part of elementary physics. In several classes the nature of electric and magnetic forces is discussed. This collection of physical phenomena includes such distant cousins as a toy electric motor and an extensive communications network.

In the study of these and related subjects, deductive skills are encouraged and practiced; these skills can then be used to study more subtle physics, or carried over to any discipline which may be the goal of a student.

First Year Classes

There are four first year classes. They give a general introduction to the subject and cover to a varied extent the more modern aspects of physics — relativity, properties of nuclear radiations and quantum mechanics.

Physics 100 is a survey class requiring no previous preparation in physics and offered primarily for students in arts or a pre-professional programme.

Physics 110 is intended for students intending to make a study of enginering or a physical science. Previous background in physics is helpful but not essential.

Physics 130 is an introductory physics class which is oriented towards the medical sciences.

Physics 128A and 129B are primarily for students headed for the study of Engineering.

For second and subsequent years, an important part of the course each year after the first is the laboratory work which establishes a connection between the theoretical and mathematical ideas of the lectures and the world of physical reality. In the third and fourth years the student is encouraged to follow his own interests as much as possible, both by designing and carrying out experiments of his own choosing in the laboratory and by selecting suitable classes from amongst the electives available.

Degree Programmes

General Degree/Major in Physics

Students intending to major in physics should include Physics 110 and Mathematics 100A and 101B in their first year programme. Physics 100 and 245 may not be included in a 'Major' and at least one 300-level class must be included. Physics 340 may not count as the only 300-level class.

Students wishing to take a general degree in Physics might be interested to note that P110 and the four non-honours-oriented courses at the 200-level (P221, P222A and 223B, 230A & 233B, and P250) between them cover essentially all of the major topics in Physics. This 'package' includes: a general introduction to physics, astronomy and cosmology, elementary nuclear physics, introductory quantum mechanics, relativity and atomic physics.

Students interested in both physics and biology may wish to examine the section on 'Combined Honours'. The first three years of the 'Biophysics' combined honours programmes constitute a three-year B.Sc. (General Degree) programme which has been put together by both departments. Again, it should be noted that alternatives are available for specific classes in this programme of study.

B.Sc. Major in Physics (example only, other possibilities exist):

Year I, 110 (Math 100A & 101B), science, arts, elective.
Year II, 221, 230 (Math 200 or 220), science, elective.
Year III, one or two of 222A and 223B, 250; one or two of 300, 315, 320, 335, elective(s).

B.Sc. with Honours in Physics

All students who intend to take a B.Sc. with Honours in Physics are encouraged to discuss their programme with staff members of the department and to consult with the Chairman of the Department at the beginning of the second year.

Year I
1. Chemistry 110.
2. Mathematics 100A & 101B.
3. Physics 110.
4. Arts or Science elective.
5. Arts elective.

Year II
6. Science elective.
7-8. Two mathematics' classes.
9-10. Physics 211 and 212.

Year III
11. Arts or Science elective.
12. Class in Mathematics.
13-15. Physics 300 and two other physics classes.

Year IV
16. Arts, science or mathematics elective.
17-20. Four physics classes at the 400 level one of which will normally be Physics 400.

Combined Honours
Physicists study, and try to understand, the fundamental laws of nature. Because of this, physicists find themselves becoming increasingly involved with other sciences where attempts are being made to understand the phenomena as well as to describe them. For example, geologists have mapped the magnetic field of the Earth and are now working with physicists, trying to explain the underlying mechanisms. Biologists and physicists are collaborating on studies of diffusion through cellular membranes, as well as on a variety of other topics.

It is important, therefore, to have scientists with training in more than one subject.

All manner of combined honours physics programmes can be generated. Two cases where details of such programmes have been worked out are combined honours with GEOLOGY and with BIOLOGY. Details of a possible 'Geophysics' programme are included in the Geology section of the Calendar. A possible programme for students wishing to do a 'Biophysics' combined honours programme is outlined below:

Combined Honours Physics and Biology

Year I
Physics 110
Biology 2010A, 2030B
Math 100A & 101B
Philosophy 100
Language or Social Science

Year II
Physics 221, 230
Biology 2000
Math 220
Chem 110

Year III
(one of) Physics 315, 320, 335
Biology 2020A, 2040B
Biology 3021B, 3031B
One other Biology or 300-level Physics
Elective

Year IV
One Biology (e.g. Biology 3030B) or one
300-level Physics
Physics 3000
Chem 230 or 241
Half-class in Biology + Physics 470B
Physics 340/Biology 3400/History 310

Students contemplating these, or any other combined honours programme may obtain further details from the Department, and should in any case consult the Departments before the beginning of their second year of study.

100 General Physics, (2 sections), lect.: 3 hrs.; problem session: 2 hrs.; C.G. White, C.K. Hoyt.

This is a survey class requiring no previous preparation in physics and offered primarily for students in arts, premedicine and pre-dentistry. It will not normally be accepted as a prerequisite to advanced classes in physics.

The class surveys physics from its beginnings to the present day. The four major topics are: Newtonian mechanics (motion, force, mass, momentum, energy); electromagnetism (charge, electric and magnetic forces and fields); relativity (space, time, mass, energy); quantum theory (elementary particles, atoms).

The major topics are dealt with mainly in historical sequence. To a large extent the ideas in later topics are built on the ideas presented in earlier topics. In particular, the four major topics mentioned are not at all isolated from each other, but are rather closely inter-related.

Throughout the class, mathematics is used as a language for expressing the basic ideas of physics and also for deductive reasoning from these basic ideas. The mathematics used is not in advance of high school algebra and trigonomentry, but some time is spent in the class developing greater facility with high school mathematics. It must be stressed that mathematical formulae are not used simply for "plugging in" numbers; rather, the emphasis is placed on a thorough understanding of the meaning and range of applicability of the formulae.

A large part of the class consists of developing understanding of physical principles through specific problems. For this reason, there is a 2 hour session each week during which students do problems with the assistance, when required, of the lecturer and graduate students. The problems are linked closely to the lecture material, and sometimes extend the subject matter of the lectures. The problem sessions are conducted informally and students are free to discuss the problems with each other as they work. There are no laboratory experiments in this class.

Text: J.B. Marion, *Physics and the Physical Universe*, Wiley.

110 General Physics, lect.: 3 hrs. (2 sections); tutorial: 2 hrs.; M.G. Calkin, D.F. Goble.

This class introduces the student to the elementary physical laws of our universe and the way in which these laws are used to forecast such natural events as the flight of a projectile, the relativistic variation of mass, the flow of electrical current in a circuit, etc. Newton's laws, for example, are stated and then one proceeds by asking "what do these laws say about the positon of a projectile after a certain time has elapsed?" Intuitive reasoning or educated guessing is eliminated. Reasoning of this kind requires more sophisticated mathematics than one normally uses in high school and consequently a considerable fraction of the first few weeks of lectures is used introducing such topics as vector algebra, differential calculus and integral calculus.

Throughout the year students will have an opportunity to assess their progress by the results of fortnightly quizzes which are given during afternoon tutorials. These tutorials replace the conventional laboratory work and give the student ample time to discuss his problem with the tutor. Most of the experimental work is confined to lecture room demonstrations.

Students beginning this class should be familiar with trigonometry, the solution of quadratic equations, binomial expansions and should now be prepared to start vector algebra and differential calculus. Previous work in physics is not essential.

Text: Tipler, *Physics*, Worth, 1976.

130 Physics In and Around You, (2 sections), lect.: 3 hrs., tutorial: 2 hrs., M.H. Jericho.

This course gives an introduction in physics for students in biology, premedicine, predentistry and allied health sciences. It will not normally be accepted as a prerequisite to advanced classes in physics.

After introducing basic concepts in physics, every opportunity is used to apply these concepts by using realistic biological examples, e.g., forces and torques are directly related to muscle action, fluids to blood circulation, sound to hearing and the properties of light to the optical system of the eye. Using this practical approach, the following major topics will be treated: a) mechanics, b) properties of matter with the emphasis on fluids and gases, c) wave phenomena, and d) electricity.

Students will be able to assess their progress by the results of quizzes given every third week. Twice a week there are informal tutorial sessions where students can discuss their assigned problems or other problems related to the course. Also, every third week there is a laboratory experiment; the experiments stress the importance of basic concepts in physics to phenomena in biology and medicine. Many demonstrations will also be shown in class.

Students beginning this course should be familiar with trigonometry, solving algebraic equations, and should be prepared to study some basic algebraic functions.

Text: Physics for the Life Sciences, by A.H. Cromer.

128A Mechanics and Waves, lect.: 3 hrs.; laboratory: 3 hrs.
Physics 128A is similar to the first half of Physics 110. It is specifically designed for those who wish to keep open the option of a B.Sc. or a 4-year Engineering degree (or both). Covered are vectors, static equilibrium; momentum, force and acceleration; and simple harmonic motion. Because of laboratory constraints, the enrolment in this class will be limited.
Prerequisite: N.S. Grade XII Physics.

129B Electricity and Magnetism, lect.: 3 hrs.; laboratory: 3 hrs.

This class is similar to the second half of 110, in that it deals with electricity and magnetism. It is primarily intended for engineers but other students may enrol. The basic ideas of electricity and magnetism will be developed, leading to an introduction to a.c. circuit theory and electromagnetic wave propagation.

Prerequisite: Basic knowledge of Newtonian mechanics.

211 Mechanics, lect.: 3 hrs.; lab.: 3 hrs. and
212 Electricity, lect.: 3 hrs., lab.: 3 hrs.

These two classes are intended to be complementary, and for second-year honours students. Unless the circumstances are unusual, they should be taken together. The classes have a common laboratory, i.e. work done in the laboratory periods is included in the grade for both classes.

Prerequisites are also common: Physics 110 and Mathematics 100A & 101B. (Statistics have shown that a student with less than a "B" grade in Physics 110 can be expected to have difficulty with 211 and 231.

It is assumed that students are familiar with elementary mechanics and the concepts of work, energy and momentum as developed in Physics 110; and with the application of simple integral and differential calculus to the solution of physical problems.

211 Mechanics
The class is divided into 2 parts: mechanics and wave motion. The first part deals with basic vector mathematics and its application to physics. Newton's laws of motion and the description of motion in unaccelerated reference frames, the two principles of special relativity and their use in describing space and time intervals in unaccelerated reference frames, conservation of energy and momentum from both the classical and relativistic view point. The last topic in the first part of the class is harmonic oscillation, which provides an introduction to the second part, wave motion. In the study of wave motion, examples are taken from many branches of physics: mechanics, electromagnetism, quantum theory. Fourier analysis of wave packets and pulse will be included.

Text: Berkeley Physics Course, Vol. 1 *Mechanics*, McGraw-Hill, 1965; Berkeley Physics Course, Vol. 3 *Mechanics*, McGraw-Hill, 1965; Berkeley Physics Course, Vol. 3 *Waves and Oscillations*, McGraw-Hill, 1965.

212 Electricity
The material discussed in this class forms part of the *Berkeley Physics Course*. The class begins by studying electrostatics, distributions of static charges, and the concepts of electric field and electric potential as physical quantities. Next, the motion of charge in conducting materials is discussed leading to the solution of circuit problems involving capacitance and inductance. By considering the electric field of a moving charge in the light of the theory of relativity, the nature of the magentic field is introduced and its properties discussed. The relationships between electric and magnetic fields are then studied and it is shown how these relationships imply the existence of electromagnetic radiation. Electric and magnetic fields in matter are also discussed.

The laboratory work is designed to illustrate the physical principles discussed in the lectures and simultaneously to introduce students to the use of electronic apparatus and to the design of some simple circuits.

Students are expected to have an introductory knowledge of the nature of electric charge, electric field, magnetic field, and of electrical current as developed in Physics 110.

Text: Berkeley Physics Course. Vol. 2 *Electricity and Magnetism*, McGraw-Hill, 1965.

221 Applied Physics, lect.: 3 hrs.; lab.: 3 hrs.; D.A. Tindall.

Applied Physics is a new course designed to acquaint students with the wide range of physical principles at play in the world around us. These principles will be discussed in class but the major emphasis will be on the practical aspects of physics. For example, we will be examining wave phenomena in gases (light, sound and microwaves), in liquids (ocean waves), and in solids (mechanical resonance and physical electronics). Before the year is out, you will have had a taste of optics, solid state physics, thermodynamics, atomic physics and any other field our imagination or time allows us to study.
In the lab, you will see physics in action and to some extent be able to experiment yourself. You will have a chance to see and use modern scientific instruments such as the oscilloscope, operational amplifiers, and lasers. Labs will deomonstrate the scientific method of experimentation and how to analyse data. It is hoped that you will learn to apply principles of physics and modern measuring techniques in the solution of practical problems found in the world of science and technology.

This course is designed for science students who want to see physics in action. It has Physics 110 as a prerequisite although exceptions have been made for students who seriously want to become familiar with the practical aspects and the tools of physics. Students taking the course should have had some exposure to calculus, complex exponential functions and vectors.
Text: To be announced.

222A Radiation Physics, lect.: 2 hrs.; lab.: 3 hrs.; G.F.O. Langstroth. Offered in alternate years commencing 1976-77.
This class involves the dimension of the properties of radiation and the physical principles related to them. The nature of atomic and nuclear radiations, some of their effects on biological materials and their measurement will form the focus for the class. Presentation of the material will avoid the use of calculus wherever possible. A visit to the Radiology or Nuclear Medicine department of a local hospital will be included to illustrate the application of radioactive isotopes and devices in the medical field.
Six to eight laboratory sessions will be arranged during the term to afford students an opportunity to become acquainted with simple measurement techniques and the use of basic instruments for the detection of nuclear radiations.
Prerequisites: Any first year physics class, or approval of the instructor.
Text: Howard L. Andrews, *Radiation Biophysics*, 2nd ed.

223B Radiation Physics - Some Applications, lect.: 2 hrs.; G.F.O. Langstroth. Offered in alternate years commencing 1976-77.
This class follows on the background obtained in Physics 222A, which is a prerequisite. Topics will vary according to the interests of the students, but may include discussions of fission and fusion as means of electrical power generation, environmental questions arising from the use of reactors and nuclear weapons, and the applications of accelerators and other devices for high energy research.
Prerequisite: Physics 222A.

Text: D.R. Inglis, *Nuclear Energy*. (It is assumed that students will possess the textbook for Physics 222A.)

230A/233B

These two half-courses are designed for second year science and engineering students who wish to take a second class in physics, in addition to Physics 221, or who for some reason are unable to take that class. Students may take third year physics classes if they have taken this class and Physics 221.

230A Mechanics, lect.: 3 hrs.; C.G. White

This class deals with the basic laws of classical mechanics. It covers similar material to that of Physics 110 but with a more advanced mathematical treatment which allows for more detailed application of the basic laws to specific physical examples, e.g., examples involving rotational and vibrational motion. A brief discussion of special relativity is also given.

Prerequisite: Physics 110, Mathematics 100A and 101B.

Text: Kleppner and Kolenkow, *An Introduction to Mechanics*, McGraw-Hill, 1973.

233B Electricity and Magnetism, lect.: 3 hrs.; C.G. White.

Prerequisite: Physics 230A.

Text: Armstrong and King, *The Electromagnetic Interaction*, Prentice-Hall, 1973.

245 Planetary Science and Astronomy, lect.: 3 hrs.; P.H. Reynolds.

This course is aimed at developing an understanding of our physical environment, both on the scale of the solar system and on the scale of the universe. It is designed for the general science student, **not** the physics specialist.

We shall use some of the major findings of geophysics and oceanography to study the Earth as a planet. We shall discuss the contributions made by the space programme - for example, the Apollo flights to the Moon and the Mariner and Viking flights to Mars. The constitution, age and origin of our solar system will be considered as will the interactions of its component parts (for example, Earth-Moon and Solar-planetary interactions).

The second part of the course will consider stars - their origin, constitution and evolution with time; the structure and age of our Galaxy and the universe of galaxies; pulsars, quasars and other recent interesting developments in optical and radio astronomy; and finally, various cosmological models.

There will be semi-regular evening observing sessions and occasional visits to Saint Mary's University's Burke-Gaffney Observatory.

Prerequisite: One first-year science course.

Texts: Contemporary Astronomy by Jay M. Pasachoff (Saunders 1977).

250 Astronomy and Introductory Astrophysics, lect.: 3 hrs.; P.H. Reynolds. Offered in 1977-78 and in every other year.

This is a basic course designed primarily for students who may wish to pursue more advanced studies in astronomy or in astrophysics. It is appropriate for a physics major or an honours physics student.

I. The Solar System: the Earth, Moon, meteorites and planets; planetary motions and celestial coordinate systems; the origin and age of the system.
II. The Stars: their distances and motions; the motion of the Sun; magnitudes, luminosites, colours and stellar spectra; building stellar models — the Sun as a star; variable stars; binary star systems; clusters of stars; interstellar gas and dust; stellar evolution.
III. The Galaxies: structural features and dynamics of our Galaxy; particular features of the exterior galaxies.
IV. The Universe: simple cosmological models.

The class will join P245 for evening observing (see above)

Prerequisite: Physics 110 or Physics 100.

Text: Smith and Jacobs, *Introductory Astronomy and Astrophysics*, Saunders, 1973.

This class deals with the basic laws of classical electricity and magnetism and the application of these laws to the analysis of electric and magnetic fields in solids. The discussion of fields in solids leads to some reference to quantum effects. A brief treatment of some common electrical circuits is also included.

300 Experimental Physics, lab.: 6 hrs.; lect.: 1 hr.; A.M. Simpson.

A class in experimental physics designed to give students a chance to do non-set experiments and thereby encounter and solve on their own the problems of experimentation. As the number of experiments is small (four to six), students should achieve a real understanding of a few physical phenomena. Topics for experimental study cover a wide range of fields such as atomic physics, mathematical physics, solid state physics and electronics. A measurement of one of the fundamental constants such as c, G or e is required, other than this the student is free to choose the field of experimental study.
Prerequisite: The class is designed for honours students and has Physics 231 as a prerequisite. For Physics students, two other physics classes must be taken concurrently. Exceptions have been made.

315 Modern Physics, lect.: 3 hrs.; D.J.W. Geldart.

This is an introductory class in quantum physics. The first term deals mainly with basic quantum mechanics. In the second term, selected topics in atomic physics, low temperature physics, nuclear and particle physics, will be discussed. Whenever possible, attention is drawn to the current trends in physics research.
Prerequisite: Mathematics 200 or its equivalent.
Text: Tipler, *Foundations of Modern Physics*, Worth Publishers, Inc. (1969).

Supplementary readings: Selected articles from Scientific American and American Journal of Physics.

320 Thermal Physics, lect.: 3 hrs.; D. Kiang.

This class studies the basic principles of statistical mechanics and the relation that they have to thermodynamics together with the application of these principles to the study of ideal gases and certain physical systems.
Prerequisite: Some knowledge of partial derivatives: Mathematics 200, or its equivalents, which may be taken concurrently with the class.

Text: To be announced.

335 Electronics, lect.: 3 hrs.; A. Levin.

The class covers advanced circuit analysis of linear and non-linear systems, the physics and resulting properties of solid state devices, the concepts of information and noise and transmission lines and filters.

Topics treated: network reduction, the 4 terminal network and solutions by matrix methods, non-linear systems, modulation, demodulation and rectification, carrier transport in semi-conductors, properties of diodes and transistors; electromechanical analogs and analog computation methods, feedback and control systems, stability criteria, nature of information and noise, properties of distributed constant lines and filters.
Prerequisite: Physics 230 or Physics 231, Mathematics 220 or 228 to be taken concurrently.

Text: Ryder, *Electronic Fundamentals*.

340 History of Science, lect.: 2 hrs.; tutorial: 1 hr.; R. Ravindra (Physics), J. Farley (Biology). (Same as Biology 3400 and History 340. Class description to be found under Biology 3400.)

365 Relativity and Cosmology, lect.: 2 hrs.; R. Ravindra.

This course is intended to introduce students to both the observational and the theoretical basis of modern physical cosmology. The first half of the course will be devoted to a development of the 4-vector formalism for the Special and the General theories of Relativity, and some realistic cosmological models based on Einstein's field equations. The emphasis will be on intuitive and physical insight rather than mathematical rigour. The second half of the course will be devoted to the understanding of available observational data in the light of previously developed theory. This course is suitable for Physics and Mathematics major or honours students in third or fourth year of study. Graduate students may take this course for a graduate credit if they show proficiency in additonal material as arranged with the instructor.

In addition to solving regularly assigned problems each student will be expected to make a departmental presentation towards the end of the year concerning latest developments in a topic of his choice, such as 'black holes', 'age of the universe', or 'primordial radiation'.

400 Advanced Physics Laboratory, lab.: 6 hrs.; A. Levin, S.T. Nugent.

This is a physics and engineering-physics laboratory class in which students in groups of two work largely on their own initiative. The experimental work covers nuclear disintegration, gamma and beta spectroscopy and absorption measurements, proton spin quantitative measurements and Planck's constant determiniation; thermionic emission and ionization experiments using a vacuum pumping and instrumentation system; properties of solid state semiconductors and devices; experiments on the spectral noise distribution of transistors and the use of analysis systems; experiments with a Helium-Neon laser, holography, etc. If they wish, students may do experiments in other areas, such as acoustics, optics, fluid dynamics. A report, on a topic to be agreed with the instructor, is required as part of this class.
Prerequisite: Fourth-year standing in physics or engineering-physics or permission from the instructor.

402B Special Topics in the History and Philosophy of Science, seminar: 3 hrs.; R. Ravindra.

405A Electromagnetic Theory, lect.: 3 hrs.; S.T. Nugent.

Topics include a review of electric and magnetic fields emphasizing the solution of Laplace's and Poisson's equations. Maxwell's equations are discussed and are used to explain plane waves in infinite media, reflection and refraction, transmission lines, guided waves, resonators, radiation and antennas.
Text: Lorrain and Corson, *Electromagnetic Fields and Waves*.

410 Advanced Classical Mechanics and Electrodynamics, lect.: 3 hrs.

In the first term the class will study Lagrangian and Hamiltonian mechanics, covering, for example, the material in Goldstein, Chapters 1, 2, 3, 7, 8, 9, 10; Lagrange's equation, Hamilton's principle, the two body central force problems, Hamilton's equation of motion, transformation, the Hamilton-Jacobi equation.

In the second term the class will study electrodynamics, covering topics such as electromagnetic waves, radiation from antennas and from moving charges, energy loss of charged particles passing through matter, plasma physics, semi-classical theory of radiation.

Texts: Goldstein, *Classical Mechanics*, Addison-Wesley; Jackson, *Classical Electrodynamics*, Wiley.

411B Special Relativity, lect.: 3 hrs.

Topics discussed include: experimental basis of the Lorentz transformation relativistic kinematics: space-time; introduction to tensor calculus, relativistic dynamics; relativistic electrodynamics.

Prerequisite: Physics 211, 231 and 315 or the permission of the instructor.

Text: T.B.A.

415 Quantum Mechanics, lect.: 2 hrs.

Topics discussed include: concepts and formulation of quantum mechanics, harmonic oscillator, potential well and barrier, angular momentum and the central force problem, perturbation methods, scattering theory.

Prerequisite: Physics 315. Students should be familiar with elementary wave mechanics and with the mathematics necessary to discuss the Schrodinger wave equation.

Text: T.B.A.

416 Mathematical Methods of Physics.

Topics discussed include: ordinary differential equations, complex variables, integral transforms, special functions, partial differential equations, eigenfunctions, eigenvalues, Green's functions, scattering theory, perturbation theory, integral equations and calculus of variations.

Prerequisite: Registration requires prior departmental consent.

Texts: Arfken, *Mathematical Methods for Physicists* (2nd ed.), Mathews and Walker, *Mathematical Methods of Physics* (2nd ed.).

423A Introduction to Solid State Physics, lect.: 3 hrs.; W. Leiper.

This class introduces the basic concepts of solid state physics which are related to the periodic nature of the crystalline lattice. Topics will include crystal structure, X-ray diffraction, phonons and lattice vibrations, the free electron theory of metals, and energy bands.

Prerequisite: Physics 315. Registration requires prior departmental consent.

Text: Kittel, *Introduction to Solid State Physics*, 3rd ed., Chapters 1-9 Wiley, 1966.

433B Physical Properties of Materials, lect.: 3 hrs.; H.W. King.

This course applies the principles of solid state physics to the study of real materials. Physical properties are shown to have intrinsic symmetry which interacts with the symmetry of the crystal structure of the material, thereby defining the number of coefficients necessary to completely describe the property. The concept of thermodynamic equilibrium, governed by diffusion in the solid state, is discussed as the basis for a description of the microstructure of metals and alloys. Although solid state properties such as electron transport, magnetism, semiconductors, superconductors and the optical properties of dielectrics and semiconductors owe their existence to the quantum properties of electrons, it is shown that in practice, the magnitude of these properties is strongly influenced by microstructural effects such as solid solution alloying, crystal defects, grain boundaries, textures and plastic deformation.

Prerequisite: Physics 315, preferably Physics 423A, and permission from the instructor. Registration requires prior departmental consent.

Text: Hutchinson and Baird, *Physics of Engineering Solids*, Wiley 1968.

Reference: Nye, *Physical Properties of Crystals*, Oxford Univ. Press, 1969.

435A Electronic Techniques for Energy Conversion, lect.: 3 hrs.; A. Levin.

This course discusses the properties, efficiency and uses of energy conversion systems based on electronic techniques. Topics discussed include: thermojunction generators and refrigerators, solar generators, thermionic generators, fuel cells and related devices.

Reference: Levine, *Selected Papers on New Techniques in Energy Conversion.*

440B Optical Electronics, lect.: 3 hrs.; S.T. Nugent.

Topics discussed include: electromagnetic theory, the propagation of rays and optical beams, optical resonators, interaction of radiation and atomic systems, theory of laser oscillations, some specific laser systems, second-harmonic generation, parametric oscillation, electro-optic modulation and optical detectors.

Text: Yariv, *Introduction to Optical Electronics.*

444A Optics, lect.: 3 hrs.; C.K. Hoyt.

Topics include a detailed study of the radiation from accelerated charges, the statistical properties of the fields from assemblies of radiators, interference, diffraction, with attention to the approximations of the Kirchhoff theory, and the application of Fourier transforms to the structure of images, the resolving power of instruments and the characterization of coherence.

A few topics in geometrical optics may be included to assist in understanding the behaviour of optical instruments and to provide a background for the better appreciation of some of the topics in physical optics.

Prerequisite: Physics 230, or Physics 231, or Physics 221 and Mathematics 220. The students should be familiar with vector analysis, Maxwell's equations and the use of complex exponential functions. Registration requires prior departmental consent.

Text: Stone, *Radiation and Optics*, McGraw-Hill, 3.

444B Optics, lect.: 3 hrs.; C.K. Hoyt.

This class is a continuation of Physics 444A and deals with coherence, polarization, scattering by matter, the electromagnetic properties of matter, including crystals, reflection, refraction and double refraction.

Prerequisite: Physics 444A. Registration requires prior Departmental consent.

Text: Stone, *Radiation and Optics*, McGraw-Hill, 3 and assigned readings on related topics.

445 Physics of the Earth, lect.: 3 hrs.

This is a class in solid-earth geophysics. Topics discussed include: the figure of the Earth and gravity, seismology and the internal structure of the Earth, the geomagnetic field, paleomagnetism — the prehistory of the geomagnetic field, heat flow and the Earth's thermal history, electrical conduction in the Earth, radioactive processes and in the age of the Earth, global geophysics— continental drift and sea floor spreading.

Taught concurrently with Geology 429.

Prerequisite: Registration requires the prior consent of the Department.

Text: Stacey, *Physics of the Earth*, Wiley, 1969; Garland, *Introduction to Geophysics*, Mantle, Core, and Crust, Saunders, 1971.

437 Analog and Digital Instrumentation for Scientists, lect.: 2 hrs.; lab.: 2 hrs.; B. Paton.

Nearly every laboratory instrument in use today is firmly based on electronics. In order to master the function of an instrument, one must have sufficient knowledge of the electronic circuitry to follow the flow of information from its origin (sensor) to its ultimate destination (meter or computer). With the advent of the integrated circuitry, complex circuitry can be built by adding together groups of simple building blocks. A course will be offered to acquaint graduate students with these building blocks, in the hopes that they will be able to understand laboratory instruments and perhaps even design their own. The major emphasis will be on the practical use of electronic circuits. Techniques and devices will be covered in lectures but only on a non-mathematical basis. The lectures will stress: what is the device, what are its characteristics, and how can it be used. These ideas will be reinforced by a lab where the student can see the device, measure its characteristics, and use it in a circuit. The student may progress at his own rate from a simple a.c. preamplifier to a digital voltmeter.

This is an interdepartmental course in practical electronics open to all science graduate students. The course is given only on alternate years and is limited to sixteen students.

Texts: Vassos and Ewing, *Analog and Digital Electronics for Scientists*, Wiley-Interscience.

Graduate Studies

The Department of Physics provides course of study leading to the advanced degrees of M.Sc. and Ph.D. Areas of research undertaken at Dalhousie include: solid state, geophysics, low energy nuclear physics, low temperature, theoretical physics, and oceanography. Further details are given in the Calendar of the Faculty of Graduate Studies.

Political Science

Professors
J.H. Aitchison
J.M. Beck
D. Braybrooke
K.A. Heard
M.K. MccGwire
D.W. Stairs

Assistant Professor
P. Brown
C. Charlebois
R. Eden
S.L. Sutherland

Research Fellows
J.A. McDonnell
D. Swanson

Associate Professors
P.C. Aucoin (Associate Director, School of Public Administration)
R. Boardman
D.M. Cameron (Director, School of Public Administration)
R.L. Dial
D.J. Munton
D.H. Poel, Chairman
T.M. Shaw (Director, Centre for African Studies)
G.R. Winham (Director, Centre for Foreign Policy Studies)

"Politics: Who Gets What, When, How!" So one political scientist has defined his subject. It is a definition, some might say, for cynics. Still, it captures what many people regard as the essence of politics. It also suggests a large part of what political scientists are constantly trying to find out. Of course, their interests vary, and so do their methods. Some, for example, are interested in the exercise of power within the nation-state. Who are the 'rulers'? Where do they come from? How do they get there? Whose interests do they serve? Under what constraints do they function? In pursuit of answers to questions as fundamental as these, political scientists are drawn to investigate, among other things, the functions and practices of political parties, the attitudes and perceptions of voters, the objectives and tactics of pressure groups, the origins and capacities of legislators, the processes and actions of governments. For many, the principal concern is to deal with these problems, and dozens of others like them, in the context of a single country — Canada, for example, or China, or Tanzania. Others seek to discover patterns of a more general kind, which they try to expose by examining a variety of countries and comparing the political phenomena of each. From this type of research they may hope, for example, to learn why some countries appear to be politically more "stable" than others. Or they may want to know how it happens that in some societies armed forces, exercising their monopoly over the ultimate instruments of brute force, seize control of the government, whereas in others they remain placidly obedient to the commands of politicians. And so also with an almost endless variety of questions of a similar sort.

Other political scientists, although still very much concerned with the play of political forces within the nation-state, focus their attention somewhat more narrowly on what we might call the "policy machine" — the complex mix of political leaders, bureaucratic administrators, and technical experts whose job it is to decide what the "government" will actually do. The process by which these decisions are made is an intricate one, complicated by the fact that bureaucracies of government, like bureaucracies everywhere, have a political life of their own. To study this process, to assess its implications, to consider the usefulness of various possible remedies (where remedies are required) — these are among the preoccupations in particular of specialists in "Public Administration".

The pursuit of politics is not, of course, confined to the internal affairs of national communities. It extends as well to the world at large, where it can become a raw and brutal game in which the question of "Who Gets What, When" is sometimes

settled only by the most violent and destructive of means. It is partly the function of political scientists who specialize in International Politics to investigate the origins and conduct of the foreign policies of particular states — to discover, in effect, why they individually behave in the way they do. It is also their function to examine the workings of the international community as a whole — to distinguish, for example, the causes of war from the conditions of peace and to evaluate the effectiveness of alternative means of securing the maintenance of international stability. In dealing with such questions they are led to examine the principles of nuclear deterrence, the workings of alliance systems, the functioning of the balance of power, the politics of the United Nations, the concept of imperialism, and a host of other diverse, yet interrelated, phenomena.

It will be obvious that the emphasis in these various political science pursuits is on the study of politics as actually practised in the world around us. But many political scientists would agree that this is only a first step, and that we should also address ourselves to questions having to do with how politics ought to be. It is not, after all, simply *self-evident* that political leaders should be subject to election, or that ignorant men should have the same voting power as educated men, or that we should be allowed to spend our money as we please, or that there is merit in the principle of equality before the law. Issues of this sort have been debated by reflective men for thousands of years, and none of them has found after careful examination that the answers come easily. To consider the very difficult problems raised by these sorts of questions is the principal task of political philosophy. It is a task which lies at the core not merely of politcal studies, but of political life itself.

Students who are interested in these various fields of inquiry within the discipline of Political Science will find all of them represented in the class offerings and programmes outlined below. Some will wish to specialize, while others may want to pursue interests in a number of different areas. In either case, the members of the Department will be happy to offer whatever advice and assistance they can in the development of any student's personal programme of studies.

Degree Programmes

Students concentrating in Political Science may take a one-year, two-year, or honours programme. The specific courses to be taken in each individual programme are chosen in consultation with a faculty advisor from the Department in accordance with the general requirements listed below. Undergraduate programmes may emphasize one of the sub-fields of Political Science or may consist of a general selection of courses from the offerings listed below.

Requirements

In order to meet the requirements of a major programme, a student must take at least four, but no more than eight, classes in political science in addition to an introductory class. All major students should take at least two full classes from among the second-year level offerings and these classes should be selected from at least two sub-fields.

Second-year Classes in Sub-fields

Canadian Government and Politics
- P.S. 2200R Canadian Government

Comparative Government and Politics
- P.S. 2300R Comparative Politics
- P.S. 2305R European Comparative Politics
- P.S. 2321B Political Behaviour
- P.S. 2325R The Theory and Practice of Government in the United States
- P.S. 2330R Politics Through Literature

Political Theory and Methodology
- P.S. 2400R Justice, Law and Morality
- P.S. 2405R Political Philosophy: Stoics to the End of the Fifteenth Century
- P.S. 2494A Introduction to Political Inquiry
- P.S. 2495B Introduction to Political Inquiry

International Politics and Foreign Policy
- P.S. 2500R World Politics
- P.S. 2510R Canadian External Relations

One-year Programme

A one-year programme does not necessarily happen within the time span of one university year but will consist of four or five classes in Political Science in addition to a first-year level class. Students choosing to complete a "one-year" programme in political science will probably be pursuing what the Faculty of Arts and Science calls a "co-ordinated" programme. That is, a student undertaking a "one-year" programme in political science will also be undertaking a "one-year" programme in some related discipline such as economics, history, philosophy, psychology or sociology.

Two-year Programme

A two-year programme constitutes the standard "major" in political science. In addition to meeting the general requirements noted above under Requirements, the student should take at least two classes from third-year level offerings. These will be chosen in consultation with the faculty. Professor K.A. Heard is the Departmental Coordinator for Major Programmes and will assist any student in the planning of his/her programme in political science.

Honours Programme

An honours programme will normally consist of a first year level class and not less then nine nor more than eleven additional classes in Political Science. Although nine to eleven classes represents the range allowed under the general university regulations, the Department recommends quite strongly that the normal honours programme consist of nine classes past the first-year class, including the honours essay. The intent of this recommendation is to encourage our honours student to take supporting class work in related disciplines.

For the purposes of the honours programme the Department has designated five second-year classes as honours core classes. Four of these core classes represent the political science sub-fields of Canadian politics, comparative politics, political philosophy and international politics and the fifth represents the methodological basis for each of the sub-fields. The five core classes by area are as follows:

Canadian politics: P.S. 2200R Canadian Government and Politics
Comparative politics: P.S. 2300R Comparative Politics
Political philosophy: P.S. 2400 Justice, Law and Morality
International politics: P.S. 2500 World Politics
Methodology: P.S. 2494A/2495B Introduction to Political Inquiry

An honours programme in political science will include:
(i) at least three core classes, two of which must be P.S. 2400 Justice, Law and Morality and P.S. 2494A/2495B Introduction to Political Inquiry.
(ii) at least four advanced classes at the third and/or fourth year level, including the honours essay.

These requirements leave a minimum of two optional credits which may be at either the second, third or fourth-year level. The Department has designated these core class requirements in order to (1) explicitly introduce some notions of breadth into the honours programme, (2) provide all honours students a grounding in the normative questions of the discipline as well as the empirical bases for scholarly inquiry and (3) place before prospective honours students the several sub-fields offered in our Department around which individual programmes may be developed.

The honours essay is counted as one credit. It will be prepared during the fourth year under the supervision of a faculty member. The essay will be expected to show the student's ability to develop a systematic argument with reference to pertinent literature and other such data or analytical materials as may be appropriate. The credit number for the honours essay is P.S. 4600. Informal arrangements are usually made for honours students in the last year to meet with some regularity to discuss and ultimately present the work represented in their essay.

Combined Honours

There are several combined honours programmes:
Political Science and Philosophy
Political Science and History
Political Science and Economics
Political Science and Sociology
Students interested in taking any of these combined honours programmes should consult with the Chairman of the Department or his deputy.

Graduate Studies

The Department offers M.A. and Ph.D. programmes in Political Science, details of which are given in the Calendar of the Faculty of Graduate Studies.

Undergraduate Programme in African Studies

The Department offers courses which may contribute towards a B.A. degree in African studies. Further details of this interdisciplinary programme are available in a calendar section above and from the coordinator of the programme in African studies.

Undergraduate Advisory System

The advisory system in the Department of Political Science is intended to assist students in designing a specific programme in accordance with their interests and the requirements of the Department. Professor K.A. Heard is the over-all Co-ordinator of Major Programmes and is assisted by other Departmental members acting as general advisors.

Selection: A student wishing to have a member of the Political Science Department as undergraduate advisor must be either: (a) enrolled in a first-year level class and contemplating a Programme in Political Science (in which case the advisor will normally be the instructor of that class, or (b) registered for a programme in Political Science. Upon entering the programme a student may indicate a choice of advisor. Normally the advisor will be a faculty member teaching in the student's sub-fields of concentration (if any). The student's choice will be respected unless the member chosen is unable to serve in this capacity. For the student who has no preference, or whose choice cannot be honoured, the Department's Undergraduate Studies Committee will assign an advisor.

The advisory relationship may be ended by the student or the advisor at any time and for any reason. One faculty member may continue to advise the same student throughout his programme.

Role of the Advisor: Basically, the advisor is intended to be available to the student throughout the year as a consultant on broad academic matters. The advisor is not, however, a tutor with regard to specific classes. Students should consult their advisers with regard to the general structure of their programmes and any proposed course changes.

Classes Offered

Numbering System for Classes

Class descriptions are listed by four-digit numbers under headings
1 Introductory
2 Canadian Government and Politics
3 Comparative Government and Politics
4 Political Theory and Methodology
5 International Politics and Foreign Policy

The first digit of each class number thus indicates year, or level, of class. Except for 1000-level classes, the second digit denotes the sub-field within which the class is listed. Thus P.S. 3540B/5540B is a class open to third-year level and graduate students, in the sub-field International Politics and Foreign Policy, offered during the second term of the academic year.

No student may take more than one first-year level class but some second-year level classes require no prerequisite. One of those which do not may be taken in the first year in addition to a first-year level class.

The prerequisites listed with each class are intended to show the sort of preparation the instructor anticipates. Admission to classes at and above the third-year level is at the discretion of the instructor who retains the right to judge the suitability of each prospective student's qualifications for the successful completion of the class and his contribution to it.

1. Introductory

1100

Section 1, **Democratic Government and Politics**, lect.: 3 hrs.; J.M. Beck.

The class is designed not only for the student who desires to continue in political science, but also for the student who will take no other classes in political science. During a short introductory section such questions as the following will be posed: Can there be a genuine science of politics? What approaches may be adopted in a study of political phenomena? This will be followed by an examination of the operative ideals of liberal democracy, fascism and communism, and a discussion of the conditions that are likey to be prerequisite for the successful working of liberal democracy. The basic part of the class wil be a comparative study of the governmental institutions of Great Britain, the United States, and Canada (with emphasis on Canada) especially designed to acquaint the student with some of the basic problems of the working of modern liberal democracy.

Section 2, **Introduction to Political Science**, lect. and discussion: 3 hrs.; R.L. Dial

There are a variety of ways we can acquire the beginnings of an understanding of politics. We can study, for example, the academic literature which seeks to describe and assess the workings of political systems. Another approach may be found in the careful dissection of political ideas, deducing from them a notion of how men should behave and do behave politically. Yet another alternative is to directly observe the political process, particularly as it touches you, the individual. In this section we shall pursue the latter approach.

Random observation, without a system of conceptual expectations, is not likely to be a very fruitful exercise. Therefore, the first half of the course will be spent absorbing a catalogue of concepts and propositions. Lectures will cover topics from political culture to interest groups; from bureaucratic authority to political compliance. The lecture material will be developed into a series of generalized propositions, applicable to the political life of your immediate environment. The ability to use these propositions in understanding *your* political environment is the object of this course. The second half of the course will see your time predominently spent in the field, observing various forms of political life in the community; e.g., city councils, the Provincial Legislature, union meetings, hearings of public commissions, etc. Through this period of field observations students will be required to keep a journal, systematically analysing events in the terms introduced earlier in the course.

Section 3, **Introduction to Political Science**, lect. and discussion: 3 hrs.; K.A. Heard.

The three main branches of political science are: political philosophy, political institutions and behaviour, and international relations. The class attempts to introduce students to some of the concepts and part of the content of each of these sub-fields. It is hoped that for all students in the class, this will add to their knowledge and understanding of the political world. For students who intend to take additional classes in political science, it is further hoped that this class will provide some basis for selecting their chosen field of future concentration.

In the first, theoretical, section of the class, we shall confront such issues as: the relation between morals and politics, e.g. with respect to the principles of justice, equality, individual liberty, honesty or good faith; the notion of the llegitimate claims of the state on its citizens, which involves the question of whether the individual is *always* bound to obey *all* the commands of the state or whether there are limits and conditions that qualify political obligation. This will further raise the whole question of whether all regimes possess legitimate authority, and if not all do, of how we distinguish between legitimate and illegitimate regimes. While this section is not intended as a survey of the history of political philosophy, aid in clarifying the issues will be sought from a number of the great political philosophers of the past.

As a transition to the second section on comparative politics and political institutions, the class wil handle certain theoretical considerations concerning types of regime, the nature of democracy and the conditions necessary for its successful functioning. It will then discuss comparatively such issues as: the selection of political leaders, the role of party and types of party system, interest groups, the media and public opinon, and problems of scale and remoteness in governmental operations.

The class will then turn its attention more particularly to the political systems of Great Britain and Canada respectively, examining in turns the major institutions (and their interrelationships) that distinguish those systems.

Finally, in the third section, the class will investigate the major features of, as well as the actors in, the international system, under the following main heads: the international state system, modifiers of the state system, the United Nations and other tyes of international organization, and informal (non-governmental) transnational actors (e.g. multinational corporations).

1101

Section 1, **Introduction to International Politics and Foreign Policy**, lect. and discussion: 3 hrs.; D.W. Stairs.

Intended for students who are especially interested in the play of politics at the international level, the material discussed in this class is divided into four main parts. The first, for background purposes, will be devoted to a general survey of international relations in the modern world with emphasis on the period since 1945. Among the topics to be considered are the founding of the United Nations, the evolution of the "cold war", the emergence of the so-called "third world", the origins and limitations of detente, the changing role of social, economic, and ecological issues as items on the international agenda, and a number of others. Following this preliminary material, the second part will be concerned with the meaning and significance of certain basic concepts which are commonly found in analytical discussions of international affairs. These will include, for example, the concepts of "power" and "power politics", the idea of the "national interest", and other such fundamental analytical tools. The third part will be directed more immediately to the making of foreign policy and to the ingredients of statecraft. What is "foreign policy"? Who makes it? How do they operate? What influences — domestic and foreign — do they take into account? And what instruments and strategems do they deploy in the pursuit of their objectives?

In the final part the emphasis will shift away from the perspective of national actors and their foreign policy and will focus again on the international arena. A variety of interstate patterns of behaviour and relationships will be considered under such headings as alliance systems, balance of power systems, concert systems and collective security systems.

The class is designed to serve as a general survey for students who plan to take only one class in International Politics as well as a broad introduction for those who intend to take additional higher level classes. It will also be of interest to students who plan to take no other classes in political science.

1103

Sections 1 and 2, **Introduction to Political Science**, lect.: 3 hrs.; J.H. Aitchison.

This course will be a comparative study of the institutions, processes and problems of government in western democracies. Attention will be paid mainly, but not exclusively, to the political systems of Great Britain, Canada and the United States but with greater emphasis on Canada.

The emphasis on Canada is for those who, at least initially, do not intend to take further classes in Political Science, and who wish to become more knowledgeable about the federal democracy of Canada and its problems. The scope of the sections, however, will be sufficiently broad to provide a foundation for those who wish to proceed to higher level classes in Political Science.

Section 3, **Introduction to Political Science**, lect. and discussion: 3 hrs.; R. Boardman.

Politics is about power and influence. This class will introduce various aspects of politics in Canada, the United States, and the Soviet Union. It can be taken by students who want to do more political science or be used as a basis for more advanced work by those interested in pursuing the study of politics further.

During the year we will explore three major fields of political science: comparative politics, political philosophy, and international relations. The student will be introduced to these fields through a series of topics each of which will be approached with a mixture of lectures, discussions, talks by guest speakers, simulation exercises, and other methods.
The topics chosen vary from year to year but in 1978-79 will cover: (1) the study of Utopias, among them Plato's Republic, and of different political ideals such as conservatism, liberalism, and socialism; (2) the media and politics, and the problem of how we arrive at our judgements about politics; (3) the politics of totalitariansim as in Stalin's Russia, Hitler's Germany, and its more contemporary forms; (4) the causes of war and peace in the modern world, approached by a study of the origins of the Arab-Israeli conflict; (5) political parties and their organization and functions in Canada, the United States, and the Soviet Union; (6) decision making and the structure of government in these three countries; (7) problems of global development and some aspects of the relations between industrialized states such as Canada and the Less Developed Countries of the Third World; and (8) the power of the individual to influence political decisions, approached by looking at some problems of Halifax city politics.
The aim, in brief, is to provide the student with a useful and coherent framework with which to analyse political questions whether or not he intends to carry the academic study of political science any further.
One basic textbook covers most of the material needed. There is no formal examination but students will be required to do a variety of assignments, among them papers, research topics, and collaborative projects.

2. Canadian Government Politics

2200 Canadian Government and Politics, lect.: 3 hrs.; Section 1 - C. Charlebois; Section 2 - P. Brown.

There will be two sections of this class. They will be the same central focus with only minor differences in content.
Among the major topics which may be considered are: Canada as a federal political community, Canada as an independent nationstate; representative government, political authority and political freedom; and, the structure and processes of parliamentary government. While considerable attention will be given to national politics, the provincial and municipal political arenas will be included in our examinations and discussions. The class will not be concerned exclusively with "government" but will encompass all aspects of politics including "non-governmental" groups and processes such as political parties, pressure groups, the mass media, political socialization, and political participation.
This class is open to students who have completed an introductory political science class or who obtain the approval of the instructor.

3204/5204 The Politics, Government and Constitution of Canada, seminar: 2 hrs.; J.M. Beck.

This class is open to those students who have demonstrated competence in Canadian politics and government by attaining at least second-class standing in Political Science 2200 or its equivalent and in exceptional circumstances to those students who have obtained high standing in Political Science 1100.
It takes the form of a seminar class in which the students' papers will explore the background, nature, and significance of current problems in the politics, government and constitution of Canada. The relation of the political culture, and especially environmental, institutional and personal factors to these problems will be examined in detail by posing such questions as: Can paticipatory democracy be a practicable concept in Canadian federal politics? How valid are the criticisms of consensus politics put forward by Porter and Horowitz? Ought Canada to be viewed as a consociational democracy? Is the party leadership convention a useful adjunct of Canadian liberal democracy or a bad American importation? Do the Trudeau reforms permit the executive branch to meet the demand of contemporary society? Have the changes in the procedures of the House of Commons since 1968 finally taken that body out of the horse-and-buggy era? How well do the Canadian mass media and pressure groups perform the functions which liberal democratic theory contemplates? Should a charter of human rights be entrenched in the Canadian constitution? How suited is the Supreme Court of Canada to performing the functions of a constitutional court of last resort? What is and ought to be the competence of the provinces in external affairs? Is the B.N.A. Act good enough or is it a completely new written constitution required to meet the contemporary crises in Canadian politics?
Prerequisite: P.S. 2200 and permission of the instructor.

3208/5208 Canadian Provincial Politics, lect. and seminar: 2 hrs.; D.H. Poel.

The course will bring together an emphasis on cross provincial, empirical research with an interest in the value context of provincial policy. Primary course goals are (1) to stimulate enough interest in provincial politics for the student to develop a research question and (2) to provide the student with sufficient research skills to successfully complete a small project in comparative provincial politics. Throughout the course, whether discussing federal-provincial fiscal relations, political parties, the economy, or specific policy areas, we will attempt to maintain a provincial perspective.
Prerequisite: P.S. 2200

3212/5212 The Politics and Government of Nova Scotia, seminar: 2 hrs.; J.M. Beck.

The work of the first term will consist of a detailed examination of the Nova Scotian political process since Confederation. In the second term research papers prepared by the members of the class will be used as the basis for analyzing and appraising the functioning of the cabinet, House of Assembly, civil service, political parties, pressure groups, and municipal institutions in contemporary Nova Scotia. Some time will also be devoted to federal Nova Scotia relations. Special attention will be paid to the political culture of the province and its effect on the general character of Nova Scotian politics.
Prerequisite: Political Science 1100 or equivalent.
(Not offered in the period covered by this edition of the calendar.)

3216/5216A Local and Regional Government, seminar: 2 hrs.; D. Higgins.

This class will deal with the origins, development, and present legal and fiscal positions of various forms of local and regional government in Canada. Special attention will be paid to three problem areas; the territorial extent of local government, policy formulation in a fractionalized political system, and the unique dimensions of urban government.

It is open to graduate and senior under-graduate students. Participants must have completed Political Science 2200 or an equivalent class in the Canadian political system.

3220A/5220A Intergovernmental Relations in Canada, seminar: 2 hrs.; P. Brown.

This class will consider a number of topics concerning the territorial division of political power and the relations that have developed between governments. Specific topics will include the nature of Canadian federalism, federal-provincial fiscal relations, selected functional areas of intergovernmental relations, interprovincial relations, and provincial-municipal relations.

Undergraduates will be admitted only with the permission of the instructor.

Prerequisite: P.S. 2200, or another class in Canadian Government.

3221B/5221B Case Studies in Intergovernmental Relations, seminar: 2 hrs.; D.M. Cameron.

Building on the foundations established in 3220A/5220A, this class will explore in depth one or several case studies involving relations between governments in Canada. The selection of cases will be made at the conclusion of the first term, attempting to accommodate the interests of students as well as taking account of the availability of literature. Students will present and defend one or more seminar papers.

Prerequisite: P.S. 3220A/5220A or P.S. 3204.

3224B/5224B Canadian Political Parties, lect. and discussion: 3 hrs.; J.M. Beck.

The Canadian party system will be viewed as an integral part of the entire political system and, among other things, the following questions will be explored: To what extent have various factors, economic, geographical, regional, ethnic, religious, constitutional and social, determined the character of Canadian parties and the party system? How valid are the findings of Michels, Ostrogorski,Duverger, and R.T. McKenzie with respect to the internal organization of political parties, and do they constitute a serious limiting effect on Canadian democracy? In other words, do the Canadian paties contribute towards genuine participatory democracy? How useful are the theories of Horowitz, Macpherson, Lipset, and Pinard in explaining the rise of third parties in Canada? Does Cairns over-emphasize the effect of the electoral system on the functioning of Canadian parties and the party system? Are Porter and Horowitz correct that the old-line political parties have outlived their usefulness? Is a resort to some other means of interest articulation likely to make the existing party system redundant?

3228B/5228B The State and the Economy in Canada, seminar: 2 hrs.; H. Kroeker.

The aim of this class is to explore the interaction between governments and economic organizations, especially businesses, from the viewpoint of political science. Topics include the nature of government regulatory policies and problems related to multinational corporations. Others centre upon the role of government as a stimulus to economic activity, especially in the developmental and technological fields. Finally, discussion will include some evaluation of the impact of ideologies, deomocratic socialism for instance, upon businesses and the economy as a whole. The implications of these topics for Canadian society will be of prime concern.

Prerequisite: P.S. 2200 or permission of the instructor.

3250 Introduction to Public Administration, lect. and discussion: 3 hrs.; C. Charlebois.

This class is designed to introduce students to the basic concepts of organization theory and administrative behaviour within the context of the operation of governments at the federal and provincial levels. Emphasis will be placed upon the relationship between theory and actual practices. An attempt will be made to give students a general overview of most of the behaviours and techniques they are likely to encounter in more advanced classes or in administrative situations.

Prerequisites: P.S. 2200 or permission of instructor.

4240/5240 Policy Formulation in Canada, seminar: 2 hrs. P. Brown.

The thrust of this course centres around a comprehensive examination of the three critical questions in the study of policy formulation in Canada. In the first place, the discussion centres on the function of the state, which is to say, the kinds of policy activities which preoccupy modern government. Secondly, some attention is given to the question of why governments develop policies in these areas, including a detailed analysis of the importance of economic, ideological and cultural consideration as determinants of policy. The third question relates to the means by which governments authoritatively develop policies, which is to say, the instruments of policy formulation. The discussion links these variables with a macro level analysis of the scholarly approach to decision-making, including such models as incrementalism, national planning and mixed scanning. Throughout, the emergence of tension resulting from the development of superindustrial society and from regionalism in the Canadian community, provides, in the form of specific policy problems the dynamics on which the more general theoretical analysis is hinged.

4242B/5242B Science Policy in Canada, seminar: 2 hrs.; P.C. Aucoin.

(Not offered in the period covered by this edition of the calendar.)

4243B/5243B Health Care Policy in Canada, seminar: 2 hrs.; P.C. Aucoin.

The purpose of this seminar is to examine the policies of Canadian governments for the delivery of health care. Existing policies and programmes will be studied in terms of the roles of the health professions and governmental structures in their formulation and administration. Special attention will be given to the process of intergovernmental relations in this policy field and the increasing politicization of health care delivery.

Prerequisite: Political Science 2200 or 3250 or equivalent classes in Canadian government and public policy.

4245B/5245B Urban Policy in Canada, seminar: 2 hrs.; D.M. Cameron.

(Not offered in the period covered by this edition of the calendar.)

4254B/5254B Canadian Public Administration, seminar: 2 hrs.; A.P. Pross.

This class will examine the organization of the Government of Canada with particular reference to the administrative process. The structure of the bureaucracy and its relationship to the political executive will be studied in detail.

Prerequisites: Political Science 2200 or 3250 or another class in Canadian Government.

(Not offered in the period covered by this edition of the calendar).

4258B/5258B Provincial Government and Administration, seminar: 2 hrs.; P. Brown.

This class will consider the organization of government at the provincial level in Canada. Special attention will be given to those features of provincial government organization and public policy which have distinguished administration at this level from that of the federal government. Several recent reorganizations, including the proposal for Nova Scotia, will be examined in detail.

Prerequisites: P.S. 2200, 3250 or another class in Canadian Government.

4266A/5266A Natural Resource Administration in Canada, seminar: 2 hrs.; P. Brown.

This class will examine the formulation and administration of natural resource policies in Canada with special attention being given to renewable natural resources. It will focus particularly on such policies as they relate to Eastern Canada such as coastal zone administration and forest resources administration. A major emphasis will be placed upon the administration of these resources and the planning process at the local, provincial, and national levels of government.

Prerequisite: Political Science 2200 or 4240 or permission by the instructor.

3. Comparative Government and Politics

2300 Comparative Politics, lect. and discussion: 2 hrs., K.A. Heard.

Classes in comparative politics and the politics of foreign states are designed, at least in part, to provide students with a broad perspective on political behaviour and political institutions, and hence to complement programmes in Canadian politics and international relations, as well as to provide a valid programme in its own right.

This class is one that attempts to provide this broad perspective. While reference is made to Canadian politics, we go on to compare the situation in Canada with the situation in a select number of other countries. These are chosen to represent a broad range of cultures — e.g., Australia, India, Nigeria, South Africa, Switzerland and the United Kingdom. The comparisons are made in terms of the various "environments" within which politics take place.

The environments selected for study are: the *physical* environment (size, climate, population, etc.), the *cultural* environment (e.g., linguistic and/or ethnic diversity or homogeneity, socialization, etc.) the *constitutional* environment (types of constitution, effectiveness or ineffectiveness of constitutional structures), the *economic* environment (the role of the state on the economy, the relation between economic development and political development, effects of unequal distribution of economic resources, etc.), the *institutional* environment, with respect to informal political institutions (parties, interest groups, the press, etc.) and the *external* environment or external influences on policy choices (e.g. foreign alliances, dependence, multinational corporations, etc.).

With respect to each of these major topics, first some observations will be made concerning the general significance of the "environment" concerned, then reference will be made to the Canadian situation, and thirdly some comparative material will be brought to bear on the subject. In order to provide a "mix" in terms of level of development, size, geographical location, etc., material for the comparative analysis will be mainly drawn from a few case studies: the United Kingdom, Switzerland, India, Australia, South Africa, Tanzania and Nigeria. None of these countries, however, will be studied comprehensively or in detail.

Prerequisites: P.S. 1100

2305 European Comparative Politics, lect. and discussion: 2 hrs.; R. Boardman.

Since Europe includes more than 30 countries varying in size form the Soviet Union to Monaco (368 acres), a comprehensive survey of the politics of all of them will not be attempted in this class. The emphasis in the first term will be on the three major western countries - France, West Germany and Britain. In the second term we will turn to the government and politics of the Soviet Union and selected East European States. The political life of other countries such as Sweden and other Scandinavian countries and Italy and other Mediterranean countries will also be invetigated; the choice from among these will depend on the time available and the interests of the students in the class.

The class is designed not only for students specializing in political science who wish to broaden their knowledge of comparative politics but also for those, such as students of one or more European languages, who do not wish to carry out advanced work in political science, but who are attracted to the study of Europe for other reasons.

2320 Political Behaviour: Micro- and Macro-Analysis, lect. and discussion: 2 hrs.; D.H. Poel.

The most general concern of this class is with the questions of how many human beings perceive, relate to, and participate in, political systems. Public opinion and voting studies are obvious aspects of micro-politics, as are areas of political socialization, personality and political culture.

(Not offered in the period covered by this editon of the calendar).

2321B Political Behaviour, lect. and discussion: 2 hrs.; S. Sutherland.

The concern of this class is with how individuals gather information about, form general orientations toward, and learn to participate (or not to participate) in the polity. Areas of concentration will be political socialization, the question of the relevance of personality traits to political opinionation and activity stances, and political participation. Research methods utilized within these areas of study will necessarily be an important secondary consideration.

(Not offered in the period covered by this edition of the calendar.)

2325 The Theory and Practice of Government in the United States, lect. and discussion: 3 hrs.; J.H. Aitchison.

The first theme will be the theory of American government, discussion of which will be based mainly on the first ten chapters of Dahl, *Democracy in the United States*. The Federal Judiciary, Congress and the Presidency will then be examined in that order. In that order because (a) the political process is judicialized in the United States to a far greater extent than in any other democracy, so much so that the powers and functioning of other political institutions can be more readily comprehended if the role and functioning of the Federal Judiciary are first understood and (b) Congress was intended to be the senior of the two "political" branches. Other themes will be political parties, pressure groups, nominations and elections, federal-regional financial relations, state and local governments, and the Supreme Court and constitutional limitations. The last of these will be taken up at the expense, if necessary, of one or more of the others.

Principal Texts: R.A. Dahl, *Democracy in the United States: Promise and Performance*; D.R. Mayhew, *Congress: The Electoral Connection*; M.D. Reagan, *The New Federalism*.

2330 Politics Through Literature, lect. and discussion; 2 hrs.; R. Dial.

What does this mean? We are *not* speaking here simply of politics AND literature; that is, political subjects in literature, or even the use of literature for practical political ends. What is suggested by THROUGH and is central to the course is a notion that literature is a 'medium' for political understanding or explanation, and, more importantly, political learning. During the first term we shall seek to use a variety of fictional works to dissect key political concepts (e.g. obligation, authority, power, leadership, ends/means, etc.). In the second term our object will be to isolate within literature explanatory theories of complex political situations (e.g. the tribe, family, caste, poverty, bureaucracy, totalitarianism, war, revolution, etc.). We shall draw on works by Hugo, Twain, Dostoevski, Diderot, France, Kipling, Shakespeare, Sophocles, Goodman, Adams, Conrad, Golding, Kafka, Koestler, Swift, Steinbeck, Dos Passos, Orwell, Malraux, Lewis, Melville, and others.
The course has no prerequisites and is not restricted to political science majors.

3301B/5301B Comparative Analysis, seminar: 2 hrs.; staff.

The focus of this course will be on the epistemological and methodological questions in the field of comparative politics...a more "substantive" course focusing comparatively on specific countries, is offered as Political Science 2300. The class will examine several classification schemes for political institutions and behaviour which are purported to offer opportunities for "comparative analysis". The larger mission of the class will be to ascertain whether comparative analysis can make good a claim to be "scientific". The course is recommended for graduate and honours students, and is open to senior undergraduates with permission of the instructor.

(Not offered in the period covered by this edition of the calendar.)

3315A African Politics, seminar: 2 hrs.; Staff.

As one of the Department's offerings in advanced comparative politics, this class analyses the political economy of several black African states. It focuses on the elusiveness of independence and development and examines the variety of responses to the problems of dependence and underdevelopment. Although it concentrates on the countries of eastern Africa — especially Kenya, Malawi, Tanzania, Uganda and Zambia — its investigation of several characteristic African phenomena — one-party states and military regimes, African socialism and self-reliance, political participation and exclusion, the growth of inequalities and authoritarianism — constitutes a general introduction to African government.
This class is intended for students in African Studies and Political Science and can be matched with Political Science 3540B on the Foreign Policies of African States.

3345B/5345B South Africa: The Dynamics of Political Groups and Group Domination, seminar: 2 hrs.; K.A. Heard.

What accounts for continued Afrikaner political domination in South Africa? Why do English-speaking South Africans apparently play such a passive role? Why have the Blacks in South Africa not mounted a revolutionary movement? What are the prospects for "homelands" independence?

These are the types of questions that will be explored in this class, with the object not only of acquiring an understanding of South African politics but with that also of formulating hypotheses concerning the formation, persistence and behaviour of political groups.

This class is intended for students who are interested either in comparative politics, in African studies or, generally, in political behaviour. It can also be used to match Political Science 3315A.

3357A/5357A Chinese Politics: Domestic, seminar: 2 hrs.; R.L. Dial.

This course will deal with the various dimensions of the Chinese political process since 1949. The central issues covered in the lectures and readings are the development and maintenance of a modernizing state, the continuing struggle for political integration, and the attempts to fashion a state philosophy consistent with these undercurrents.
This course may be usefully matched with P.S. 3574B/5574B, Chinese Foreign Relations.

4. Political Theory and Methodology

2400 Justice, Law and Morality, seminar: 2 hrs.; R. Eden.

(Same as Phil. 240.)

This introduction to ethics and political philosophy examines the problem of justice, and the relation between ethical inquiry and political science, in seven works. For classical political philosophy the primary ethical choice is a choice between two ways of life, the ethos or way of philosophy and the ethos or way of citizenship. This choice is framed in Plato's *Republic* by comparing justice in the polity with justice in the soul; in Artistotle's *Ethics* and *Politics* it is posed through an ascent from the moral virtues to the delemmas of political life; although the moral virtues seem to be self-sustaining and examination of practical political life shows that philosophy is required to secure justice, and this raises the question whether philosophers should try to do so. In modern thought the problem of justice has been framed in very different terms: the primary ethical choice has been placed upon a new footing because neither the philosophic life nor the political life seem primary. The modern Socrates, Montaigne, argues that the primary choice is between individual freedom and submission to authority, or between the self and powers outside or above the self. His *Essays* depict the ethos of choosing for the self; this essaying self poses the problem of justice, and of the relations between justice, law, and morality, in a new way: for Montaigne the primary choice is between *his way* or ethos and *the old way* of the ancient Socrates. Hobbes attempts to found political science in conscious opposition to the old way, which he ridicules in his *Leviathan* as "Aristotely." The new self requires a stern government for its protection. Tocqueville argues that democracy will collapse into a Hobbist tyranny under law if individualism, or the primacy of the self, is not checked. He proposes a utilitarian ethics to teach men who have chosen for the self to govern themselves wisely: in contrast to Mill, Tocqueville tries to persuade the democratic individual to choose between the old alternatives of Socrates, or to choose between civic participation and science as against the free self. Thus in studying *Democracy in America* and Mill's "On Utilitarianism" we will return to the beginning of our inquiry.

This class involves careful study of difficult books and considerable written work will be required, but aside from the will to work it has no prerequisites.

2455A Marxist Theory and Its Upshot in the Modern World, seminar: 2 hrs.; D. Braybrooke. (Not offered in the period covered by this edition of the calendar.)
Social objectives inherited from earlier socialist thinkers inspired Karl Marx's life work and thought. The distinctive features of Marxist socialism, however, come from the combination of philosophical ideas derived (with a number of changes) from the German philosopher Hegel with ideas about economics derived from economists of the British classical school. The latter ideas gave the thought its cutting edge as a critique—which remains surprisingly relevant today—of the social arrangements typical of capitalism. The depth of the critique and its upcompromising character can, however, be explained only by referring to the ideas (about alienation; about fully rational social institutions) taken from Hegel. After identifying in this way the chief ingredients of Marx's teaching, the class will consider various attempts (by Bernstein; Sorel; Lenin; Trotsky) to accommodate Marxist theory to economic and political developments that Marx himself did not anticipate. At the end of the term, it will discuss the official creed of the Soviet Union; and a representative expression of contemporary Western Marxism outside the Communist Party.
Prerequisites: A class in philosophy or a class in Political Science.

2494A Introduction to Political Inquiry: Understanding Statistical Information, lect. and discussion: 2 hrs.; C. Charlebois.

Members of this class will engage in study planned to improve the ability to understand quantitative information. The class will begin with a consideration of the problems inherent in conceptualizing and operationalizing social indicators — quantitative information about socially important conditions of society — and will proceed through the elementary techniques most often used to present such information. Thus, concentration will be upon the notion of "norming", sampling and statistical inference, common descriptive statistics through correlation. The aim is to learn where each statistic or technique of analysis is appropriate, rather than to gain proficiency in calculation. There is no prerequisite for this course.

2495B Introduction to Political Inquiry: Understanding Political Man, lect. and discussion: 2 hrs.; R. Eden.

To complement the inquiries undertaken in P.S. 2494A, this class will focus on some of the nobler and nastier activities of political men, including the formation of parties in electoral and legislative bodies; the founding of political institutions; the leading of mobs; and other uses of force and fraud for political ends. In taking up these topics the concern will be to introduce modes of analysis which reasonable men have adopted in order to penetrate the deceptions practiced or perpetrated by men of action. The class will consider how, and why, it is that in its pursuit of knowledge political science has always confronted philosophical difficulties in distinguishing knowledge of political matters from mere opinion. We shall introduce some of the ways of thinking that have been proposed to resolve these substantial difficulties.
The class is open to students who have completed an introductory political science class or who obtain the approval of the instructor.

3410/5410 Man, Society and Politics: the Concept of Community, seminar: 3 hrs.; staff.
(Not offered in the period covered by this edition of the calendar.)

3430C/5430C The Political Philosophy of Plato, seminar: 2 hrs.; R. Eden.

"Justice is the most serious, if not the most immediate, concern of political societies; and Plato's *Republic* is the best work ever to have been written on Justice." This traditional claim may indicate a basic purpose of the kind of careful and critical study we hope to give the dialogue: to learn about justice and thus about the upper limit or highest possibility of political society. But how is the traditional claim to be squared with Rousseau's observation in *Emile*? - "If you wish to know what is meant by public education, read Plato's *Republic*. Those who merely judge books by their titles take this for a treatise on politics, but it is the finest treatise on education ever written."
(Not offered in the period covered by this edition of the calendar.)

3435A/5435A Machiavelli and Modern Politics, seminar: 2 hrs.; R. Eden

How modern is Machiavelli? How Machiavellian is modernity? This seminar will explore Machiavelli's contribution to modern politics and political science through a study of his two principal works, *The Prince* and *The Discourses*.

3450A/5450A Theories of Federalism, seminar 2 hrs.; staff.

3438B/5438B Rousseau and the Founding of Modern Democracy, seminar: 2 hrs.; R. Eden.

To many it seems self-evident that the progress of the arts (or technology) and the sciences is necessary for human happiness and hence for the political order which best promotes human happiness—that is, democracy. This belief is widely shared, and indeed it is difficult to imagine how most of our institutions could exist if it were not widely shared. But it may be questioned: although modern science may be true, it has been a powerful tool in the hands of tyrannical regimes. Rousseau was the first political philosopher to question modern progress based upon the sciences and the arts and to reject that progress on behalf of democracy and human happiness.
This seminar will explore the origins of modern democracy through a study of Rousseau's political philosophy. Considerable attention will be given to Rousseau's defense of democracy against earlier critics, and to his understanding of the founding of a democratic society and there is no prerequisite for this class but seminar participation will constitute part of the grade.
(Not offered in the period covered by this edition of the calendar.)

3451A/5451A The Critique of Democracy in Modern Political Philosophy, lect. and seminar: 3 hrs.; R. Eden.

This course is intended as an introduction for citizens who wish to reflect critically on the character of representative government, on liberal democracy, and on the kind of commercial republic in which we live in North America.
A course seems necessary because there is controversy concerning what gives liberal society its coherence and definitions; indeed, concerning whether it *has* a definite form. In the hope of putting these controversies into perspective, we shall return to Montesquieu, one of the early proponents of liberal commercial republicanism, and to Nietzsche, who may be the most intransigent and radical opponent of liberal democracy and representative institutions.

To put it simply, we shall ask Montesquieu, who sought to father this creature, why it was necessary, or reasonable, to create it. We shall ask Nietzsche, who set out to destroy it, why he thought it worthwhile to bury Montesquieu's commercial republic. By asking these questions persistently, we may articulate the coherence, and define the character, of liberal democracy, as seen by a most thoughtful friend and by a most brilliant antagonist.

In pursuing this line of inquiry, the seminar will also introduce the student to a charming and seductive form of imaginative literature. Both Montesquieu and Nietzsche wrote aphoristically. Their modes of writing are persuasive and appeal to the sentiments, to prejudice, and to the imagination, as well as to reason. We shall attempt to subject their writings to critical analysis and to make them available for rational evaluation.

We shall assume that the student is coming to both authors, to the problem of liberal democracy, and to this seductive mode of argumentation or persuasion, for the first time. The course does not presuppose sophistication, and indeed it hopes to prepare the reflective student to be judiciously critical of those, like Montesquieu and Nietzsche, who are intent upon sophisticating us.

3452B/5452B The Critique of Democracy in Modern Political Philosphy, lect. and seminar: 3 hrs.; R. Eden.

This course will deal with the questions and theories of 3451A/5451A but will examine different texts by the two authors.

3470B/5470B Futurology and Politics, seminar: 2 hrs.; D. Munton. (Not offered in the period covered by this edition of the calendar.)

3495/5495 Research Methods and Data Analysis, seminar: 2 hrs.; D.J. Munton. (Not offered in the period covered by this edition of the calendar.)

A knowledge of the promises and pitfalls of social science research is as important today to the average citizen as it is to the administrator or researcher. This seminar is intended to be a broad, non-technical introduction to the assumptions, procedures, and problems of empirical investigation in political science. The five major stages common to all such research theory, research design, data collection (surveys, simulation, aggregate date, etc.), measurement, and analysis are explored using substantive readings from various subfields of the discipline.

The major assignment in the course will be a research project of the student's own choice and design. It is not expected that students will have any background in statistics or computer programming, but it is hoped that all are or can become excited by the joys of disciplined discovery.

3496C/5496C Philosophy of the Social Sciences, seminar: 2 hrs.; meeting every two weeks throughout the year; D. Braybrooke, S. Sutherland. (Same as Phil. 351C/551C.) (Not offered in the period covered by this edition of the calendar.)

A number of philosophers (among them Peter Winch, Charles Taylor, G.H. von Wright) have challenged the application in the social sciences and history of the methods, quantitative and otherwise, used in the natural sciences (explicated in the works of Karl Popper, C.G. Hempel, Wesley Salmon, and others). The challengers hold that in the study of man and society, different methods, occupied with the logic of action rather than with causality and leading to interpretative (or "hermeneutical") explanations, are suitable. This class will try to establish the extent to which this view rightly calls attention to an important non-quantitative branch of social inquiry, most vividly illustrated in anthropological studies of whole cultures. The class will also try to work out the relationship between this branch and the branch or branches of social inquiry in which the example of the natural sciences can be fruitfully followed. In particular, it will discuss the degree to which rules (the standby of the interpretative branch) complement regularities (the standby of the other branch or branches), even fuse with them. The class will also give particular attention to the use — on either side of the divide between the branches, or bridging between them — of the assumption that agents are rational. The application to the social sciences of Thomas Kuhn's concept of paradigm will be kept in mind throughout these stages of discussion. At the end of the year, attention will turn to the contention of such philosophers as Juergen Habermas and Karl-Otto Apel that the social sciences have, besides the tasks of the branches mentioned, a task of criticism ("Ideologiekritik"), and the class will consider how this task might be accomplished.

Prerequisites: A class in research methods or political behaviour and a class in philosophy; or permission of the instructors.

4479A/5479A Utilitarianism, Classical Liberalism, and Democracy (Seminar in Philosophy, Politics and Economics), 2 hrs.; first term, D. Braybrooke. (Not offered in the period covered by this edition of the calendar.)

(Same as Phil. 447A/547A and Econ. 446A/547A.)

This class will be preoccupied with the impact on political philosophy of two leading beliefs characteristic of classical liberalism: first, the belief that good government is strictly limited government; and second, the belief that there is no standard of personal welfare, or of the common good, beyond personal preferences and points on which the preferences of different persons agree. These beliefs have been most sharply formulated by economists. The class will trace the first belief from Adam Smith through John Stuart Mill to Milton Friedman; then examine the history of the second belief, which turns on Pareto's repudiation of classical utility (as conceived by Benthan and Mill) and culminates in Buchanan and Tullock's *Calculus and Consent*. The class will then give some attention to less restrictive conceptions of democratic government that have grown up alongside classical liberalism. It will read such authors as R.H. Tawney and Robert A. Dahl in the course of doing so. Finally, it will consider the implications for liberalism of certain findings in the theory of public goods and the theory of games, about the limits of voluntary action.

Prerequisites: Students taking the course should ideally have had previous courses in all three subjects, but it will suffice for them to have worked to an advanced undergraduate level in at least one of them. Students taking the course for a credit in philosophy should have had a class in logic (200 or 201 or 202) and one in ethics (310); students taking the class for a credit in political science should have had at least one 3000-level class in political science; students taking the class for credit in economics should have had at least one 330-level class in that subject.

4480A/5480A Social Choice Theory (Seminar in Philosophy, Politics and Economics), 2 hrs.; first term, D. Braybrooke.

(Same as Phil. 448A/548A and Econ. 448A/548A.)

(This class will not be given during the year referred to by this calendar; it will be given the following year.)

Kenneth Arrow's Nobel Prize winning theorem, to the effect that no device of social choice meets an apparently minimal set of weak standards, has seemed to lead two traditions of thought to ruin. One tradition, begun in the 18th century by Condorcet and continued in the 19th by Lewis Carroll, is the theory of voting. The other tradition is welfare economics — the theory of economic recommendations — which has had a drastically inhibited history since Pareto led economists to abandon the notion of interpersonally measurable utility. Its inhibitions, which are reflected in Arrow's work, have not saved it from his attack. This class, after tracing the two traditions that converge in Arrow's theorem, will study the theorem itself and then consider (with the help of such writers as A.K. Sen and Charles R. Plott) the continuing disarray into which formal social choice theory (and hence the basic theory of democracy) has been thrown by the theorem.

Prerequisites: Students taking the class should ideally have had previous classes in all three subjects, but it will suffice for them to have worked to an advanced undergraduate level in at least one of them. Students taking the class for a credit in philosophy should have had a class in logic (200 or 201 or 202) and one in ethics (310); students taking the class for a credit in political science should have had at least one 3000-level class in political science; students taking the class for credit in economics should have had at least one 300-level class in that subject.

4490B/5490B The Logic of Questions, Policy Analysis and Issue Processing (Seminar in Philosophy, Politics, and Economics), 2 hrs.; spring term, D. Braybrooke.

(Same as Econ. 449B/549B and Phil. 449B/549B.)

(This class will not be offered during the academic year referred to by this calendar.)

4495B/5495B Problems of Quantification, seminar: 2 hrs.; S. Sutherland.

There will be two areas of concentration. Attention will be given to the theoretical foundations of social enquiry, with concentration where possible upon social indicators. Second, students will engage in computer analysis of a small data set, to gain some facility in interpreting statistics. A major paper will emerge from student's work in either of the two streams.

5. International Politics and Foreign Policy

2500 World Politics, lect.: 2 hrs.; staff.

In analysing the development and future of international politics this class will consider both theories of international relations and the variety of actors in the international system. It will attempt to explain dependence and interdependence, conflict and harmony, and trends in the evolution of world politics. It will focus on problems of world order, especially on those of inequality and under-development, balance of power and arms races, regional conflict and cooperation, and the impact of international law and organizations. Although the class will examine the evolution of the international system, it will concentrate on contemporary problems such as international stratification, ecology, integration, detente, resources and middle powers.

2510 Canadian External Relations, lect. and discussion: 2 hrs.; D.W. Stairs.

This class is designed as a general survey of Canadian foreign and defence policies and of the processes by which these policies are made. After some preliminary discussion of the history of Canadian external relations before World War II, including in particular the drive for independence in the conduct of foreign policy, the first part of the syllabus will be concerned with the substance of Canada's role in world affairs since 1945. The second part will be devoted to an analysis of the "policy machine" and will deal with such subjects as the growth and development of the Department of External Affairs, the evolution of the Canadian foreign service, the current structure of the foreign policy community, and the relationship between the foreign service bureaucracy and such political institutions as the Cabinet, Parliament, the various provincial governments, political parties, and pressure groups. Throughout, an attempt will be made to identify some of the persistent pressures and constraints which Canadian policy makers are forced to take into account as they respond to the demands of their constituents and to the changing conditions of international politics.

3520/5520 Theories of International Relations, lect. and discussion: 2 hrs.; G. Winham.

This course is a survey of the theoretical literature on international politics and foreign policy. It seeks to understand three timeless problem sin international relations: the nautre of conflict and war; the nature of economic disparities and imperialism; and the nature of social grouping and nation states. The course is a study in politics, but it draws on research from history and the social sciences. For example, students will be expected to read from Toynbee and Thucydides as well as Deutsch, Singer and McClelland (The Achieving Society).

This course is designed mainly for graduate students, but it will be open to undergraduates who wish to pursue more extensively the theory of international relations. Students will be expected to pariticpate regularly in seminar and to write a series of essays during the year.

3530/5530 The United Nations in World Politics, seminar: 2 hrs.; R. Boardman and M.K. MccGwire.

Since 1945 there has been a continuous evolution in the structure, functions, power and influence of the United Nations. Orginally conceived as an organization with a strong basis towards international stability and the status quo, it has emerged in recent years as an engine of social change.

This class will trace the evolution of the United Nations from its early concentration on problems of collective security, through the period of preventive diplomacy and anti-colonialism, to its present role as a forum for the demands and aspirations of the Less Developed Countries. It will review the shift of power within the UN and the relevance of this shift to the "real" world outside, analyse the substance of United Nations influence, and consider whether there have been significant trends in this area. The class will begin with a historical and theoretical survey of the development of international organizations in the twentieth century with a view to making an assessment of the contribution of the United Nations to international peace and security since 1945. It will then turn to the following issues which have involved the United Nations: colonialism, trade, aid and development, the law of the sea, food and population, energy and resources, and the environment. In each case it will consider the roles played by the UN as an organization and by its individual members.

3535A/5535A Towards a New World Order, seminar: 2 hrs.; staff.

The international system has changed dramatically in the present decade; this course is intended to describe, analyse and explain progress towards, and the elusiveness of, a new world order. It will focus on the demands for, and responses to, change in international politics, economics, society and norms. In addition to a critical review of the burgeoning literature on the new world order, the course will examine the impact of several salient issues, especially uneven development, energy and raw materials, food and population, new actors and coalitions, corporations and technological transfer, pollution and the global environment and coercive

or incremental change. The course will consider normative as well as analytic problems and will concentrate on the tensions between inter-dependence and dependence, self-reliance and integration, autonomy and transnational imperatives; it is a response to a world of inequalities, scarcities and tensions.

This is an advanced course in international politics which requires a concern with, and awareness of, global issues; it should be of interest to students of international economics, society and history or with a familiarity with Third World states and problems.

3540B/5540B Foreign Policies of African States, lect. and seminar: 2 hrs.; staff.

The foreign policies of several African states will be reviewed in this class. It will begin with a survey of Africa's inherited problems and ideological responses and an examination of the four levels of international interaction in Africa: its dependence and impact as an international subsystem, the development of an African continental system, patterns of regional conflict and cooperation, and the making of foreign policy in African states. Since new states have produced novel discontinuities in the international system we will be concerned with the diplomatic, developmental, and methodological implications of African participation. The second half of the course will be taken up with case studies of African foreign policies, e.g., those of Tanzania, Ghana and Nigeria, Egypt and Libya, Ivory Coast and Senegal, Malawi and Zambia, and Uganda and Kenya; and of regional organizations in Africa such as the East African Community, the *Entente*, and ECOWAS.

Students concentrating in International Politics or in African Politics will find that this class fits into their programmes.

3544B/5544B Conflict and Cooperation in Southern Africa, lect. and seminar: 2 hrs.; staff.

This course is intended to be an introduction to the international relations of Southern Africa; it is a study of regional political economy with both empirical and theoretical significance. After a review of the history of Southern Africa the class will examine patterns of dependence and interdependence in the subsystem and the foreign policies of states in the region. We conclude by looking at Southern Africa in world politics and at the possible futures of the region. The primary focus is on regional conflict and intergration, especially on the liberation movements and regional coalitions. In addition to an analysis of the foreign policies of both black and white states in the region, we examine the impact of the UN and OAU on political change in Southern Africa.

3570/5570 Canadian Foreign Policy, seminar: 2 hrs.; D.W. Stairs and D.J. Munton.

This seminar focuses on the recent history and contemporary problems of Canadian foreign policy. The first part of the class analyses major developments and situations in Canada's post war relations. These historical developments include the framing of the United Nations, Canadian initiatives in the establishment of NATO, participation in the Korean War, the Suez Crisis and Canada's UNEF proposal, the nuclear weapons question, relations with Quebec and France, recognition of China, Nixon-economics and continental interdependence.

The second part of the class takes a more analytical approach to the factors that underlie Canadian policy. Using the historical cases as illustration, the seminar will consider the influence of external factors (for example, the Cold War, the hierarchical nature of the international system, and the policies of other countries) and domestic factors (public opinion, interest groups, Parliament, the federal bureaucracies, leaders' personalities, etc.)

Finally, some policy prescriptive questions will be considered: Is nonalignment appropriate or possible? What should Canada do about American economic domination? Should Canada become a major "foreign aid power"? And so on.

3572/5572 American Foreign Policy, seminar: 2 hrs.; G. Winham.

The course will explore why Americans make the kind of foreign policy they do and will examine: the nature of the people; the nature of American foreign policy institutions; relationships among institutions and between institutions and the public; and perceptions of and pressures from the external environment. The course will focus on the decision process, and relevant methodologies for examining decision strategy will be examined. Students will be expected to develop an ability to explain foreign policy decisions of the United States.

The course will be conducted as a seminar with regular readings, discussions, and class reports of ancillary readings. One research paper for the year is expected, which will be presented orally in class. A short version of the paper will be submitted during the first term. A short essay is expected near the end of the year.

3574B/5574B Chinese Foreign Relations, seminar: 2 hrs.; R.L. Dial.

China's international behaviour and the policy process shaping that behaviour will be explored through the proposition: "A nation's foreign policy is a device for maximizing external sovereignty and controlling internal interests with external consequences." Approximately one-quarter of the lectures will deal with the foreign relations of "traditional" China, as they may provide both a sense of contrast and continuity with contemporary Chinese international behaviour. Prior classes on Chinese politics are not required for this course.

3590/5590 The Politics of the Sea, seminar: 2 hrs.; M.K. MccGwire.

Traditionally the world ocean has been used for the projection of state power, for the conveyance of goods and people, and as a source of food. Although there were disputes over its use, the sea was considered to be an unlimited and self-renewing resource, and maritime activity, largely unregulated, took place within a loose framework of customary law. Since 1945 there has been an exponential growth in the exploitation of the ocean both as a resource and as a sewer. The engine of change is technology which has increased access to the resources of the sea and its bed. It has also generated rising standards of living and exploding populations which combine to increase the pressure on natural resources and the dangers from pollution. There is a new awareness of the fact that the ocean's capacity is not unlimited and that its role in the world's ecological balance can be impaired. All nations are now fully alive to the sea's potential and all are concerned to get their "fair" share, directly or indirectly. Within the general context of negotiations on the Law of the Sea, the argument is about who gets what and who has to forego activities and access. Formerly unrestricted access and exploitation were seen as natural rights.

This class will consider the major issues involved, the differing interests of different countries, the developing legal framework, and the political process of the on-going negotiations. There is a great deal of ground to be covered and preference will be given to graduates and mature students from other relevant disciplines will be welcomed.

3595A/5595A Theories of War and Peace, seminar: 2 hrs.; D.J. Munton. (Not offered in the period covered by this edition of the calendar.)

4600 Honours Essay

4625 Reading Class: Advanced American Government, J.H. Aitchison.

Psychology

Professors
J.C. Fentress (Chairman)
G.V. Goddard
W.K. Honig
P.H.R. James
J.A. McNulty
S. Nakajima
K.E. Renner
R.S. Rodger

Associate Professors
J.W. Clark
P.J. Dunham
B. Earhard
V. LoLordo
D.E. Mitchell
B.R. Moore
M. Ozier
R.L. Rudolph
M. Yoon

Assistant Professors
J. Barresi
K. Bloom
M. Cynader
J. Day
P. Jusczyk
R. Klein
I. Meinertzhagen
B. Rusak

Izaak Walton Killam Research Professor
D.M. Regan

Research Associates and Postdoctoral Fellows
K. Beverley
M. Mastari
B. Tansley
B. Timney

People see and hear, get hungry and fall asleep, and for an instant remember in great detail events which have just happened to them. Sometimes they hear but do not listen; often they remember only a fraction of what happened five minutes previously. They make love and play dangerous games, solve problems and go mad, drink far more than they need to quench their thirst; and they fight. Animals behave in similar ways. If we knew the reasons why they did so, we would have gone a long way towards understanding ourselves. Just as important, differences between species must be recognized to appreciate the unique features of each, and to provide a solid basis for rigorous and often limited generalizations.

Psychology is an experimental science, its purpose is to discover the conditions which control the activities of animals and people, to measure these conditions and the responses they produce, and to use this knowledge to invent ways of predicting behaviour and changing it. It is a subject for inventive but also scientifically rigorous people; better suited to those who want to find out for themselves than to those who want to be told what to believe. Although it has been the major achievement of behavioural science in the past two or three decades to discover the remarkable precision with which the behaviour of animals and men is controlled by their internal and external environments,—and as a student you will be expected to master the technology which has made these discoveries possible—this achievement has increased, not diminished, the challenge. We know for certain that there are at least two memory systems in the brains of vertebrates, but we do not know how these systems are linked together; we know (contrary to common sense) that things look larger the further away they seem to be, but no one understands why the moon on the horizon looks larger and closer than it does in the sky; it has become clear that *both* genes and environment set the potentialities and constraints for behavioural expression—that nature can never be fully separated from nurture; there is reason to believe that at least some of the mental diseases are not diseases at all, but forms of behaviour which are learned like habits—yet we do not understand why some people learn these disordered behaviours while others escape scot-free.

Psychology at Dalhousie treats behaviour as a natural phenomenon, and in that sense shares much with the other life sciences. Today, for example, the boundary that historically has separated psychology from zoology, physiology, or even cellular biology on the one hand has begun to blur. On the other hand, important ties are being made to such disciplines as anthropology and sociology. The

student will find that the diverse subject matter includes three major levels of analysis, the organism, the organism's biological machinery, and the broader social-environmental context in which particular behaviour patterns are expressed. Meaningful integration of these diverse levels and forms of analysis is an intellectual challenge of major proportions. Similarly, the time perspectives of immediate causation, development, evolution, and function all contribute to the modern approach to behavioural science; each must be evaluated in relation to the others.

Degree Programmes

General B.A. or BSc. in Psychology.
Students enrolled in the general (i.e., three-year) programmes must take at least four and no more than eight full credits beyond the introductory level in their area of concentration. Required classes for students who intend to major in Psychology are listed below. Although there is considerable freedom of choice, it is important for the prospective major to plan ahead carefully. If you need advice planning your programme, see Dr. J. Clark, Dr. R. Klein, Dr. M. Ozier, or Dr. R. Rudolph.

Requirements for a general degree in Psychology:
1. Psychology 100 or Psychology 101.
2. Psychology 200A
3. At least three more 200-level classes.
4. At least one full credit at the 300 level (excluding 300 and 301).
5. At least one more full credit in Psychology.

B.A. or B.Sc. with Honours in Psychology (Major Programme).
Students enrolled in the major honours programme must take at least nine and no more than eleven full credits beyond the introductory level in their area of concentration. Requirements for the Honours Degree in Psychology are listed below.

It is recommended that students in this programme take 200A and 210B and as many classes from the core programme (see requirement 3 below) as possible in the second year. Honours students are advised to complete Psychology 357 prior to the fourth year. 400 level seminars may be taken in the third and fourth years. 200 or 300 level classes may be taken at any time provided that the student meets the necessary prerequisites.

Although there is considerable flexibility for the student, it is important to plan carefully (this is especially true for those considering graduate work in Psychology). If you need advice in planning your programme, see Dr. P. Dunham, Dr. R. Klein, Dr. P. Jusczyk, or Dr. R. Rudolph.

Requirements for an Honours Degree in Psychology:
1. Psychology 100 or Psychology 101.
2. Psychology 200A and Psychology 210B.
3. At least four more 200-level classes.
4. Psychology 357.
5. At least two full credit laboratory classes at the 300 level (Psychology 300 may substitute for one of these classes).
6. Psychology 465 (Honours Thesis).
7. At least one full credit of 400 level seminars.
8. At least one more full credit of Psychology at or beyond the 300 level.

Combined Honours
It is possible for students to take an honours degree combining psychology with a related arts or science subject. In such a combined honours programme the student must take eleven full credits beyond the 100-level in his two areas of specialization, with not more than seven full credits in either area. The student in the combined honours programme will normally write a thesis (or the equivalent) in the area that he elects as his major and in which he takes the majority of his classes. Any student intending to take a combined honours degree should consult with the two respective departments to arrange the details of his programme.

Other Programmes

A variety of other programmes are available in cooperation with other departments. These programmes are designed to meet the needs of students whose specific interests may lie in areas other than those covered by the major and honours programmes offered by the department. Interested students should contact Dr. R. Klein for further information.

Junior Research Assistantships
A number of Junior Research Assistantships will be available during both the academic term and the summer vacation, to students who are taking an honours degree in psychology. Details of these assistantships, and of the stipends attached to them may be obtained from Dr. B. Earhard, **"classes marked * are not offered every year. Please consult the current timetable on registration to determine if this class is offered".**

100 Introduction to Psychology, lect.: 3 hrs.; Staff.

This class is designed for students who are interested in the biological and social bases of behaviour in both men and animals. You may expect to complete the class with an understanding of how the senses work and of how, for instance, we learn to see; of the different kinds of memory in man, how they operate, and how they are affected by disorders of the brain; of the way in which hereditary and environmental factors interlock to produce those complex sequences of behaviour which distinguish one species from another; of the way in which children learn their native language; of how the form of an animal society can be predicted from a knowledge of a limited number of ecological facts.

Psychology 100 meets three hours a week for lectures. The grade is based on a number of examinations given at intervals throughout the year.

101 Introduction to Psychology, tutorials: 3 hrs.; Staff.

The content of Psychology 101 is similar to that of Psychology 100. The two classes differ in the manner of teaching. In Psychology 101 there is no fixed pace for covering the content of the class. Nor are there regularly scheduled lectures -- although lectures, films and demonstrations are offered sporadically. Instead, students work through the readings at their own pace, and, when they think that they have mastered a unit of the readings, attend an individual tutorial. The tutorial consists of a brief test on the readings followed by a review of the test and a discussion with the tutor. If the tutor judges the student's understanding of the unit to be inadequate, the student returns for another tutorial on the unit after additional preparation. Tests on a unit of work may be re-written until understanding is achieved and demonstrated. The grade for the class is based on the number of units passed by the end of the year.

200A Methods in Experimental Psychology, lect.: 2 hrs.; lab.: 2 hrs.; P. Dunham and other members of the department.

The basic purpose of this class is to introduce the student to the methodological tools which have been developed by research psychologists to study behaviour. The course has both lecture and laboratory requirements. In lecture, we will proceed from a discussion of the general problem of applying the scientific method to the study of behaviour to more specific procedures used by psychologists in studying various aspects of animal and human behaviour. The laboratory work will consist of a series of projects designed to illustrate some of the more important techniques used by psychologists in the study of human and various other animals.

Prerequisite: Psychology 100 or Psychology 101.

201A or B Clinical Psychology, lect.: 3 hrs.; J. Day.

The goal of this class is to acquaint students with different approaches taken in the field of clinical psychology, both theoretical and applied. As the primary focus of clinical psychology is abnormal human behaviour, considerable time is devoted to the problem of defining the concepts of "mental illness," "psychopathology," "abnormal" behaviour. The class provides a broad overview of intervention programmes ("therapies") from Freudian analysis to more contemporary behavioural and phenomenological approaches to the modification of behaviours and beliefs.

Prerequisite: Psychology 100 or Psychology 101.

Restriction: This class may **not** be taken concurrently with Psychology 312.

202A or B Psychological Aspects of Social Issues, lect.: 3 hrs.; K.E. Renner, C. Adamec.

Most of the important social issues of our time have implications for human adjustment, for the forms of our social institutions, and for the relationships between people and between people and their institutions. Topics will vary according to current issues but may include pornography, drugs, religion, abortion, law and order, and similar topics. Selected topics will be examined in greater detail to provide a context for formulating general psychological concepts and theoretical issues. The final part of the course will pursue the logical implications of the analysis for prescriptions for the future.

Prerequisite: Psychology 100 or Psychology 101.

203 Psychological Measurement, lect.: 3 hrs., R.S. Rodger.

After some of the abstract properties of measurement systems are described (e.g., representation theorems, uniqueness theorems, meaningfulness, admissible scale transformations, scale types, fundamental and derived measurement), aspects of psychophysical measurement will be discussed. Further elaboration of measurement procedures in psychology requires a knowledge of statistical theory. The required amount of this theory is given and then used in the context of signal detection theory and the analysis of data from paired comparison experiments. The course ends with consideration of mental test technology (especially with cognitive tests of the multiple choice type), including item analysis, reliability and validity. Class notes have been prepared by the instructor. Exercises are scheduled regularly for students to do out of class. A knowledge of higher mathematics is not necessary to understand the material in this course: a knowledge of high school arithmetic and algebra is generally a sufficient background.

Prerequisite: Psychology 100 or Psychology 101.

*** 205A or B Integration of Behaviour,** lect.: 3 hrs,, J.C. Fentress

The concern of this course is how various dimensions of behaviour are combined into adaptive functional sequences. Material is drawn from a variety of animal species, including man. Reference to underlying nervous system mechanisms is used to clarify the dynamic relationships of diverse organisms to their environments. Topics include description and classification of sequential structure, balance between central programming and sensory processing, control system specificity, the problem of feedback, and genetic plus experiential substrates of integrated patterns of behaviour.

207 Introduction to Neurosciences, lect.: 3 hrs.; I.A. Meinertzhagen

This class invites all students who are interested in the structure and functions of the brain: what are they, how do they work and how do they arise? Neurosciences is a newly evolving interdisciplinary field. Its aim is to integrate exciting new findings in many diverse areas of brain research into a single systematic framework. The class will introduce to the student five main aspects in this effort: (1) Structural organization of the nervous system; central, peripheral and autonomic nervous systems and comparative studies amongst different vertebrate and invertebrate species. (2) The basic unit of the nervous system; the neurone and its cytology. (3) The principal language of the nervous system; nerve impulses and neural signalling. Excitation and conduction along the axon and transmission across synapses. (4) Embryonic development of the nervous system; growth, degeneration and regeneration. (5) Specificity and plasticity of the nervous system; from fixed patterns of organization and connections to the problem of experiential modification, learning and memory.

Prerequisite: Psychology 100 or Psychology 101 or with consent of the instructor. For those not having Psychology 100 or Psychology 101, Biology 1000 and 2020 would be advantageous.

*** 208 A or B Social Psychology,** lect.: 3 hrs.; J. Barresi.

This class will provide a general introduction to the field of social psychology. This class takes interpersonal relationships—i.e., how a person is influenced by the implied or actual presence of other persons—as the frame of reference. Social context plays an important role in defining a person as well as providing roles and models. The operation of social processes is considered with respect to substantive topics (e.g., prejudice, attitudes, conformity) selected from the current research literature. Various theoretical perspectives which have been proposed for the integration and organization of the subject matter are introduced.

Prerequisite: Psychology 100 or Psychology 101.

209A or B Developmental Psychology, lect.: 3 hrs.; P. Jusczyk.

This class focusses on the origins and subsequent growth and development of psychological processes. What kinds of adaptations does the growing organism have for coping with his environment? How does experience affect the course of development? Is there evidence for distinct stages in the development of psychological processes or does change occur through a series of gradual increments? A number of attempts by important theorists to describe and explain the developmental process are reviewed. While the chief emphasis of the class is on human development, examples and parallels will also be drawn from research with other organisms.

Prerequisite: Psychology 100 or Psychology 101.

210B Contemporary Research Problems in Psychology, lab.: 3 hrs.; staff.

This class is intended primarily for honours students as a continuation of Psychology 200A. It consists of working through a research problem with the instructor on a one to one basis. At the end of the year, the student is expected to have completed an independent experiment and submitted a written report of the data. Students other than honours students will be permitted to take the class with the permission of the instructor.

Prerequisite: Psychology 100 or Psychology 101 and Psychology 200A.

213A or B Information Processing, lect.: 3 hrs.; R. Klein

Many psychologists have adopted the language and concepts of computer science to help them understand human cognitive processes: perception, memory, thinking, action. Computers receive, process, store, retrieve and produce information. This class will introduce you to the view that the mind of man, like the computer, is an information processing device. Although we begin with an analogy between brains and computers, we quickly move into the area of psychological research, because most of what we know about human information processing we have learned through laboratory studies of humans performing carefully designed tasks.

Is there more than one kind of memory? How do we remember and why do we forget? To what extent do we control the flow of information in the brain? Which mental activities are automatic, and how do they become so? These are some of the questions we will examine.

Prerequisite: Psychology 100 or Psychology 101.

214A or B Learning, lect.: 3 hrs.; V. LoLordo

Traces the experimental study of learning from the turn-of-the century research of Pavlov and Thorndike to the present. Development of the field of animal learning will be described in terms of the ways in which particular conceptions of the learning process have guided experimentation, and have in turn been revised on the basis of the outcomes of that experimentation. Among the most important concepts discussed in the course are: association, attention, biological constraints on learning, classical conditioning, discrimination, expectancies, law of effect, learning-performance distinction, operant conditioning, S-S and S-R bonds, and stimulus control. The value of various approaches will be discussed with respect to several goals: (1) providing truly general principles of learning; (2) understanding the behaviour of particular species; (3) direct application to human problems. Throughout the term, the emphasis will be on understanding *why* researchers in animal learning do what they are currently doing (given the goals and the historical context), rather than on learning a great number of facts about animal learning.

Prerequisite: Psychology 100 or Psychology 101.

215A or B Perceptual Processes, lect.: 3 hrs.; J. McNulty.

Perception deals with the way in which our senses provide us with information about our environment. This class focusses on the process by which sensory experiences are coded and interpreted by the nervous system. What properties of the nervous system determine how we interpret information that stimulates our senses? How do we perceive patterns, colours, shapes, and sounds? How does experience influence and modify perception?

Prerequisite: Psychology 100 or Psychology 101.

216A or B Animal Behaviour, lect.: 3 hrs.; B.R. Moore.

This class will examine the natural and, to a lesser extent, the laboratory behaviour of several intensively-studied species. Foraging and communication, aggression and sex, predation and defence will be studied as they occur in such organisms as the honeybee, bat and noctuid moth, pigeon, rat and chimpanzee.

Prerequisite: Psychology 100 or Psychology 101 or Biology 1000.

300 Independent Research in Modern Psychology, seminar and lab.: 4 hrs.; staff.

This class is designed primarily for students who wish to gain further experience and understanding of contemporary psychological research. A student who enrolls in the class chooses a member of staff who will serve as his class advisor throughout the academic year. The student will be expected to conduct independent research of his own under the supervision of his class advisor.

Prerequisites: Previous or concurrent enrollment in two other 300-level classes; and may be registered for only with the prior consent of the instructor.

301 Advanced General Psychology, 3 hrs. with additional meetings with the instructor; J.W. Clark, V.M. LoLordo, W.K. Honig.

For the advanced student, this class reviews general psychology with the aim of consolidating the student's knowledge of the foundations. The method is unconventional. With the assistance of the instructor, the student prepares the material assigned to Psychology 101 at a level which will enable him to instruct introductory students in individual tutorials. There are no examinations. The grade is based on the quality of two projects undertaken by the student in the first and second terms. Students are advised to consult with the instructor in order to begin preparation some months before classes start in the fall.

Prerequisites: The consent of the instructor, Psychology 200, and at least concurrent registration in other 300-level psychology classes.

304 Learning and Motivation, lect.: 2 hrs, lab.: 2 hrs.; R.L. Rudolph, W.K. Honig.

Psychology 304 deals with the fundamental principles of learning derived from research with animal and human subjects. Since most of these principles have been discovered and investigated in experiments using animal subjects, primary emphasis is placed on animal learning. The discussion of human learning emphasizes those aspects of behaviour that are unique to man—language and abstract thinking—in addition to more general phenomena such as transfer and forgetting. Motivation is not studied as a separate topic but is discussed in terms of its effect on learning and performance.

Laboratory sessions involve (a) experiments with animals and human subjects, (b) discussion of the applicability of learning principles to everyday behaviour, and (c) an occasional film.

Prerequisite: Psychology 100 or Psychology 101 (Honours), Psychology 200 (General). (Note: Beginning in the academic year 1978/79, Psychology 214.)

305 Perception, lect.: 2 hrs.; lab.: 3 hrs.; M. Cynader.

Psychology 305 considers the way in which information about the world is provided by the senses and how we use this information in our behaviour. The material covered in the class falls into four sections.

1. The methodological and theoretical problems peculiar to the study of sensation and perception;

2. The transformation of physical stimulus energy into neural energy, and the processing of this information achieved by the nervous system;

3. The psychological analysis of sensations and their relation to the known facts of sensory physiology;

4. The effects of higher processes, such as recognition, attention, and memory, on the way in which sensations determine how we perceive the world.

The majority of the class will be devoted to vision and hearing in human beings.

The experimental work to be presented has been selected for its importance in the theoretical understanding of perceptual processes, and the student will be expected to organize his work around theoretical rather than factual questions.

The lab work will consist of a general introduction to the apparatus and methods used in perceptual research, followed by experimental studies designed and carried out by each student individually.

Prerequisite: Psychology 100 or Psychology 101 (Honours), Psychology 200 (General). (Note: Beginning in the academic year 1978/79, Psychology 215.)

307 Physiological Psychology, lect.: 2 hrs.; Lab.: 3 hrs.; L. Nadel.

Physiological psychology is concerned with the biological explanation of psychological phenomena such as perception, motivation, learning and memory. It will be assumed that students have a working knowledge both of the basic biological properties of the central nervous system and of concepts and methods in experimental psychology. Emphasis will be placed on psychological issues: how do organisms perceive their environments, how do they maintain survival, how do they learn from experience, and so on, with the answers sought in physiological terms. As an alternative to the laboratory section, students may elect to write an extensive review paper on a topic to be agreed upon by the instructor.

Prerequisites: Psychology 200 and at least one class in Biology or Psychology 207, or the permission of the instructor.

308 Experimental Social Psychology, lect.: 3 hrs.; J. Barresi.

This class concerns the study of individual behaviour as a function of social stimuli with emphasis on extensive student research projects and class presentations. The class develops from discussion of research designs and methods to the study of basic processes such as person perception, social comparison, and social influence, including behaviour within groups and the relations between them. What determines the impressions, how others influence our beliefs and opinions, how decisions are made, and why people discriminate against members of other ethnic groups are all topics which will be considered.

Prerequisites: Psychology 100 or Psychology 101 (Honours), Psychology 200 (General).

309 Early Development, lect.: 2 hrs.; "field work" or lab.: 2 hrs.; K. Bloom.

Psychology 309 is designed to study the biological and behavioural basis for the development of human behaviour. To this end, we consider the concepts of development, evolution, and genetics as they apply to the understanding of our species' heritage. Human development begins at conception when the genetic structure and the earliest environment of the individual are determined. In Psychology 309 we study human gametogenesis, fertilization, embryonic and fetal development while considering prenatal environmental influences which together describe the development of the unborn infant as characteristic of its species and its individuality. During the process of parturition, genetic, physiological and behavioural changes occur which signify the newborn's adjustment to extrauterine life. For survival, the young human's environment includes a caregiver and is, therefore, a "social" environment. An infant's first social relationship, i.e., mother-infant interaction, may serve as a clue or as a prototype of later social behavioural "styles." Developmental changes in processes such as perception, language, and cognition are discussed with reference to the influences of the infant's social environment.

Prerequisites: Psychology 100 or Psychology 101 (Honours), Psychology 200 (General).

312 Issues in Clinical Psychology, lect.: 2 hrs.; seminars and labs.: 2 hrs.; J. Day.

As with most areas of any science sacred cows roam at large in the field of clinical psychology. The purpose of this class is to sit on the horns of the dilemmas and slaughter the beasts.

A second goal of the class is to help students learn how to present, listen, and participate in seminars. The issues taken up in the seminars include such topics as altered states of consciousness, concepts of intelligence, approaches to psychological testing, theories of schizophrenia, theories of therapies, women and madness, death.

Prerequisite: Psychology 201, or permission of instructor.

313 Cognitive Processes, lect. 3 hrs.; B. Earhard.

A child enters this world without a memory, thought or language—with only the requirement that certain basic needs be satisfied. Within two years, a child has a well-developed memory for people, events, and words, as well as the capacity to communicate verbally with others. Cognitive psychology is not concerned with providing a description of the developmental process, but rather with ascertaining the character of mechanisms that must underlie such human abilities. Cognitive psychologists ask such questions as: How does an individual recognize an object when it is in different contexts or orientations, when each shift in position or orientation produces a different pattern of stimulation on the eye? How much of daily experience is committed to permanent memory, and by what processes is it memorized? How is information stored in memory, and how is information lost from memory? In general, it can be said that cognitive psychology is concerned with developing explanations and mechanisms to account for thought and language in the human organism.

Prerequisites: Psychology 100 or Psychology 101 (Honours), Psychology 200 (General). (Note: Beginning in the academic year 1978/79, Psychology 213.)

*** 315A or B Psychological Testing and Evaluation,** lect.: 3 hrs.; K.E Renner.

This class will provide an introduction to psychological testing. The major emphasis will be on the assessment of intelligence.

In addition to discussing the validity, reliability and general usefulness tests, the student will be expected to become proficient in the administration, scoring and interpretation of the Wechsler Adult Intelligence Scale, The Wechsler Intelligence Scale for Children, and the Stanford-Binet.

Prerequisite: Restricted to honours students.

319A or B Psychology of Language, lect.: 3 hrs.; P.W. Jusczyk.

What is a grammar and why is it important to us? What do words "mean"? Can chimpanzees really learn language? How do we understand sentences? Is language really the royal road to the mind? These questions and many others are considered in the context of this course. Psychology 319A provides students with a basic introduction to how psychologists study language. The course is intended to provide a foundation for students who are interested in the study of language, thought and language development.

Enrollment is limited to 3rd and 4th year students or by special permission of the instructor.

Prerequisite: Psychology 100 or Psychology 101, and some background in information processing is suggested.

322 Community Psychology, lect.: 1 hr.; lab.: 2 hrs.; K.E. Renner.

A cooperative relationship is established with local community and social action groups in which current issues or problems become the focal point for a field laboratory course. Topics will vary from year to year but may include such topics as police relations with the public, social re-entry support for female offenders, diversion of youthful offenders from the criminal justice system, problems and issues in reducing rape, among others. Classroom work centres on concepts of community psychology and in teaching field research skills and techniques.

Prerequisites: Psychology 100 or 101 and Psychology 202 or 208 or 308.

350A Developmental Neuroscience, lect.: 3 hrs.

This class invites all students who are interested in the development of the structures and functions of the nervous systems: How do the complex structures of the brain develop from a single cell in such specific and orderly ways that enable the brain to embody its versatile functions? The class will introduce to you three main aspects: (1) Embryonic development of the nervous system; primary morphogenetic movements of cells, birth of neurones and neuroglial cells, and migration of neurones to specific places in the nervous systems. (2) Formation of functional interconnections among neural elements; synaptogenesis, topographic patterns of neural connections, synaptic organizations of various parts of the nervous systems. (3) Specificity and plasticity in regeneration or reorganization on the neural connections following various experimental manipulations of the nervous system.

Prerequisite: Psychology 207 (Introduction to Neuroscience, or consent of the Instructor).

351B Neuroscience Laboratory, Two 3 hrs. labs/wk.

This class will introduce to you basic knowledge and techniques in formulating research projects in neuroscience. Each student is encouraged to make a research proposal and carry out his chosen project under close supervision by applying various techniques, including behavioral tests, electrophysiological stimulation and recording, neurosurgery, neuroanatomical examination of the neural tissues with various histological staining and autoradiographic methods.

*** 353A or B Philosophy of Science and Experimental Psychology,** seminar: 2 hrs.; W.K. Honig.

An examination of methodological and conceptual issues in experimental psychology. Topics treated include the character of explanations, general statements, theories and theoretical entities in empirical psychology, as well as particular issues in current research programmes: concept-formation in non-humans; perception studies; computer-simulation. Readings from the works of contemporary psychologists and philosophers.

Prerequisite: One full class in Philosophy or Psychology beyond the 100 level, or consent of instructor.

357 Statistical Methods in Psychology, lect.: 2 hrs.; lab.: 2 hrs.; M. Ozier.

The object of this class is to familiarize the student with the logic and application of the descriptive and inductive statistical methods that are commonly used in the analysis of data in experimental psychology. The material covered begins with the topic of frequency distributions and their characteristics, and progresses through parametric and non-parametric tests of significance, correlation and regression techniques, analysis of variance and covariance. The general approach is to introduce each of a variety of statistical methods by reasoning through the ideas underlying the topic under consideration, then discussing the general method of attacking the questions asked of the data, and finally working through specific problems in class. The classes are conducted as a combination of lectures and labs, and students are encouraged to participate actively and question often.

Psychology 357 is required for honours psychology students and qualifying graduate students. Other students may be admitted with the consent of the instructor. Although mathematical sophistication beyond the principles of elementary algebra is not required for successful completion of this class, students who are weak in arithmetic and basic algebra are encouraged to consult the instructor during the summer preceding their enrolment for assistance in preparing for the class.

Prerequisite: This class is primarily intended for honours students, but other students will be admitted with the consent of the instructor.

400 Level Seminars:
These seminars (400-464) are intended for 3rd and 4th year honours students (others may enroll in these classes only with special permission of the instructor). The topics covered in these classes will vary from year to year, consult the department for the specific course descriptions.

400 Senior Seminar; 2 hrs., Staff.

*** 404A or B Applications of Conditioning and Learning,** 2 hrs., V.M. LoLordo.

*** 408A or B Topics in Social Psychology,** 2 hrs., J. Barresi.

*** 409A or B Development of Social Behaviour,** 2 hrs., K. Bloom.

*** 413A or B Topics in Human Information Processing,** 2 hrs., M. Ozier.

*** 416 Animal Learning Topics,** 2 hrs., B.M. Moore.

*** 423A or B Human Performance Topics,** 2 hrs., J. McNulty.

432A or B Topics in Clinical Psychology, 2 hrs., Staff.

*** 436A or B Topics in Animal Behaviour,** 2 hrs., Staff.

*** 440A or B Theories of Brain Function,** 2 hrs., L. Nadel.

*** 444A or B Cognitive Development Topics,** lect.: 2 hrs.; P.J. Dunham.

This class is intended for students interested in issues in cognitive development who would like to pursue a topic in some depth. The actual content of the class will vary from year to year. In coming years, the topics are expected to include language development, the development of thought and reasoning, perceptual development and moral development. The class is open to 3rd and 4th year students.

Prerequisite: Psychology 100 or 101, Psychology 200, Psychology 209, or Psychology 319A **and** permission.

458 History of Psychology, seminar: 2 hrs.; J.W. Clark.

We shall discuss the evolution of thought about some psychological issues that have been of central concern throughout man's intellectual history: the control of movement, the perception of space, the location of mind, the association of ideas, the nature of aberrant behaviour, the development of children, the behaviour of animals. The understanding of such issues will be traced in the writings of the major contributors from antiquity to the emergence of experimental psychology in the nineteenth century, and their development will be examined in the work of psychologists in the early years of this century.

Preparatory reading: It would be advantageous to the student to read E.G. Boring's *History of Experimental Psychology* before the class starts.

Prerequisites: Restricted to honours students.

*** 464 Ethology,** 2 hrs.; staff.

Ethology is a relatively new science which bridges psychology and biology. In Psychology 464, we approach ethology through a survey of schools of thought concerning animal behaviour and a review of trends in field and laboratory research. This overview of the science of animal behaviour is supplemented by observations of animals in both natural and experimental settings. These observations illustrate techniques employed to study animal behaviour and allow the student to evaluate some of the theoretical formulations.

The format and the content of the class are somewhat variable and depend on the composition of the class. For example, topics or species of particular interest to the students may be examined in depth through discussions, paper presentations, or direct observations of behaviour.

Prerequisite: This class is primarily intended for honours students, but other students will be admitted with the consent of the instructor.

465 Honours Thesis, Members of the Department.

Psychology 465 is designed to acquaint the student with current experimental problems and research procedures in experimental psychology. Each student is assigned to a staff member who advises the student about research in his major area of interest, and closely supervises an original research project which is carried out by the student. Each student is required to submit a formal report of the completed research before the first of May. The final grade is based upon the originality and skill displayed by the student in designing his project and upon the submitted report.

Prerequisite: Restricted to honours students in their graduating year.

Religion

Professor	Associate Professor	Assistant Professor
Wilfred Cantwell Smith (Chairman)	R. Ravindra	C.T. Sinclair-Faulkner

The University study of religion aims at an intellectual understanding of this more than intellectual reality. Religion is a phenomenon virtually universal in human society and history; some have held that it is central to the human condition. Understanding involves grasping simultaneously both the meaning of faith in the lives of participants, and the critical analysis of outside observers. Both the student who wishes to enhance his or her understanding of religion as an historical and social and human fact, and the student who wishes to wrestle with problems arising in academic reflection concerning the relation between the personal and the objective, will find material to engage them in the courses described below.

General B.A. in Religion
Students wishing to major in Religion must successfully complete Religion 101, and at least four classes in Religion beyond the 100 level. This will provide them with a broad introduction to both Eastern and Western religious life, and to the various ways in which religion may be studied. In the light of their specific interests, Religion majors will be encouraged to enrol in related courses offered by other Departments. Programmes should be planned in consultation with the undergraduate adviser, Dr. C.T. Sinclair-Faulkner.

Classes marked * are not offered every year. Please consult the Department.

101 Introduction to the Study of Religion, lect.: 2 hrs.; section meeting 1 hr.; C.T. Sinclair-Faulkner.

Religion is: a way of life? an encounter with God? a neurosis? the essential human trait? an epiphenomenon? The possibilities are explored by using the insights of modern social scientists, humanists, and theologians to study Canadian life. This course fulfills the first year Writing Requirement. A detailed syllabus is available from the Department of Religion.

No prerequisite.

201 Western Religious Experience, Seminar format; 2 or 3 hrs.; C.T. Sinclair-Faulkner.

What has it meant to "be religious"? The Western world has known many different ways: personal, mystical, political, rational, sensual. Original accounts of pagan, Jewish, and Christian religious experience will be studied in their historical context, including Augustine's *Confessions,* the Kabbalah, and Mary Daly's *Beyond God the Father.* Each student will undertake a guided study of some twentieth-century religious experience of his or her choice. A detailed syllabus is available from the Department of Religion.

Prerequisite: Religion 101 or consent of instructor.

202 Religion and Culture in India, lectures and tutorials: 3 hrs.; W.C. Smith and Ravi Ravindra.

An introductory presentation of the major human outlooks on the world in present-day India, especially Hindu and Muslim, with an examination of the historical background, including for almost a thousand years the Buddhist. Following this extensive synoptic consideration in the first term, an intensive reading of the Bhagavad Gita will occupy the second term..

Prerequisite: Religion 101; or King's Foundation Programme, or consent of the instructor.

*** 211 Myths and Symbols of India,** lecture and seminar: 3 hrs.; R. Ravindra.

In India, mythology is a major vehicle of transmission of spiritual truths and psychological insights. It is very difficult to acquire an understanding of the culture of India, particularly of her religions, literature, and visual arts, without having some familiarity with her myths and symbols. This course is intended to introduce the students to some of the most important myths and symbols in both Hindu and Buddhist contexts. There will be some general discussion of the meaning of myths and the nature of mythic and symbolic understanding. A considerable stress will be placed on the presentation of visual material based on important works of art.

Prerequisite: No formal prerequisite. Some familiarity with the contents of Religion 202 is desirable but not necessary.

221 Religious History of Canada, lect.: 2 hrs.; section meeting 1 hr.; C.T. Sinclair-Faulkner.

When Canadians have built cities, gone to war, founded economic empires, fallen in love, designed school systems, and elected governments, religion has often been a decisive factor. Sometimes religion has been *the* decisive factor. What is "religion" in Canada? In the course of this extensive historical study of life in Canada from the sixteenth century to the present, a variety of answers will be explored.

A detailed syllabus is available from the Department of Religion.

Prerequisite: Religion 101, History 120 or 220, or consent of the instructor.

*** 251 Religion and Science.** Seminar: 2 hrs.; Ravi Ravindra.

An historical and analytical study of the relationship between scientific inquiry and religious aspirations and concerns. Particular emphasis will be placed on the writings of thinkers such as Kepler, Pascal, Newton, Goethe and Einstein, each of whom combined scientific commitment and spiritual sensibility to a very high degree and has had an enormous influence on intellectual history.

Prerequisite: One class in Religion or one class in Science (preferably both).

302 Eastern Religious Experience. Seminar: 2 hrs.; W.C. Smith

An intensive study of the autobiography of the eleventh-century Muslim intellectual Ghazzali, of the life and some writings of the twelfth-century "neo"-Confucian Chu Hsi, the thirteenth-century Japanese Buddhist reformer Shinran, and the twentieth-century Hindu political leader and "great Soul" Gandhi. In each case a consideration of the lives of the figures chosen will be complemented by an introduction to the socio-historical context out of which each came and to which each significantly contributed.

Prerequisite: Religion 202.

*** 351/551 Modes of Knowing,** Seminar: 2 hrs.; R. Ravindra.

An historical and critical study of the interrelationship of the three primary modes of empirical knowing: namely, science, art, and religion. All these three activities proceed by a combination of theory, observation, and experience, but they understand and interpret them differently. Is it because their purposes and metaphysical assumptions are different and encourage different psychological attitudes and tendencies? The concern of this class will not be to prove one or the other of these "right" or "wrong" but to attempt to understand the nature of *truth* and *order* that man has sought through these ways. Readings will be taken from a variety of sources, with emphasis on the works or reputed sayings of acknowledged masters in each of these three ways of approaching reality, such as Jesus and Buddha, Blake and Leonardo da Vinci, Newton and Einstein.

Prerequisite: Any student at a third year of higher level may take the course; others will be permitted only with the consent of the instructor.

*** 450/500 Faith and Belief: A Comparative Study,** seminar: 2 hrs.; W.C. Smith.

A consideration of the possibility of a generic concept "faith" as intellectualizing an apparently universal human quality. Faith as conceptualized classically in Buddhist, Hindu, Islamic, Jewish and Christian instances will be explored, and religious belief as conceptualized there and in modern Western thought. Through comparisons and contrasts the possibility will be investigated of perhaps understanding faith as a multiform human (or religious) constant. Limited enrolment.

Prerequisite: Knowledge of at least one classical scriptural language (Hebrew, Greek, Arabic, Sanskrit, Chinese, etc.); some philosophy or history of religion, preferably both.

Russian

Professor	Associate Professors	Assistant Professors
Y.Y. Glazov (Chairman)	I.M. Coffin N.G.O. Pereira	J.A. Barnstead N.M. Nevo I. Vitins

The Russian Department offers classes in Russian language, literature, and culture. Since the Soviet Union plays a crucial role in today's world and makes important contributions in a wide variety of scientific, technical, and humanistic fields, knowledge of its linguistic and cultural background can prove advantageous in many areas of study. Students in the sciences and mathematics will find Russian especially useful, as it can give them a lead of six months to a year over those who must wait for journals to be translated. The Department is always willing to help the student develop the technical vocabulary required by his particular field.

Russian at Dalhousie is taught with the aid of one of the most modern language laboratories in Canada. Classes are kept small so that all students can receive the personal attention of the instructor. Emphasis is placed on gaining a through grasp of Russian grammar and an extensive speaking, reading, and writing vocabulary. Late afternoon classes are offered in some courses to accomodate students who are unable to attend lectures in the day-time.

One of the richest areas of Russian life is its literature. Dostoevsky, Tolstoy, Chekhov. Pasternak, Solzhenitsyn and many other Russian writers have made fascinating contributions to world culture. Classes in Russian literature are generally offered in English in order to give as many students as possible the opportunity to become acquainted with its masterpieces, which have influenced writing in many countries. Russian majors do portions of the reading in the original and may have additional discussion sections.

Classes in Russian culture and civilization are intended to introduce students to art, architecture, music, religion, and other areas of Russian life which are necessary to understand the language and literature. Films, guest speakers, and plays provide ample exposure to Russian language and culture outside of class. A Russian language table for lunch is a weekly event, and evenings of Russian music, poetry, and art are scheduled periodically.

There are two parallel Russian programmes:

(1) Study of the Russian language from the introductory level (Russian 100), intermediate Russian (Russian 200), to advanced Russian (Russian 300, 302, 310A and 315A) and honours Russian (Russian 400, 410, 420, 430, and 499).

(2) Study of Russian literature and culture (Russian 104—Russian Culture and Civilization; Russian 205—Survey of Russian Literature; Russian 207—Russian Literature and Culture after Stalin's Death; Russian 222A—The Fantastic in Russian Literature; Russian 224B—Theories of Literature; Russian 243A—Dostoevsky and Tolstoy; Russian 245B—Pasternak and Solzhenitsyn; Russian 303A—Russian Intellectual History; Russian 309A—Soviet Society Today; Russian 315A—Introduction to Russian Literature (conducted in Russian); Russian 319—Russian Drama; Russian 325A—Literature of the Russian Revolution; Russian 327B—The Russian Heroine; Russian 410—Russian Classical Literature of the XIX Century; Russian 420—Russian Literature of the XX Century; Russian 430—Russian Poetry).

Degree Programmes:

Classes in the Russian Department are open to students either
(1) as electives in any degree programme
or
(2) as constituents of a major or honours degree in Russian
or
(3) with classes in another foreign language forming parts of a combined honours degree.

Classes Offered

100 Elementary Russian, lect.: 3 hrs.; J.A. Barnstead/I.M. Coffin/N.M. Nevo/I. Vitins.

No prerequisites.

This class is designed for students who have little or no previous knowledge of the Russian language. Equal emphasis is placed on developing oral and reading skills with a sound grammatical basis. The programme is closely correlated with intensive language classes for more able students and laboratory work.

104 Russian Culture and Civilization, lect.: 2 hrs.; Y.Y. Glazov/I. Vitins. Conducted in English.

No prerequisites. Not offered in 1978-79.

This class examines the evolution of Russian culture and civilization from their earliest origins to the present day. Following a brief introductory classification of historical and cultural epochs, the class will concentrate on literature, art, architecture, music, political and social conditions, religion, and other related topics throughout the history of Russian.

200 Intermediate Russian, lect.: 3 hrs.; J.A. Barnstead/I. Vitins.

Prerequisite: Russian 100 or equivalent.

This class is a continuation of Russian 100. Oral and reading skills and a further knowledge of grammar are developed through the study of Russian texts.

205 Survey of Russian Literature, lect.: 2 hrs.; Y.Y. Glazov/I. Vitins.

Conducted in English.
No prerequisites. Not offered in 1978-79.

This class traces the evolution of Russian literature from its earliest beginnings to the present time. The class will analyze representative works of the ancient Kievan and Muscovite periods as well as Russian Classicism, and will concentrate on the out-standing writers of the nineteenth century, including Pushkin, Gogol, Dostoevsky, Turgenev, and Tolstoy. The second half of the class will be devoted to the study of such authors as Chekhov, Gorky, and such leading post-revolutionary writers and poets as Mayakovsky, Sholokhov, Pasternak, and Solzhenitsyn.

207 Russian Literature and Culture after Stalin's Death, lect. and discussion: 2 hrs.; Y.Y. Glazov.

Conducted in English.
No prerequisites. Not offered in 1978-79.

This class traces the literary, cultural, and political history of Russia afer Stalin's death in 1953. Among the major issues considered are the significance of Stalin's death, the "Thaw" and de-Stalinization, Pasternak, Solzhenitsyn, Nadezhda Mandelstam and Sakharov. Revival of the intelligentsia and religious trends. Relationships of Russia and the West. Official and non-official culture.

222A The Fantastic in Russian Literature, lect. and discussion: 2 hrs.; J.A. Barnstead.

Conducted in English.
No prerequisites.

This class examines the role of fantastic elements in Russian literature, tracing them from their roots in ancient Slavic folk traditions through their development in the romantic poetry of Pushkin and Lermontov, the prose of Pushkin, Gogol and Dostoevsky, and the works of such twentieth century authors as M.A. Bulgakov (*The Master and Margarita*) and A.N. Tolstoy. Contemporary Soviet science fiction is read and discussed in the light of this native fantastic tradition and is contrasted with Western work. Students are encouraged to formulate typologies of fantastic elements and devices, testing their adequacy on materials drawn from course readings and from their own research.

224B Theories of Literature, lect. and discussion: 2 hrs.; J.A. Barnstead.

Conducted in English.
No prerequisites.

Attempts to answer the question "What is literature" are often more successful in charcterizing the people making them than in defining the concept. This is perhaps especially true in Russia. This class begins with a survey of Russian thought about literature from medieval times to the end of the nineteenth century, revealed implicitly in Russian literature and explicitly in the writings of Russian critics, but viewed as well against the background of the Classical tradition and its subsequent development in Western Europe. It then concentrates on a more detailed study of twentieth century theories. Particular emphasis is laid on the complex interrelationships of modern Russian theories of literature with their Western counterparts, e.g. the influence of Formalism on American "New Criticism". Topics treated include formalism, early Marxist criticism, Socialist Realism, post-Stalin Marxist criticism, Sturcturalism, and Tartu School of semiotics.

Student discussions and papers will apply the principles of a given school to practical criticism of works of their choice, demonstrating the strengths and weaknesses of each theory.

243A Dostoevsky and Tolstoy, lect. and discussion: 2 hrs.; Y.Y. Glazov.

Conducted in English.
No prerequisites.

Two great representatives of the Russian spirit: Dostoevsky (1821-1881) and Tolstoy (1828-1910). Their roots in Russian and Western soil. Their main masterpieces: *Crime and Punishment* and *Brothers Karamazov, War and Peace* and *Anna Karenina*. Their heroes and heroines. Their search for self-identity. The authors' creative methods. Their attitudes toward common people, Russia, Christianity and socialism.

245B Pasternak and Solzhenitsyn, lect. and discussion: 2 hrs.; Y.Y. Glazov.

Conducted in English.
No prerequisites.

The class traces the dramatic biographies of these two giants of Russian literature and their creative activities. *Doctor Zhivago* by Pasternak (1890-1960) and *One Day in the Life of Ivan Denisovich* by Solzhenitsyn (1918-), as well as his *Cancer Ward* and *The First Circle* are examined. Their sources in the Russian spirit. The world of their heroes and heroines and their search for truth. Their creative methods and spirituality. Their relationships with writers of the nineteenth century.

300 Advanced Russian, lect.: 3 hrs.; J.A. Barnstead.

Conducted in Russian.
Prerequisite: Russian 200 or equivalent.

Following a thorough review of inflectional morphology, this class concentrates on expanding all aspects of the students' knowledge of Russian. Grammatical topics treated include systematization of the verb, aspect and voice, word formation, punctuation, and elements of stylistics. Soviet and emigre texts are read extensively and intensively. Discussions and compositions are based on the assigned readings and on conversational materials drawn from Soviet universities. Heavy emphasis is placed on vocabulary expansion and correct pronunciation and intonation.

302 Russian Prose and Poetry, lect.: 3 hrs.; Y.Y. Glazov.

Conducted primarily in Russian.
Prerequisite: Russian 200 or equivalent.

In this class students will read, translate, and critically interpret a series of the best short stories of such great Russian authors as Pushkin, Tolstoy, and Chekhov, and poems by Lermontov, Mayakovsky, Mandelstam and Pasternak. Original texts will be supplied with vocabularies and grammatical notes. Texts will be chosen according to the level of students' knowledge.

303A Russian Intellectual History, N.G.O. Pereira.

(See listing under Russian Studies Programme).

309A Soviet Society Today, N.G.O. Pereira.

(See listing under Russian Studies Programme).

310A Intensive Russian Grammar, J.A. Barnstead.

(See listing under Russian Studies Programme).

312A Intensive Russian Prose and Poetry, Y.Y. Glazov.

(See listing under Russian Studies Programme).

315A Introduction to Russian Literature, lect. and discussion: 3 hrs.; Y.Y. Glazov.

Conducted in Russian.
Prerequisite: Russian 200 or equivalent.

The class traces the history of Russian literature, emphasizing developments in the last two centuries. The major landmarks of both prose and poetry are discussed and analyzed in Russian.

319 Russian Drama, lect.: 2 hrs.; N.M. Nevo.

Conducted in English.
No prerequisites.

The immense wealth of the Russian dramaturgical heritage is an object of universal recognition. One of the most celebrated theatres of our time, the Moscow Art Theatre, has not only served as the stage for many spectacular premiers, but also as the laboratory in which the "methods" of Stanislavsky and Nemirovich-Danchenko were perfected. The Russian dramaturgical school has produced such great masters as Fonvizin, Pushkin, Gogol, Turgenev, Ostrovsky, Chekhov, Gorky and Mayakovsky, and is deeply rooted in the Russian traditions of art. Although this school constantly strove to maintain its characteristically Russian national image, it evolved under the strong influence of Shakespeare, Moliere, Racine and others, and has, therefore, created a unique synthesis of the best Russian national and foreign elements.

Following a brief introduction to the early beginnings of the Russian drama, the course will concentrate on a detailed study of representative works of the 19th and 20th centuries.

325A Literature of Revolution: The 1920's in Russian Literature, lect. and discussion: 2 hrs.; I. Vitins.

Conducted in English.
No prerequisites.

A study of experiment and submission during one of the artisitically most exciting, diverse, and frustrating periods in Russian letters. "Socialist realism" was not yet official doctrine; innovation in form and literary polemics were tolerated. Writers openly pondered the role of the individual, of culture, vis a vis the masses and the new order. Close reading and discussion of texts by Pasternak, Babel, Zamyatin, Olesha, Pilnyak, Zoshchenko, and Bulgakov.

327B The Russian "Heroine", lect. and discussion: 2 hrs.; I. Vitins.

Conducted in English.
No prerequisites.

The strong and enduring spiritual and moral force, "infernal" or "divine", which Russian women have exerted on their society is richly and controversially reflected in literature. The class will focus on the portrayal of several literary heroines and will discuss their emergency and impact on both the literary imagination and society. Their number will include Pushkin's Tatyana, Dostoevsky's Sonya Marmeladova and Nastasya Filippovna, Tolstoy's Anna Karenina, Gorky's *Mother* and Bulgakov's Margarita.

400 The Structure of Contemporary Standard Russian, lect. and discussion; J.A. Barnstead.

Conducted in Russian.
Prerequisite: Russian 300 or permission of the instructor.

Systematic study of the structure of Russian: analysis of special problems in phonology, morphology, syntax, and stylistics. Tailored to the individual needs of the student, with emphasis on practical applications of linguistic insights.

410 Russian Classical Literature of the XIX Century, lect. and discussion; Y.Y. Glazov.

Conducted in Russian.
Prerequisite: permission of the instructor.

Problems in nineteenth century Russian literature from Pushkin and Gogol to Turgenev and Tolstoy. Analysis and discussion in Russian of topics chosen to fit the needs of the students.

420 Russian Literature of the XX Century. lect. and discussion; I. Vitins.

Conducted in Russian.
Prerequisite: permission of the instructor.

Problems in twentieth century Russian literature, from

Chekhov and Gorky up to Bulgakov and Pasternak. Analysis of trends and schools based on representative works chosen to fit the needs and interests of the individual student.

430 Russian Poetry, lect. and discussion; J.A. Barnstead/I. Vitins.

Conducted in Russian.
Prerequisite: permission of the instructor.

A combination of an introduction to the theory of poetry with close analysis of masterpieces of nineteenth and twentieth century Russian poetry chosen to fit the interests of the individual student.

499 Russian Special Topics, staff.

Conducted in Russian.
Prerequisite: permission of the Department.

This class is designed to offer the student an oportunity to work with an advisor in researching subjects which are not regularly taught in the Department. These may include literary, linguistic or other topics related to Russian studies. Students who wish to register for a specific programme should consult the chairman of the Department.

Russian Studies Programme

Participating Faculty:
Yuri Glazov (Professor of Russian)
Michael MccGwire (Professor of Political Science)
Irene Coffin (Associate Professor of Russian)
Norman Pereira (Associate Professor of History and of Russian, Director of the Programme)
Natan Nevo (Assistant Professor of Russian)
Ieva Vitins (Assistant Professor of Russian)
John Barnstead (Assistant Professor of Russian)

The Russian Studies Programme is a special inter-disciplinary course of instruction whose purpose is to allow Dalhousie students (as well as students from other Canadian Universities) to undertake intensive study of the Russian language and related fields. In order to participate, students must be able to demonstrate competence in the Russian language equivalent to two years of university classes (at Dalhousie these are Russian 100 and Russian 200) with a mark of "B" or better. The duration of the programme is one academic year, the first half of which is to be at Dalhousie or some other Canadian university, the second half to be at the Pushkin Institute in Moscow, USSR. Enquiries and applications should be addressed to the Director of the Programme.

Classes at Dalhousie September-December

303A Topics in Russian Intellectual History, Optional. Seminar: 2 hrs.; Norman Pereira.

(This class corresponds to the first half of History 3030).

309A Contemporary Russian Society, Seminar: 2 hrs.; Norman Pereira and Staff.

310A Intensive Grammar, Seminar: 5 hrs.; John Barnstead.

This is an intensive version of Russian 300.

312A Intensive Russian Prose and Poetry, Seminar: 5 hrs.; Yuri Glazov.

This is an intensive version of Russian 302.

Classes at Pushkin Institute, Moscow January-April

301B Grammar, Seminar: 8 hrs.

303B Conversation, Seminar: 4 hrs.

305B Vocabulary Building, Seminar: 4 hrs.

308B Phonetics, Seminar: 4 hrs.

Sociology and Social Anthropology

Professors
D.H. Clairmont
L. Kasdan
J.J. Mangalam
W.N. Stephens

Associate Professors
J.H. Barkow
G.D. Bouma
D.H. Elliott
J.L. Elliott
H.V. Gamberg
R.C. Kaill (Chairman)
J.C. Morgan
V. Thiessen

Assistant Professors
R. Apostle
P. Butler
P.G. Clark
V.P. Miller
J.D. Stolzman

Visiting Professors
J. Loewenstein

Visiting Lecturers
J. Burke
N.W. Jabbra
J. Poushinsky

Research Associate
R.C. MacKay

Sociology and Social Anthropology

This Department offers courses and programmes of study in the related disciplines of sociology and social anthropology.

Sociology

As a social science, sociology seeks to apply the scientific method to human behaviour. In doing so, it makes two assumptions—that man's social life exhibits regularity and recurrent patterns, and that man is essentially a social animal. The sociological enterprise focusses upon social relationships, social institutions and processes of social change. No single approach to these complex phenomena has been found adequate. As a result, a wide range of explanatory models and perspectives has evolved.

Sociology provides a context within which students learn to think critically about their social environment; become aware of the impact of social forces on their lives and the lives of others; and develop skills of analysis useful in understanding and management of their social environment. The career possibilities in sociology include research in government, industry, or university, and teaching at the high school or university levels. Many students find a sociology major helpful in preparing for social work, nursing, personnel management and other occupations dealing directly with people.

Social Anthropology

Anthropology is a diverse discipline whose branches study the human species in all of its physical, cultural and linguistic diversity in both space and time. It consists of four subdisciplines: Archaeology, Linguistics, Physical Anthropology, and Social or Cultural Anthropology. As a joint department of Sociology and Social Anthropology this department is committed to a program which stresses the areas of convergence between the two disciplines. The major focus is upon courses in Social Anthropology, although courses in other areas may be offered.

Social Anthropology shares many theoretical and substantive interests with Sociology. It adds a strongly comparative dimension by its concern with the complete range of human societies and cultures in all historical and geographic settings. Its primary emphasis is upon pre-industrial societies and the non-industrial sectors of more complex societies. Its concern is with all levels of social and cultural integration from the family, through the band, the chiefdom, and the state. It aims at generalization by comparing structures and processes in major institutions within societies (kinship, political, economic, religious), as well as between societies. A well trained social anthropologist will be acquainted with overlapping areas in Sociology, just as a well trained sociologist will be acquainted with Social Anthropology.

Degree Programmes and Course Offerings

THE DEPARTMENT IS PRESENTLY REVISING ITS UNDERGRADUATE ACADEMIC PROGRAMMES AND COURSE OFFERINGS. FOR UPDATED INFORMATION, PLEASE SEE CALENDAR SUPPLEMENT, DEPARTMENT OF SOCIOLOGY AND SOCIAL ANTHROPOLOGY.

Sociology and anthropology are both approved fields for concentration. In Addition, the department offers honours programmes in sociology and anthropology. An honours degree is recommended, and frequently required preparation for most advanced work in sociology and anthropology. Interested students are invited to contact the Undergraduate Committee for detailed advice on application and requirements for both programmes. Normally, an application for honours study is made on the basis of the results of the second year, i.e., towards the end of your fourth semester.

The anthropology programme within the department is currently under review. The anticipated changes will be in the direction of a closer integration of the sociology and anthropology programmes with the emphasis in anthropology to be on social and cultural anthropology. The precise nature of these changes are not yet known. Until the details are worked out, the existing degree programmes in the department will continue to be in effect. We wish to assure students that they will receive adequate notice of any changes affecting them and that the transition from the old to the new programme will be made in such a way as to cause them the least possible disruption.

General B.A. in Sociology
Students enrolled in the general (i.e. three year) degree programme must take at least four and no more than eight classes beyond the introductory level in their areas of concentration. Recommended classes for students who intend to major in sociology are listed below.

Year I
1. Sociology 100
2. At least one of Anthropology 100, Economics 100, Political Science 100, or Psychology 100.
3-5. Three classes chosen from fields other than Sociology.

Year II
6. Either Sociology 201 or 224.
7-8. Two other classes in sociology.
9-10. Two classes chosen from fields other than sociology.

Year III
11-13. Three classes in sociology.
14-15. Two other classes from fields other than sociology.

Sociology 100, as a general introduction, is normally a prerequisite for all advanced Sociology classes in the department. The content of this class is especially designed to provide students contemplating concentration in sociology with a solid foundation for subsequent study in the field. Multiple sections will be offered and each section will include lectures plus discussion in small tutorials. Students with high school Sociology may be permitted to take selected 200 level classes without having taken Sociology 100. 200-level classes include all the classes normally taken by students concentrating in sociology. 300-level classes are structured primarily as seminar courses and ordinarily presume a fair degree of familiarity with the discipline. 400-level classes are restricted to honours students and qualifying graduate students.

General B.A. in Anthropology
Students majoring in Anthropology are urged to include the following classes in their programme: 200, 227, 307, 325, and at least one regional ethnography class.

B.A. with Honours in Sociology
The nine sociology classes above the introductory level required for the honours degree should include statistics (301), research methods (310), two classes in theory (401A, 405A/B), and the honours seminar 450. The seminar paper produced in 450 will be examined as an honours thesis, to be presented in an open meeting. This will fulfill the university requirement that a student pass a comprehensive examination covering his honours work in order to receive an honours degree.

B.A. with Honours in Anthropology
Nine credits in anthropology, above the introductory level are required, including Anthropology 451, 452, 453, and 459. Anthropology 459 carries two credits and consists of the writing, under supervision, of an honours thesis. The thesis must be acceptable to at least *two* members of the anthropology staff. Applicants to the programme are asked to contact the Undergraduate Committee. Admission is based upon a personal interview and the examination of a paper which the applicant feels demonstrates her/his writing ability. Following admission to the programme, each honours student must select one faculty member to serve as principal advisor. In accordance with University regulations, a student must pass a comprehensive examination in order to receive an honours degree.

Combined and Unconcentrated Honours
Combined honours programmes can be arranged between sociology and anthropology, economics, philosophy, political science, and psychology. Combined honours programmes with anthropology as one of the foci can be arranged with sociology and psychology. Combined honours involving sociology or anthropology and other disciplines than those listed may be possible, if the departments concerned agree. In any case, students wishing to arrange combined or unconcentrated honours programmes are advised to seek the counsel of the departments involved as early as possible.

Canadian Studies Programme
The Department is cooperating with several other Departments in offering a Canadian Studies Programme. Interested students should contact Professor P.G. Clark.

African Studies Programme
The Department is cooperating with several other Departments in offering an African Studies Programme. Interested students should contact Professor J.L. Barkow.

Sociology Classes Offered
The following classes are offered by the department on a fairly regular basis. Those classes actually offered in any academic year are listed in a departmental brochure prepared each March. Students entering their second and subsequent years are advised to obtain a copy of the brochure from the department or at the registration desk.

100 Introduction to Sociology

Sociology 100 is designed to provide both a general introduction to the discipline of sociology as well as a foundation for more specialized study in the field. Emphasis in this class will be placed on basic sociological concepts, the nature of the sociological perspective, the logic of social inquiry, and recurrent theoretical and methodological problems of the discipline. In addition, some of the more important areas in sociology will be surveyed. In particular, this would include the study of family and kinship relationships, deviant behaviour, political and religious institutions, bureaucracies and complex organizations, ethnic and minority group relations, population trends, social stratification, and urbanization.

201 Figuring Out Society
This course is designed for students who for reasons of curiosity or practicality wish to acquire the skills used by sociologists to analyze social phenomena, but find themselves intimidated by statistical tables and mathematical symbols. A variety of quantitative and qualitative methods will be introduced which will enable the student to understand and evaluate both fact-finding and problem-solving studies of social phenomena which are routinely carried out not only by academic sociologists, but also by practitioners in such fields as business, government, social work, public health, and education. Emphasis will be placed on the progressive refinement of a research project of the student's choice.

202 Comparative Sociology
This class looks at the ways by which similarities and differences between societies are investigated. Major emphasis is placed on a comparison of modern industrial societies with primitive, non-industrial ones. Sub-systems or parts of societies are also analyzed. These include factors such as family, economy, government, and social class systems.

203 Deviance and Social Control
Groups make formal and informal rules in an attempt to regulate and make predictable the behavior of their members. Violations of these rules occur in many different ways and stem from various causes. The purpose of the class is to examine both the processes by which groups make rules and the reasons why these rules are violated. Specific issues such as crime, delinquency, narcotic addiction, alcoholism, prostitution, suicide, and minority group relations are discussed in this context.

204 Social Stratification
This class analyzes the principal aspects of social inequality in modern, industrial society. The formation of classes, status groups and the organized political expressions are considered. Questions of the distribution of power and wealth in society, the existence of power elites or governing classes, the impact of bureaucracy on class relations, the extent to which major economic inequalities have been reduced in this century, problems of the mobility of individuals and the groups through the stratification system and the impact on social structure are dealt with. Theoretical discussions in the class are largely concerned with the ideas of Karl Marx and Max Weber, but attention is also paid to contemporary theoretical approaches to stratification.

205 Sociology of Religion
This class analyzes the relations between religious beliefs and human behavior and social structure. Major themes include: the impact of social structure on the development of belief systems; the question of whether beliefs guide and direct human behavior; the formal organization of the religious institution, social psychological considerations of religious behavior. The primary focus is on current religious movements in Canada.

206 Social Change and Modernization
This class is primarily concerned with the social and economic problems of underdevelopment in the Third World, with emphasis on the political and economic relations between industrially advanced and backward countries, and the forms which these relations have taken since political independence. An attempt is made to identify the economic and social causes of underdevelopment in this relationship. Critical attention is also paid to the traditional nature of pre-industrial societies and values as obstacles to industrialization and social change.

207 Socialization
Comparative materials on childhood and adolescence in a variety of societies will be presented. Interpretation of youth problems as resulting from special features of modern society will be reviewed. Effects of age-segregation, prolonged schooling, and delayed opportunities for work will receive special emphasis.

Socialization into teenage peer groups will be considered, as will professional socialization within selected university programmes in medical training. The students will participate in a research project which will include fieldwork on student life, and questionnaire, interview, and autobiographical material.

208 Communities
Sociology 208 examines a wide variety of territorially based residential groupings. The emphasis in the first term is on such features of natural communities as the ecology, neighborhood social networks, the power structure, and behaviour in public settings. Both the rural village and the metropolis is dealt with, in addition to such sub-communities as ethnic ghettos, slums, suburbia, and bohemia. Emphasis in the second term is on intentional communities such as utopian colonies, communes, company towns, and religious communities. Students are expected to design a model of an intentional community.

209/325 Sociology of Science and Ideas
The study of the social origins and organization of knowledge is an important aspect of contemporary sociology. This class is concerned with the examination of the body of knowledge known as modern science. The historical origins of science will be discussed. The social organization of contemporary scientific research will be examined using data drawn from major studies. The interaction between scientific community and society-at-large will be analyzed. The relationship between modern technology and contemporary scientific research will be studied with particular reference to the impact of computers upon the development of modern social science.

211 Canadian Soceity
An analysis of selected aspects of Canadian society employing theoretical perspectives and empirical materials. The aim of the course is to develop a composite view of the society as a whole through an understanding of the interrelationships between its parts. Major foci will include the integration and survival of Canadian society, structural change, and the management and consequences of inequality. Prospects for the future of Canada will be discussed in terms of these characteristics.

212 Minority Groups
The social status of minority groups will be examined in the light of contemporary theories of prejudice and discrimination. The societal consequences of discrimination will be considered with respect to their effect on both minority and majority groups. Special emphasis will be placed upon an analysis of Canadian minorities.

213 Complex Organizations
This class makes a critical study, from the comparative point of view, of theoretical models for the analysis of complex organizations. Students will examine the classical, structural-functionalist, and management science approaches to organizations. The class will entail a systematic survey of the sociological literature on this subject, with special concentration on organizational structure, strategy and decision-making.

214 Industrial Sociology
Recommended preparation: Sociology 204 or 213. This class will examine the social relations of industry at both the micro- and macrosociological levels of analysis. The course will deal primarily with the productive system and attendant industrial institutions of advanced capitalist society. Major topics for investigation include the industrialization process, the social structure of industry, the development of trade unionism, and the sociology of work relationships.

215 Mass Society
This class deals with the origin of modern, post-industrial "mass society". Problems associated with industrialization, cybernation, leisure, technology, and environmental degredation are examined in detail. Various attempts at solution of these problems are analyzed. The rise of the "expert" and of counter-cultural movements are given particular attention. Theoretical and methodological innovations for "future forecasting" are introduced.

216 Sociology of Occupations
The class analyzes several social processes basic to occupational careers, professionalization and formal organization of occupations. These processes are treated in the context of their implications for the relations between occupations and both social structure and human behavior.

217 Political Sociology
This course is designed to introduce students to the major concepts and theories which inform the sociological study of politics. In addition to this general orientation particular attention will be devoted to the role of power and ideology in Western society, the interplay between economy and polity in contemporary North America, and political transformation as a social process.

219 Sociology of Women
The focus in this course is on theories attempting to explain the status and role of women, both across different contemporary societies and over time. Particular attention will be paid to the status and role of women, both across different contemporary societies and over time. Particular attention will be paid to the status of women in Canada - participation in the paid labour force, politics, educational and cultural institutions and comparisons made with other, mainly European, societies. There will be some study of the feminist movement, and the intellectual implications of the feminist perspective in social science.

220 Sociology of the Family
Family in one form or another is an aspect of all societies. It is the most important agent of early socialization and personality formation. The first part of the course will be devoted to a consideration of some of the cross-societial characteristics of family in general, and of the extended family as found in traditional societies, in particular. The second term will be devoted to a consideration of family characteristics in urban-industrial societies, concentrating on nuclear family. An attempt will be made to understand the processes by which family's structures and functions have changed through time as societies evolved from a traditional to an urban-industrial social organization.

222 Social Psychology
An intensive consideration of selected problems concerning how individuals relate to groups. Theoretical and methodological issues will be equally stressed in an integrated fashion.

224 Sociological Theory - An Introduction
The class provides a systematic introduction into major topics in sociological theory. During he first term classical theorists up to 1920 are treated (Saint-Simon, Marx, Weber, Durkheim, Pareto, etc.) During the second term, more recent theoretical developments within the field are dealt with.

226B Culture and Political Behaviour.
Political systems examined comparatively. Relation between political and other social institutions and analysis of the organization of conflict in non-Western societies. The relation to tribal and peasant politics to national politics in developing countries seen in a comparative framework.

237 Women in Latin America
This class has four main objectives: 1) to examine critically assumptions about women held by the major academic disciplines; 2) to test these assumptions in the perspective of current research and individual experience; 3) to study traditional and changing sex roles in Latin America, with particular emphasis on Cuba; 4) to explore new alternatives for men and women in our society.

301 Statistics
This class is designed to give the student some experience at an elementary level with those branches of statistics which are most frequently used in the social science. In particular the student will learn when and how to use non-parametric tests. He will also be given a general introduction to factor analysis.

303 Social Problems and Social Policy
This seminar focuses on the policy implication of research into various social problems. It addresses the issue of moving from delineation of a social problem, to doing the necessary research, to the development of policy relevant to the problem and considers issues in problems of implementation of policy.

306 Modernization and Development
The class will treat change, modernization, and development as distinct but related notions. Beyond examining the meanings and implications of these terms, an attempt will be made to outline some of the complex processes involved in planning for national development of traditional societies. For purposes of concrete illustrations, the class will focus on the problems of South Asia.

308 Seminar - Soc. Psych
This Seminar involves the detailed examination of selected topics in social psychology ranging from the attitude - behavior controversy to behavior modification, social engineering, socialization, or conformity. A background in either (preferably) sociology or psychology is presumed.

309 Population and Society
This class presents an analysis of the interrelationships of population and social structure. It examines changes in size, structure, and distribution of world population in terms of the three major components of demographic change: fertility, morality, and migration, with emphasis on their social, economic, and political causes and consequences.

310 Research Methods
This class will provide a detailed survey of the basic methods of social research. The topics discussed in the class include the construction of theory, the formulation of research problems, research designs, measurement, methods of data collection, and analytic theory testing. Special attention is given

to the sample survey as one of the main methods of social science research. Practical experience in survey methods is proved through a class project.

311 Sociology of Leisure

Sociology has been interested in work since the early origins of the discipline. Much less attention has been gven to leisure. Currently, there is an increased emphasis upon the analysis of leisure among sociologists. This course deals with the historical and cultural origins of leisure time as a major social phenomenon, with factors affecting variation in amount and use of leisure time among individuals in Western societies, and with social consequences of trends toward more increased leisure. The course is planned as a seminar; readings are primarily based on journal articles.

312 Social Conflict

This course will endeavor to introduce students to the various analytical perspectives sociologists have employed to understand the patterning and consequences of conflict in society. In this regard particular attention will be devoted to the functional, coercion, and Marxian theories of conflict. This course will further be concerned with conflict in contemporary society, with special reference to patterns of conflict and change in Canada.

313 Sociology of Health and Illness

Beliefs and attitudes surrounding disease concepts and treatment will be examined in primitive and contemporary societies. In addition, the social organization of medicine will be examined with respect to the following: the health professions, the hospital as a complex organization, and the larger society.

316 Sociology of Education

See Education 4000. Students wishing to take the Sociology of Education for a sociology credit register for Sociology 316 and attend Education 4000.

318 Issues in the Theory of Society

An examination of the problem of order in modern large-scale societies. The major focus will be the tension between continuity and change in such social systems and the alternative ways in which perspectives on this tension have been developed. In particular there will be analysis of the relationship between value integration and conflict approaches.

319 Social Movements

This seminar examines both conventional (Formal) and contemporary (action) approaches to social movements - viewed as efforts by individuals and groups to challenge culture-values, social institutions and/or a political order. Focus is upon participant observation, with particular attention to developments in Nova Scotia and the Atlantic region.

321 Criminal Law and Law Enforcement

Roughly half of this course deals with the development of theories of criminal law, law enforcement and criminal behaviour, from the eighteenth century on. The second half involves a critical examination of Canadian criminal law and law enforcement agents - the nature and amount of crime, policing, the courts and correctional agencies.

324 Sociology of Crisis Intervention

Emphasis is placed on understanding and investigation of the social significance and impact of the Distress Center phenomenon within our society. The course itself provides students with two learning experiences. On one level it enables students (a) to gain practical experience working with a social agency, and (b) to make participant observations. On another level students will be sociologically investigating and reporting (in a theoretical or research paper) an aspect of Crisis Intervention.

326 The Development of Sociology as a Discipline

This is a course in the "Sociology of Sociology". main concern will be the manner in which sociology came to be a distinct field of enquiry in the late nineteenth century, and why it took the forms it did. Special attention will be given to the divergent paths of Sociology in the United States, Great Britain, Germany, and France in order to analyze the relationship between the sociological enterprise and its social context. It will be an advantage to have taken prior courses in the history of sociological thought and in the sociology of knowledge.

327 Sociology of Careers

This course will focus on the career-choice process in late adolescence and early adulthood. Theories of career-decision and vocational maturity will be reviewed; the student will contribute to a class research project on university career-choice problems. Also treated will be the changing occupational structure and its effects on youth's opportunities; and recruitment and career lines in selected occupations.

331 Time and Society

This class will deal with the way man organizes and budgets time. Of particular interest will be the dichotomy in Western society between work time and leisure time. In particular, the class will deal with the historical and cultural origin of leisure time as a major social phenomenon, with factors affecting variations in amount and use of leisure time among individuals in Western society.

401B History of Sociological Thought

An examination of the development of classical sociological theory. Major theorists will be compared with special reference to their discussions of the development and structure of modern society and their contributions to contemporary sociology. Those contributors under discussion will include the British empiricists, Spencer, Marx, Durkheim and Weber.

405A Contemporary Sociological Theory

In this class a number of recent theoretical developments in sociology will be critically examined. The choice of specific theoretical topics will be left up to the instructor.

450 Honours Seminar in Sociology

Oral presentation on selected theoretical and research topics will be made in seminar and finally completed as written papers. Topics will be selected to fit the specific needs of individual student's honours programmes.

451A Readings in Sociology

451B Readings in Sociology

452A Readings in Sociology

452B Readings in Sociology

In a reading class the student is assigned to a member of staff for regular meetings to discuss readings in a selected area. Papers and research projects will be expected. Prerequisites: Written permission of instructor.

Anthropology Classes Offered

As a general rule, most classes above the 100 level require either Anthropology 100 or permission of the instructor as a prerequisite.

A supplement containing additions to and deletions from this list of classes will be issued by the Department. Students in their second and subsequent years are urged to pick up a copy of the mimeo "Anthropology Classes" available each March from the department, and at registration.

If you are interested in an aspect of anthropology for which no class is offered, you are invited to discuss the possibility of a reading or experimental class with the faculty.

100 Introductory Anthropology.

This class introduces students to all subfields of anthropology. Topics considered include: the variety of human societies and how societies are organized and function in their environments; hominid relationships to the other primates; human evolution; principles of archaeology, particularly as applied to North American prehistory; and the study of languages around the world as they relate to the cultures they are part of.

During both terms, films will be used to present concrete examples for analysis.

101B The Best of Anthropology.

As one anthropologist put it, anthropology is where you find it–which means that it is everywhere you care to look. In this course, topics overlapping with biology, history, sociology, psychology and linguistics will be discussed by various staff members. Some examples are the origins of sex, language, oneupmanship, human bodies, and kith and kin.

A letter grade of B or better will permit entry to higher level anthropology courses which ordinarily require anthro 100 as a prerequisite.

200B An Introduction to Archaeology.

The class covers the following topics: archaeology and its relationship to history and prehistory; the origins and growth of the discipline of archaeology; the application of archaeological techniques in the field of prehistory; the excavation of a site; the establishment of a chronological framework; the reconstruction of the prehistoric past; an outline of the reconstruction of the prehistoric past; an outline of the prehistory of Eastern North America; the prehistory of Nova Scotia. The course will also involve practical work in the archaeological collections at the Nova Scotia Museum and, weather permitting, at least one field trip.

201 Dawn of Civilization.

The first Civilizations came into being in Mesopotamia, Egypt, the Indus Valley and China in the Old World. We shall examine the problem of the origin of these Civilizations in the light of the latest archaeological research. Did they all develop from one centre and the process of Civilization take place once, and once only, in human history, or did it occur independently in different parts of the world?

Prerequisite: permission of instructor.

210 Ecology and Culture.

It is clear that the ecology (meaning the natural environment) is affected by the way people live. It is less clear how the way people live is affected by their ecology or environment. This course deals with the ways in which different environments affect how people live, relate to one another, think and organize themselves. The major focus will be on how cultural choices are influenced and constrained by the relationship among ecology, technology, and how people are making a living. Examples of hunter-gather, horticulturalist, rancher and farmer cultures will be used as illustrations. Classes will be a combination of lecture and seminar sessions, and two term papers will be required.

Prerequisite: Anthropology 100 or permission of instructor.

220A Social Anthropology.

An examination of alternative ways of analysing culture and society. Illustrative case studies will be used which represent a variety of geographical areas, types of society (i.e., from simple band to urban industrial) and theoretical perspectives. Since different theoretical perspectives have been applied to specific institutions (economic, political, religious, kinship, etc.), such institutions will be examined where appropraite.

Prerequisite: Anthropology 100 or permission of instructor.

222 Psychological Anthropology.

This class deals with the areas of overlap between psychology and anthropology. Topics to be covered include: culture and personality; culture and mental health; psychiatry in other cultures; cross-cultural differences in learning; and the evolution of human psychological characteristics. A paper will be required.

Prerequisite: Anthropology 100 or Psychology 100 or permission of instructor.

226B Culture and Political Behaviour.

Political systems examined comparatively. Relation between political and other social institutions and analysis of the organization of conflict in non-Western societies. The relation to tribal and peasant politics to national politics in developing countries seen in a comparative framework.

Prerequisite: Anthropology 100 or permission of instructor.

227 Language and Culture.

This course offers an introduction to aspects of linguistics, which relate to anthropology. The history of anthropological linguistics will be reviewed, with particular attention paid North American workers in the field, including Boas, Sapir, and Kroeber. Current areas of study in anthropological linguistics, such as sociolinguistics, ethnoscience, and language change, will be examined. The relation of language to culture will be considered, drawing on examples from primitive and complex societies. Students will also learn to record sounds phonetically, and to analyze the sounds and words of a language to culture will be considered, drawing on examples from primitive and complex societies. Students will also learn to record sounds phonetically, and to analyze the sounds phonetically, and to analyze the sounds and words of a language into meaningful units for the speakers of that language.

Prerequisite: Anthropology 100 or consent of the instructor.

229B Belief Systems.

This class introduces the student to the study of non-Western belief systems. Emphasis will be on the religion of small-scale societies, treated from the perspective of religion as a system of symbols giving meaning to the universe and one's place in it. Topics will include religion as a biological phenomenon, the nature of ritual, religion and healing, religion and altered states of consciousness, sorcery and witchcraft, religion and culture change.

Prerequisite: Anthropology 100.

231A North American Indians.

This class provides a general introduction to Indian cultures in North America, as these cultures existed in pre-European times and as they changed in response to the presence of

Europeans. Following a consideration of New World prehistory and demography, the course will treat representative tribes of each geographic "culture area" in North America. It will conclude with a discusion of present-day Indians in Canada and the United States.

Prerequisite: Anthropology 100 or consent of the instructor.

232B Ethnohistory of North American Indians.
This class will study the history of Indian-White relations in North America, including the United States and Canada, from the time of the Indians' first contact with Europeans and Asians to the present. Emphasis will be on presenting this history from the natives' point of view.

Students with history interests will take this course; students interested primarily in ethnographic description of Native American cultures will take Anthropology 231A.

Prerequisite: Anthropology 100 or 231A or consent of the instructor.

306A The Social Organization of Pre-Literate Societies
This class gives a systematic and detailed description and analysis of the social organization of pre-industrial societies where men earn their living by gathering, hunting, herding, or agricultural activites, and those segments of industrial societies which combine traditional modes of adaptation with participation in modern markets (e.g., Maritime fisherman, etc.).
Prerequisite: Anthropology 100 or permission of instructor.

307 Biosocial Anthropology
The theme of this class is that many human characteristics, both individual and social, are species traits and are the product of biological evolution. Topics to be discussed include the synthetic theory of evolution, the nature of sociocultural evolution, the fossil record of human evolution, the fossil record of human evolution, the behaviour of apes and monkeys, and the biopsychological basis of human behaviour. At least one paper will be required. (Anthropology 307 stresses the theoretical basis of biosocial anthropology, while anthropology 308 emphasis empirical biosocial research.).
Prerequisite: Anthropology 100 or Psychology 100 or Biology 1000.

308 Biosocial Research
This class applies the theoretical perspectives discussed in Anthrop. 307 to empirical research. Representative topics include the study of non-verbal behaviour and communication, human ethology, sex differences, universals in emotional expression, and biological rhythms.

Class is the same as Psychology 361.

Prerequisite: Anthropology 100, or a background in biology or psychology or permission of instructor.

361 Africa: Ethnography and Modernization
This class introduces the student to the anthropological study of the peoples of Africa. The class is organized in terms of subject areas rather than ethnic units or geographic regions. Topics to be discussed during the autumn session will include general background, family and social organization, economics and livelihood, politics and government, and personality and socialization. During the spring session our focus will be on contemporary, rather than colonial or precolonial Africa. The major topic will be the influence of modernization on urban and rural life. A paper will be required. Students in Dalhousie's African Studies Program are cordially invited to register for this class.

Prerequisite: Anthropology 100 or permission of instructor.

320A, 320B Readings in Anthropology
This class is intended for students who wish to delve deeply into a subject for which no appropriate advanced class is offered. The student and professor jointly decide on the requirements for the course.

Prerequisite: Written permission of instructor.

321 Peasant Society and Culture
A comparative examination of the way of life of the majority of mankind. Problems of defining salient characteristics which distinguish peasant from other types of societies are dealt with. Various models for describing and analyzing the behaviour of peasants (economic, political, religious, psychological, etc.) are examined. Their applicability to traditional Canadian fishing communities, and to French Canada, are examined. The role of peasants in modern social change is a major focus.

Prerequisite: Anthropology 100 or permission of instructor.

325 History and Theory of Anthropology
A course designed to acquaint students with the foundations and development of antrhopology. The growth of theory in anthropology will be stressed, with special attention paid major schools of thought and the work of prominent individuals within those schools, including Cultural Evolution and Morgan; American School and Boas; Functionalism and Malinowski and Radcliffe-Brown; Culture and Personality; Ethnoscience; and the directions in which contemporary anthropology points. Special efforts will be made to expose students to the original writings of prominent anthropologists.

Prerequisite: Anthropology 100 or consent of the instructor.

331 Cross-cultural Study of Socialization
In this course the student will (1) be introduced to the cross-cultural research method, i.e., the testing of general hypotheses on large samples of ethnographic cases, with the analysis, in lectures and in readings, of selected cross-cultural studies of socialization; and (2) become expert on the ethnographic literature on one of the world's major culture areas (Latin America, Europe, Middle East, Africa, Southeast Asia, or whatever) as it treats a problem. The student will write at least one major paper, and participate in one or more (probably two) cross-cultural investigations.

Prerequisite: Anthropology 100 or permission of the instructor.

332B Ethnohistorical Method
Ethnohistory is the study of the history of peoples normally studied by anthropologists. Following class review of pertinent literature on methods employed by ethnohistorians in reconstructing past cultures and the histories of non-literate peoples, each student will undertake an individual ethnohistorical project involving research in original documents in the Public Archives of Nova Scotia.

Prerequisite: Anthropology 232A or consent of the instructor.

340 Ethnicity and Nationhood
This class focuses upon the tensions between ethnic ties and loyalties and the demands of citizenship in both old and new states. The focus is comparative covering a variety of geographical areas and societal types. We will examine the problems of integration in the new states of the Third World as well as the resurgence of ethnicity as a political factor in old states (e.g. Canada, Spain, Belgium, etc.). We will examine various explanatory models for these problems (e.g. class, plural society, etc.).

Prerequisite: One of the following: a course in Sociology or Anthropology, Political Science or History.

451 Proseminar in Anthropology
Intensive examination of major issues in anthropology. The first part of the class is devoted to a survey of major issues current in the field. During the second part, the student will present to the seminar his formulation and analysis of a particular problem.

452 Supervised Readings in Anthropological Theory and Method
The student should secure written permission of the instructor before registering for this class. The student and his instructor will plan a programme of readings appropriate to the former's interests and background.

453 Readings in Ethnology
The student should secure written permission of the instructor before registering for this class. The student and his instructor will plan a programme of readings essentially dealing with a geographic area (or areas).

549 Honours Thesis
This class carries two credits. The student writes an honours thesis under the supervision of his principal advisor.

Spanish

Associate Professors
G. Alfaro
S.F. Jones, Chairman
A. Ruiz Salvador

Assistant Professor
J.E. Holloway

After Chinese and English, Spanish is the most widely spoken language in the world. It is the native tongue of well over 200 million people living in 22 countries. Spanish is, therefore, of tremendous social, political, and economic importance.

Latin America is making international headlines as emerging nations struggle for independence and a new political identity. Students of political science, economics, commerce, sociology-anthropology, psychology, literature, history, and other academic disciplines will feel increasingly interested in Latin American studies as new solutions are adopted by these nations to modern-day problems. Students from these departments are welcome to take our classes on Spanish and Latin American culture, civilization, history, and politics. These classes are conducted in English, the reading is in translation, and there are no prerequisites.

Knowledge of the Spanish language will be useful to all Canadians seeking careers as diplomats, members of the foreign service, bankers, politicians, businessmen, interpreters, translators, teachers, professors, critics, editors, journalists, and many others. An undergraduate concentration in Spanish, followed by training at the Masters level in Administrative Studies, could lead to a variety of possible careers in the Spanish speaking world in international business and public service.

It goes without saying, of course, that a knowledge of Spanish would be of great benefit to anyone planning to travel or live in Spanish-speaking countries. Our beginning language course especially emphasizes conversational Spanish, and our Department awards some travel grants to outstanding students so that they may spend the summer living with Spanish-speaking families abroad. In this way we hope to acquaint students with the culture of the countries they are studying, as well as help them to acquire some measure of fluency in the language.

It is also a widely recognized fact that some of the best novels and poetry are coming out of Latin America to-day, providing stimulating and challenging material for many of our literature classes.

If your tastes and abilities lie in the direction of Spanish or Latin American studies, you should consider the possibility of taking a Bachelor's degree with Honours in Spanish, or with Honours in Spanish and another subject combined. Those who wish to do so, or to take Spanish as an area of concentration in a General Bachelor's degree course, are encouraged to discuss the matter at any time (but the earlier the better) with a member of the Department. An Honours degree is usually required for or facilitates access to graduate studies.

Spanish Degree Programmes

General Bachelor's Degree
Course should consist of at least four full-credit upper-level classes taken in the second and third year, four of which must be conducted in Spanish. Any student who wishes to deviate from these basic requirements should consult the Department Chairman.

Bachelor of Arts with Honours in Spanish
Course should include:

Year I
1. Spanish 100, 101.
2. Spanish 110, 111.
3-5. Electives.

Year II
6-8. Spanish 200, 201, 250, 251, plus one other 200 level class.
9. Class in the minor subject.
10. Elective.

Year III
11-13. Spanish 302, 303, plus two other 300 level classes.
14. Class in the minor subject.
15. Elective in a subject other than 10.

Year IV
16-18. Three classes to be chosen from the upper-level programme offered by the Spanish Department.
19-20. Two electives (May be Spanish).

In addition, students are required to write an Honours essay, in Spanish, supervised by a member of the Department.

Bachelor of Arts with Combined Honours in Spanish and Another Subject.
Programmes may be arranged by consultation (as early as possible) with the departments concerned. Students planning a combined Honours course should consider, however, that the number of classes taken in either subject might be insufficient for admission to many graduate programmes without at least an extra year's work.

Notes:
(1) the "other" classes chosen as electives in the programmes outlined above must satisfy general degree requirements.

(2) Combinations of classes other than those set forth above may be chosen after consultation with the Department Chairman.

(3) A student may, with the permission of the Department be admitted to a Spanish course at an advanced point because of prior knowledge of the language. Such a student, however, (except as he may be granted transfer credits in the usual way), must normally take the same total number of classes as other students in the same course.

Classes Offered

100A Beginning Spanish, Staff. Discussion and conversation, 3 hrs.; Language Lab.: as needed.

For students with no knowledge or only a slight knowledge of Spanish.

This class is designed for students wishing to achieve proficiency in spoken and written Spanish. *Spanish One,* a textbook written and taught by members of the Department avoids the usual chalk-and-blackboard dialogues often used in the classroom. Instead, it deals with the kinds of topical and controversial subjects that people in Spanish-speaking countries are likely to discuss: the pros and cons of going to university, the success and failure of marriage, the generation gap, women's lib, the population and pollution crises, and other items of human and social interest.

101B Beginning Spanish, Staff.

This course is a continuation of 100A.

Prerequisite: 100A or permission of Instructor.

110A Spanish Culture and Civilization, Ruiz Salvador. Lecture and discussion, 2 hrs.

Conducted in English. No prerequisites. Open to students in all departments. No knowledge of Spanish necessary.

Although it may sound self-evident to Canadian students, this class deals with Spain and the Spaniards. What Spain is and who the Spaniards are, however, may not be that clear-cut for Spaniards themselves. This class is a search for Spain throughout her history (Roman, Arab, Jewish, and Christian Spain), with continuous reference to her art, literature, sciences, and customs. The goal of the class is to gain a clear picture of one of the most perplexing components of Western Civilization.

111B Latin American Civilization, Alfaro. lecture and discussion, 2hrs.

Conducted in English. No prerequisites. Open to students in all departments. No knowledge of Spanish necessary.

Spain's discovery of the New World meant not only the creation of the first global empire in history, but also the broadening of material and spiritual horizons for European man. The Spanish conquest brought with it a new race, a new religion, and a new economic and political order. The superposition of Spanish elements on the autochthonous civilizations of Aztecs, Chibchas and Incas gave rise to a new Latin American civilization. The class will study representative works in English translation.

200A Intermediate Spanish, Staff. Discussion and conversation, 3 hrs.; Language Lab.: as needed.

This class will continue the work done in *Spanish One.* Supplementary reading as necessary.

201B Reading and Conversation, Staff. Discussion and conversation, 3 hrs.

Emphasis will be placed on perfecting conversational skills as the reading material is discussed in class.

209A Women in Latin America, Jones. Lecture and discussion, 2 hrs. Not given in 1978-79.
Conducted in English. No prerequisites. Open to all students in all departments.

This class has four main objectives 1) to examine critically assumptions about women held by the major academic disciplines; 2) to test these assumptions in the perspective of current research and individual experience; 3) to study traditional and changing sex roles in Latin America, with particular emphasis on Cuba; 4) to explore new alternatives for men and women in our society.

211A The Cuban Cultural Revolution: Alfaro. Lecture and discussion, 2 hrs.

Conducted in English. Open to students in all departments. No prerequisites. No knowledge of Spanish necessary.

Cuba, the only Communist society in the Western Hemisphere, has undergone a dramatic political and economic transformation. The Revolution has also brought about changes in education, the arts, the role of women, race relations, and athletics. The class focuses on the problems and achievements of the Revolution, the peculiarities of Communism in a Caribbean society, and its effect on literature and the arts.

212B The Spanish Inquisition and its Challengers, Jones. Lecture and discussion, 2 hrs. (Not given in 1978-1979).

Conducted in English. Open to students in all departments. No prerequisites. No knowledge of Spanish necessary.

During the time of the Reformation, many Spanish thinkers came to believe that the Church had long since failed to interpret correctly and teach effectively the message Christ had originally offered to mankind. The Church had become a large and powerful institution, however, and viewed much of the criticism as an attack on its authority and a threat to its very existence. It responded by severely persecuting the dissenters and organizing a movement later known as the Counter Reformation. This class will attempt to examine the process by which ideas eventually may become distorted when they are institutionalized, and the methods by which progress and change can come about in spite of the efforts of the establishment to repress dissension.

213B Latin American Dictators: In the Novel, Alfaro. Lecture and discussion, 2 hrs.

Conducted in English. Open to students in all departments. No prerequisites. No knowledge of Spanish necessary.

The history of Latin America since Independence has been characterized by the rise to power of countless dictators. Some of the best Latin American novels portray these almost mythical figures who to this day wield absolute power in many countries. The class will examine the literature and history of this phenomenon with particular attention to the twentieth century, and will attempt to discover its roots in militarism, underdevelopment, and imperialism.

220B Literature of the Spanish Civil War, Ruiz Salvador. Lecture and discussion, 2 hrs. (Not given in 1978-79).

Conducted in English. Open to students in all departments. No prerequisites. No knowledge of Spanish necessary.

The Spanish Civil War, probably more than any other war in history, compelled the leading writers of the era to take a stand. As a rallying point for various ideologies -- Communism, Anarchism, and Fascism -- it clearly defined the issue of freedom versus tyranny. No war before or since has provoked so many words and so much action from so many writers.

221B The Novel of the Mexican Revolution, Alfaro. Lecture and discussion, 2 hrs. (Not given in 1978-79).

Conducted in English. Open to students in all departments. No prerequisites. No knowledge of Spanish necessary.

The Mexican Revolution (1910-1917) is the first people's revolution of the twentieth century. The prerevolutionary situation, the war, and its aftermath resulted in some of the finest Latin American novels. This class will view these works against the historical and social background of contemporary Mexico.

222B Masterpieces of Spanish Theatre, Jones. Lecture and discussion, 2 hrs. (Not given in 1978-79). Conducted in English.

223A Contemporary Latin American Prose, Holloway. Lecture and disucssion, 2 hrs.

Conducted in English. Open to students in all departments. No prerequisites. No knowledge of Spanish necessary. (Not offered in 1978-1979).

This class samples short stories and novels of contemporary prosists from throughout Latin America. Included are works by such outstanding experimental writers as Julio Cortazar, Juan Rulfo, Carlo Fuentes, Alejo Carpentier, Garcia Marquez and Jose Donoso -- authors whose vigorous narrative, technical innovation and synthesis of surrealism, myth, and magical realism evidence not only a "new consciousness" in Latin America, but perhaps a rejuvenation in prose art of global consequence.

250A Introduction to Spanish Literature, Ruiz Salvador. Lect. and discussion, 2 hrs.

Conducted in Spanish.

Introduction to the main works and trends in Spanish literature. Study of illustrative works.

251B Introduction to Latin American Literature, Holloway. Lecture and discussion, 2 hrs.

Conducted in Spanish.

Introduction to the main works and trends in Latin American literature. Study of illustrative works.

302A Translation, Staff. Lecture and discussion, 2 hrs.

Exercises in translation from Spanish to English and from English to Spanish.

303B Composition, Staff. Lecture and discussion, 2 hrs.

Training towards accuracy in writing Spanish. Vocabularly building, free composition.

308B The History of Modern Spain, Ruiz Salvador. Lecture and discussion, 2 hrs.

Conducted in English. Open to students in all departments. No prerequisites. No knowledge of Spanish necessary.

A study of the major historical forces and ideas shaping the evolution of the modern Spanish nation from the reign of Charles III (1759) to the present.

309A The History of Latin America, Alfaro. Lecture and discussion, 2 hrs. (Not given in 1978-1979).

Conducted in English. Open to students in all departments. No prerequisites. No knowledge of Spanish necessary.

This class will focus on two decisive periods of Latin American history: the Spanish conquest and the contemporary revolution. Special attention will be given to the impact of European civilization on the Indian cultures, the system of economic exploitation, and race relations. Although most of Spanish America gained independence from Spain in the 19th century, the social and economic relations within the societies remained basically the same. Only in the 20th century was the situation challenged by revolutionaries. The class will examine the Mexican and Cuban revolutions.

320B Cervantes, Jones. Lecture and discussion, 2 hrs.

Conducted in English. Open to students in all departments No prerequisites. No knowledge of Spanish necessary. (Not given in 1978-1979).

This class will examine Cervantes' philosophy of life through an analysis of his great masterpiece, *Don Quixote*. In this precursor of the modern novel, Cervantes studies human nature in all its many aspects. Life is presented as a complex and ironic interplay of idealism and disillusionment, appearance and reality, chivalrous love and worldly love. All truth is relative, but the ultimate irony is felt by the reader himself who discovers, in the end, that Don Quixote's view of the world is superior to that of all the "sensible" people who judged him to be mad.

321B Borges, Holloway. Lecture and discussion, 2 hrs. (Not given in 1978-1979).

Conducted in Spanish.

The Cervantine tradition of fiction dealing with a problematical reality persists in twentieth century Hispanic literature, and its most noted continuator is Jorge Luis Borges. Renowned for his fantastic, metaphysical short stories, Borges is one of the leading figures in contemporary world literature, and perhaps the greatest living writer in the Spanish language. This class serves as an introduction to his work and its relationship to the currents of contemporary literature and thought which inform it.

322B Galdos, Ruiz Salvador. Lecture and discussion, 2 hrs.

Conducted in Spanish.

A liberal thinker who studiously confronted the social conditions of his day and sought to counteract the prejudices of a formalistic, authoritarian society, Benito Perez Galdos (1843-1920) was Spain's foremost socio-psychological novelist, or, perhaps, literary social psychologist. Pre-eminent in his own country, Galdos must also be considered one of the most vital and representative novelists of the nineteenth century in Europe. This class focuses on *Fortunata and Jacinta,* his masterpiece.

350A Contemporary Spanish Literature, lecture and discussion, 2 hrs. Ruiz. (Not given in 1978-1979).

Conducted in Spanish. A study of representative works.

351A Contemporary Spanish American Literature, Lecture and discussion, 2 hrs. Holloway.

Conducted in Spanish. A study of representative works.

398A Reading course for majors.

399B Reading course for majors.

404A Advanced Style and Syntax, Staff. Lecture and discussion, 2 hrs. (Not given in 1978-1979).

450A Golden Age Theatre, Staff. Lecture and discussion, 2 hrs. (Not given in 1978-1979).

451B Golden Age Poetry and Prose, Staff. Lecture and discussion, 2 hrs. (Not given in 1978-1979).

498A Reading course for Honours Students.

499B Reading course for Honours students.

Theatre

Faculty
Alan Andrews
Angela D'Ambrosia
Robert Doyle, Costume Studies
Lionel Lawrence, Chairman
Robert Merritt
Arthur Murphy
David Overton
Peter Perina, Scenographer
Pat Richards - sabbatical 1977-78

Special Instructors
David Mardon (Technical Direction)
David Porter (Properties)
N.J. Sokcevic (Figure Drawing and Perspectives)
Lynn Sorge (Costumes)
Ian Thomson (Construction)

Theatre is a rich, complicated performing art that involves refined creative work in many different fields.

The Theatre Department offers two distinct programmes: One a degree programme, the other a certificate/diploma one. The four year degree programme in Theatre Studies leads to an Honours B.A. in Theatre. The self-contained Costume Studies programme leads to a certificate in two years, and a diploma in three.

The Honours B.A.

The four year theatre programme exists within the faculty of arts and science, and students wishing to achieve an Honours B.A. in Theatre must expect to take certain classes outside the discipline of theatre. However the art of theatre is a consuming one and a significant amount of the student's time will be spent in studying and practicing it.

The theatre programme has certain firm requirements. The intention is to provide the best opportunity for each student to develop her or his individual preference, and yet to ensure that each student becomes aware of the many subtle intricacies of the theatre. With this in mind the current classes can be arranged to provide three distinct programmes; a core curriculum, a specialty in acting, or a specialty in scenography.

Every theatre student is expected to take part regularly in production work, either acting or in other areas of production. The performance of theatre sometimes falls within the actual work of a class, sometimes not. But the regular experience provided by performance is axiomatic to understanding the theatre, and theatre students are expected to be part of as many pieces of production work each year as possible. Involvement in the local professional and semi-professional companies is encouraged.

Students who wish to study the theatre should draw up a plan of studies for a four-year programme. Each student should consult with the department chairman to make sure that the appropriate prerequisites are met and that the whole proposed programme falls within the university requirements for a degree.

Theatre students pursuing an honours theatre degree can arrange their theatre classes in three ways:

No. 1 The core Programme
Year 1: Theatre 100, and 105
Year 2: Theatre 201, 270 and 280
Year 3: Theatre 350, 360 and choice of one other senior theatre class.
Year 4: Theatre 460, 490 and choice of one other four year class.

No. 2 The Acting Specialty
Year 1: Theatre 100, 105
Year 2: Theatre 201, 202, 280
Year 3: Theatre 380, choice of two third-year classes.
Year 4: Theatre 490, 481, 482

No. 3 The Scenography Specialty
Year 1: Theatre 100, 105
Year 2: Theatre 201, 270, and choice of one other second year class.
Year 3: Theatre 371 and choice of two third-year classes.
Year 4: Theatre 490, plus choice of two fourth-year classes.

Each year offerings are being strengthened and in certain areas further professional training opportunities are being introduced. Before registering, students should contact the department for information on recent developments.

Combined Honours

Combined honours programmes of study in which theatre is related to some other discipline studied at Dalhousie also exist. Interested students should apply to the department for further information.

The Costume Studies Certificate — Diploma Course
Within the department is the self-contained Costume Studies Programme. Students selected for this programme concentrate their studies solely on costume studies and design and are trained to become professionals in this field. Classes in costume studies lead solely to the certificate (two years) and diploma (three years) and cannot be credited towards any degree programmes offered by Dalhousie University.

Facilities

The department is located in the theatre wing of the Dalhousie Arts Centre. The theatre wing is a self-sufficient unit involving one theatre, two studios, a roof theatre, and supporting workshops.

The department is developing close collaboration in certain theatre work with the Neptune Theatre and other regional theatres. There are opportunities to participate with other theatre groups who perform in the city of Halifax.

Some theatre classes by the nature of the work involved have a restricted enrolment. All students wishing to take any class in theatre should therefore first consult with the department.

Classes in the Degree Programme

Year 1.

100: The Nature of the Theatre, 3 hrs. lecture, discussion, performance. Various sections: Andrews, Lawrence, Merritt, Overton. 6 credit hrs.

This class provides an introduction to the nature of the theatre as a composite performing art. It is intended to explore the nature and functions of the separate theatre crafts (acting, playwriting, scenography, directing) and to consider the diverse ways in which these crafts are, have been, and can be synthesized. The various sections will differ in the emphasis given to these crafts, but each section will involve work with written scripts, improvisation, criticism, and discussion leading to a basic understanding of the functions of theatre and the ways through which it has influenced society. The class is a prerequisite for admission to the theatre honours programme, but is also designed to serve as an elective for the student who wishes to take a single class in theatre. Students who intend to enrol in the theatre honours programme should also register for Theatre 105 simultaneously with Theatre 100.

105: Theatre Organization and Stagecraft, 2 hrs. lectures; 3 hrs. labs and work in productions. Perina, Doyle and Technical Staff, 6 credit hrs.

This class is an introduction to theatre production. It provides initial contact with scenography. Basic theatre construction, common materials used for construction, stage properties and costumes, knowledge of basic theatre lighting and sound equipment, and the methods and procedures for working with all of them efficiently, creatively and safely make up the substance of this class.

Students who intend to enrol in the theatre honours programme must take this class. It is also a prerequisite for the scenography classes.

The class involves two one-hour lectures and a three-hour lab weekly, added to which students will work on evening production. Because of the required evening production work, those enrolling in this class must avoid permanent evening commitments other than departmental theatre activity during the academic year.

130: Introduction to Film 3 hrs., Overton, 6 credit hrs.

This is an introductory class for students with no background in film. The class involves an examination of film history, genres, theory, and techniques, and requires extensive viewing of films outside those shown in classes. This is not a class in film production.

Year 2

201: The History of the Theatre, 3 hrs. lecture, discussion, demonstration, Merritt, 6 credit hrs.

This class is designed to provide the student with a basic and comprehensive understanding of the development of theatre and drama. Emphasis will fall on the crucial phases of that development: the classical theatre of Greece, the theatre in the medieval period and in the Renaissance, and its subsequent evolution until the rise of the modern theatre in the second half of the nineteenth century.

This class is required for all students in the honours programme, and may be taken by others who are in at least the second year of their university course.

202: Modern Dance, 4 hrs. of movement, Richards, 6 credit hrs.

This basic class is designed to introduce the student to the theories and techniques of modern dance; the use of space, rhythm, dynamics, kinesthetics; and aesthetic awareness and composition. The development of personal expression through the medium of dance will also be encouraged within the class.

270: Scenography 1, 6 hrs., Perina, 6 credit hrs.

This class is designed to give students basic visual judgement and understanding. In the first half year, it follows the Bauhaus approach to graphic design but adapts it to the needs of three-dimensional theatre space. The second half of the year the course teaches perspectives; the final project is to integrate all the previous material and apply it to simple stage design. Student class work will be displayed at the end

of the year by the Dalhousie Art Gallery. Throughout the year analysis and criticism of various works are encouraged. The required text is Gyorgy Kepes' *Language of Vision*. Students must have the instructor's permission to enter.

280: Acting 1, 6 hrs., D'Ambrosia, 6 credit hrs.

This class involves work in movment, improvisation and exercises related to scene study. Students must have the instructor's permission to enter.

Prerequisite: Acceptance into the honours programme, and/or permission of the instructor.

340: Seminar on Canadian Theatre, 2 hrs., lecture, Murphy, 6 credit hrs.

This special class will be taught by Dr. Arthur Murphy, author of several plays both published and performed in Canada, who will conduct the class in a close study of the original play, from the first draft through to the performed script, using specific examples from plays he has written that have been given professional productions in Canada and also eliciting writing from each student in the class. Part of the class will include the plays of certain leading playwrights in Canada who will be invited to the class to talk of their work. Finally the class will also look at aspects of Canadian theatre history.

350: The Modern Theatre, 3 hrs. Andrews, 6 credit hrs.

The modern theatre has been characterized by successive bursts of creative energy and experiment. This class gives students an opportunity to study these developments in detail and to examine several important theatrical theories. Their implementation in particular plays and in theatrical practice will also be examined.

360: The Playwright in the Theatre, 5 hrs. Merritt. 6 credit.

This class is concerned with the play as a vehicle for theatrical performance. Through written exercises dealing with specific dramaturgical problems, and through detailed analysis of the structure and form of plays representing diverse styles and genres, the function of the playwright is examined. The class also involves practical exploration of the ways through which a script can be created, revised, and developed.

371: Scenography, 6 hrs., Perina. 6 credit hrs.

This class is for theatre honours and special scenography students only. It builds on the knowledge from the previous class in the field, Theatre 270 as far as visual knowledge is concerned, and from technical knowledge acquired in Theatre 105. Students concentrate on learning in more detail about three-dimensional theatrical space, its dynamics and composition. At the same time, they learn technical drawing for the theatre and the methods of executing constructionally a designed work. They are introduced to the directorial/scenographic relationship. Student class work is exhibited at the end of the year in the Dalhousie Gallery's annual exhibition. The required texts for the course are John R. Walker's *Exploring Drafting: Basic Fundamentals* and Willis Wagner's *Modern Woodworking*. Students must have the instructor's permission to enter.

Prerequisite: Theatre 105.

380: Acting II, 6 hrs. class work, D'Ambrosia, 6 credit hrs.

This is a beginning scene study class involving exercises related to scene work, improvisation and scene work.

Prerequisite: Theatre 280 and permission of instructor.

399: Production, Perina plus directors, 6 credit hrs.

This class is assessed on accumulated credit over three years. Students should therefore plan to gather the necessary credit from their first year. Credit is awarded for approved major production theatre work under faculty direction, either in cast or crew. Students will normally accumulate eight separate pieces of work for this credit. A student can enrol in this class in his third year, only if he has completed five approved pieces; the three remaining pieces of work will be specifically assigned. Grading will be on a pass/fail basis.

Prerequisite: Only available to third-year honours theatre students who have planned to take this class from their first year.

420: Education 4620: Developmental Drama, 3 hrs. practice, Lawrence, 6 credit hrs.

This class is designed to show potential or current teachers, or any person involved or interested in the development of children, how drama can be used both to guide personal development and to heighten learning ability. The class considers how best to adapt developmental drama to school situations. Improvisation, theatre games and dramatizations of social issues make up part of the class; various approaches to drama in education are considered. Regular practice runs through the class and .each student will work out an individually practical scheme to put into subsequent use.

460: Directing, 4 hrs. Andrews, 6 credit hrs.

The procedures that lead to theatrical events are analysed in this class. The requirements include the directing of scenes from plays, and at least one fully achieved production. The class is normally only available to honours theatre students in the fourth year of their programme.

470: Special Topics, Faculty, 6 credit hrs.

This class allows the student to explore in detail particular areas of the theatre which are of special interest, with the guidance of members of the faculty. Frequency and the length of meetings will be decided to meet the needs of the particular topic or project under study. The class is open only to fourth year honours theatre students.

481: Acting III, D'Ambrosia, 6 credit hrs.

An advanced class in exercises and scene study, as well as interview and audition techniques.

Prerequisite: Theatre 380 and permission of instructor.

482: Acting IV, D'Ambrosia, 6 credit hrs.

This class concentrates on production work. The advanced acting student will be evaluated on both preparation of role and performance. Production work will be supplemented by reading and analysis of contemporary theatre practice.

430: Dramatic Theory and Criticism, and the Aesthetics of the Theatre, 4 hrs., Overton, 6 credit hrs.

All of the arts face a profound problem in the attempt to establish criteria which will enable creative activity to be evaluated. This class sets out to tackle that problem as far as the theatre is concerned. It looks at the various hypotheses and critical strategies that have been devised hitherto, and attempts to judge their present worth. It also asks what critical values are necessary for the survival and future growth of the theatre.

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Blackford, B.L., B.Sc. (Acadia), M.Sc. (M.I.T.), Ph.D. (Dal.),
Associate Professor of Physics
Boardman, R., B.Sc., Ph.D. (Lond.),
Associate Professor of Political Science
Bouma, G.D., B.A. (Calvin), B.D. (Princ. Theol. Sem.), M.A., Ph.D. (Corn.),
Associate Professor of Sociology
Bradfield, F.M., B.Com. (McM.), Ph.D. (Brown),
Associate Professor of Economics
Brown, J.W., A.B. (Miami), M.A. (Middlebury), Ph.D. (Penn.),
Associate Professor of French and Chairman of the Department
Brown, M.G., B.A. (U.W.O.), M.A. (Queen's), A.M., Ph.D. (Chic.),
Associate Professor of Economics

Brown, R.G., B.Sc. (Macdonald), M.Sc. (McG.), Ph.D. (Rutgers),
Associate Professor of Biology
Brunner, H., Dipl. in Math., M.A., Ph.D. (ETH. Zurich),
Associate Professor of Mathematics
Burns, S.A.M., B.A. (Acad.), M.A. (Alta.), Ph.D. (Lond.),
Associate Professor of Philosophy
Burton, A., B.Ed. (Sask.), M.Ed. (Alta.),
Associate Professor of Education
Byham, R.D., B.M., M.M. (Ill. Wesleyan),
Associate Professor of Music

Cameron, D.M., B.A. (Queen's), M.A., Phil. M., Ph.D. (Tor.),
Associate Professor of Political Science
Cameron, T.S., M.A., D. Phil. (Oxford),
Associate Professor of Chemistry
Campbell, R., B.A. (Harv.), Ph.D. (Corn.),
Associate Professor of Philosophy
Chapman, A.R.O., B.Sc., Ph.D. (Liv.),
Associate Professor of Biology
Clark, J.W., M.A. (McG.), Ph.D. (Queen's),
Associate Professor of Psychology
Clarke, D.B., B.Sc., M.A. (Tor.), Ph.D. (Edin.),
Associate Professor of Geology
Clements, J.C., B.Sc., M.A. (U.B.C.), Ph.D. (Tor.),
Associate Professor of Mathematics
Coffin, Irene, Lic. es Lett. (Sorbonne),
Associate Professor of Russian
Collins, J.V., B.Sc. (West Indies), Ph.D. (West Reserve),
Associate Professor of Biology
Cooke, R.C., B.S. (Macon), Ph.D. (Dal.),
Associate Professor of Oceanography
Cordes, J.G., B.Sc., M.Sc. (Dal.), Ph.D. (Cantab.),
Associate Professor of Physics
Cowan, S.A., B.A. (Montana), M.A. (Yale),
Associate Professor of English
Crowley, J.E., A.B. (Prin.), M.A. (Mich.), Ph.D. (Johns H.),
Associate Professor of History
Cynader, M., B.S. (McG.), Ph.D. (M.I.T.),
Associate Professor of Psychology

D'Ambrosia, Angela, B.F.A. (Carnegie Inst.)
Associate Professor of Theatre
Dawson, R. MacG., B.A. (Trin.), M.A. (Tor.), B. Litt. (Oxon.),
Associate Professor of English (King's)
Dauphinee, G.A., B.Sc., M.Sc. (Dal.),
Associate Professor of Chemistry
Dial, R.L., B.A. M.A. (Col.), Ph.D. (Berk.),
Associate Professor of Political Science
Doyle, R.W., B.Sc., M.Sc. (Dal.), Ph.D. (Yale),
Associate Professor of Biology
Dunham, P.J., B.A. (DePauw), M.A., Ph.D. (Miss.),
Associate Professor of Psychology

Earhard, B., B.A., M.A., Ph.D. (Tor.),
Associate Professor of Psychology
Elliott, D.H., B.A. (Yale), Ph.D. (Pitt.),
Associate Professor of Sociology
Elliott, J., B.A., (Wells), M.A. (Kansas), Ph.D., (Pitt.),
Associate Professor of Sociology

Farley, J., B.Sc. (Sheff.), M.Sc. (U.W.O.), Ph.D. (Man.),
Associate Professor of Biology
Farrell, D.M., B.A. (St. Norbert Coll.), M.Mus., Ph.D. (Wis.),
Associate Professor of Music
Fergusson, C.B., B.A. (Dal.), D. Phil. (Oxon.),
Associate Professor of History
Field, C.A., B.Sc. (Dal), M.S., Ph.D. (Northwestern),
Associate Professor of Mathematics
Fingard, J., B.A. (Dal.), M. Phil., Ph.D. (Lond.),
Associate Professor of History
Fournier, R.O., M.S., (Wm. & Mary), Ph.D. (U.R.I.),
Associate Professor of Oceanography
Friedrich, R., Ph.D. (Gott.),
Associate Professor of Classics

Gamberg, H.V., B.A. (Brandeis), A.M., Ph.D. (Prin.),
Associate Professor of Sociology
Garside, E.T., B.A. (Queen's), M.A., Ph.D. (Tor.),
Associate Professor of Biology
Geldart, D.J.W., B.Sc. (Acadia), Ph.D. (McM.),
Associate Professor of Physics
Goble, D.F., B.Sc., M.Sc. (Alta.), Ph.D. (Tor.),
Associate Professor of Physics

Goldsmith, F.B., B.Sc., Ph.D. (Wales),
Associate Professor of Biology
Grossert, J.S., B.Sc., M.Sc., Ph.D. (Natal),
Associate Professor of Chemistry
Grünenfelder, L., Dipl. Physics, Dr. Sc. Math. (Zurich),
Associate Professor of Mathematics
Gupta, R.P., B.Sc., M.Sc. (Agra), Ph.D. (Delhi),
Associate Professor of Mathematics

Haley, L.E., B.S.A., M.S.A. (Tor.), Ph.D. (Calif.),
Associate Professor of Biology and Assistant Dean of the Faculty of Arts and Science
Hare, W.F., B.S. (Lond.), M.A. (Leic.), Ph.D. (Tor.),
Associate Professor of Education and Philosophy and Chairman of the Department of Education
Hartley, A.J., B.A. (U.W.O.), M.A. (Tor.), Ph.D. (Lond.),
Associate Professor of English
Hartzman, C.S., B.S. (C.C.N.Y.), M.S. (Purdue), Ph.D. (Colo.),
Associate Professor of Mathematics
Harvey, M.J., B.Sc. (King's), Ph.D. (Durh.),
Associate Professor of Biology
Heighton, E.L., B.Sc., M.A. (Dal.), Ed. D. (Virg.),
Associate Professor of Mathematics (King's)
Hooper, D.L., B.Sc., M.Sc., Ph.D. (U.N.B.),
Associate Professor of Chemistry
Huber, P.B., B.A., M.A., Ph.D. (Yale),
Associate Professor of Economics

Jones, S., B.A. (Benn.), M.A. (Calif.-Berkeley), Ph.D. (Harv.),
Associate Professor of Spanish and Chairman of the Department

Kaill, R.C., B.A. (Dal.), B.D., M.S.A. (Tor.), Ph.D. (McG.),
Associate Professor of Sociology and Chairman of the Department
Keane, P., B.A. (Manch.), M.Ed. (Brist.), Ph.D. (Bath),
Associate Professor of Education
Kennedy, A.E., B.A., M.A. (U.B.C.), Ph.D. (Edin.),
Associate Professor of English
Kiang, D.B.I., B.Sc. (Mt. A.), M.Sc., Ph.D. (McM.),
Associate Professor of Physics
Klein, E., Ll.M. (Buenos Aires), Dr. rer. pol. (Hamburg),
Associate Professor of Economics
Klug, M.A., B.A. (Minn.), M.A. (Kansas State), Ph.D. (Ill.),
Associate Professor of English
Kocourek, R., State Examination, Ph.D., C.Sc., Docent. (Prague),
Associate Professor of French
Kwak, J.C.T., B.Sc., M.Sc., Ph.D. (Amst.),
Associate Professor of Chemistry

Lawrence, D.W., B.A., M.A., Ph.D. (Lond.),
Associate Professor of French
Lawrence, L.H., B.A. (Qu.), M.A. (Ill.),
Associate Professor of Theatre and Chairman of the Department
Leiper, W., B.Sc., Ph.D. (Glas.),
Associate Professor of Physics
Lewis, D.M., B.Eng., M. Eng. (N.S.T.C.),
Associate Professor of Engineering
LoLordo, V.M., A.B. (Brown), Ph.D. (Penn.),
Associate Professor of Psychology

McBride, R.P., B.Sc., M.Sc. (U.B.C.), Ph.D. (Edin.),
Associate Professor of Biology
MacLennan, I.A., B.A. (Oxon.), M.Sc. (Lond.),
Associate Professor of Philosophy
Marfels, C.T., M.A., Dr. rer. pol. (F.U. Berlin),
Associate Professor of Economics
Marriott, E.T., B.A. (Mt. A.), M.Ed. (Tor.),
Associate Professor of Education and Dean, Student Services
Martin, R.M., A.B. (Col.), M.A., Ph.D. (Mich.),
Associate Professor of Philosophy and Chairman of the Department
Medioli, F., Ph.D. (Parma),
Associate Professor of Geology
Mendel, S., M.A. (Cantab.),
Associate Professor of English
Merritt, R.G., A.B. (Corn.), M.A. (N.Car.), Ph.D. (Tul.),
Associate Professor of Theatre
Mitchell, D.E., B. App. Sc., B.Sc., M.App. Sc. (Melb.), Ph.D. (Calif.),
Associate Professor of Psychology
Moore, B.R., A.B. (Emory), Ph.D. (Stan.),
Associate Professor of Psychology
Morgan, J.G., B.A. (Nott.), M.A. (McM.), D. Phil. (Oxon.),
Associate Professor of Sociology (King's)
Morris, J., B.A. (DePauw),
Associate Professor of Music
Muecke, G.K., B.Sc., M.Sc. (Alta.), D. Phil. (Oxon.),
Associate Professor of Geology
Munton, D.J., B.A., M.A. (U.B.C.), Ph.D. (Ohio),
Associate Professor of Political Science
Myers, C.J., B.A. (Sask.), M.A., Ph.D. (Tor.),
Associate Professor of English

Nadel, L., B.Sc., M.Sc., Ph.D. (McG.),
Associate Professor of Psychology
Nugent, S.T., B.Sc. (M.U.N.), B.E. (N.S.T.C.), M.A.Sc. (Tor.), Ph.D. (U.N.B.),
Associate Professor of Engineering Physics

Ozier, M., B.A., M.A., Ph.D. (Tor.),
Associate Professor of Psychology

Paré, R., B.Sc. (Laval), M.Sc., Ph.D. (McG.),
Associate Professor of Mathematics
Paton, B.E., B.Sc., M.Sc. (Wat.), Ph.D. (McG.),
Associate Professor of Mathematics
Patterson, E.M., B.Sc. (Mt.A.), B.Eng. (N.S.T.C.), M.Sc. (Queen's),
Associate Professor of Engineering and Acting Chairman of the Department
Pereira, N.G.O., B.A. (Man.), M.A., Ph.D. (Calif. Berkeley),
Associate Professor of History and Russian
Pillay, P.D., B.A. (S.A.), Ph.D. (Lond.),
Associate Professor of History and Chairman of the Department
Piper, D.J.W., B.A., M.A., Ph.D. (Cantab.),
Associate Professor of Geology
Poel, D.H., A.B. (Calvin), M.A. (W. Mich.), Ph.D. (Iowa),
Associate Professor of Political Science and Chairman of the Department
Poole, H.E., B.A., M.A. (Birm.), Ph.D. (Tor.),
Associate Professor of Education

Ramaley, L., B.A. (Colo.), M.A., Ph.D. (Princ.),
Associate Professor of Chemistry
Rao, U.L.G., B.A., M.Sc., M.A. (Andhra), Ph.D. (U.W.O.),
Associate Professor of Economics
Ravindra, R., B.Sc., (I.I.T.), M.A. M.Sc., Ph.D. (Tor.),
Associate Professor of Physics and Religion
Reynolds, P.H., B.Sc. (Tor.), Ph.D. (U.B.C.),
Associate Professor of Geology and Physics
Roald, J.B., B.Ed. (U.B.C.), M.A. (Wash.), Ed.D. (U.B.C.),
Associate Professor of Education
Rudolph, R.L., B.A., M.A. (DePauw), Ph.D. (N.Car.),
Associate Professor of Psychology
Ruiz Salvador, A., B.A. (Brandeis), A.M., Ph.D. (Harv.),
Associate Professor of Spanish

Semple, S.W., B.A. (Syd.), M.Ed., Ed.D. (Tor.),
Associate Professor of Education
Shaw, T.M., B.A. (Sussex), M.A. (Mak.), M.A., Ph.D. (Prin.),
Associate Professor of Political Science
Simpson, A.M., B.A. (Cantab.), M.Sc., Ph.D. (Dal.),
Associate Professor of Physics
Smith, W.R., B.A.Sc., M.A.Sc. (Tor.), M.Sc., Ph.D. (Wat.),
Associate Professor of Mathematics
Sodhi, S.S., B.A., B.T., M.A. (Panjab), B.Ed., Ph.D. (Alta.),
Associate Professor of Education
Steffen, D., Ph.D. (Gott.),
Associate Professor of German and Chairman of the Department
Stewart, P.N., B.A. (U.B.C.), M.A. (Calif. Berkeley), Ph.D. (U.B.C.),
Associate Professor of Mathematics and Chairman of the Department
Stokes, L.D., B.A. (Tor.), M.A., Ph.D. (Johns H.),
Associate Professor of History
Sutherland, W.R.S., B.Sc. (Mt. A.), M.A., Ph.D. (Brown),
Associate Professor of Mathematics
Swaminathan, S., B.A., M.A., M.Sc., Ph.D. (Madras),
Associate Professor of Mathematics

Tan, K.K., B.Sc. (Nan.), Ph.D. (U.B.C.),
Associate Professor of Mathematics
Thiebaux, H.J., A.B. (Reed Col.), M.A. (Ore.), Ph.D. (Stan.),
Associate Professor of Mathematics
Thiessen, V., B.A. (Man.), M.A., Ph.D. (Wisc.),
Associate Professor of Sociology
Thompson, A.C., B.Sc. (Lond.), Ph.D. (King's Coll., Newcastle-upon-Tyne)
Associate Professor of Mathematics

Tittle, J.S., B.S. (Kent State), M.M., D.M.A. (Wisc.),
Associate Professor of Music
Todd, T., B.A., Ph.D. (Texas),
Associate Professor of Education
Turner, M., B.A., M.A. (Manch.), Ph.D. (Lond.),
Associate Professor of History

Valleau, W.,
Associate Professor of Music

Waller, G.F., B.A., M.A. (Auck.), Ph.D. (Cantab.),
Associate Professor of English
Warren, C.H., B.Sc. (U.W.O.), Ph.D. (McM.),
Associate Professor of Chemistry
Whittier, H.S., B.S. (U.S. Naval Academy), M.A. (New Hamp.), Ph.D. (Yale),
Associate Professor of English
Wilson, D.F., B.F.A. (Carn. Inst. Tech.), M.Mus. (Roch.), Ph.D. (Roch.)
Associate Professor of Music
Winham, G.R., A.B. (Bowdoin), Dipl. Int. Law (Man.), Ph.D., (N. Car.),
Associate Professor of Political Science and Director of the Centre for Foreign Policy Studies

ASSISTANT PROFESSORS

Apostle, R., B.A. (Sim. Fr.), M.A. (Calif), Ph.D. (Berkeley),
Assistant Professor of Sociology

Barnstead, J.A., B.A. (Oakland), A.M. (Harv.),
Assistant Professor of Russian
Barresi, J., B.S. (Brown), M.A., (S. Cal.), M.S., Ph.D. (Wis.),
Assistant Professor of Psychology
Beaumont, C., B.Sc. (Sussex), Ph.D. (Dal.),
Assistant Professor of Oceanography
Bloom, K., B.S. (Loyola, Chic.), M.A., Ph.D. (N. Car.),
Assistant Professor of Psychology
Borwein, J., B.Sc. (U.W.O.), M.Sc., D. Phil. (Oxford),
Assistant Professor of Mathematics
Boyd, E., B.A. (S.M.U.), B.Ed. (St. F.X.), M.A. (Middlebury),
Assistant Professor of French
Boyd, R.J., B.Sc. (U.B.C.), Ph.D. (McG.),
Assistant Professor of Chemistry
Burke, J.C., B.A. (Memorial), B.D. (Pine Hill), Ph.D. (Edin.),
Assistant Professor of Sociology
Butler, P.M., B.A. (Mem.), M.A. (U.N.B.), Ph.D. (Tor.),
Assistant Professor of Sociology

Carter, T.P., B.A. (Prin.), M.A., Ph.D. (Brown),
Assistant Professor of French
Charlebois, C., B.A., M.A. (U.B.C.), Ph.D. (York),
Assistant Professor of Political Science
Chattopadhyay, A., B.Sc. (Calcutta), M.Sc. (Roorker), M.Sc. (Wat.), Ph.D. (Tor.)
Assistant Professor of Chemistry
Chaubey, Y.P., B.Sc. (B.H.), M. Stat. (I.S.I.), M.A., Ph.D. (Rochester),
Assistant Professor of Mathematics
Cintas, P.F.D., M.A. (Colorado), Ph.D. (Ind.),
Assistant Professor of French
Clark, P.G., B.A., M.A., (McM.), Ph.D. (U.B.C.),
Assistant Professor of Sociology
Cross, M.L., B.A. (Montana), M.A. (Simon Fraser),
Assistant Professor of Economics

Dasgupta, S.K., B.A. (Calcutta, M.A. (Delhi), M.A. (Roch.),
Assistant Professor of Economics
Day, J.L., B.S. (Alma), M.S. (E. Mich.), Ph.D. (Dal.),
Assistant Professor of Psychology
Djokic, P., B. Mus., M. Mus. (Julliard),
Assistant Professor of Music
Dunn, K.A., B.Sc. (Wat.), M.Sc., Ph.D. (Tor.),
Assistant Professor of Mathematics

Eden, R., B.A. (Berkeley), Ph.D (Harv.),
Assistant Professor of Political Science
Ervine, W.B., B.A.Sc., M.A.Sc. (Tor.), Ph.D. (Stan.),
Assistant Professor of Geology

vanFeggelin, C.,
Assistant Professor of Music
Ford, C., B.Mus. (Tor.),
Assistant Professor of Music

Gabor, G., M.Sc., Ph.D. (Eotvos L. Univ. of Science),
Assistant Professor of Mathematics

Gamberg, R., A.B. (Brandeis), M.A. (Ill.),
Assistant Professor of Education
Gesner, B.E., B.A., B.Ed., M.A. (Dal.),
Assistant Professor of French
Godfrey, J.F., B.A. (Tor.), B. Phil. (Oxon.), D. Phil. (Oxon.),
Assistant Professor of History and President, University of King's College
Gonnella-Welch, E., Dipl. of Art (Dundee Coll. of Art), L.R.A.M. (Roy. Acad. Lond.)
Assistant Professor of Music
Gordon, W.T., B.A., M.A., Ph.D. (Tor.),
Assistant Professor of French
Grindley, T.B., B.Sc., M.Sc., Ph.D. (Queen's),
Assistant Professor of Chemistry
Guy, R.D., B.Sc. (Simon Fraser), Ph.D. (Carleton,),
Assistant Professor of Chemistry

Hafter, R.S., B.A. (Vt.), M.A., Ph.D. (Brandeis),
Assistant Professor of English
Hicks, G.S., B.Sc., M.Sc. (Carl.), Ph.D. (Sask.),
Assistant Professor of Biology
Holloway, J., B.A. (Colo.), M.A. (Wyoming),
Assistant Professor of Spanish
Holmes, R.D., M.S. (Prin.), Ph.D. (Dal.),
Assistant Professor of Mathematics
House, D.K., B.A., M.A. (Dal.), Ph.D. (Liv.),
Assistant Professor of Classics
Huebert, R.M., B.A. (Sask.), M.A., Ph.D. (Pitts.),
Assistant Professor of English
Huegel, D.G., B.A. (Calif.), M.A. (Col.), Ed.D (Col.),
Assistant Professor of Education
Huntley, D., M.A. (Camb.), Ph.D. (Bristol),
Assistant Professor of Oceanography

Jabbra, N., B.A. (Calif.), M.A. (Ind.), Ph.D. (C.U.A.),
Assistant Professor of Sociology
Jusczyk, P.W., B.A. (Brown), M.A., Ph.D. (Penn.),
Assistant Professor of Psychology

Kartsaklis, G.A.B., Ph.D. (Bonn.),
Assistant Professor of Economics
Kealey, G.S., B.A. (Tor.), M.A., Ph.D. (Roch.),
Assistant Professor of History
Keener, L.L., B.A. (Amherst), M.Sc., Ph.D. (Rensselaer),
Assistant Professor of Mathematics
Klein, R.M., B.A. (S.U.N.Y.), M.A., Ph.D. (Ore.),
Assistant Professor of Psychology

Lane, P.A., B.A. (Hartwick), M.A., Ph.D. (S.U.N.Y.),
Assistant Professor of Biology
Lee, R.W., B.S., M.A. (Mass.), Ph.D. (S.U.N.Y.),
Assistant Professor of Biology
Lesser, B., B.Com. (Dal.), M.A., Ph.D. (Corn.),
Assistant Professor of Economics
Lowry, J.M.P., B.A., M.A., Ph.D. (Dal.),
Assistant Professor of German

Manos, J., B.A., B.Ed. (St. F.X.), M.Ed., Ph.D. (Calg.),
Assistant Professor of Education
Meinertzhagen, I.A., B.Sc. (Aberdeen), Ph.D. (St. Andrews),
Assistant Professor of Psychology
Mercer, E.B., B.Sc. (Dal.),
Assistant Professor of Mathematics and Administrative Assistant to the President
Miller, V.P., B.A. (Berkeley), M.A., Ph.D. (Calif. Davis),
Assistant Professor of Anthropology
Monk, P., B.A. (Reading), M.A. (Carleton), Ph.D. (Queen's),
Assistant Professor of English
Moore, R.M., B.A. (Oxford),
Assistant Professor of Oceanography
Morgan, H.E., B.A. (U.B.C.), B. Litt, (Oxon.), Ph.D. (Wash.),
Assistant Professor of English

Nevo, N., M.A. (Dal.),
Assistant Professor of Russian
Newman, J.M., B.Sc. (Dal.), M.A., Ph.D. (Tor.),
Assistant Professor of Education
Ng, S., B.Eng., M.Eng. (McMaster), Ph.D. (Waterloo)
Assistant Professor of Engineering
Novitsky, J.A., B.S. (Penn.), Ph.D. (Ore.),
Assistant Professor of Biology

O'Brien, J.T., B.A. (Wisc.), M.A., Ph.D. (Roch.),
Assistant Professor of History

O'Dor, R.K., A.B. (Calif.), Ph.D. (U.B.C.),
Assistant Professor of Biology
Osberg, L.S., B.A. (Queen's), M. Phil., Ph.D. (Yale),
Assistant Professor of Economics
Overton, D.R., B.A., M.A. (U.B.C.), Ph.D. (Calif.),
Assistant Professor of Theatre

Pacey, P.D., B.Sc. (McG.), Ph.D. (Tor.),
Assistant Professor of Chemistry
Patriquin, D.G., B.Sc. (Bishops), M.Sc., Ph.D. (McG.),
Assistant Professor of Biology
Peirce, J.W., A.B. (Dartmouth), Ph.D. (M.I.T.),
Assistant Professor of Geology
Perina, P., Dipl. Scenography (Prague),
Assistant Professor of Theatre
Phillips, J., B.Sc. (Vict.), M.A., Ph.D. (Oregon),
Assistant Professor of Mathematics
Pincock, J.A., B.Sc., M.Sc. (Man.), Ph.D. (Tor.),
Assistant Professor of Chemistry
Pinfold, T., B.A., M.A. (U.W.O.), Ph.D. (Minn.),
Assistant Professor of Economics
Poburko, N.S., B.A. (Ford), M.A., Ph.D. (Harv.),
Assistant Professor of English

Raymond, R.L., B.S. (Yale), M.A. (Tor.),
Assistant Professor of English
Richman, J., B.Sc. (Harvey Mudd), Ph.D. (M.I.T.),
Assistant Professor of Oceanography
Roulston, A., B.A. (Sir. G. Wms.),
Assistant Professor of German
Runte, Hans R., M.A., Phil, Ph.D. (Kansas),
Assistant Professor of French
Runte, R., B.A. (S.U.N.Y.), M.A., M.Ph., Ph.D. (Kansas),
Assistant Professor of French
Rusak, B., B.A. (Tor.), Ph.D. (Berkeley),
Assistant Professor of Psychology

Sandhu, M.M., Licence en Lettres (Montpellier), Ph.D. (Yale),
Assistant Professor of French
Schelter, W.F., B.Sc. (McM.), Ph.D. (Mc.G.),
Assistant Professor of Mathematics
Schotch, P.K., B.A., M.A., Ph.D. (Wat.),
Assistant Professor of Philosophy
Schwarz, H.G., M.A. (Munich), Ph.D. (McG.),
Assistant Professor of German
Sherwin, S., B.A. (York), Ph.D. (Stan.),
Assistant Professor of Philosophy
Sinclair-Faulkner, C.T., B.A. (Tor.), M.Th., M.A., Ph.D. (Chic.),
Assistant Professor of Religion
Sproule, H.D., B.A. (Dal.), M.A. (McG.),
Assistant Professor of English
Stephens, R.W., B.A. (Cantab.), M.Sc. (Brist.), Ph.D. (ICST),
Assistant Professor of Chemistry
Stodola, L., B.Mus. (Chic.), M.Mus. (Julliard),
Assistant Professor of Music
Stolzman, J., B.A. (Ore.), M.S. (Fl. State), Ph.D. (Ore.),
Assistant Professor of Sociology (King's)
Stovel, J.B., B.A. (Sir G. Wms.), B.A. (Camb.), Ph.D. (Harv.),
Assistant Professor of English
Sutherland, D.A., B.A. (Mt. A.), M.A. (Dal.), Ph.D. (Tor.),
Assistant Professor of History
Sutherland, S.L., B.A., M.A. (Alta.), Ph.D. (Essex),
Assistant Professor of Political Science

Taylor, G.D., B.A., Ph.D. (Penn.),
Assistant Professor of History
Terzis, A., B.S. (Franklin-Marshall Col.), M.S., Ph.D. (Prin.),
Assistant Professor of Chemistry
Tetreault, R.R., B.A. (U.B.C.), M.A., Ph.D. (Corn.),
Assistant Professor of English
Tindall, D.A., B.A., Ph.D. (Camb.),
Assistant Professor of Physics
Tomkow, T.A., B.A. (Simon Fraser), Ph.D. (Camb.),
Assistant Professor of Philosophy
Tritt, W., B. Mus. Maitrise en Interpretation Musicale, (Mont.), Dipl. de Concertiste (Sherbrooke),
Assistant Professor of Music
Vinci, T., B.A. (Tor.), M.A. (Pitts.), Ph.D. (Pitts.),
Assistant Professor of Philosophy
Vitins, I., B.A. (Mich.), Ph.D. (Calif.),
Assistant Professor of Russian

Waterson, K., B.A. (Long Island), M.A. (N.Y.), Ph.D. (C.U.N.Y.),
Assistant Professor of French
Weldon, K.L.M., B.Sc., M.Sc. (Tor.), Ph.D. (Stan.),
Assistant Professor of Mathematics
White, C.G., B.Sc., M.Sc. (Dal.),
Assistant Professor of Physics
White III, G.N., B.A. (Harv.),
Assistant Professor of Mathematics
Willison, J.H.M., B.Sc. (St. Andrews), Ph.D. (Nott.),
Assistant Professor of Biology
Wroblewski, J.S., B.S. (Illinois), M.S., Ph.D. (Florida),
Assistant Professor of Oceanography

Zentilli, M., B.Sc. (Chile), Ph.D. (Queen's),
Assistant Professor of Geology
Zouros, E., M.S., Ph.D. (Agriculture College, Athens), Ph.D. (Chic.),
Assistant Professor of Biology

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Lecturer in French

Crowley, M., B.A. (Miami), M.A.T. (Johns Hopkins),
Lecturer in Education

Dubinsky, L., B.A. (Dal.), M.A. (N.Y.U.),
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Lecturer in Chemistry

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Lecturer in German

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Lecturer in Economics

Richards, P.D.,
Lecturer in Theatre
Ricker, E.W., B.A., M.Ed. (U.B.C.),
Lecturer in Education
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Lecturer in French

Shuh, J.E., B.A. (Mt. A.), M. Div. (Union Theological Sem.),
Lecturer in Education

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Lecturer in Music

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Musician-in-Residence, Department of Music