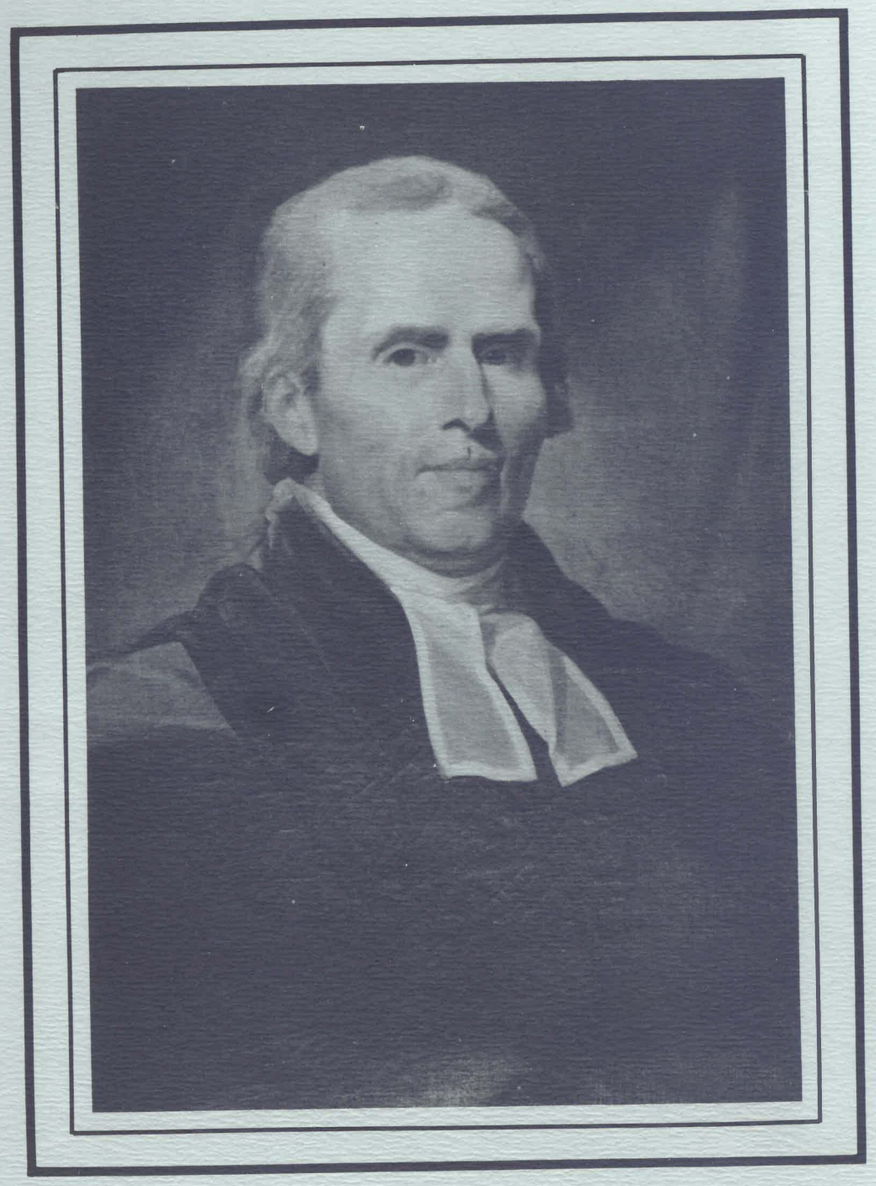


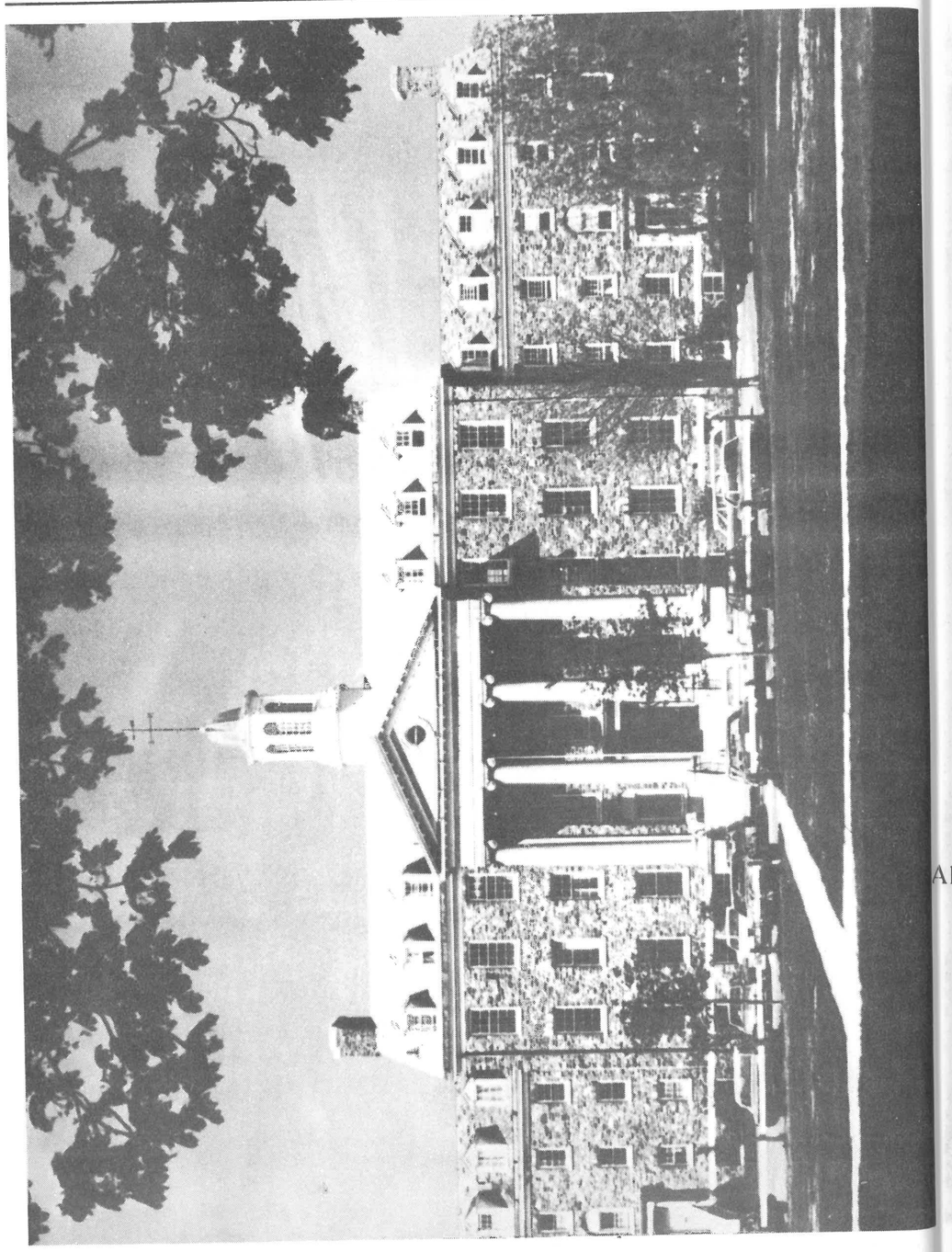
PHOTO: DELOREY

Dr. William Cochran,
First President of King's

CALENDAR
1980-81

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

HALIFAX, NOVA SCOTIA
192 st SESSION

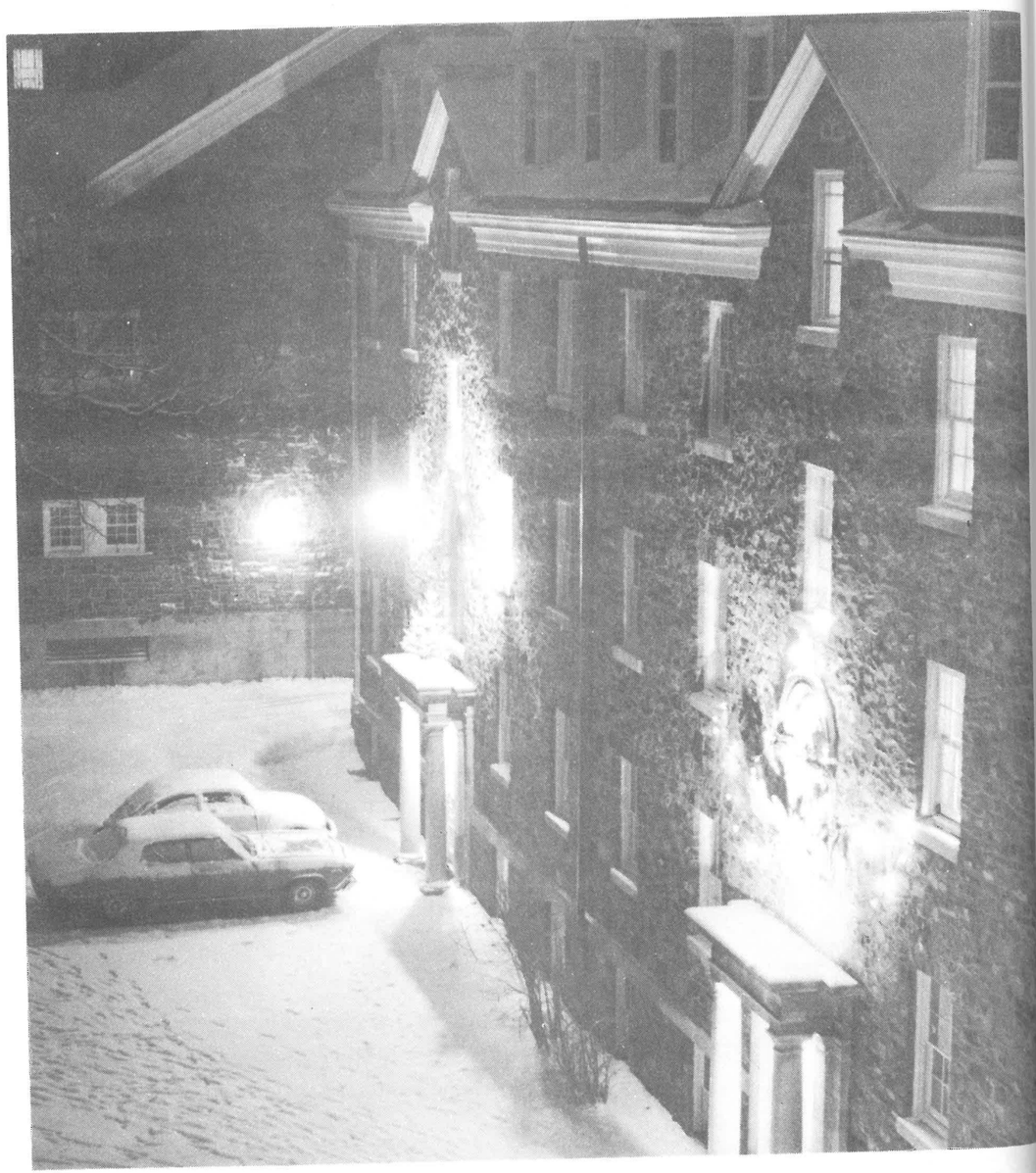


THE UNIVERSITY OF KING'S COLLEGE

offers the

Bachelor of Arts (Ordinary and Honours)
Bachelor of Science (Ordinary and Honours)
These degrees are granted by Dalhousie University.
Also in association with Dalhousie, King's offers the requisite pre-professional work for admission to **Medicine, Dentistry, Architecture, Law, Education, Physiotherapy, Theology.**

Bachelor of Journalism (Honours) (Four years from Grade 12)
Bachelor of Journalism (One year after a first degree)
These degrees are awarded by the University of King's College



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ALMANAC 1980-81

JULY 1980

Tuesday, 1
Dominion Day

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

Monday, 14
Halifax Natal Day—No classes—date to be confirmed

AUGUST 1980

Wednesday, 5
Dartmouth Natal Day—half holiday—date to be confirmed

Wednesday, 13
Supplemental examinations begin in Arts and Science.

Friday, 15
Final day of classes, Summer School.

SEPTEMBER 1980

Monday, 1
Labour Day

Tuesday, 2
Registration and payment of fees, Bachelor of Journalism

Wednesday, 3
Classes begin in Bachelor of Journalism (B.J.) Programme

Wednesday, 10—Saturday noon, 13
Last Regular days for class approval, registration and payment of fees for students in Arts and Science and Bachelor of Journalism (Honours) Programme

Thursday, 11
Classes begin in the Foundation Year Programme

Sunday, 14
University Church Service - Chapel 4:30 p.m.

Monday, 15
Classes begin in Arts and Science and Bachelor of Journalism (Honours) Programme.

Monday, 29
Last day for adding classes (except "B" classes) Arts and Science and Journalism

OCTOBER 1980

Monday, 13
Thanksgiving Day.

NOVEMBER 1980

Tuesday, 11
Remembrance Day.

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

DECEMBER 1980

Thursday, 11
Last day of classes in Arts and Science, Foundation Year Programme and Journalism.

Friday, 12
Examinations begin in Arts and Science and Journalism.

Monday, 22
No classes, student holidays begin.

Thursday, 25
Christmas Day.

Friday, 26
Boxing Day.

JANUARY 1981

Thursday, 1
New Year's Day.

Monday, 5
Registration of new students.
Classes resume, all faculties.

Monday, 19
Last day for adding or changing "B" (or second term) classes, Arts and Science and Journalism.

Wednesday, 28
Last day for withdrawing from full-year classes, or "C" classes, without academic penalty. Arts and Science and Journalism.

FEBRUARY 1981

Wednesday, 4
Meeting of Convocation 8:00 p.m.

Friday, 6
George III Day. No classes.

Saturday, 7
Winter Carnival. No classes.

Monday, 23 - Saturday, 28
Study break.

MARCH 1981

Monday, 2
Classes resume

Monday, 9
Last day for withdrawing from "B" classes without academic penalty, Arts and Science and Journalism

APRIL 1981

Friday, 10
Awards Banquet
Last day of classes, Foundation Year Programme.

Saturday, 11
Last day of classes in Arts and Science, Journalism.

Monday, 13
Examinations begin in Arts and Science and Journalism.

Friday, 17
Good Friday

Thursday, 23
Last day for submitting work in the Foundation Year Programme.

MAY 1981

Monday, 4
Registration and beginning of classes, Chemistry 240: (1st session of Summer School).

Monday, 11
Summer School registration (1st session).

Tuesday, 12
Summer School begins (1st session).

Wednesday, 13
Encaenia Day - 11 a.m. Baccalaureate Service.
King's Convocation - 2:30 p.m.

Thursday, 14
Dalhousie University Convocation.

Friday, 15
Dalhousie University Convocation.

Monday, 18
Victoria Day.

Friday, 22
Dalhousie University Convocation

Friday, 29
Dalhousie University Convocation

JUNE 1981

Monday, 22
Registration and beginning of classes, Chemistry 110: (2nd
session of Summer School).

Tuesday, 23
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
The Right Reverend the Lord Bishop of Nova Scotia.

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President and Vice-Chancellor
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The Hon. Mr. Justice Robert J. McCleave, Q.C.
Mr. James E. Cochran, B.A., B.Ed.
Dr. Garth B. Christie, B.Sc., M.D.
Mrs. R.W. (Linda) Fowler, B.A., B.Ed.

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The Rev. Dr. Robert D. Crouse, B.A., S.T.B., M.Th., 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 Elizabeth A. Chandler
Mr. J-F B. Lambert
Miss Paula Jean Webber

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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.
Dr. Henry F. Muggah, Q.C.
Professor F. Hilton Page, M.A., D.D.
Mr. F.W. Chenhall, B.Comm., C.A.
Mr. Ralph V.A. Swetnam, LL.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. Frank T. Beazley
Ms. Mary Barker
Mr. G. R. K. Lynch
Mr. R.G. Smith
Mr. R. V. A. Swetnam
Dr. J. P. Atherton
The Very Rev. H. Rhodes Cooper
The Rev. T. W. F. Crowther

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Mr. R. G. Smith

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Prof. R. MacG. Dawson (1983)

Governor Emeritus
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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Vice-President
George C.S. Bain
Director, School of Journalism
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Director, Foundation Year Programme
Mr. D. Fry
Bursar
H. Roper, B.A., M.A., Ph.D.
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. F.G. Krieger, B.A., B.S.T.
Divinity Secretary
Mrs. Iris Newman
Executive Secretary Alumni Association
The Rev. T.H. Curran, B.A., M.A., M.T.S.
Dean of the College
Mrs. T.H. Curran, B.A., M.A.
Dean of Women and Information Officer
Mr. R. M. Shoveller, B.P.E.
Director of Athletics

Officers of Convocation

The Honourable Mr. Justice R.A. Ritchie, Q.C., B.A., D.C.L., L.L.D.,
Chancellor
J.F. Godfrey, B.A., B.Phil., D.Phil.
Vice-Chancellor
The Rev. 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 (1979-80)

J.P. Atherton, M.A. (Oxon.), Ph.D. (Liverpool)
Professor of Classics, Chairman of Department
George C.S. Bain
Professor of Journalism and Director of the School of Journalism
R.D. Crouse, B.A. (Vind.), S.T.B. (Harv.), M.Th. (Trinity), Ph.D. (Harv.)
Professor of Classics
T. H. Curran, B. A. (Trinity), M.A. (Dal.), M.T.S. (A.S.T.)
Dean of the College, Assistant to the Director - Foundation Year Programme
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)
Vice-President of the University, Professor of History
W.J. Hankey, B.A. (Vind.), M.A. (Tor.),
Assistant Professor of Humanities and Social Sciences, Special Lecturer in Classics
H. Eugene Meese, B.A. (Ohio State), Dip. Journ. (U.W.O)
Assistant Professor of Journalism
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.)
Assistant Professor of Humanities and Social Sciences, Registrar
C. J. Starnes, B.A. (Bishops), S.T.B. (Harv.), M.A. (McG.), Ph.D. (Dal.)
Assistant Professor of Humanities and Social Sciences, Assistant Professor of Classics, Director of the Foundation Year Programme.
D.H.Steffen, Ph.D. (Gott.)
Associate Professor of German
K.E. von Maltzahn, M.S., Ph.D. (Yale)
George S. Campbell Professor of Biology

Associate Fellows
A.H. Armstrong, M.A. (Cantab.), F.B.A.
Professor of Classics and Philosophy, Dalhousie University
J. Farley, B.Sc. (Sheff.), M.Sc. (U.W.O.), Ph.D. (Man.)
Associate Professor of Biology, Dalhousie University
Y. Glazov, Ph.D. (Oriental Institute, Moscow)
Professor of Russian and Chairman of the Department, Dalhousie University
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
R. Puccetti, B.A. (Ill.), M.A. (Tor.), Ph.D. (Paris)
Professor of Philosophy, 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 an University for the education and instruction of Youth and Students in Arts and faculties, 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 beginnings 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 now offers two degree programmes (B.J. Honours and B.J.).

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 "Oxbridge" 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.

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 Wednesday	9:00 a.m. - 5:00 p.m. 6:00 p.m. - 11:00 p.m.
Thursday	9:00 a.m. - 5:00 p.m. 7:30 p.m. - 11:00 p.m.
Friday	9:00 a.m. - 5:00 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.

ADMISSION REQUIREMENTS

A. Admission to the Dalhousie-King's Faculty of Arts and Science

1. General Statement

For further information on admission to the Faculty of Arts and Science, visit, write or telephone: the Registrar's Office, University of King's College, Halifax, N.S. B3H 2A1 (902-422-1271).

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.*

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 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* should be received by June 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 June 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.

(d) 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.

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

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

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 principal 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.

B. Admission to the School of Journalism, the University of King's College

1. Admission to the 4 year B.J. (Hons.) programme

For applicants from High School. (See below -2- for application procedure for admission to the one year B.J. degree programme—for applicants who hold a Bachelor's degree).

General

The normal minimum requirement which applicants must possess to be considered for admission to the B.J. (Hons.) programme, is that for admission to the Dalhousie-King's Arts and Science programme. As the number of places in the programme is limited, it is expected that only a proportion of qualified applicants will be admitted; selection will be made on a competitive basis.

Application Procedure

Candidates for admission to the School of Journalism must apply using the Dalhousie-King's common application form (available from the Registrar's Office, or from most high schools). Completed application forms should be received by the Registrar as soon as possible after January 1, and not later than April 15. Late applicants will be considered only if space is available. Candidates must indicate on their application form that they are applying for admission to the B.J. (Hons.) degree. The following supporting evidence must also be provided by the candidate:

(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.

When these documents have been received, applicants judged to have obtained the minimum requirements will be so notified by the Registrar, University of King's College.

When you have received this notification you must then complete your application by writing a letter of application, typed on standard typewriter paper, double-spaced, in which you tell us about yourself, your studies and the fields of study you most enjoy and have been most successful in, and your interests out of school. Say what it was that led you to think about journalism and why it is that you want to study it. This letter, which should be of about three pages in length—600 words—should be in effect an essay about yourself which will not only tell us who you are and what you have done and want to do, but permit us to make a judgment about your ability to express yourself. Mail this to:

George Bain
Director, School of Journalism,
University of King's College,
Halifax, N.S. B3H 2A1

When this biographical sketch has been read for content and style, the Director may ask the candidate, as a further test, to do a book review, in which case a list from which a choice may be made will be mailed to you.

The school follows a policy of considering applications as they come in, and the number of places is kept deliberately small. It is to the advantage of the applicant, therefore, to complete the submissions as early as possible. Applications ordinarily will be complete by April 15. Late applications will be considered only if space remains.

A reasonable ability to type is required. Students should note the policy of the School of Journalism with respect to this matter as stated elsewhere in this calendar under the heading "Typing Requirement."

2. Admission to the one year B.J. programme

For applicants who hold a Bachelor's degree.

General

The intention of the B.J. programme is to foster the professional development of students so that they may fill editorial positions in news organizations with not only a high degree of technical competence, but responsibility, dedication and a sense of purpose. It is designed to do two things—to give students a mastery of the techniques of news gathering, writing and presentation, this in a newsroom atmosphere; and to acquaint them with issues so as to provide the sort of background essential to the knowledgeable reporting of increasingly complex affairs.

Although other academic qualifications may be considered, normally only those students may be admitted to this programme who have successfully completed a B.A. or B.Sc. degree at a recognized university with a minimum average of B. Enrolment is limited and students will not ordinarily be admitted unless their record shows a broad acquaintance with the history of the development of western civilization such as that which is provided by the Foundation Year Programme outlined in the University Calendar. Prospective students who have not taken the Foundation Year Programme in the first year of their first degree and who are in course at another institution are advised to consult with the University on the course of studies which will best prepare them to meet this requirement.

Application Procedure

For admission to the one-year B.J. programme, the student must:

1. Complete the Dalhousie-Kings common application form, available from the Registrar. Students must indicate on the application form that they are applying for the B.J. degree. This form must be returned to the Registrar, University of King's College.

2. Submit a transcript of credits covering undergraduate and any graduate work.

3. Be prepared to demonstrate before graduation a reading knowledge of French. The University administers such a test at the beginning of the Fall Term and at the end of the Spring Term and it may be taken more than once without penalty. The student is required to translate—the use of a dictionary is permitted—a designated passage or passages from a current French-language newspaper, such as le Devoir. No French courses will be offered or available to B.J. students during the academic year.

4. Submit an autobiographical sketch typed on standard typewriter paper, double-spaced. In addition to personal information, the student should write about his/her studies, interests and extra-curricular activities. Details of any experience on college publications or practical experience in newspapers, broadcast stations or magazines. (Length: 1,000 words maximum) Mail this to George Bain, Director, School of Journalism, University of King's College, Halifax, N.S. B3H 2A1.

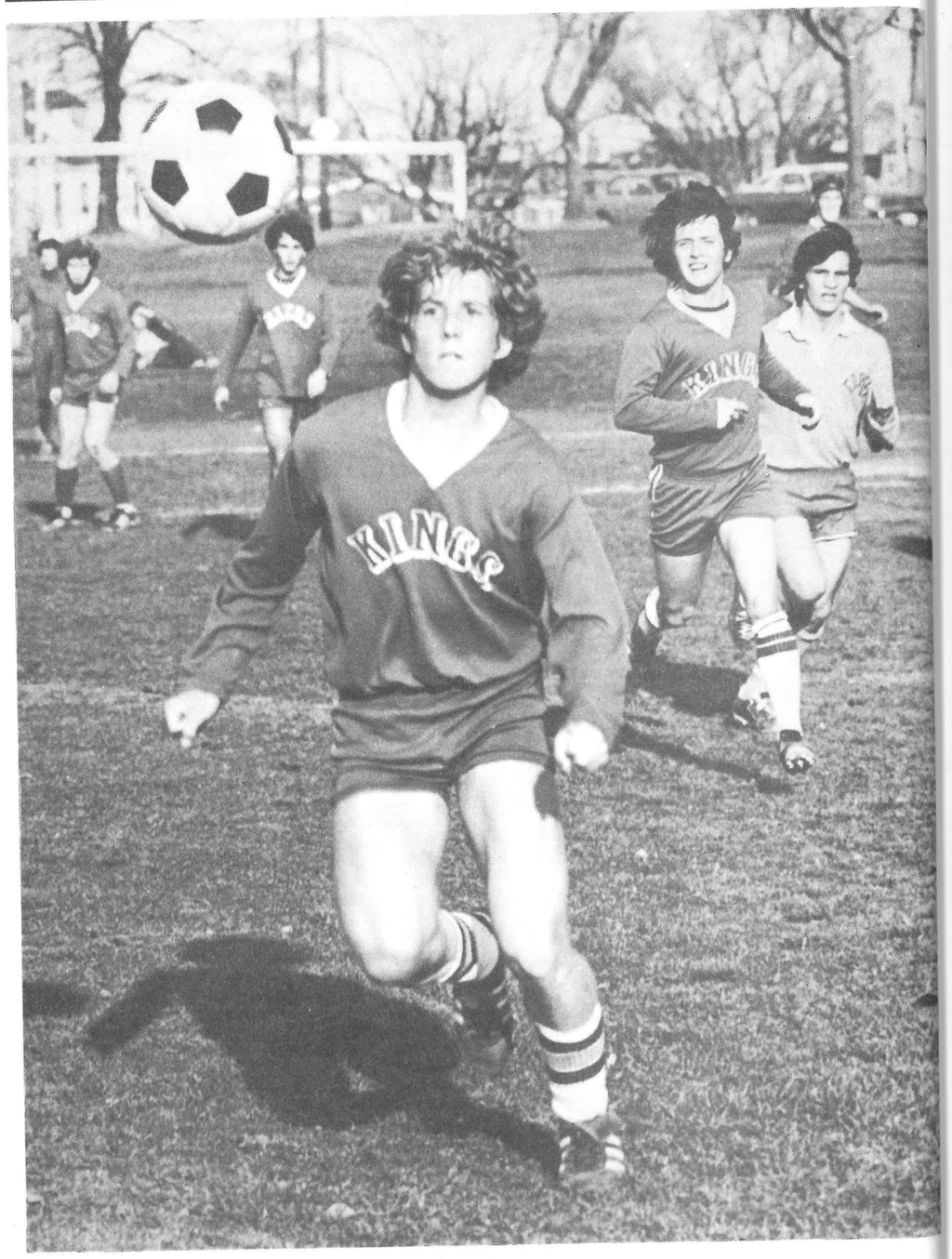
5. All students must know how to type. All assignments must be typewritten.

6. Prospective students should note that the B.J. programme begins before the regular session of the Faculty of Arts and Science. For the academic year 1980/81 registration is on September 2 and classes begin on September 3, 1980.

The School takes into account the student's academic records, contributions to school, university, and other publications, extra-curricular activities, and other evidence of a keen interest in journalism. Previous professional experience or writing, though frequently a good test of motivation, is not essential.

The School follows a policy of continuously reviewing applications and admits only a limited number of qualified applicants. Thus it is to the advantage of the applicant to complete the submissions and tests as early as possible. Application forms must ordinarily be received by April 15. Late applications for admission will be considered only if space is available.

Students are admitted for the full-year course which begins September 3. The School has no regular summer session, offers no correspondence courses and accepts no part-time students in the one-year B.J. programme.



KING'S COLLEGE RESIDENCES

Dean
The Rev. Thomas H. Curran, B.A., M.A., M.T.S.

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

Dons (1979-80)
Mr. Anthony Bassett, B.A., M.A.
Miss Joyce Burnett, B.Sc.
Mr. Jonathan Eayrs, B.A. (Senior Don)
The Rev. Ronald Evans, B.A., M.Div.
Miss Susan Harris, B.A., B.Ed.
Mr. Gregory Mullaly, B.A., B.Phil.
Mr. Gary Thorne, B.A., M.A.

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 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 living room, 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 extra-curricular 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 residence 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 9, 1980 until the morning of the last day of examinations in the Faculty of Arts and Science for the Fall term. The residence will reopen on January 4, 1981, and remain open until the morning of the last day of examinations in the Faculty of Arts and Science for the academic year.

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 those periods may reside in the College by permission of the Deans on payment of rent. When Prince Hall is open, meals may be purchased.

As the residences will not be open during the Christmas holidays, students are urged to make arrangements for their Christmas vacations as early as possible in the Fall term. 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 an application received by the Registrar or the Deans prior to August 15th will entitle the student to a refund of the $50.00. Failure to cancel with the Registrar or the Deans before August 15th 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 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-serve basis for a minimal *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 make use of 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.

(A student enrolled at King's is required to pay the King's Student Union Fee of $51.00, 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 $51.00).

FEES AND CHARGES

Academic and Related Fees

Fees are subject to change. Those payable in 1979-80 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	$840.00	$3.00	$843.00	$843.00		$550.00	$298.00
Journalism	$868.00	—	$868.00	$868.00		$550.00	$323.00

Part-time Students - Academic and Student Fees
Part-time students are expected to complete the registration process and pay a minimum fee of $25.00 on or before the regular registration dates. For those registering for classes completed in one term the total of university and incidental fees are payable at the time fixed for registration. Those registered for classes that extend over two terms may elect to pay fees for those classes in two installments. If payment is made by installments, a carrying charge of $5.00 is added to fees payable in the second installment, and for each class extending over two terms $115.00 constitutes the first installment and $77.50 the second installment.

Undergraduate class fees are as follows:

	University Fee	Student Union Fee
One-third credit class	$60.00	-
One-half credit class	$90.00	$6.25
One full credit class	$175.00	$12.50
Two full credit classes	$350.00	$25.00
Three full credit classes	$525.00	$51.00 (full Student Union benefits)

Audit Students
Students who wish to audit a class but not for degree credit are required to register and pay fees at registration on the following basis:

	University Fee
One-third credit class	$30.00
One-half credit class	$45.00
One full credit class	$90.00

A student registered to audit a course who during the session wishes to receive credit for the class must receive approval from the Registrar and pay the difference in class fees plus a transfer fee of $25.00.

Summer Session Students
Students registered for the first or second summer session pay fees on the same basis as part-time or audit students during the regular academic year.

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. Interest will be charged if the account is in arrears and $5.00 will be charged for any cheque returned as non-negotiable by a bank. Late registration penalty must also be paid if applicable.

Application Fee
An application fee of $10.00 is required with the application form submitted by any student *who has not previously attended this University,* for any programme except those in the Faculty of Graduate Studies. In the case of a student who applies to more than one programme for a given session, the fee need be paid only once. If, however, the fee is paid for a given session, and the applicant does not attend whether accepted or not accepted, and an application is made for a subsequent session, the fee is again payable.

Application fees are not refundable and are not applied as a credit to class fees.

Admission Deposit
Deposits are required in certain programmes. All prepaid deposits are applied to the first installment due for fees. No refunds are made to students who do not register in the programme for which they have been accepted. Where fees in full are payable by a government or other agency, a deposit paid by an individual will be refunded to the student by November 15, unless the account is not paid by that date in this case refund will be made as soon as payment is received.

Registration Fees
All students are expected to register on or before the regular registration dates. To complete registration an accepted applicant or returning student is required to complete the registration process, including any necessary class selection or approval, and to pay a minimum fee of $25.00 unless an admission deposit has been paid. The registration fee may be paid at any time prior to August 15, and it will be applied as a credit to fees. This payment must be made by all students including those on scholarships, fellowships, student loans, or whose fees are to be paid by external agencies.

Late Registration
Students are required to register and pay minimum of first instalment on or before specified dates as indicated in the almanac. Late registration requires the approval of the Dean of the Faculty and/or the Registrar, and payment of a penalty fee of $5.00 per day, to a maximum of $25.00.

Payments
Fees are due and payable at registration. Full-time students and part-time students with classes extending over fall and winter terms may pay fees in two installments.

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

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

Scholarships or bursaries paid by or through Dalhousie University may be applied to fees. Students must produce at registration adequate documentary evidence of entitlement to the sums claimed under the award. If fees are to be paid by a government or other agency, a signed statement from the agency must be presented at registration. (All such students are required to pay $25.00 on registration.)

Fees cannot be deducted from salaries paid to students who are employed by Dalhousie University.

Late Payment
Interest will be charged on any balance of fees outstanding after the registration date except where payment of a second installment is permitted. When fees are paid within two weeks of the last date for regular registration, interest charges will be foregone. Students whose accounts are more than 30 days in arrears may be dismissed from the University.

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 interest charges waived. 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 will be charged on second installments outstanding after January 23.

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 ($51.00 or $6.25, 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 (for students in Arts and Science) or the Accounts Bursar at King's (for students in Journalism).

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 Killam Library, Dalhousie, upon payment of a $5.00 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
Any graduating student who is unable to appear at Encaenia is expected to notify the Registrars of Dalhousie and King's in writing prior to May 4, giving the address to which the diploma is to be mailed. There is a $10.00 fee payable by students who wish to be graduated in absentia, and this should accompany the notification. In any case where notification is not received by the required date, and a student does not appear at Encaenia, the fee will be $15.00.

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 registered 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 registered and cancels his registration before the first day of classes will be entitled to a full refund of fees, except those paid as Admission Deposit.

A student withdrawing within two weeks of the date of commencement of classes will be charged a registration fee only of $25.00.

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 proportional 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 instalment 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 $51.00 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.

Residence Fees
All residence rates include three meals per day for the duration of the academic year. There are no meal plans which exempt resident students from some meals. In the case of timetable 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.

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, 1980, or who fails to notify the Dean 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 of 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 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 $51.00. 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.

Failure to Pay Residence Fee
Residence Fees for the Fall term must be paid by September 30 of each year. Residence Fees for the Winter term must be paid by January 30 of each year. Students who have not paid these fees by the deadline indicated will be charged a penalty of $40.00 in addition to 12% interest on the unpaid fees.

1. No student may return to residence in the Winter term until his first term residence (and interest) charges are fully paid; the rooms of these students will be reassigned.

2. No student may return to residence after the study break of the Winter term until his second term residence (and interest) charges are fully paid; the rooms of these students will be reassigned.

Expulsion
Each student expelled from residence loses his or her room deposit of $50.00.

Caution Deposit
On enrolment each resident student is required to make a deposit of $50.00 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 make up for the previous year's deductions so that his credit may be maintained at $50.00.

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 1979-80 academic year.

RESIDENCE	TOTAL	Residence Fees PREPAID DEPOSIT	MINIMUM PAYABLE AT REGISTRATION	BALANCE JAN. 20 (INCLUDES$ SERVICE CHARGE)
Single Room and Board (Bays)	$1,948.00	$50.00	$1,000.00	$903.00
Single Room and Board (Alexandra Hall)	$1,929.00	$50.00	$1,000.00	$884.00
Suite Room and Board (Alexandra Hall)	$2,025.00	$50.00	$1,000.00	$980.00
Double Room and Board (Bays)	$1,873.00	$50.00	$1,000.00	$828.00
Double Room and Board (Alexandra Hall)	$1,854.00	$50.00	$1,000.00	$809.00

GENERAL 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

In the case of students reading for the B.A. or B.Sc. degrees, 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.

In the case of students working towards the B.J. (Hons.) or B.J. degrees, all matters relating to academic affairs and discipline are the responsibility of the Faculty of the University of King's College, subject to the approval of its Board of Governors.

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 withdraw from a Faculty because of

failure to maintain adequate academic standing, the right to be considered for admission to another Faculty is unaffected.

In the case of students reading for the B.A. or B.Sc. degrees, 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.

The same rules apply to students working towards the B.J. (Hons.) or B.J. degrees except that, in these cases, the Faculty of King's College stands in the place of the Dalhousie Senate and the Faculty Committee on Discipline stands in the place of the Dalhousie Senate Committee on Discipline and subject to these reserved powers in the Director of the School of Journalism. Moreover, unprofessional conduct such as faking a story, is treated, like plagiarism, as a serious breach of academic discipline which may constitute grounds for instant dismissal. Likewise, on report of a serious breach of law, or a serious academic offence deemed by the President of King's, or in his absence by the Vice-President, to affect vital University interests, a student involved may be temporarily suspended and denied admission to classes or to the University by the President or Vice-President, but any suspension shall be reported to the Faculty of King's, together with the reasons for it, without delay.

From time to time the Faculty may wish to interview students of the University concerning their marks or academic performance. After the Christmas marks have been released, the Faculty will endeavour to see all freshman students on an individual basis. Students are required to keep all appointments made with them by members of Faculty concerning their academic performance.

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 having 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, the Dean of Women, the President of the Students' Union, the Chairman of the Bays' 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 Presidential authority to expel from residence is delegated to the Dean.

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 Deans.

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

Dons, the Dean, the Dean of Women, 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.

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.

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 than 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 to 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.
e) Application must be made to the Registrar of Dalhousie prior to enrolling any of the six classes which constitute the minimum additional requirement. This application must give details of the proposed programme and must be supported by the new major department.

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 in sections 4 through 8.

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, within 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. Otherwise, changes will only be made as in the "Reassessment of Grade" regulation below.

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 at the beginning of the 3rd week of classes in the fall and spring terms. 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 of 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 Regulations).

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: Classes taken at another institution are not awarded merit points unless approved by the Committee on Studies for that purpose for the particular student, in accordance with the following guidelines:

1. All Dalhousie classes taken must be included.
2. At least ten Dalhousie classes must be included.
3. Consideration will be given only to those external classes taken to pursue programmes of study approved in advance by the Faculty.
(At the present time this refers only to the programmes at Lancaster University, the Pushkin Institute, and the Colegio de España.)
4. Consideration will only be given where the performance in the external class is first class.
5. Department advice on the equivalent Dalhousie grade for a particular class will be sought where necessary.

Minimum Standing for an Honours Degree
Students in honours courses are expected to maintain a minimum standing of C in each of the advanced classes (see Degree Programmes) which comprise their honours programme. 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 preceding 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 will 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 re-admission.
(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 three credits from off-campus classes and 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 Kings.

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 must comply with the regulation "Credits from Other Universities Under Concurrent Registration".

Correspondence Classes
A regulation similar to the above applies 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: 14th November; for B classes: 1 week after study break; for C classes: 28th January, for full year classes: 28th 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.

GENERAL ACADEMIC REGULATIONS-SCHOOL OF JOURNALISM

Applicability of General Regulations, School of Journalism

Students registered at the University of King's College as candidates for the B.J. (Hons.) and B.J. degrees are subject to the General Regulations, School of Journalism, and not to the Faculty Regulations of the Faculty of Arts and Science. Students taking classes in the Faculty of Arts and Science must, however, conform to the General Faculty Regulations of the Faculty of Arts and Science with regard to these classes.

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 from undue hardship from application of any of the regulations may appeal for relief through the Registrar to the Journalism Studies Committee, University of King's College.

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 Director of the School of Journalism, as well as the approval of the class instructor.

Duration of Studies
A student in the Bachelor of Journalism (Honours) programme will normally complete his/her studies within four

years of first registration. All requirements for the degree must be complete within ten years of first registration. A student in the Bachelor of Journalism programme is normally required to complete his/her studies within one calendar year of first registration.

Auditing
Interested persons may audit courses in the School of Journalism on permission of the Director. The University of King's College reserves the right to charge fees for the auditing of courses in the School of Journalism.

Advanced Placement
A student possessing advanced knowledge of a subject, which he has acquired otherwise than at a University, will be encouraged to begin his studies in that subject at a level appropriate to his knowledge, as determined by the School of Journalism, 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 B.J. (Hons.) or B.J. degree).

Concurrent Registration at University of King's College and Another Educational Institution, other than Dalhousie.
Ordinarily no student may register at the University of King's College in the School of Journalism if concurrently taking work in another educational institution. Regulation 7 below outlines procedures to be followed to secure waiver of this general regulation. Regular exceptions are made with respect to registration at affiliated institutions other than Dalhousie.

In-Course degree Requirements for continuing in the B.J. (Hons.) degree programme and the B.J. degree programme:
In order to be assured of maintaining their places in the B.J. (Hons.) programme, students must achieve at least a C+ average in the journalism writing programme (those courses based upon reporting and editing assignments) and a minimum average overall of B-.

The one-year B.J. programme, because it is intensive and accumulative, will be conducted on a semester system and in order to be assured of maintaining their places from one semester to the next, students must achieve the same standards as above.

Degree Requirements-Writing Courses:
In both the B.J. (Hons.) programme and the one-year B.J. programme students must achieve at least an overall C+ average in writing programmes to receive their degrees.

Forced Withdrawal Consequent on Unsatisfactory Performance
When the work of a student becomes unsatisfactory his case will be discussed by the Journalism Studies Committee 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.

In-course transfers from B.A. or B.Sc. to B.J. (Hons.)
Providing that a student has successfully completed the Foundation Year Programme in his/her first year, he or she may transfer into the B.J. (Hons.) programme at the end of the first year only, and providing that his/her academic standing is sufficiently high. All such transfers are to be made on a space available basis as determined by the limited enrolment policy of the University.

Applications for such in-course transfers from the B.A. or B.Sc. to B.J. (Hons.) programme are made to the Registrar and applicants must write a letter of application and take the English Test as specified in the general procedures for admission to the B.J. (Hons.) degree programme.

2. Credit and Assessment

A credit towards a degree is earned in a full-credit class, a class in which typically there are a minimum of 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 in classes offered by the School of Journalism at King's or in the Faculty of Arts and Science at Dalhousie; 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 Faculties of Dalhousie, other than Arts and Science, or
e) at institutions other than King's or Dalhousie while registered at King's.

Regulations governing each of these ways of earning credits are presented below.

Gaining Credit
To gain credit towards the B.J. (Hons.) or B.J. degree, a student must meet the requirements relevant to that degree and must appear at all examinations, prepare such essays, exercises, assignments, reports, etc. as may be prescribed.

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 work, workshops, 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. Within two weeks after the beginning of each term, instructors teaching in the School of Journalism must report to the Director on the method of evaluation used 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, instructors teaching classes in the School of Journalism are required to submit grades to the Director, such grades to be based on the instructor's evaluation of the academic performance of the students in the class in question. Christmas grades are normally submitted in all 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 Director's Office.

Change of Grade
Corrections 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 Director'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. The School of Journalism 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 of 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 the University of King's College for reassessment of a grade in a class. The Registrar will direct the request to the Director of the School of Journalism 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 the University of King's College 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) the failed class is not one of those listed in the curriculum as a Workshop and it is not the Independent Project;
b) he obtained a final grade of F/M;
c) he has satisfied the requirements for the class (see Regulations);
d) 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 School of Journalism—constitute the same proportion of the final grade as did the final examination during the regular session);
e) 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, University of King's College 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 towards 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. Regular Academic Year

Workload
Five to five and one-half courses shall be regarded as constituting a normal year's work for a student. (See curriculum for B.J. (Hons.) and B.J. degree programmes). Applications from students who have strong reason for wishing to take an overload will be considered by the Journalism Studies Committee. 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 will 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, and all of their required writing and reporting workshops, 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 University for consideration for re-admission.

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 to the Registrar from the physician attending the student at the time of the illness.

Repeating Classes for Which a Passing Grade has been Awarded.
With the permission of the Director of the School of Journalism and the endorsement of the Journalism Studies Committee 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.

4. Summer School and Correspondence Classes (Applicable to B.J. (Hons.) Students Only).

Limits on Credits
Up to two credits from Summer School and correspondence classes at King's or Dalhousie may be accepted towards the requirements for a degree. Such classes must have been passed at an adequate level and can be accepted only if they are closely equivalent to courses normally given in the Joint Faculty of Arts and Science or the School of Journalism.

Maximum Workload
Normally no student may take classes totalling more than one full credit in any one Summer School session where the University offers more than one Summer School session per year. Not more than two full credits can be obtained at Summer School in any one academic year.

Exceptions will normally be granted by the Journalism Studies Committee 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 King's, a Summer School class to be counted for credit towards a B.J. (Hons.) degree must:

a) obtain an application form from the Office of the Registrar at the University of King's College;
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 the University of King's College 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 applies 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.

5. Transfer Credits (Applicable to B.J. (Hons.) Students Only)

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. See "Transfers" under "Admissions to the School of Journalism".

6. Credits from other Faculties

A student taking classes in the joint Faculty of Arts and Science as part of the B.J. (Hons.) programme must conform to the regulations of that Faculty with respect to these classes, and likewise for classes taken with permission of the Journalism Studies Committee in Faculties other than Arts and Science at Dalhousie.

Each B.J. (Hons.) student must submit to the Journalism Studies Committee by the end of the first year a proposal for a coherent academic programme involving an in depth study of a particular area or discipline for the 5 courses that must be taken in the second year and the 2 courses that must be taken in the third year in the Faculty of Arts and Science. The Committee will advise each student on his/her proposed programme and will approve (with changes where necessary) each student's plan. Any subsequent changes in a student's program will require the approval of the Committee. See also Regulation 7 in the General Academic Regulation for the School of Journalism.

7. 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 the University of King's College and provide 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 Journalism Studies Committee, (see above, Regulation 6).

The class fee will be paid by the University of King's College if:

a) the student is registered as a full-time student in the B.J. (Hons.) or B.J. programme;
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.

8. 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, the Director of the School of Journalism and by the Registrar at Dalhousie, for courses taken at Dalhousie and by the Registrar at the University of King's College for courses taken in the School of Journalism.

Withdrawing from Classes
a) The last day for withdrawing from a class without penalty is: for A classes: 14th November; for B classes: 1 week after study break; for C classes: 28th January; for full year classes: 28th 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).

Withdrawing from the University
A registered student who wishes to withdraw from the University must write to the Registrar at King's explaining his circumstances. 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 Director of the School of Journalism, the Registrar at the University of King's College and, where appropriate, with the Director of the Foundation Year Programme. Non-attendance, by itself, does not constitute official withdrawal.

9. Transfers from other Colleges and Universities to the School of Journalism (B.J. (Hons.) only).

Deadlines for Receipt of Applications

Canada and the U.S.A.:	April 15th
Other Countries	April 15th

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. On receipt of these documents, students will be notified by the Registrar, and are then required to take an English Test and to submit a letter of application—the procedure for these two matters is described under, "Admissions to the B.J. (Hons.) degree programme".

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 to the B.J. (Hons.) degree in three years.

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) A student in the B.J. (Hons.) programme must attend King's as a full-time student in his last two years, unless special permission to the contrary is obtained from the Journalism Studies Committee.

d) No classes taken at another institution will be counted towards fulfilling the concentration requirement in the Arts and Science or in the Journalism parts of the B.J. (Hons.) degree programme without specific approval from Journalism Studies Committee.

e) Transfer credits may be granted only for classes equivalent to classes offered at Dalhousie-King's, and only in subjects recognized as having standing in a faculty of Arts and Science, or approved classes in Journalism Studies, equivalent to classes offered at King's.

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

g) The Programme of Studies of all transfer students will be subject to approval by the Journalism Studies Committee.

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, $1500, $1000, $800, and $500 respectively, provided from various bequests to the university as well as from university funds.

The George David Harris Memorial Scholarships—two at $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, these two scholarships are 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 $1500, one at $1000 and two at $800, 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.

Alexandra Society Scholarships—The Alexandra Society of the University of King's College provides entrance scholarships, the number of which is determined annually by the Society on a funds-available basis.

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—$1000 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 available 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.

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 university. 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.

James Fear Scholarships—Two at $1,000. Established by the will of Mary L. Fear in memory of her husband James Fear, a graduate of the University of King's College, two scholarships of $1,000 are awarded to students entering the University of King's College as pre-Divinity students and proceeding to the degree of Master of Divinity at the Atlantic School of Theology. They are renewable yearly provided that the recipients maintain suitable standing. When no pre-Divinity students are nominated by the Bishop for any one year when the scholarships are available, the Fear scholarships will be awarded as entrance scholarships 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 — $400. 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, $1500, $1000, $800 and $500 respectively, provided by the bequests listed above and from university funds.

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 — $100 (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.

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.

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 1st 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 £2010 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 Post-Graduate 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, 1977, 1979, etc. Applications must be considered before August 1st of 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.

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.

James Fear Scholarships — Two of $1,000. Established by the will of Mary L. Fear in memory of her husband James Fear, a graduate of the University of King's College, two scholarships of $1,000 are awarded to students entering the University of King's College as pre-Divinity students and proceeding to the degree of Master of Divinity at the Atlantic School of Theology. They are renewable yearly provided that the recipients maintain suitable standing. When no pre-Divinity students are nominated by the Bishop for any one year when the scholarships are available, the Fear scholarships will be awarded as entrance scholarships for one year only.

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 1981).

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 1981-82).

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. 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 1979-80.

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. 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. 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 1981-82.

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 Schol 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.

JOURNALISM

1. Entrance Awards

A. Annual scholarships to the value of $1000 and $800, provided from bequests to the university as well as from university funds. Applicants to the first year of the Bachelor of Journalism (Honours) programme are eligible to apply for the George David Harris Memorial Scholarships (See p. 32.)

IBM Canada Bursary Program — IBM Canada Ltd. makes an annual grant of $2,000 for bursaries to students registered in a full-time course at the University, who have satisfactory standing and who demonstrate financial need. Appolication may be made through the Registrar's office.

Mercantile Bank of Canada Scholarship—$800. One scholarship of $800 to be awarded to a student entering the first year of the Bachelor of Journalism (Honours) programme.

Aetna Casualty/Excelsior Life Scholarship—$800. One scholarship of $800 to be awarded to a student entering the first year of the Bachelor of Journalism (Honours) programme.
gramme.

Canadian Tire Corporation Scholarship—$500. One scholarship of $500 to be awarded to a student entering the first year of the Bachelor of Journalism (Honours) programme.

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 1979

GRADUATING CLASS

LIFE OFFICERS

Honorary President
Roy Gray

President
Gary Wayne Tower

Vice-President
Douglas Arthur Bayers

Secretary
John David Wiles

Treasurer
Judith Ruth White

Valedictorian
Miss Jennifer Jo Henderson

DOCTOR OF CIVIL LAWS (honoris causa)
Dr. Clarence Melville Bethune . . . . . Baddeck, N.S.
Christmas Edward Thomas . . . . . Halifax, N.S.

DOCTOR OF DIVINITY (honoris causa)
Canon Clark Russell Elliot . . . . . Halifax, N.S.
Canon James Harold Graven. . . . . Halifax, N.S.

BACHELOR OF ARTS DEGREE:

**	BABA, Momoh Stephen	Zaria, Nigeria
*	BARTEAUX, David Ross	Dartmouth, N.S.
	BAYERS, Douglas Arthur	Windsor, N.S.
*	BLANCHARD, Rochelle E.	Shippagan, N.B.
*	BROWN, Cleta Denise	Vancouver, B.C.
	BULEY, David Michael	Summerside, P.E.I.
	BUTLER, Virginia Mae	Murphy Cove, N.S.
	CAMPSIE, Philippa Rosemary (First Class Honours in History and Biology Combined)	Toronto, Ont.
	COLLINS, Margaret Anne	Halifax, N.S.
	DUFF, Wendy Margaret	Halifax, N.S.
**	FERGUSON, John Murray	Halifax, N.S.
	GRAHAM, Andrew Thomas (Honours in Political Science and French Combined)	Halifax, N.S.
*	HARTLING, Ellen Irene	Harrigan Cove, N.S.
*	HARVEY, Natalie Dawn	Wolfville, N.S.
	HATT, Arthur Harry	Weymouth, N.S.
	HENDERSON, Jennifer Jo (Distinction)	Dartmouth, N.S.
	JAMIESON, Roy Fraser	Dartmouth, N.S.
*	JAN WELLEM, Nyckolaus (Honours in Classics)	Upper Darby, PA, U.S.A.
	KEOUGH, John Bernard	Sydney, N.S.
	KNEBLES, John Randolph (Honours in Classics)	Calgary, Alberta
**	KNIGHT, Lloyd Bruce	Lethbridge, Alberta
**	KULNYS, Daina Margarita	Halifax, N.S.
	LARSEN, Gregory John	Armdale, N.S.
	MacLEOD, Roderick Vincent	Sydney, N.S.
	MATHESON, Kimberly Joan	St. Stephen, N.S.
	McCARNEY, Neal Paul	Truro, N.S.
*	MILLS, David Allan (Distinction)	Saint John, N.B.
	MOREIRA, James Henry	Halifax, N.S.
	PETLEY, Dale Alfred	Moncton, N.B.
**	PETLEY-JONES, Shirley Louise	Halifax, N.S.
**	REARDON, Sheila Mary	Sydney, N.S.
	STORY, Robert Scott Henry	Dartmouth, N.S.
**	WATERBURY, Judith Anne	Kentville, N.S.
	WHITE, Judith Ruth	Truro, N.S.
**	YOUNG, Margaret Louise	Exeter, N.H., U.S.A.

BACHELOR OF ARTS—HONOURS CERTIFICATE

DECHMAN, Margaret Kathleen, B.A. (First Class Honours in Sociology and Anthropology and University Medal)	Middle Musquodoboit, N.S.
HIMMELMAN, Melody Carol, B.A. (Honours in History)	Crousetown, N.S.

BACHELOR OF SCIENCE DEGREE:

BURTON, David Lloyd, (Honours in Biology)	Aylesford, N.S.
CROWTHER, Stephen Barrett	Moncton, N.B.
FISHER, Brian Ernest	Dartmouth, N.S.
GOUGH, Carolyn Lavinia	East Preston, N.S.
HILCHEY, Margo Anne	Halifax, N.S.
** INGRAHAM, Myrtle Jane	Bridgewater, N.S.
LeBLANC, Claire Marie Anne (Distinction)	Ottawa, Ont.
LLOYD, Donald Ian	Dartmouth, N.S.
MICHELL, Lauren Marie	Milton, Ont.
MORLEY, Charles Arnold	Halifax, N.S.
** MORRISON, George Thomas	Liverpool, N.S.
OAKLEY, Kathymarie	Halifax, N.S.
RHODENIZER, Brian Lester	Bridgewater, N.S.
SMITH, Dale Clifford	New Haven, N.S.
* TILLEY, Barbara Jean (Honours in Geology)	Ottawa, Ont.
WEAGLE, Glenn Eric (Honours in Biology)	Musquodoboit Harbour, N.S.
WOOD, Harold Arthur	Granville Ferry, N.S.

BACHELOR OF SCIENCE—HONOURS CERTIFICATE

TOWER, Gary Wayne, B.Sc. (Honours in Psychology)	Springhill, N.S.
VONDETTE, Nancy Anne, B.Sc. (Honours in Biology)	Bedford, N.S.
* WALKER, Stephen David, B.Sc. (Honours in Geology)	Bedford, N.S.

* In Absentia
** Awarded during the session

ENCAENIA AWARDS

ARTS AND SCIENCE

The Governor General's Medal	Margaret Kathleen Dechman
The Lawson Prize	Lucille Logan
The Beatrice E. Fry Memorial Prize	Sarah Stevens
The McCawley Classical Prize	Darryl Reed
The Zaidee Horsfall Prize in Mathematics	Charles Butts Robert Bruce Murphy Charles Reagh Marilyn Sandford
The Almon-Welsford Testimonial Prize	Charles Reagh
The Dr. M.A.B. Smith Prize	Helen MacDonell
The Bishop Binney Prize	Helen MacDonell
The Akins Historical Prize	Peter Linder

DIVINITY:

The Canon W.S.H. Morris Scholarship	The Reverend Carolyn Tomlin
The George Sherman Richards Proficiency Prize	Eric MacDonald
The Archdeacon Forsythe Prize	Alan Evans
The Shatford Pastoral Theology Prize	The Reverend Arthur Churchill
The Kenelm Eaton Memorial Scholarship	Edwin Ebsary
The George M. Ambrose Proficiency Prize	Jeff Rossiter
The H. Terry Creighton Scholarship	The Reverend Andrew Wetmore
The Moody Exhibition	Lorne Gosse

ENTRANCE SCHOLARSHIPS AND BURSARIES

ARTS AND SCIENCE

Kimberly Bungay	James Fear Scholarship
Barry David	Susanna Weston Arrow Almon Scholarship
Renate Dowell	Alumni Association Scholarship
Michael Earle	University Scholarship
Rachael Earle	Henry S. Cousins Scholarship
Thomas Eisenhauer	Dr. Norman H. Gosse Scholarship
Ann Elwood	George David Harris Memorial Scholarship
Peter Epstein	James Fear Scholarship
Christopher Evans	Susanna Weston Arrow Almon Scholarship
John Hancock	Charles Frederick William Moseley Scholarship
Anthony Janik	University Scholarship
Ann Leamon	University Scholarship
Donna MacNeil	Alumni Association Scholarship
Kenneth Marshall	Henry S. Cousins Scholarship
Ian Mitchell	University Scholarship
Laura Nickerson	University Scholarship
Kristina Rautaharju	Alumni Association Scholarship
Carol Reardon	Susanna Weston Arrow Almon Scholarship
Donald Rowe	Alumni Association Scholarship
Alexander Smith	University Scholarship
Elizabeth Tuck	Henry S. Cousins Scholarship

KING'S COLLEGE NAVAL BURSARY
Michael R. LeBlanc

NOVA SCOTIA TEACHERS COLLEGE BURSARY
Krista Lingley

UNITED STATES SCHOLARSHIP
Denise Nehring

ENTRANCE SCHOLARSHIPS

SCHOOL OF JOURNALISM

Susan Allen	University Scholarship
Janice Brown	Mercantile Bank Scholarship
Joanne Cadogan	University Scholarship
Christine Davies	University Scholarship
Michael LeBlanc	I.B.M. Scholarship
Alice LeDuc	Canadian Tire Scholarship
Helen MacDonnell	University Scholarship
Elizabeth Patterson	I.B.M. Scholarship

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 King's Watch

The "King's Watch" 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 Mrs. Helen Buley the Choir has grown to about 35 members, sings three services each week and has developed a considerable range of liturgical music. A small number of Choral Scholarships are available to choir members. Applications for Choral Scholarships are to be made to the Choir Director.

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 commemorates the life of Sandra MacLeod, a University of King's College student who died in 1973, and may be given to any undergraduate nember of King's, whether in residence or a day student. The award is made to a student with a good scholastic record, who by the fullest use of his or her qualities of character and mind, makes a contribution to the University of King's College. 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.

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

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 concerned 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 significant 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 (men's residence) and Wings (women's 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 Officer 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.

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 others 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:
President, (1979-81)
Domald F. Chard, B.A., M.A., Ph.D.
85 Newcastle Street
Dartmouth, N.S.
B2Y 3M8

Vice-President, (1979-81)
John R. Stone, B.A, M.Ed.
RR No. 1, Boutilier's Point
Halifax Co., N.S.
B0J 1G0

Treasurer,
C. Wm. Hayward, C.A.
918 Robie Street
Halifax, N.S.
B3H 3C4

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 1979-80

Hon. President,
Mrs. G.F. Arnold, 1360 Tower Road, Halifax, N.S. B3H 2Z1

Hon. Vice President,
Mrs. H.L. Nutter, 791 Brunswick St., Fredericton, N.B. E3B 1H8

President,
Mrs. J.E. Lane, Apt. 34, 6411 South St., Halifax, N.S. B3H 1V1

1st Vice President,
Mrs. Victor Fairn, 55 Lynn Dr., Dartmouth, N.S., B2Y 3V8

2nd Vice President,
Mrs. F.E. Christiansen, 94 Gibbon Rd., East Riverside, N.B., E2H 1R5

3rd Vice President,
Mrs. A. MacKeigan, 68 Reserve St., Glace Bay, N.S., B1A 4W1

4th Vice President,
Mrs. H.M.D. Westin, P.O. Box 713, Charlottetown, P.E.I., C1A 7L3

Recording Secretary,
Mrs. Vida MacSweeney, 228 Victoria Rd., Dartmouth, N.S., B3A 1W7

Corresponding Secretary,
Mrs. P.N. MacIvor, 8 Lakeview Pt., Dartmouth, N.S., B3A 1W7

Treasurer
Mrs. A.G. MacIntosh, 12 Westwood Drive, Truro, N.S., B2N 3R3

Convenors:

Friends of King's
Mrs. W.R. Harris, P.O. Box 83, Truro, N.S., B2N 5B6

Hasti-notes
Mrs. G.S. Clark, Apt. 303, 26 Brookdale Cres., Dartmouth, N.S., B3A 2R5

Library Memorial Fund
Mrs. J.E. Lane, Apt. 34, 6411 South St., Halifax, N.S., B3H 1V1

Presidents:

Halifax Branch:
Mrs. Hilliard Banfield, 5643 Duffus Street, Halifax, N.S., B3K 2M7

Dartmouth Branch:
Mrs. Carl Blair, 20 Albert St., Dartmouth, N.S., B2Y 3M3

Saint John Branch:
Mrs. Ford Hazen, 63 Parks St., Saint John, N.B., E2K 3N8

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 pre-professional 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 pre-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. It is not a pre-university year but forms part of the first year work for a B.A. or B.Sc. (King's-Dalhousie) and for the B.J. (Hons.)(King's). 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 concentration 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: 1979-80

R. Apostle, B.A. (Sim. Fr.), M.A. (Calf.), Ph.D. (Berkeley)
Assistant Professor of Sociology
A.H.Armstrong, M.A. (Cantab), F.B.A.,
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. (Trin.), M.A. (Tor.), B. Litt. (Oxon.),
Associate Professor of English
R. Eden, B.A. (Berkeley), Ph.D. (Harvard)
Assistant Professor of Political Science
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
Y. Glazov, Ph.D. (Oriental Institute, Moscow),
Professor of Russian and Chairman of the Department
J.F. Graham, B.A. (U.B.C.), A.M., Ph.D. (Col.),
Fred D. Manning Professor of Economics
A.E. Kennedy, B.A., M.A. (U.B.C.), Ph.D. (Edin.),
Associate Professor of English
P.F. Kussmaul, Ph.D. (Basle)
Associate Professor of Classics
K.E. vonMaltzahn, M.S., Ph.D. (Yale),
George S. Campbell Professor of Biology
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
H. Roper, B.A. (Dal. et Cantab.), M.A., Ph.D. (Cantab.),
Assistant Professor of Humanities and Social Sciences
C.J. Starnes, B.A. (Bishops), S.T.B. (Harvard), M.A. (McGill), Ph.D. (Dal.),
Assistant Professor of Humanities and Social Sciences, Assistant Professor of Classics, Director, Foundation Year Programme
D.H. Steffen, Ph.D. (Gottingen),
Associate Professor of German and Chairman of the Department
J. Stolzman, B.A. (Oreg.), M.S. (Fla. St.), Ph.D. (Oreg.),
Assistant Professor of Sociology
J.B. Stovel, B.A. (Sir G. Wms. et Camb.), Ph.D. (Harvard),
Assistant Professor of English

Junior Fellows: 1979-80

T.H. Curran, B.A. (Trinity), M.A. (Dal), M.T.S. (A.S.T.),
Assistant to the Director, Foundation Year Programme
J.M. Eayrs, B.A. (Trinity)
P.D. Epstein, B.A. (Trinity), M.A. (Dal.), M.T.S. (Harvard)
A.M. 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. The two George David Harris Memorial Entrance Scholarships ($2000) require a separate application - see the entry under Scholarships, Bursaries and Prizes elsewhere in the calendar.

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.; Three hours of tutorials to be arranged.

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, examination and essays. 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 and comprises three quarters of the work and requirements of K100. 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.

The Foundation Year Programme may be combined with almost any programme of study in Arts and with many in Science but in all cases students are requested to discuss their proposed programmes with the Director before completing their registration.

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 pre-professional 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 B.J. (Hons.) degree.

Evaluation

The mark for the course is based on students' papers, examinations and their class participation. No student will be able to pass the course without completing the written requirements. All students (K100 and K110) write the first essay of the year within two weeks from the start of term. Beyond this, students registered in K100 will write two essays for each of the six units of the course. Students in K110 write two essays in three of the six units and one essay for each of the three remaining 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 in K110.

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,* Marlowe's *Faust,* Eliot's *Waste Land;* 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 theology, philosophy 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,* Darwin's *On the Origin of the Species;* and Newton's *Mathematical Principles;* texts taken from the history of astronomy, biology and physics.

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 breakup 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.

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.

5. **The Era of Revolutions:** 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 nationalistic 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 (1979-80)

The following is the list of required reading which was treated in 1979-80. It gives an indication of the scope of practical and theoretical works through which our understanding of the various aspects of our culture is developed.

Section I — The Ancient World

The Akkadian Creation Epic, (Selections).
Hesiod, *Theogony,* (Selections).
*Homer, *Iliad.*
de Coulanges, *The Ancient City,* (Selections).
The Bible, (Selections).
*Sophocles, *Oedipus Rex* and *Antigone.*
*Plato, *Republic.*
*Vergil, *Eclogue IV.*
*Vergil, *Aeneid*

Section II — The Middle Ages

The Bible, (Selections).
Eusebius of Caeserea, *Life of Constantine and Oration,* (Selections).
**The Apostle's Creed* and *The Nicene Creed.*
St. Augustine of Hippo, *City of God,* (Selections).
St. Benedict of Nursia, *The Rule,* (Selections).
*Einhard, *Life of Charlemagne.*
**The Song of Roland.*
**The Mass.*
Pullan, B., *Sources for the History of Mediaeval Europe,* (Selections).
*Otto of Freising, Prologue to the first book of the *History of the Two Cities.*
Anselm of Canterbury, *Proslogium.*
St. Thomas Aquinas, *Summa Theologiae,* Questions 1 and 2.
Pope Boniface VIII, *Unam Sanctam* and other documents, (Selections).
St. Francis of Assisi, *The Rule,* (Selections).
*Dante, *The Divine Comedy,* 3 Vols. (Hell, Purgatory, Heaven).
Chaucer, *Canterbury Tales,* (Selections).
The Romance of the Rose, (Selections).

Section III — The Renaissance and Reformation

*Huizinga, *The Waning of the Middle Ages.*
*Pico della Mirandola, *Oration on the Dignity of Man.*
Rabelais, *Gargantua and Pantagruel,* (Selections).
William of Ockham, (Selections).
Kepler, (Selections).
*Machiavelli, *The Prince.*
*Strauss, "What is Political Philosophy?"
*Copernicus, "Preface and Dedication to Pope Paul III" from *The Revolution of the Heavenly Spheres.*
Westfall, *The Construction of Modern Science,* (Selections).
*More, *Utopia.*
Diaz, *The Conquest of New Mexico,* (Selections).
Las Casas, *The Devastation of the Indies,* (Selections).
*Marlowe, *Doctor Faustus.*
Dame Julian of Norwich, *Revelations of Divine Love,* (Selections).
Erasmus, *Praise of Folly,* (Selections).
Dillenberger, *Luther: Selections from his Writings,* (Selections).
Calvin, *Institutes of the Christian Religion,* (Selections).

Section IV — The Age of Reason

*Descartes, *Meditations on First Philosophy.*
*Descartes, "Author's Letter", from *Principles of Philosophy.*
Descartes, *Treatise of Man,* (Selections).
*Hobbes, Leviathan, (Parts I and II).
*Cornille, *The Cid.*
Locke, *Second Treatise of Government,* (Selections).
Locke, *An Inquiry Concerning Human Understanding,* (Selections).
*"Declaration of Rights", England 1689.
*"Declaration of Independence", America 1776.
*"Declaration of Rights", France 1789.
Hume, *An Inquiry Concerning Human Understanding,* (Selections).
Hume, *Treatise of Human Nature,* (Selections).
Newton, *Mathematical Principles of Natural Philosophy,* (Selections).
Westfall, *Construction of Modern Science,* (Selections).
*Koyré, *"The Significance of the Newtonian Synthesis".*
*Mozart, *Don Giovanni.*
*Rousseau, *Discourse on the Origin of Inequality.*
Rousseau, *The Social Contract,* (Selections).
*Kleist, *The Prince of Homburg.*

Section V — The Era of Revolution

*de Tocqueille, *The Old Regime and the French Revolution.*
*Austen, *Persuasion.*
*J. S. Mill, *Utilitarianism.*
*Dostoyevsky, *Crime and Punishment.*
*Heilbroner, *The Making of Economic Society* (Part I).
Tucker, *Marx-Engels Reader,* (Selections).
Darwin, *The Origin of Species,* (Selections).
*Young, "The Impact of Darwin on Conventional Thought".
*Nietzsche, *The Genealogy of Morals.*
*Weber, "Science as a Vocation".
Nisbet, *The Sociological Tradition,* (Selections).

Section VI — The Contemporary World

*J.-P. Sartre, *Existentialism and Humanism.*
*C. P. Snow, *The Two Cultures and the Scientific Revolution.*
*T. S. Eliot, *The Waste Land.*
**Ryle, "Pleasure".*
*Heilbroner, *The Making of Economic Society,* (Part II).
*K. Davis et al, "The Continuing Debate on Equality".
*E. Shils, "Mass Society and its Culture".
*Wilensky, "Mass Society and Mass Culture".
*Ravindra, "Two Theories of Relativity".
*Condon, "A Half-Century of Quantum Mechanics".
*Solzhenitsyn, *Letter to Soviet Leaders.*
*Camus, *The Rebel.*
A. Arber, *The Mind and The Eye,* (Selections).
*Ferguson, "The Mind's Eye: Non-Verbal Thought in Technology".
*M. Polyani, *The Study of Man.*

** = Work cited read in its entirety.*

THE SCHOOL OF JOURNALISM

The University of King's College offers the only degrees in Journalism in the Atlantic provinces. The University offers two degrees.

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

General Description: The aim of the B.J. (Hons.) programme 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.

In the first year the B.J. (Hons.) student will normally take the Foundation Year Programme (see page of this calendar) and an elective in the Arts and Science Faculty. Electives will usually be taken in the field of Arts and Science in which the student aims to fulfill the Arts and Science requirement of the B.J. (Hons.) programme. Each B.J. (Hons.) student will be asked to submit to the Journalism Studies Committee by the end of the first year, a proposal for a coherent academic programme involving an in-depth study of a particular area or discipline for the 5 courses that must be taken in the second year, and the 2 courses that must be taken in the third year in the Faculty of Arts and Science. The Committee will advise each student on his/her proposed programme, and will approve with changes where necessary each student's plan—any subsequent changes in a student's programme will require the approval of the Committee. In addition, second year students are required to do a half course in Writing and Reporting offered by the School of Journalism.

In the third year the student will take three courses in Journalism designated by the School of Journalism, and two courses in the Faculty of Arts and Science (see above).

In the fourth year the student will take five and one-half courses in the School of Journalism including an Independent Project (see curriculum outline below).

French Requirement
It is the policy of the University that students graduating from the School of Journalism are required to pass a test demonstrating their comprehension of written French. If a student fails the test it may be taken again at a later date with no academic penalty. Credit courses will be available to bring a student up to the required level, though the successful completion of such a course or courses does not, in itself, waive the requirement of passing the test.

Students are encouraged to take the test as early as they can during their course of studies so that they may know how they stand with respect to this requirement. The University will normally administer the test at the beginning and end of each academic year and at other times by special arrangement.

Typing Requirement
A reasonable ability to type is required and students entering the School of Journalism must learn to type before the workshops begin. (For B.J. (Hons.) students, this means they should know how to type by the beginning of their second year in the Journalism programme: for B.J. students, before entering the School.) All assignments in the School of journalism must be typewritten.

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.)

This is a post first degree course offered to students who have completed a first degree, normally a B.A. or B.Sc. The University of King's College 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.

Because of the intensive nature of this one year programme it does not conform to the lecture schedule of the Faculty of Arts and Science. Students in the B.J. programme will begin work during the first week of September (see Almanac) and will continue somewhat beyond the last day of classes in Arts and Science. Please see the B.J. curriculum below for the courses offered in this programme.

3. Curricula for B.J. (Hons.) and B.J. programmes.

See the following two pages for the B.J. (Hons.) and B.J. curricula.

B.J. (Hons.) Curriculum

		Credits	Total Credits
Year 1	**Required of All Students**		
	Foundation Year Programme and one elective course in the Faculty of Arts and Science.	4	
	Normally, although not necessarily, this would be a French course. See the statement on the French requirement.	1	5
Year 2	**Required of All Students**		
	Courses in the Faculty of Arts and Science. Each B.J. (Hons.) student must submit to the Journalism Studies Committee by the end of the first year a proposal for a coherent academic programme involving study of a particular area or discipline for the 5 courses that must be taken in the second year, and 2 courses that must be taken in the third year in the Faculty of Arts and Science. The Committee will advise each student on his/her proposed programme and will approve (with changes where necessary) each student's plan. Any subsequent changes in a student's programme will require the approval of the Committee. See also Regulations 6 and 7 in the General Academic Regulations for the School of Journalism.	5	
J201A	Introduction to Journalism Basic Writing and Reporting	1/2	5-1/2
Year 3 **FIRST TERM**	**Required of All Students**		
	Courses in the Faculty of Arts and Science	2	
J301/A	Writing and Reporting (Pre-req. J201/A)	1/2	
J310/A	Communications and Society	1/2	
J315/A	Issues in the Day's News	1/2	
SECOND TERM			
	Courses in the Faculty of Arts and Science		
J301/B	Writing and Reporting	1/2	
J310/B	Introduction to Broadcasting	1/2	
J315/B	Issues in the Day's News	1/2	5
Year 4 **FIRST TERM**	**Required of All Students**	**Credits**	**Total Credits**
J401/A	Advanced Writing and Reporting	1/2	
J420/C	Senior News Seminar (alternate weeks)	1/2	
	Students will develop programs to meet individual goals in consultation with faculty advisers. To complete their fall term work, they will select four half-courses from the following:		
J411/A	Legal Issues	1/2	
J445/A	Issues in Business, Finance and Economics (Note: Required of students with no previous credit in economics)	1/2	
J471/A	Broadcast Writing	1/2	
J472/A	Copy-Editing	1/2	
J475/A	International Issues in Perspective	1/2	
J476/A	Canadian Diplomacy: Principles and Issues	1/2	
SECOND TERM	**Required of All Students**		
J460/B	Independent Project*	1/2	
J420/C	Senior News Seminar (alternate weeks)	-	
	Students will choose four half-courses from the following:		
J403/B	News features and magazines	1/2	

J404/B	Interpretive and Analytical Reporting	1/2	
J440/B	Radio News Reporting	1/2	
J441/B	Television News Reporting	1/2	
J445/B	Issues in Business, Finance and Economics	1/2	
J450/B	Specialist Writing	1/2	
J451/B	Elements of Design and Makeup	1/2	
J474/B	Canadian Diplomacy—Techniques and Operations	1/2	5 1/2

*An Independent Project will be required of all students (B.J. (Hons.) and B.J.) which they must complete satisfactorily if they are to qualify for the degree. This professional level assignment will require a student to produce a journalistic work of publishable quality in an area of his or her choosing. This can be either for print or for broadcast on radio or television. It will be written or produced in consultation with a faculty adviser, and will be the product of extensive research and reporting demonstrating a firm grasp of both academic and professional skills. The project will count as a 1/2 credit course in the final term of a student's programme.

B.J. Curriculum

		Credits	Total Credits
FIRST TERM	**Required of All Students**		
J501/A	Advanced Writing and Reporting	1/2	
J520 C	Senior News Seminar (alternate weeks)	1/2	
	Students will develop four half-courses from the following:		
J511/A	Legal Issues	1/2	
J545/A	Issues in Business, Finance and Economics. (Required of students with no previous credit in economics)	1/2	
J510/A	Introduction to Broadcasting	1/2	
J572/A	Copy-Editing	1/2	
J575/A	International Issues in Perspective	1/2	
J576/A	Canadian Diplomacy: Principles and Issues	1/2	
SECOND TERM	**Required of All Students**		
J560/B	Independent Project.*	1/2	
J520/C	Senior News Seminar (alternate weeks)	-	
	Students will develop programs to meet their individual goals in consultation with faculty advisers. To complete their Spring Term work they will select four half-courses from:		
J503/B	News features and magazines	1/2	
J504/B	Interpretive and Analytical Reporting	1/2	
J540/B	Radio News Reporting	1/2	
J541/B	Television News Reporting	1/2	
J545/B	Issues in Business, Finance and Economics	1/2	
J550/B	Specialist Writing	1/2	
J551/B	Elements of Design and Makeup	1/2	
J574/B	Canadian Diplomacy: Techniques and Operations	1/2	5 1/2

*An Independent Project will be required of all students (B.J. (Hons.) and B.J.) which they must complete satisfactorily if they are to qualify for the degree. This professional level assignment will require a student to produce a journalistic work of publishable quality in an area of his or her choosing. This can be either for print or for broadcast on radio or television. It will be written or produced in consultation with a faculty adviser, and will be the product of extensive research and reporting demonstrating a firm grasp of both academic and professional skills. The project will count as a 1/2 credit course in the final term of a student's programme.

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 School of Dentistry. Candidates are encouraged to proceed 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 then 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. F. Krieger, B.A., B.S.T.

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 Train-

ing, 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 October 9 from 7:00 to 9:00 p.m., fees being payable at that time.

1979-80 Courses

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 in Arts and Science

1. Courses of Study

Bachelor of Arts/Bachelor of Science

Major, Co-ordinated or Individual Programmes
Honours Programmes

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

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 except when special permission of the instructor is given to other students.

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

Major, Co-ordinated or Individual Programmes: three years—15 classes required
Honours Programmes: four years—20 classes required

For the degree of B.Sc.: All students entering for the first time in September 1980 and subsequent years are required to complete successfully at least one full university class in mathematics other than Mathematics 102 and Mathematics 110.

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, 106, 107, Political Science 1103, Religion 101, Spanish 110A, and 111B.

5.1.2 Recommendations

(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. (This recommendation does not apply to students entering the King's Foundation Year Programme.)

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 Requirements for the Second and Third Years
A student who has successfully completed the first year may, if qualified, enter an honours programme as outlined in Section 5.3 below. Otherwise, three types of options are open to the candidate during the second and third years of study as follows:

(a) *Major Programmes,* in which the student must select a major subject and plan the programme in consultation with that department, 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 Major Programmes

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, Computer Science, Geology, Mathematics, Physics, or Psychology.

5.2.1.5 Students may choose electives from any of the classes listed by departments offering major or honours programmes in the Faculty of Arts and Science, subject to the restriction that a total of not more than THREE classes may be taken from the list below:

(a) African Studies 200, Art History 101 and Comparative Literature 100.

(b) Education Foundation Offerings (Education classes with numbers below 4400). Note: Education classes numbered 4400 and above are not available as Arts and Science electives.

(c) Classes in Engineering and Oceanography. Note: The restriction on Engineering electives does not apply to students in the Diploma in Engineering Programme who combine their studies with a programme leading to a B.Sc. in Biology, Chemistry, Geology, Mathematics or Physics (see Degree Regulation 7(b) in this Calendar).

(d) Music classes 1000, 2007, 2088C, 2089C, 2010, 2012, 2013. Note: No other class in Music is available as an Arts and Science elective except by special permission of the Department of Music.

(e) The following approved classes from other faculties and institutions: Architecture 100, Commerce 101R, 108A/B, 207A/B, 209A/B, 213A/B, 215A, 216B, 306B, 320A/B, 322A/B, 324A/B, 332A/B and Health Education 412A/B.
Note: Students enrolling in elective classes are required to meet all normal class prerequisites.

5.2.2 Co-ordinated Programmes
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
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 a Major 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 a major programme. There are two types of honours programmes: 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 usually transfer from an honours to a major programme without inconvenience. To this end the Honours candidate should include in the first year's programme one class from the list given in Section 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 programme 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 a degree with Honours

A student who has received a 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 programme. Regulations in paragraphs 5.3.1 and 5.3.5 (or the regulations regarding the B.Sc. in Engineering Physics) must be met. On satisfying the requirements of the Honours degree programme, the student will receive a certificate which converts his degree to a degree with Honours.

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) twelve 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.

6. Bachelor of Science in Engineering-Physics

Four Years — 21 classes required.

This special programme has honours status and is based on a study of physics oriented towards its application to engineering problems. It is designed to give students more exposure to practical applications than does the Honours physics course. Students are also given an opportunity to specialize in such fields as electronic systems engineering, semiconductor engineering, underwater acoustics and materials science. Completion of the course is excellent preparation for a career in industrial research or for graduate study in applied sciences.

Details of the curriculum for the course are given under *Physics* in *Programmes of Study.*

7. Engineering

(a) Diploma in Engineering
Two Years — 11-1/2 credits

The professional degree in Engineering is the Bachelor of Engineering Degree which is conferred by the Nova Scotia Technical College in association with Dalhousie University. Students desiring to pursue a career in Engineering may qualify over a period of four years.

The first two years of study are taken at Dalhousie and comprise a programme of 11-1/2 credits which lead to the Diploma in Engineering. Upon successful completion of this Diploma programme, students will be admitted to the Nova Scotia Technical College for a further two years of study leading to the degree of Bachelor of Engineering.

(b) Bachelor of Science
Three Years — 15 credits

Students may combine studies for the Diploma in Engineering with a programme leading to a Bachelor of Science Degree with a major in Biology, Chemistry, Geology, Mathematics or Physics, with Engineering classes acting as minor classes. Successful students are eligible to apply to the Nova Scotia Technical College to continue studies towards the Bachelor of Engineering Degree. Alternatively, students may apply for admission to an honours programme at Dalhousie.

8. Bachelor of Music

Four Years - 21 classes including graduation requirement

Special requirements and descriptions are given under *Music* in *Programmes of Study*

9. Bachelor of Education

Integrated (with B.A. or B.Sc.): four years — 22 classes, including field experience.

Integrated (with B.A. or B.Sc. with Honours): five year — 27 classes, including field experience.

Sequential: one year—
(Elementary and Secondary) — 7 classes, including field experience.
B.Ed. for vocational teachers — 15 classes, including field experience.

In the B.Ed. programme for vocational teachers, classes in arts and science are taken concurrently with classes in education. A B.Ed. is awarded upon completion.

By arrangement with the Nova Scotia Department of Education, students with senior matriculation completing the integrated B.A. or B.Sc./B.Ed. programme or the sequential B.Ed. programme may receive a Teacher's Certificate (Class 5.). All other B.Ed. graduates should consult the Registrar, Nova Scotia Department of Education concerning certification and licensing.

The level of certification awarded upon completion of the B.Ed. programme for vocational teachers is dependent upon type of certification held on entering the programme. Graduates of this programme are advised to consult the Registrar, Nova Scotia Department of Education about certification and licensing.

Transfer of Credit:
Decisions concerning transfer of credit will be made following consideration of transcripts and students' intended areas of study.

Enquiries should be directed to the Secretary, B.Ed. programme.

Students who wish to obtain the degree of B.Ed. with transfer of previous credit must obtain the degree of B.A., B.Sc., or B.Com. and apply for admission to the B.Ed. programme. Graduates of non-degree granting Teachers' Colleges should note that the following guidelines will be used in transfer of credit:

Graduates of an acceptable three-year programme will be required to take an additional two and one-half classes.

Graduates of an acceptable two-year programme will be required to take an additional three and one-half classes.

Graduates of an acceptable one-year programme will be required to take an additional five classes.

The actual selection of classes is to be made to suit the needs of each student and the student will be advised accordingly when his/her file is examined.

Transfer of Credits for a B.Ed. for Vocational Teachers:
The candidate may receive up to 3 credit transfers for completion of the three-year interprovincial summer school programme of basic training. This includes credit for practice teaching which meets Department of Education requirements. Evidence of candidate's performance as a teacher is required.

10. Bachelor of Music Education

Four years — 20 classes including field experience.

Details of the curriculum and requirements for admission to the course are given under *Music* in *Programmes of Study*. The *B.Mus.Ed.* leads to Certification by the Nova Scotia Department of Education.

11. Commerce and Public Administration

Detailed requirements for admissions and programmes are set forth in the calendar of Dalhousie University Faculty of Administrative Studies.

12. Dentistry

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

12.1 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 classes has been included in the degree programme.

12.2 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, Dental 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.

13. 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.

13.1 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.

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

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

14. 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.

15. 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.

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)
P.D. Pillay (History)
A.M. Sinclair (Economics)
R.J. Smith (English)
J.B. Webster (History)

Associate Professors
J.H. Barkow (Sociology & Social Anthropology)
E. Gold (Law)
T. Pinfold (Economics)
T.M. Shaw (Political Science)

Assistant Professor
L. Osberg (Economics)

Killam Fellow
Richard Roberts

The undergraduate programme in African Studies offers students an opportunity to integrate classes from a number of disciplines. The major focus is Africa; the minor focus is development. Five classes beyond the first year deal with African cultures, economics, history, literature and politics; the remaining classes are concerned with development and change.

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 1100, English 100, History 1990, Political Science 1100, 1101, or 1103.

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, although the course aims to provide an overview of current questions and concepts relevant to the continent as a whole.

LIST I

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

Anthropology 238, Social Anthropology of Africa

Economics 2234A, Pre-Colonial Economic History of Sub-Saharan Africa

Economics 2235B, Economic History of Tropical Africa: Colonial Period

Economics 3337B, Recent Economic Developments in Sub-Saharan Africa

English 217, African Literature

History 1400, Europe and the Third World

History 2400, History of Tropical Africa

History 3450, History of South Africa

History 3490, Studies in Decolonization

Political Science 3315A, African Politics

Political Science 3345B/5345A, South Africa: The Dynamics of Groups and Group Domination

Political Science 3540B/5540B, Foreign Policies of African States

Political Science 3544A/5544B, Conflict and Cooperation in Southern Africa

LIST II

Anthropology 226, Culture and Political Behaviour

Anthropology 306B, Modernization and Development

Anthropology 307, Biosocial Anthropology

Anthropology 223, Psychological Anthropology

Economics 2250/4440, Applied Development Economics

Economics 3331A, Environmental Economics

Economics 3333A, Theories of Economic Development

Economics 3341A, Urban Economics: Growth and Development of Urban Areas

History 3360, Enslavement and Emancipation: Afro-Americans in the U.S. South to 1900

History 2130, British Empire and Commonwealth

Political Science 2300, Comparative Politics

Political Science 3340/5340A, Problems of Development: The Politics of New States

Political Science 2500, World Politics

Political Science 3530/5530, The United Nations in World Politics

Political Science 3535A/5535A, Towards a New World Order

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.

Biochemistry

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

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

Assistant Professors
P.J. Dolphin
R.A. Singer
M.W. Spence
L.C. Stewart
M.H. Tan

Lecturers
J.T.R. Clarke
H.W. Cook
I.A. Macdonald
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, and in cell biology, 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.

The common major programme is outlined below. Most students choose either biology or mathematics as their minor subject, but other fields of science are acceptable, and both physics and psychology have been chosen in the past. 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. In addition to complying with General Faculty Regulation 3.3 and Degree Programme Requirement 5.3.3.1. students must attain an average grade of B- or higher in the Biochemistry classes of the Honours programme.

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.
10. Additional class in minor subject beyond 100 level.

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

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

B.Sc. with Combined Honours in Biochemistry

Students with a strong interest in Biochemistry who would nevertheless like to study a second subject in greater depth than is provided for by a single-subject Honours programme are invited to consult the Academic Advisor, D.W. Russell, about Combined Honours programmes.

Programme in Molecular Biology

The Departments of Biochemistry, Biology and Microbiology are developing a coordinated programme in Molecular Biology. For their first year, students are expected to take:

1. Biology 1000.
2. Chemistry 110.
3. Mathematics 100 & 101.
4. A "writing" class.
5. An elective.

Students should consult faculty advisors in their major departments for classes to be taken after the first year.

Physics 110 must be taken at some time during the first two years of study. For further details, interested students should consult Faculty advisors in their major departments (M.W. Gray, Biochemistry; L.C. Vining, Biology; C. Stuttard, Microbiology).

Classes Offered

Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered.

2015 (Department of Biology) Cell-Molecular Biology, lect., 3 hrs., Biology and Biochemistry staff.

Members of the Biochemistry and Biology Department have joined in offering this introductory class which will explore the full range of contemporary ideas in cell and molecular biology. The class will deal with topics such as the transmission of genetic information, gene expression, growth, adaptation, cell division and differentiation at a mechanistic level and provide the student with a broad perspective of metabolic processes associated with energy production, biosynthesis, transport and communication. It will also seek to explain the integration of these and other forms of biological activity through regulation of gene expression and the diverse cellular and metabolic control systems.

Students who intend to take more advanced biochemistry and molecular biology classes next year will need this class as a prerequisite and are strongly advised to take Biol. 2012A/B also.

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

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.

Students planning to take Biochemistry 300 (or its equivalents) in 1981-82 should note that Biology 2015 will be a prerequisite (except with permission of the instructor) and Biology 2012A/B is highly recommended.

430 Series: Intermediary 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; F.B. Palmer and Staff.

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.

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
R.G. Brown
M.L. Cameron
J. Farley
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
L.C. Vining

Associate Professors
E.W. Angelopoulos
A.R.O. Chapman
J.V. Collins
R.W. Doyle
E.T. Garside
L.E. Haley
M.J. Harvey
G.S. Hicks
P.A. Lane
R.W. Lee
R.P. McBride
R.K. O'Dor
E. Zouros

Assistant Professors
B. Freedman
J.A. Novitsky
D.G. Patriquin
J.H.M. Willison

Adjunct Professors
D. Brewer
J.S. Craigie

Instructors
L. Cooke
B. Coté
C. Coté
P. Gerdes
J. Hardie
P. Harding
J. Hughes
C. Knight
A. Mills
M.J. O'Halloran
C. Stewart

Research Associates
J.D. Castell
R. Conover
B.T. Hargrave
J. Kerekes
G. McLelland
I. Meinertzhagen
G. Newkirk
T. Platt
D.M. Ware

Postdoctoral Fellows
W. Hart
G. Jones
T. MacKay
A. Robertson

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, bioengineering and education, agriculture, aquaculture, forestry and environmental architecture and engineering.

Degree Programmes

The department offers classes leading to the B.A. and B.Sc. degree with a major 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.

The basic Biology Honours Programme provides a broad background in the biological sciences and enough flexibility to allow some degree of specialization in a variety of subdisciplines. A suitable programme of this kind (e.g. cellular and developmental biology, cellular biology and genetics, ecology and evolution, etc.) worked out with an advisor and leading to a thesis in that area is excellent preparation for advanced studies.

Some students may wish to choose a Combined Honours Programme with Biochemistry, Chemistry, Geology, Mathematics, Microbiology, Psychology or Physics. These programmes must be worked out with the two departments. Students may be interested in programmes that are not oriented toward a traditional discipline but rather emphasize a broad knowledge. For them an Unconcentrated Honours Programme may offer the best preparation. Advice on these matters may be obtained in the department.

Several special Biology Honours Programmes are described as follows:

Programme in Environmental Biology

Under this heading we distinguish two programmes. They emphasize the skills necessary to understand organisms as they relate to their environments and provide a broadly based preparation for careers or advanced studies in such areas as fisheries, agriculture, forestry, parks, wildlife, landscape, environmental studies, etc. Because of the many differences between **terrestrial** and **marine** or **aquatic** environments, two separate programmes are available.

Programme in Human Biology

This programme provides a broad grounding in the fields of modern medical research and is suitable preparation for advanced studies in any of the medical sciences. Some specialization in a particular field is possible during the fourth year.

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.

Programme in Marine Biology

This programme is designed to provide a fundamental background in Biological Sciences while permitting concentration in Marine Biology. It prepares students for technical positions in Marine Biology and for advanced research training in graduate school. It combines the resources of faculty with Marine interests from the Departments of Biology and Oceanography, and makes full use of the sea-water facility in the Life Sciences Centre. Other departments offer a selection of classes in Economics, Law and Politics of the sea. Following is the suggested selection of classes:

(number in brackets indicates credits)

Year I
- Principles of General Biology (1)
- General Physics (1)
- Differential and Integral Calculus (1)
- General Chemistry (1)
- Writing class (Sect. 5.1.1 (c)) (1)

Year II
- Organic Chemistry (1)
- Biostatistics (1)
- Ecology and Evolution OR Ecology + 1/2 Elective (1) OR (1/2 + 1/2)
- Cell Biology (1/2)
- Invertebrates (1)
- Structure and Function of Ecosystems OR Biology of Fish (1/2)

Year III
- Genetics (1/2)
- Algae—systematics OR Biology of Algae (1/2)
- Biological Chemistry (1/2)
- Physiology of Marine Animals (1)
- Limnology (1/2)
- Aquatic Microbiology (1/2)
- Biology of Fish OR Structure and Function of Ecosystems (1/2)
- Applied Mathematics for Life Sciences (1/2)
- Elective (1/2)

Year IV
- Honours Research and Thesis (1)
- Physical and Chemical Oceanography (1/2)
- Fisheries Management (1/2)
- Biological Oceanography (1/2)
- 2-1/2 Electives (to include classes to complete the major and minor) (2-1/2)

Suggested Electives
- Ecological Sampling
- Ecological Techniques
- Resource Ecology
- Resource Economics
- Politics of the Sea
- Marine Microbiology
- Ichthylogy
- Coastal Ecology
- Plant Physiology
- Physiology of Marine Plants
- Theoretical Ecology

Programme in Mathematics and Biology

The departments of Biology and Mathematics offer a combined honours programme which is particularly applicable to biology students with an interest in ecology and population biology. Four specific mathematics classes must be taken: 100/101; 200; 206; 203/204. The remainder of the programme will usually consist of classes from the Mathematics 336/337/338/339 sequence or the mathematics 311/312 sequence. Students interested in this programme should consult the department as soon as possible.

Programme in Microbiology

The departments 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) and D.B. Stoltz (Microbiology). Note that classes that are cross listed between these two departments can be taken for either Microbiology or Biology credits.

Programme in Molecular Biology

The departments of Biology, Biochemistry and Microbiology are developing a co-ordinated programme in Molecular Biology. Students interested in such a programme should take the following classes in their first year: Biol. 1000, Chem. 110, Math 100/101, writing class, one elective. Physics 110 should be taken during the first or second year. Students should consult faculty advisors in their major departments for classes to be taken after the first year.

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. Doyle, R.W. Lee, L.E. Haley, O.P. Kamra, E. Zouros; *Ecology/Environmental Studies,* R.W. Doyle, B. Freedman, 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; *Animal Biology,* E.T. Garside.

Classes Offered

Please note that except in very special cases Biology 1000 is the prerequisite for all other courses in the biology department.

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.

Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered.

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 for the student who has had no previous training in the subject as well as 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 three full-credit classes (Biology 2000, 2015 and 2046) 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, 2060B, 2046R; 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 chosen from not less than 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 Categories I and III. Biology 2012A or B is a half-credit class which is not a member of the core and thus cannot be counted toward fulfilling the core requirement.

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 hr./2 wks.; Lecture Assembly 1 hr.; R.P. McBride, J.G.O. Ogden, M.L. Cameron, L.C. Vining, D.G. Patriquin; Instructors, L.H. Cooke, A.H. Mills.

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 9:30 p.m.

The subject matter puts emphasis on those features common to all organisms. The class 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 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 classes 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.; J. Farley, A.R.O. Chapman, M.J. Harvey; Instructors, P. Harding, B. Coté (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 centre and no formal lectures. The study centre is open on a come-any-time basis from morning to late evening.

2010B Molecular Biology. Lect. 3 hrs.; Lab. 3 hrs.; J.A. Novitsky, L.C. Vining; Instructor, K. Holmwood. (Category 1).

This class deals with the organization and function of the living world in molecular terms. It explores the biochemistry of heredity, growth and existence at a level that does not depend upon extensive knowledge of organic chemistry, although some background in chemistry is essential. It is intended to provide the fundamentals of a molecular approach to biology for students who do not anticipate pursuing molecular biology or biochemistry as their main interest.

2012A/B Laboratory Techniques for Cell and Molecular Biology. Lect. 1 hr.; Tutorial 1 hr.; Lab. 3 hrs.; Faculty member; Instructors P. Gerdes, K. Holmwood.

A class to introduce the student to techniques, equipment and the experimental approach to solving biological problems in the laboratory. Lectures will present the theoretical background to laboratory experimentation. Tutorials will aim mainly at developing an appreciation of experimental design and data analysis.

Students intending to take more advanced biochemistry and/or molecular biology classes next year are strongly advised to take this class along with Biology 2015.

Biology 2012A/B cannot be used as part of the biology major and honours requirement for 2-1/2 biology core-class credits.

2015 Cell-Molecular Biology. Lect. 3 hrs.; R.K. O'Dor, J.V. Collins, W.C. Kimmins (plus Biochemistry Faculty); Instructors P. Gerdes, K. Holmwood. (Category I).

See Biochemistry 2015 for description of class content.

2020A Cell Biology: Form and Function, Lect. 2 hrs.; Discussion 1 hr.; Lab. 3 hrs.; J.V. Collins, R.K. O'Dor; Instructor, P. Gerdes. (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./2 wks.; Tut. 1 hr.; L.E. Haley, O.P. Kamra, R.W. Lee; Instructors, J. Hughes, J. Hardie. (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.

2040B Evolutionary Biology, Lect. 2 hrs.; Tutorial 1 hr.; Lab. 3 hrs.; E. Zouros; Instructor, C Stewart. (Category III).

Lectures will cover the following topics, with about equal time devoted to each: origin of life and the evolution of the eukaryotic cell; evidence for evolution and major evolutionary theories; mechanism of evolution with emphasis on natural selection; the evolution of populations and the origin of species; patterns in the fossil record; human evolution. A textbook and a collection of papers (about four papers per topic) will supplement the lectures. The mathematical theory of evolutionary biology will be studied in the laboratory, which will consist of a set of problems covering elements of population genetics, games theory, and statistics.

Prerequisite: High school Algebra.

2046 Ecology and Evolution, Lect. 3 hrs.; Lab. 3 hrs.; R.W. Doyle; Instructors, C. Knight, C. Stewart. (Category III).

The class will deal with the growth and regulation of population size, the genetic structure of populations and the ecological structure of plant and animal communities. Principles which apply on a short (ecological) time scale will be developed in parallel with the analogous principles which apply over much longer stretches of evolutionary time. Much of the laboratory and about one-quarter of the lectures are concerned with applied population biology; in particular, with the biological basis of fisheries management. The class integrates and adds to material from Biology 2040 and Biology 2060.

2050A/B Developmental Biology, Lect. 3 hrs.; Lab. 3 hrs.; G.S. Hicks; Instructor, C. Coté. (Category II).

A variety of currently useful developmental systems will be studied in this class. Development is seen as an orderly sequence or programme of events which changes simple structures, such as eggs, into extremely complex, many-celled organisms. Initially, developmental "Decisions" must be made by cell lines which are becoming committed to a specific function. Then there is the coordinated appearance of entirely new structures, at all levels of biological organization: Cell-specific proteins and other macromolecules, specific tissues, organs and organ systems. Consequently, new functions gradually emerge in the organism. The challenge for developmental biology is to "explain" these developmental programmes in terms of cause and effect. Emphasis will, therefore, be placed on experimental approaches to developmental questions. The laboratory sessions stress critical observation and analysis of living developing systems.

2060A Ecology, Lect. 3 hrs.; Lab. 3 hrs.; members of staff; 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.

Prerequisite: 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 extracelular 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 subequently register in Biol./Microb. 4024B.

Prerequisites: Biology 2015, or 2020A, or 2100A/B.

3030B Advanced Genetics, Lect. 2 hrs.; Tutorial 1 hr.; Lab. 3 hrs.; L.E. Haley.

The topics introduced in biology 2030A/B will be dealt with in much greater detail. There will be an emphasis on the genetics of different organisms and the analysis of genetic crosses.

Prerequisite: 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.

Prerequisites: Biology 2030A or B, and Biology 2020A or Biology 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.

3035A Population and Quantitative Genetics, Lect. 2 hrs.; Tutorial 1 hr.; E. Zouros.

This year the class will be devoted to quantitative genetics. The following topics will be covered: nature of continuous variation in natural or laboratory populations; analysis of resemblance among relatives; selection of quantitative characters; analysis of breeding schemes; and analysis of correlated characters and threshold characters. Falconer's "Introduction to Quantitative Genetics" will be used as textbook, but more advanced treatments may be used as references. Data from actual research will provide the material for exercises. Students doing research in genetics will be encouraged to bring into class the results of their own research. A statistical analysis of such data may serve as a partial fulfillment of the requirements of the class.

Prerequisites: Biology 2030 or Biology 2040 or Biology 2046; Math 100 and Math 106 or permission of the instructor.

*** 3036A Developmental Genetics,** Lect. 2 hrs.; Tutorial 2 hrs.; L.E. Haley.

This class will deal with gene activation and control in eukaryotic development.

Prerequisites: Biology 2030A or B and 2050A or B.

3039A Human Genetics, Lect. 3 hrs.; Tutorial 1 hr.; O.P. Kamra and E. Zouros.

The course is designed to accommodate students of Biology and Medicine with special interest in human genetics. Topics include human cytogenetics and abnormalities, inborn errors, genetic risk induced by environmental factors; prediction and detection of genetic risk, genetic counselling; genetic and non-genetic factors in behavioral characters and multifactorial diseases; genetic variability, selection and genetic load in human populations; ethical and social issues associated with manipulation of human genetic pools. A background in basic genetics is assumed.

Prerequisite: Biology 2030A or B.

*** 3050B Development and Morphogenesis in Animals,** Lect. 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 Ecology, Lect. 2 hrs.; Lab. or Tutorial 3 hrs.; one weekend field trip; B. Freedman.

Various topics within the field of Applied Ecology will be discussed. Emphasis will be on the organism and/or ecosystem effects of forestry practices and other types of land management, including recreation, and on the effects of various types of pollutants, including acidic precipitation, oil spills, heavy metals, sulphur dioxide, and various chemical pesticides.

Prerequisite: Biology 2060A/B or 2046.

3061B Structure and Function of Ecosystems I, Lect. 2 hrs.; Seminar 1 hr.; K.H. Mann and staff.

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* or some other introductory Statistics text is required reading. Biology 2060A or B or 2046.

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.Not for students who have done Math 338 (Sample Survey Methods).

Prerequisites: Biology 2060A or B or 2046; Math. 106 or 206 or Psychol. 357.

3066B Forest Ecology, Lect. 2 hrs.; Lab. or Tutorial 3 hrs.; two field trips on weekends; B. Freedman.

Various topics within the field of Forest Ecology will be discussed. At the ecosystem level, we will deal in depth with the cycling of energy and significant nutrients, and with successional changes in these processes. The effects on forests of natural catastrophic events, especially fire and pathogens, will also be described as will the autecology of tree species of significance to the Maritimes.

Prerequisite: Biology 2060A/B or 2046.

3070 Animal Physiology I, Lect. 2 hrs.; Discussion 1 hr.; Lab. 3 hrs.; R.K. O'Dor, M.L. Cameron; Instructor M.J. O'Halloran

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 and 2020A or 2015 (in which a minimum C grade is required).

3073A Plant Physiology, Lect. 2 hrs.; Lab. 3 hrs.; D. Patriquin, R. Brown.

Topics covered include water relations, photosynthesis, respiration, Nitrogen metabolism, cell walls, photobiology, hormones, membrane transport, translocation, and some aspects of crop physiology.

Prerequisite: Biology 2010B or 2015 or 2020A or permission of instructor.

***3075A Plant-Soil Relationships,** Lect. 2 hrs.; Lab. 3 hrs; D.G. Patriquin.

This class deals with processes that are involved in the exchange of materials between plants and soils, and that limit plant growth under field conditions. The emphasis is on cultivated plants, but the material is relevant to natural systems, and reference is made to aquatic angiosperms and sediments. Topics include soil formation, soil aeration and root metabolism, water relationships, mineralization and humification of organic matter, plant mineral nutrition and ion uptake, fertilizers, saline soils and halophytic angiosperms, and plant-microbe interactions. Laboratory sessions deal with the design of field and greenhouse experiments and with the methodology of measuring the various properties and processes discussed in class.

***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.

Prerequisites: Biology 2100A/B and Chemistry 240 or Biology 2010/2015.

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.

Prerequisites: Biology 2100 A or B and Chemistry 240 or Biology 2010/2015.

3114A Introduction to Virology, (Microbiology Dept.).

3115A Introduction to Immunology, (Microbiology Dept.).

3116 Mycology, 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.).

***3211A Systematic Survey of the Algae,** Lect. 2 hrs.; Lab. 3 hrs.; A.R.O. Chapman.

An examination of the taxonomic and evolutionary relationships of the algae. Considerable emphasis will be placed on practical work (Field and laboratory) where students will become familiar with the algal components of the local flora.

Prerequisite: Grade B or better in Biology 2000.

The above class will alternate yearly with Biology 3212A.

***3212A Biology of the Algae,** Lect. 2 hrs.; Lab. 3 hrs.; A.R.O. Chapman.

A non-systematic examination of the cellular, organismic, population and community organizations of benthic and planktonic algae.

Prerequisite: Grade B or better in Biology 2000.

***3213B Plant Development,** Lect. 2 hrs.; Lab 3 hrs.; G.S. Hicks.

In the vascular plants, the major developmental processes of cell differentiation and organogenesis consist of complex sequences of programmed events. This class examines these events, as exemplified by the development of (1) the elements of the vascular system and the male sex line, and (2) organogenesis, stressing organ determination and the control of organ morphogenesis. Whenever possible, experimental evidence will be used to substantiate concepts. Within this framework, the principles and techniques of plant tissue culture will be taught in the laboratory.

3214A 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'. A plant collection is one requirement; consult the instructor as early as possible about this.

Prerequisite: Biology 2000.

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.

***3217B Plant Anatomy,** Lect. 2 hrs.; Lab. 3 hrs.; G.S. Hicks.

This class presents a survey of the major cell and tissue types in living seed plants. A modern approach will provide current information on the ultrastructure and composition of cells especially as related to cell function. Emphasis will be placed on the organization of tissues into larger functional units, or tissue systems, in both primary and secondary plant body. This will reveal the basic unity of the plant body. Wherever possible, information will be drawn from developmental studies, where these help to understand plant organization. Laboratory studies are primarily concerned with the learning and application of plant microtechnique: hand sectioning, dehydration methods, microtomy and staining.

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 unlike that of 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 of preserved animals 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.

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.

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 class 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.

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. Students are urged to follow up this class with Philosophy 242B: Philosophy and the Life Sciences.

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 class surveying the whole range of vertebrate tissues and organs.

Prerequisites: Biol. 2020A or 2015 and permission of the instructor.

*** 3611B Principles of Biogeography,** Lect. 2 hrs.; Seminar 1 hr.; E.C Pielou.

This class brings together descriptive biogeography (plant and animal; terrestrial and 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).

Advanced Classes Offered

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. Offered subject to enrollment.

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 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).

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.).

4039B Topics in Human and Medical Genetics; Lect./Seminar 2 hrs.; S. Blecher, J.T.R. Clarke, O.P. Kamra (Coordinator), R.S. Tonks, J.P. Welch, E. Winsor, E. Zouros and others.

This advanced level seminar class is open to Biology and Medical students. Students will present reports based on a research project (experimental or literature search) conducted under the supervision of faculty members in Biology or one of the medical departments. Lectures from the faculty will supplement class work and will emphasize integration of student seminars into a self contained unit.

Prerequisites: Biology 3039A or 1st year Medicine.

*** 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 M.J. O'Halloran

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 class material toward the students' interests and backgrounds. The class 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 satisfactory 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.; J.G. Aldous (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.

Prerequisite: Permission of Instructor.

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.).

Highly interacting complex systems from such diverse fields as physics, biology, economics, and sociology have much in common when analyzed from the viewpoint of their dynamics and energetics. In particular, such systems share two basic characteristics. (1) Any system which manifests itself in the real world through motions under impressed forces is dissipative, that is, in the real world there are resistive forces opposed to the motion. This gives rise to a general notation of entropy for all types of systems. (2) Complex real systems are highly organized and the study of the motions necessarily involves a study of their hierarchical structure.

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 thermo-dynamics augmented by field theory and dynamical systems theory. The resulting field thermo-dynamics is a powerful tool for the analysis of complex dissipative phenomena, 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 Activity 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 Resource Ecology and Economic Development, Lect./Seminar 3 hrs.; A.J. Hanson.

Major theories of natural resource management have evolved rather separately through economic, behavioural and ecological disciplines. In any situation, however, decisions should depend on either coupled analysis or on the degree to which one or another approach clearly should predominate. The interphase of ecology with these other disciplines and the criteria which may be used to weigh ecological inputs in economic development planning processes are the major topics to be covered. The ecological principles to be applied, the extent and timing of information needed for management, and the means and extent of data integration vary greatly. Current approaches and analytical techniques for doing so will be described. These do not focus particularly on environmental impact assessment. Instead they illustrate adaptive strategies for long-term resource use, pest and disease control. The class includes an introduction to practical problems of project cycles, of defining objectives and of budget analysis.

4652A Advanced Ecology Seminar, Consult Department.

4653B Advanced Ecology Seminar, Consult Department.

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.

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, French, History, Political Science, 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. 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.

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:

Professor B. Lesser, Economics Department
Professor M.G. Parks, English Department
Professor Hans Runte, French Department
Professor P.G. Clark, Sociology Department
Professor J.M. Beck, Political Science Department
Professor P.B. Waite, History Department

Chemistry

Professors
W.E. Jones (Chairman of Department)
D.R. Arnold
W.A. Aue
W.J. Chute
T.P. Forrest
K.E. Hayes
O. Knop
K.T. Leffek
D.E. Ryan

Associate Professors
T.S. Cameron
J.A. Coxon
G.A. Dauphinee
J.S. Grossert
D.L. Hooper
J.C.T. Kwak
P.D. Pacey
L. Ramaley
R. Stephens
C.H. Warren

Assistant Professors
R.J. Boyd
A. Chatt
T.B. Grindley
K.R. Grundy
R.D. Guy
J.A. Pincock

Lecturers
M.L. Heit
J. Wasson

Instructors
C.D. Burkholder
J. Gabor
D.A. Groves (Part-time)
S.A. Sawler
D.J. Silvert
M. Yeats

Research Associates
D.A. Othen

Postdoctoral Fellows
S.A. Barton
H. Furue
G. Krishnamurty
J.E. Nawrocki
V. Paramasigamani
P. Pruszynski
K. Ramakrishnan
F. Sauriol
J. Thiel
R. E. Tout
W.J. Westerhaus
P. Wong
M.Yoshida

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 to 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.

Degree Programmes

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 211A/B, 220A/B, 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 a Chemistry Counsellor each year regarding his or her programme of study. The student's programme should also include Mathematics 100 and 101 and Physics 110.

The Chemistry Counsellors this year are W.J. Chute, G.A. Dauphinee, J.A. Pincock, R. Stephens, and C.H. Warren. All students are encouraged to meet with one of these faculty members to discuss any problems that may arise.

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, Geology 100 or Physics 110
5. Elective

Years II, III and IV must include:
1. Chemistry 211A/B, 220A/B, 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, 488 and 888 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 was not taken in Year I, it should 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 Biochemistry, Biology, Geology,

Mathematics or Physics. In order that an introduction into all the basic areas of chemistry is obtained, Chemistry 211A/B, 220A/B, 231A, 232B and 240 must be part of all combined honours programs involving Chemistry.

In addition to the above second-year chemistry classes, the following programmes are suggested for guidance to the student.

Combined with Biochemistry

Chemistry 341A, 342B, 343A/B, 431A/B, 440A/B, 441A/B, 442A/B and 888, together with Biochemistry 300R and 3 1/2 other full credits in Biochemistry and Chemistry of which three must be in Biochemistry.

Combined with Biology
Chemistry 213A, 341A, 342B, 343A/B, 440A/B, 441A/B, 442A/B and 888 with Biology 2000, 2010A/B, 2020A/B and 2 1/2 other full credits of which at least two must be in Biology.

Combined with Geology
Chemistry 311A, 312B, 321A, 322B, 411A, 412B and 888 with Geology 201, 202A, 223B, 425 and 2 other full geology credits.

Combined with Mathematics
Chemistry 300A, 330A, 400B, 430A/B and 888 with Mathematics 213, 250, 311A or B, 312A or B, 350 and at least one of 406, 410, 412 or 421 and one other full chemistry or mathematics credit.

Combined with Physics
Chemistry 300A, 330A, 331B, 400B, 432B and 888 with Physics 211, 221, 315, 320A/B and two other chemistry or physics credits.

The above are only guidelines and students must consult the Chairman of the Department of Chemistry and the Chairman of the other area of study *before* registering in the combined programme.

Co-operative Employment Programme in Chemistry DALCHEM CO-OP

The **"Dalchem Co-op"** co-operative programme in chemistry provides chemistry students with an integrated pattern of academic study and supervised work terms in industry, government laboratories and institutes, etc. The programme enables students to obtain a better appreciation of the practical problems they will face in their chemical careers upon leaving the University. The work term experience will give students an opportunity to orient themselves at an early stage towards the practical application of their newly acquired knowledge, and add to their motivation for academic study.

Eligibility
Students entering their second year of an honours programme in chemistry or combined honours programme at Dalhousie are eligible for admission. Application forms can be obtained from the Department office.

The Work-Study Programme
The programme consists of 8 academic terms and 4 supervised work terms. A term is defined as a 4 month period, i.e. the summer term (S) from May through August, the fall term (F) from September through December, and the winter term (W) from January through April. Students will follow one of two sequences:

Year	1		2			3			4			5	
	F	W	F	W	S	F	W	S	F	W	S	F	W
A	1	2	3	4	W1	5	6	W2	W3	7	W4	8	
B	1	2	3	4	W1	5	W2	W3	6	7	W4	8	

Where the numbers 1-8 stand for fall or winter academic terms, and W1-W4 for work terms.

Classes and Degrees
The 8 academic terms allow for the accumulation of 20 class credits and the Honours Requirement, Chemistry 888 satisfying the requirements for:
a) A B.Sc. degree with Honours in Chemistry
b) A B.Sc. degree with Honours in Chemistry (and Another Approved Subject) Combined.
The academic programme and required classes are the same as for the B.Sc. degree with Honours in Chemistry or the B.Sc. degree with Honours in Chemistry (and Another Approved Subject) combined, as described earlier, including Chem 388 and Chem 488. For detailed programmes consult the Programme Director. In addition, in year 2 Co-op students are required to participate in the non-credit course and lecture series "Chemical Practice".

The Work Term
The Programme Director contacts employers in Nova Scotia, other Maritime Provinces or other parts of Canada. Co-operating employers will interview students available for placement approximately 2 months before the start of the work term. The employer pays the student at rates determined by the employer's wage structure. The Department works hard to ensure placements for all students, but it may happen that due to circumstances beyond the Department's control a given student will not find employment in a given term. Such cases should be rare, but students who find themselves in this position must still complete four work term placements before graduating. Each student will have a faculty advisor during his or her work term. The student is required to write a work term report for each work term, to be submitted to and graded (on a Pass/Fail basis) by the employer. Students who for some reason do not complete four work terms satisfactorily but who have completed all academic requirements can still graduate with an Honours Degree in Chemistry, but they will not have completed the Co-operative Employment Programme.

Further Information
For further information contact the Programme Director, Co-operative Employment Programme in Chemistry, Department of Chemistry, Dalhousie University, Halifax, N.S., B3H 4J3.

Classes Offered

A or B indicates that the class is a half credit and will be offered in either the A or B term or in exceptional circumstances in both terms. The names of professors are those teaching the classes in 1979/80 and not necessarily those for 1980/81. Consult the timetable for up to date details.

Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered.

First Year and Senior Resource Centres are located in Rooms 167 and 166. The centres are staffed with people who can help with Chemistry problems and the facilities include study areas, computer terminals with special programmes designed for Chemistry students, molecular models, audio-visual aids and a small library.

105 Chemistry For Dental Hygiene Students lect.: 3h; lab.: 3h; 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 h.; lab/tutorial: 3 h.; R.J. Boyd, A. Chatt, W.J. Chute, J.A. Coxon, G.A. Dauphinee, K. Grundy, K.E. Hayes, M.L. Heit, P.D. Pacey, L. Ramaley, D.E. Ryan, R. Stephens, J. Wasson.

This is a multi-sectioned class, some sections of which are designed to meet the needs of specific groups of students. The class and tutorial size is kept small, to allow close interaction between the students and the professor. Please consult the Chemistry Counsellors at Registration and the timetable for further information. However all sections cover similar material though sometimes different emphasis may be placed on certain topics. Topics include 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.

A special section of this class is available to students who have a strong background, at the high school level, in chemistry and a genuine interest in science. Through a more challenging laboratory program and a series of guest lectures, students are given an opportunity to gain a greater appreciation of chemistry and its relation to other aspects of human endeavour. This section has the same curriculum, the same textbook and examinations at the same level as the regular sections of Chemistry 110. Interested students should consult the Department of Chemistry for more information as soon as possible after acceptance into the university.

211A or B Introductory Inorganic Chemistry, lect.: 2 h; lab.: 3 h; optional tutorial: 2 h; T.S. Cameron, K.R. Grundy.

This class covers the fundamentals of Inorganic Chemistry. Specific topics include: ionic bonding and the nature of solids, the structure of atoms and simple molecular orbital theory, coordination chemistry of the transition metals and a certain amount of systematic chemistry of inorganic compounds. The preparation, analysis and observation of inorganic compounds will be the laboratory assignments.

Prerequisite: Chemistry 110.

213A Inorganic Chemistry of Life lect.: 2 h; lab.: 3 h; T.S. Cameron.

This class will examine inorganic elements in living systems. The special properties, structures and reactivities of these elements and their compounds will be studied in the context of these living systems.

The laboratory will illustrate the class work with experiments on compounds isolated from living systems and on inorganic compounds that are used as models for these systems.

Prerequisite: A good understanding of the principles studied in Chemistry 110.

This class may **not** be included in nine chemistry credits required for an honours chemistry degree (Degree Programmes 5.3.4.1 (i); it may however be taken by honours chemistry students in addition to these nine.

220A or B Introductory Analytical Chemistry, lect.: 2 h; lab.: 3 h; 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 h; lab.: 3 h; 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 h; lab. 3 h; 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.

233B Physical Chemistry for the Life Sciences, lect.: 3 h; lab./tut.: 3 h; W.E. Jones and J.S. Wasson.

This class is designed for those students who do not plan a career in chemistry but who would find the principles and concepts of physical chemistry of use in related areas.

The basic ideas of physical chemistry will be developed in a way that will introduce the necessary mathematical concepts in simple terms. Previous knowledge of the calculus is not necessary. The principal topics, chemical equilibrium, rate of chemical reactions, electrochemistry and properties of solutions will be treated by application to examples of biological and environmental interest.

The laboratory/tutorial sessions will be designed, through

short experiments, films and other tutorial aids, to illustrate the application of experiment in physical chemistry.

Prerequisite: Chemistry 110.

Chemistry majors may not apply credit for Chemistry 233B towards the major requirements of a degree in Chemistry, although they may take Chemistry 233B as an elective.

Credit will **not** be given for both Chemistry 231A and Chemistry 233B **nor** for both Chemistry 232B and Chemistry 233B.

240 Introductory Organic Chemistry, lect.: 3 h; lab.: 3 h; J.S. Grossert and T.P. Forrest, T.B. Grindley, D.L. Hooper, 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 h; lab.: 3 h; 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.: 3 h; 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 an introduction to the simple Hückel molecular orbital method.

Prerequisites: Mathematics 200 or 220 and Chemistry 211A/B or 231A or 232B.

311A Chemistry of the Main Group Elements, lect.: 2 h; lab.: 3 h; 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. Some of these experiments involve special handling techniques, such as controlled atmosphere, high temperature or vacuum line manipulation.

Prerequisite: Chemistry 211A/B.

312B Chemistry of the Transition Metals, lect.: 2 h; lab.: 3 h; O. Knop.

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.

The laboratory experiments serve to introduce the student to procedures for the preparation and characterization of compounds of the transition elements.

Prerequisites: Chemistry 211A/B, Mathematics 100 and 101.

321A Solution Equilibria and Analytical Spectroscopy, lect.: 2 h; tutorial: 1 h; lab.: 3 h; A. Chatt.

Chemistry 321A is organized into three units:

1. Introduction to Statistics—elementary concepts, evaluation and reporting of analytical data, ways of expressing precision and accuracy, confidence limits, regression.

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/B.

322B Analytical Electrochemistry and Separations, lect.: 2 h; tutorial: 1 h; lab.: 3 h; 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.

Prerequisites: Chemistry 220A/B and 321A or permission of the instructor.

330A Chemical Thermodynamics, lect.: 2 h; lab.: 3h; J.C.T. Kwak.

The purpose of this class is to apply the laws of thermodynamics to systems which can undergo chemical as well as physical changes. Chemical thermodynamics is exceedingly general in its applicability, making it an important tool for attacking many problems in chemistry, biochemistry, geology, and the life sciences. In this class, thermodynamic relationships will be developed in a rigourous way, but at all times the application of the results to situations of considerable practical interest will be demonstrated. The first part of the class introduces the thermodynamic quantities, energy, enthalpy, entropy, and free energy, and the calculation of these properties for a large variety of systems and physical and chemical changes. Special emphasis will be placed on the chemical potential and other partial molar properties. Non-ideal systems, solutions, and chemically reacting systems will be treated.

In the laboratory 6 experiments covering various aspects of experimental chemical thermodynamics will be performed. Topics include calorimetry, densimetry, phase equilibria, gas absorption, and electrolyte equilibria. There is one laboratory period per week. A formal report is submitted for each of the experiments.

Although the level of mathematics used in the class is not very high, a good working knowledge of calculus is required. Partial differentials will be used extensively throughout the course.

Prerequisites: Chemistry 231A and Mathematics 200 or 220.

331B Chemical Kinetics, lect.: 2 h; lab.: as needed; P.D. Pacey.

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 using 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 h; lab.: 3 h; 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 class will be built on the framework of the functional group classification developed in introductory organic chemistry classes. 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.

Prerequisite: Chemistry 240 (or equivalent).

342B Pathways of Organic Chemistry, lect.: 3 h; lab.: 3 h; 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.

Prerequisite: Chemistry 240 (or equivalent).

343A or B Bioorganic Chemistry, lect. 3 h; 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 class.

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.

Prerequisite: Chemistry 240 (or equivalent).

388 General Topics in Chemistry. A non-credit seminar class to be given by invited speakers which must be taken by all 3rd year honours Chemistry students.

400B Theoretical Chemistry, lect.: 2 h; 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 h; compulsory tutorial: 3 h; O. Knop and C.H. Warren.

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 211A/B and Mathematics 200 or 220, or consent of instructor.

412B Solid State Chemistry, lect.: 2 h; lab.: 3h; 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 211A or B, 330A, and 411A (or equivalents) or consent of instructor.

420A or B Analytical Instrumentation, lect.:2 h; lab.: 3 h; R. Stephens.

This class describes spectroscopic methods of elemental analysis. Techniques covered include flame and flameless atomic absorption, atomic fluorescence, plasma emission, x-

ray methods and neutron activation analysis. The theory of each method is given, and the operation of the appropriate instrumentation is described. The characteristics, advantages and disadvantages of each technique as a method of analysis are considered.

Prerequisites: Chemistry 321A and 322B or permission of instructor.

421A or B Methods of Organic Analysis, lect.: 2 h; lab.: 3 h; R.D. Guy.

Instrumental methods for the separation and analysis of organic compounds are covered. Topics in chromatography include GC and LC detectors; adsorption, reverse phase and ion exchange procedures in liquid chromatography; and field flow fractionation separations. Other topics covered are thermal methods of analysis, kinetic methods, and radioimmunoassays.

Prerequisites: Chemistry 321A and 322B or permission of instructor.

430A or B Introductory Statistical Thermodynamics, lect.: 3 h; 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 or B Biophysical Chemistry,** lect.: 2 h; lab.: 3 h; J.C.T. Kwak.

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 or B Spectroscopy and Photochemistry,** lect.: 2 h; 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.

Prerequisite: Chemistry 231A, 232B or permission of instructor.

440A or B Spectroscopy of Organic Molecules, lect.: 2 h; lab.: 3 h; 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.

441A or B Stereochemistry and Synthesis in Organic Chemistry, lect.: 2h; lab.: 3 h; J.S. Grossert.

Organic stereochemistry and synthesis, illustrated in considerable part with examples taken from the field of natural products, are discussed. Laboratory experiments will be chosen to incorporate modern, advanced synthetic techniques and principles.

Prerequisites: Chemistry 341A, 342B or equivalent, or permission of instructor.

442A or B Organic Reaction Mechanisms, lect.: 2 h; lab.: 3 h; K.T. Leffek and 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 the considered include applications of kinetic 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 to be given by invited speakers which must be taken by all 4th year honours Chemistry students.

888 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
J.P. Atherton (Chairman)
R.D. Crouse
J.A. Doull
T.E.W. Segelberg

Associate Professors
R. Friedrich
P.F. Kussmaul

Assistant Professors
D.K. House
J.M.P. Lowry
C.J. Starnes

Special Lecturer
W.J. Hankey

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 Dalhousie 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, etc.).

Degree Programmes

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 Mediaeval Philosophy not having a Language prerequisite should be especially useful to students taking a bachelor's 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 Mediaeval 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.

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.

Classes Offered
Literature, History and Philosophy

Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered. *If this class is not listed in the timetable please consult the Classics Department.*

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 Origins of Western Thought: 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, lect.: 2 hrs.; R. Friedrich.

The first part of this class will deal with the Greek theatre (production, stage convention, the Dionysian festival, the ritual origins of drama) which is followed by a study of a number of Greek and Roman plays as well as Aristotle's *Poetics* and Horace's *Art of Poetry*. In the second part the influence of Greek and Roman drama and the impact of Aristotle and Horace on the formation of modern European drama will be traced through a study of a number of plays each representing a type of European drama ranging from Shakespeare to Brecht.

All plays will be studied in translation. This class is open to first-year students.

Ancient History and Religions

Classics 220 Ancient History: The Ancient City, lect.: 2 hrs., P.F. Kussmaul.

An introduction to Ancient History through a study of the constitutions of the Greek city states (especially Athens) and of Rome. Basic texts, such as Aristotle's *Athenian Constitution,* will be read in English translation. This class is open to first-year students. There is no foreign language requirement. This class is given alternately with 221.

Classics 221 Roman History: The Roman Empire and the Rise of Christianity, lect.: 2 hrs., P.F. Kussmaul.

A continuation of the introduction to Ancient History through a study of the institutions and constitutional arrangements of the Roman Empire from the time of Augustus. The relation of the Empire to Christianity will be a topic of primary interest. This class is given alternately with 220.

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 is the study of the beginnings of the Christian Church against its Jewish background within the Hellenistic culture. The history of the Church will be followed up through the first 3-4 centuries. Emphasis will in alternate years be laid on various features such as the development of Christian Initiation, the Eucharist or 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.

Classics 226/526 Roman Religion, seminar: 2 hrs.; E. Segelberg.

Classics 227/527 Near Eastern Religion, seminar: 2 hrs.; E. Segelberg.

Classics 230/530 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 453/553 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, J.P. Atherton.

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 History of Christian Doctrine II: From Augustine to Calvin, W.J. Hankey *.

Classics 338 Mediaeval 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.; C.J. Starnes. *

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 class will endeavour to discover in what sense a thinking of nature as 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.

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.

Classics 431/561 Seminar on the Philosophy of Plato, seminar: 2 hrs.; J.A. Doull.

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 Mediaeval 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 458/558 Reading and Research.

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.

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.

Greek 301/501 Greek Epic, seminar: 2 hrs.: staff.

Greek 302/502 Greek Lyric, seminar: 2 hrs.: staff.

Greek 303/503 Greek Drama: Tragedy, seminar: 2 hrs; staff.

Greek 304/504 Greek Drama: Comedy, seminar; 2 hrs.; R. Friedrich.

Greek 305/505 Greek Philosophical Texts I, seminar: 2 hrs.; staff.

Greek 306/506 Greek Philosophical Texts II, seminar: 2 hrs.; staff.

Greek 307/507 Greek Philosophical Texts III, seminar: 2 hrs.; staff.

Greek 308/508 Greek Historians, seminar: 2 hrs.; staff.

Greek 309/509 Greek Literary Criticism, seminar: 2 hrs.; R. Friedrich.

Greek 312 Biblical Greek

This class will enable the student who already knows the basics of Classical Greek to familiarize himself with koine-Greek as it is found in various *New Testament* authors. The Greek of the *Septuagint* will also be taken into account.

Greek 410/510A/B 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 A Study of Latin Prose and Poetry, lect./discussion: 2 hrs., P.F. Kussmaul.

A study of the poetry and prose literature of Rome through a selection of texts: particular attention will be paid to improving the students' command of the grammar and syntax of the Latin language.

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.

Latin 405/505 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

Comparative Literature

R. Friedrich (Classics) (Chairman)
A. Andrews (Theatre)
J.A. Barnstead (Russian)
S.A.M. Burns (Philosophy)
F. Gaede (German)
R.M. Huebert (English)
S. Jones (Spanish)
J.M. Kirk (Spanish)
J. Lowry (German)
R.M. Martin (Philosophy)
S. Mendel (English)
N.S. Poburko (English)
H.R. Runte (French)
R. Runte (French)
M.C. Sandhu (French)
H.G. Schwarz (German)
H.D. Sproule (English)
H.S. Whittier (English)

COMPARATIVE LITERATURE, despite its name, is not so much defined by 'comparisons' as by studies involving literary works which belong to more than one literature and language. The idea of a national literature (English literature, French literature, Canadian literature, etc.) is of relatively recent date. It originated in the 18th century with the rise of national consciousness; yet at the same time the traditional broad unity of all literatures reasserted itself in Goethe's concept of 'world literature'. In Comparative Literature the literary work is treated in its double aspect of belonging to a national literature as well as forming part of world literature. Comparative Literature has various approaches. It implies the study of *themes* and *motifs* (e.g. Faust, myths, etc.) as they recur in literary works of different ages and literatures; of *literary genres* such as drama, epic or romance; of *periods* (e.g. Renaissance, 18th century, etc.); of *movements* (e.g. Romanticism, Symbolism, etc.); of authors writing in different languages but linked by influences; of the *reception* of the work of an author in another literature (e.g. Shakespeare in Germany). The relationships of literature to the other arts (e.g. film, the fine arts, music, etc.) may also be a subject of Comparative Literature; and last but not least, Comparative Literature forms a bridge between literature and other fields in the humanities such as philosophy, religion, and politics.

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.

Classes Offered

Classes marked * are not offered every year. Please consult the current timetable on registration to determine if this class is offered.

Note: At present the Comparative Literature Programme is being fundamentally revised; the entries may therefore be outdated at the time when this Calendar will be published. Students interested in the Comparative Literature Programme are advised to contact R. Friedrich, Department of Classics, 424-3468.

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.

201 The History of the Theatre, A. Andrews

Note: This class is cross-listed as Theatre 201.

203 Masterpieces of Western Literature, H.S. Whittier

Note: This class is cross-listed as English 203.

204 The European Novel, S. Mendel

Note: This class is cross-listed as English 204.

*** 207 Ancient Drama in Relation to Modern Drama,** R. Friedrich

Note: This class is cross-listed as Classics 207.

*** 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.

*** 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

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.

*** 216 Bertolt Brecht and the Tradition of Drama,** F. Gaede

Note: This class is cross-listed as German 210.

217 Faust—a Secular Path to Salvation, J. Lowry

Note: This class is cross-listed with German 215.

218 Germanic and Greek Mythology, J. Lowry

Note: This class is cross-listed as German 235.

237 Restoration and 18th Century Comedy, R. Runte

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

Note: This class is cross-listed as Philosophy 270.

350 The Modern Theatre, A. Andrews

Note: This class is cross-listed as Theatre 350.

490 Dramatic Theory and Criticism, and the Aesthetics of the Theatre, A. Andrews

Note: This class is cross-listed as Theatre 490.

Computer Science

The major in Computer Science is offered by the Mathematics Department and inquiries should be directed to that department.

Degree Programmes

Students who major in Computer Science are required to obtain at least four Computer Science credits beyond the 100-level. Amongst these, the following are required: Computer Science 245A-270B and Computer Science 360A-370B. It is expected that most students will also complete both Computer Science 235 and Computer Science 227; the former is particularly recommended for those interested in business or administrative aspects of computing and the latter is recommended for those interested in science and engineering applications and is a prerequisite for Computer Science 320. Mathematics 303 is recommended for those planning advanced study of Computer Science.

Potential Honours students should consider combined honours in Mathematics and Computer Science.

A student may not receive credit for both CS 140 and Engineering 240 or either of the previous courses MATH 225 (in 1978-79) or CS 240. The latter two courses may be used instead of CS 140 as prerequisite for further CS courses.

A student may not receive credit for both CS 141 and the previous course CS 240 in 1978-79. Whenever CS 141 is a prerequisite the latter will serve instead.

A student may not receive credit for both CS 235 and the previous course CS 335.

Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered.

140A/B Introduction to Computer Science, lect.: 3 hrs tut.: 1hr.

This class together with CS 141 provides a general introduction to algorithmic concepts, structured programming, and Computer Science. Students will develop programming skills in Fortran and a higher-level language. The programming exercises will involve numeric and non-numeric applications such as the manipulation of character strings and text processing.

Prerequisites: Nova Scotia Mathematics 012 or equivalent.

141B Applications and Algorithms, lect.: 3 hrs tut.: 1hr.

This class is a continuation of CS 140. The applications tend to be more mathematical and include numerical calculations with truncation and rounding errors, statistics, modeling and simulations, data processing, non-numerical applications involving networks and graphs, interpreters and translators. Students will be introduced to elementary data structures and algorithm analysis.

Prerequisite: CS 140 and Math 100.

227B Numerical Methods, lect.: 3 hrs. (Same as Mathematics 227B).

Linear systems of equations, interpolation and approximation, non-linear equations, quadrature, ordinary differential equations. The emphasis will be on the use of numerical methods for the computer solution of such problems.

Prerequisite: Math 101, 203 and CS 140.

235A Introduction to File Processing, lect.: 3 hrs.

This class will introduce students to a file processing

language such as COBOL or PL/I, and algorithms for the manipulation of large sequential files. Internal and external sorting methods will be covered as well as other topics in data processing.

Prerequisite: CS 140.

245A Computer Organization, lect.: 3 hrs.

This class covers elementary computer system architecture including some case studies of actual machines. It also covers digital representation of number and other data. Other topics include machine language, instruction execution, addressing techniques, computer system organization, memory devises and microprogramming.

Prerequisite: CS 141.

270B Programming Languages, lect.: 3 hrs.

The emphasis will be on fundamental concepts such as block structure and recursion and structured control flow. Exercises will be given in several languages such as Algol or Pascal, Snobol, Lisp and APL. On completion of this class students should be competent programmers able to program in any language given appropriate reference material.

Prerequisite: CS 141. Recommended: CS 245.

320R Introduction to Numerical Analysis, lect.: 3 hrs. (same as Mathematics 320R).

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 and CS 227.

***325B Database Management Systems Design,** lect.: 3 hrs.

This class stresses the concepts and structures necessary to design and implement a data base management system. Hierarchical, network and relational models are discussed with emphasis on the necessary logical and data structures. Various normal forms and canonical schema are discussed as well as the concepts of relational algebras and rational calculus.

Prerequisites: CS 360, 235.

360A Data Structures. lect.: 3 hrs., (same as Mathematics 360A).

Data types and the operations on them are covered in this class, including stacks, queues, trees and various linked structures. The corresponding algorithms are also analyzed, including searching and sorting, retrieval and update algorithms. There is also an introduction to data bases and management information systems.

Prerequisites: CS 245 and CS 270. *Recommended Corequisite:* Math 303.

370B Operating Systems, lect.: 3 hrs. (same as Mathematics 370B).

This class covers principles of modern operating systems and some case studies of existing systems. Specific topics include concurrent processes, process scheduling, memory management, file systems, protection and security and performance evaluation.

Prerequisite: CS 360. *Recommended:* Math 206.

***375A Artificial Intelligence,** lect.: 3 hrs.

This class introduces students to basic concepts and techniques of artificial intelligence or systems and gives insights into active research areas and applications. Representational issues and notational structures are emphasized and existing systems are surveyed. Students will work on a fairly large project using LISP.

Prerequisite: CS 270. *Corequisite:* CS 360A.

***380B Language Processors,** lect.: 3 hrs.

This class covers formal description and classification of programming languages as well as the specification of systems and algorithms for two-down and bottom-up parsing and various methods for attaching semantics to syntax. A simple translater writing system will be used to implement parts of a small language.

Prerequisite: CS 360.

***390A Introduction to the Theory of Computing,** lect.: 3 hrs., (same as Mathematics 390B).

Turing machines and other automata and models of computing are discussed as well as unsolvable problems and their implications. Models, flowcharts, and program schemata and application to program equivalence, termination and correctness are discussed.

Prerequisite: CS 141. *Corequisite:* Math 303.

Other Dalhousie classes of particular interest to students specializing in Computer Science include Physics 421A and 422B. Also, students may, with special permission, enrol in Computer Science classes at other institutions in Halifax such as N.S.T.C. and St. Mary's University.

Economics

Professors
R.L. Comeau (Chairman)
J.L. Cornwall
R.E. George
J.F. Graham
E. Klein
Z.A. Konczacki
C.T. Marfels
R.I. McAllister
N.H. Morse
A.M. Sinclair

Associate Professors
F.M. Bradfield
M.G. Brown
P.B. Huber
G. Kartsaklis
B. Lesser
T.A. Pinfold
U.L.G. Rao

Assistant Professors
M.L. Cross
S. DasGupta
W.A. MacLean
L. Osberg

Special Lecturers
M. Gardner
M. MacDonald

Economics is a social science—a science because it involves a rigorous intellectual effort to derive logical conclusions from basic facts and propositions; a social science because it has human beings and their welfare as its ultimate concern. The basic facts of Economics cannot be knowable and measurable with the same precision as those of the physical sciences—human society and its motivations are far too complex to permit this—but none of the sciences surpasses economics in its relevance to our needs and problems and goals. Economic man is rational man consuming, organizing and producing within a framework of laws and customs in an effort to use the limited resources of our world efficiently for the greatest satisfaction. What should we produce and how much; which factors of production should we employ and in what way; how shall we distribute what we produce and who shall own the means of production?—these are basic problems for economists in the business world, in government and in the universities. It is not an easy science; indeed it is one of the most complex, difficult (and fascinating) areas of study you could choose in the university when you pursue it beyond its elementary levels, but some basic knowledge of economics is essential for any educated person. A more extensive knowledge of the subject is an invaluable complement to other fields of specialization such as law, commerce, politics and other studies in social sciences or humanities—and a specialization in the field can lead to a variety of interesting career opportunities.

B.A. Degree Programme (Three Years)

Students choosing to major in economics at the undergraduate level may do so in the three-year B.A. Programme or they may seek a higher level of specialization in the four-year Honours Programme. Several combined programmes may also be arranged with economics as the major or minor subject in association with such other fields as political science, sociology, history, geology, biology, mathematics—and possibly others.

Final programme approval for all majors, honours and graduate students must be obtained from the appropriate coordinator.

General Principles: The following programme arrangements are provided to the students as guidelines to facilitate the selection of classes appropriate to particular areas of interest. They should not, however, be construed as straitjackets nor as a reason for not seeking individual guidance from faculty members. Indeed, major programmes in economics must be approved by the Department. In suggesting such programme frameworks, two principles have particular weight:

(a) students taking economics as a major, or in an honours programme, should be encouraged to strike a balance between breadth of coverage among disciplines and depth of specialization in economics;

(b) students taking economics as a minor or as a component of another specialization, such as commerce, should be allowed a reasonable degree of flexibility in their choice of economics classes.

General Format: Requirements for a major in economics can be satisfied by taking Economics 1100 or equivalent and any four other full-year classes, or equivalent, in economics. However, a student who desires to take a major in economics with more than the minimal requirements should undertake a programme of study along the following lines:

Year 1	- Principles of Economics - Mathematics 100/101, or equivalent (usually Mathematics 110) - Three classes in fields other than Economics
Year 2 and 3	- A minimum of 5 and a maximum of 8 classes in Economics - Classes in Political Science, History, Mathematics and other related subjects are to be taken to bring the total of classes over the three-year period to 15.

No more than one credit will be given for Economics 1100, 1110, and 1120. For persons considering an honours degree, or any advanced work in economics, intermediate micro and macro classes (Economics 2220A/B and 2221A/B) and intermediate statistics (Economics 2228 or equivalent) are mandatory.

Specific Programmes

Students wishing to take a set of classes which provide both depth and coherence in a particular area of economics should examine the following programme suggestions:

Canadian Development Studies
Economic Analysis and Policy
Economics and the Citizen
Economics and Government
Economic Development in Historical Perspective
International Development Studies
Labour and Society
Mathematical Economics and Econometric Methods
Regional and Urban Economics
Resources and Environment

The details of these programmes are set out in a brochure which is obtainable from the Department of Economics.

Students with interests not covered in the above-listed programmes are encouraged to set up their own programmes with the advice and approval of the Department.

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.

B.A. Honours Degree Programme (Four Years)

The necessary core classes for an Honours Degree in Economics are: Economics 1100 or 1110; Economics 2220 (A or B); Economics 2221 (A or B); Economics 4420A; Economics 3321B; Economics 2228; Mathematics 110 or equivalent; a course in Economic History; a class in the History of Economic Thought. A minimum of nine classes in Economics, beyond the elementary level, is required.

The student's programme will be chosen in consultation with the Department and must have the approval of the Department.

The 21st mark required for the honours programme will be based on an honours essay, graded on a pass/fail basis.

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

Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered.

1100 Principles of Economics, lect.: 3 hrs., tutorial: 1 hr., (optional) 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 1100 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.

1110 Principles of Economics: A Mathematical Approach, lect.: 2 hrs., tutorial: 2 hrs., various members of staff.

This is an introductory class for students with a background in mathematics. Similar to Economics 1100, 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.

1120 Principles of Economics: An Historical Approach, lect.: 2 hrs., tutorial: 1 hr., B. Lesser.

This class 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 1120 is not open to Commerce students needing to satisfy their Economics 1100 requirements.

2200A/B Introduction to Micro-economic Theory, lect.: 3 hrs.; various members of staff.

A basic introduction to micro-economic theory and its applications. It satisfies the minimum micro-economic theory requirements for majors and honours in economics. This class may be of particular interest to Commerce students and other students not majoring in economics since it will pay particular attention to applications of theory in a practical context. Content: the household and the firm: theories of supply and demand. Perfect competition. Non-competitive and imperfectly competitive markets. Regulation.

Prerequisite: Economics 1100 or equivalent.

2201A/B Introduction to Macro-economic Theory, lect.: 3 hrs.; various members of staff.

A basic introduction to macro-economic theory and its application. It satisfies the minimum macro-economic theory requirements for majors and honours in economics. This class may be of particular interest to commerce students and other students not majoring in economics since it puts emphasis on the areas of macro-economic theory as an aid in solving contemporary economic problems. Content: National income accounting. Theory of employment, interest and money. Monetary and fiscal policy.

Prerequisite: Economics 1100 or equivalent.

2220A/B Micro-Economic Theory I, lect.: 3 hrs.; (offered both terms).

Micro-economics 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 as with 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 2000 to 4000 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.

2221 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.

2222A Economic Statistics I, (same as Commerce 204A), lect.: 3 hrs.; workshop: 2 hrs.; various members of staff.

For description see Commerce 204A.

2223B Economic Statistics II, (same as Commerce 205B), lect.: 3 hrs.; workshop: 2 hrs.; various members of staff.

For description see Commerce 205B.

2228 Intermediate Statistics, lect.: 3 hrs.; U.L.G. Rao.

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 to be an introduction to econometrics. It is presumed that advanced econometric techniques can be understood by the student who has taken this class.

This class concentrates on the theory of probability, discrete and continuous probability models, mathematical expectation, moment generation functions, and statistical inference. The general linear model will also be discussed. 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, this would prepare the student for advanced work in econometrics.

The student is expected to have at least a one-year course in calculus (Mathematics 110 or 100) and preferably linear algebra too.

2231B Health Economics, lecture and seminar: 3 hrs.; M.G. Brown.

This class 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 class 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 2220A/B is desirable.

2232 Canadian Economic History, lect.: 3 hrs.; N.H. Morse.

This survey class covers the 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 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. As the class proceeds, the focus shifts more and more towards Canada and more formal theory is introduced in discussing Canadian problems and policies, especially in the twentieth century. As prerequisite, a class in economics principles and some knowledge of history would be beneficial.

2234A 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; landholding 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.

2235B 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 2234A are desirable.

2238A 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.

2239B 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 2238A, 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.

2241A * 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.

2242B * 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.

2250 Applied Development Economics, seminar: 2 hrs. and tutorials, R.I. McAllister.

Purpose. This class enables participants to review 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 and West Africa.

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 be effective members of planning, programme and project teams.

3. *Projects and Development.* The cutting edge of 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, zero-base budgets 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.

Prerequisites: Introductory Economics.

Resources. Experienced advisers from government and private agencies will add further perspective and guidance by participating in some aspects of this class.

3321B Macro-Economic Theory, lect.: 3 hrs.; J. Cornwall.

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 2221A/B and Mathematics 110 (or equivalent).

3324 Public Finance, lect.: 2 hrs.; tutorial: 1 hr.; J.F. Graham.

Economics 3324 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 2220A/B and 2221A/B are desirable.

3325 Labour Economics, lect. and seminar: 3 hrs.; L. Osberg.

Labour Economics studies the allocation of and the returns to human labour. In this class we discuss both the empirical findings of economists and the various alternative theoretical models which seek to explain them: i.e. the 'neoclassical' theoretical perspective, the 'institutional' framework and 'radical' critique. Students are encouraged to choose for themselves which of the alternative 'explanations' they consider to be most satisfactory. Topics covered include: (1) Unemployment in Canada today. We consider the theory of the supply and demand for labour, recent trends in employment and unemployment, the impact of unemployment insurance upon unemployment, the connection between unemployment and inflation and the meaning of the unemployment rate for economic policy in Canada today. (2) Pay differentials and the economic function of education. Education can be viewed as investment in 'human capital' or as 'credentialism'. We examine these arguments and the empirical evidence on the economic return of education. (3) The economics of discrimination. The average earnings of male workers in Canada are almost 80 per cent greater than the average earnings of female workers. Why? In this section we see how much of this is due to discrimination. (4) Poverty and inequality. In this section we discuss the extent of poverty and inequality in Canada and analyze its causes and long-run trends.

Prerequisite: Introductory Economics. Economics 2220A/B is highly desirable.

3326A 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 4426B which continues the analysis with a consideration of the theory and effectiveness of monetary policy.

Prerequisite: Introductory Economics; Economics 2221A/B is desirable.

3327 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'. 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 economic principles. A class in micro-economics and macro-economics also would be helpful. The presentation, except for a few specific points, is largely non-mathematical. The main requirement of students is an ability to read and assimilate a certain body of literature rather quickly.

3328 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.

Prerequisites: Economics 2200A/B or 2220A/B which may be taken concurrently. Students may also be admitted by permission of the instructor.

3330A International Trade, lect.: 3 hrs.; A.M. Sinclair.

This class considers the causes of international 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 2220A/B.

3331A * 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 3332B.

Prerequisites: Introductory Economics. Economics 2220A/B, 2221A/B and 3333A are desirable. Students may also be admitted by permission of the instructor.

3332B Resource Economics, lect.: 3 hrs.; N.H. Morse.

This class is concerned with the economics of the following resource sectors: agriculture, fisheries, forestry, mining, and energy. The focus is on Canada, but not exclusively.

Prerequisites: Introductory Economics. Economics 2220A/B, 2221A/B and 3331A are desirable.

3333A * Theories of Economic Development, lect.: 2 hrs., Z.A. Konczacki.

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 2221A/B, and History of Economic Thought is desirable.

3336B Regional Development, seminar: 2 hrs.; and tutorials; R.I. McAllister.

This class enables students to analyse 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 serious consideration. Particular attention will be given to lessons drawn from Canada (especially Quebec and the Atlantic Provinces), France, Italy, the U.K., U.S.A., and Japan.

Prerequisites: Introductory Economics; at least one class in both Political Science and Canadian History are desirable.

3337B 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: intra-African and overseas, with particular empahsis on trade relations between the African Countries and Canada, problems of marketing, foreign investment and aid programmes, economic planning, and the prospects for the future of development and co-operation between African economies.

Prerequisites: Introductory Economics. Economics 2234A and 2235B are desirable.

3338A Introductory Econometrics I, lect.: 3 hrs.; W.A. MacLean.

This class introduces econometric theory to the student interested in understanding some of the quantitative methods commonly used in economics. Simple and multiple regression techniques are considered in the context of the classical linear model. Estimation problems caused by violations of the assumptions of the classical model are discussed. These include heteroskedasticity, autocorrelation and simultaneous equations bias.

Prerequisites: Mathematics 100 (or equivalent) and one of Economics 2228, Economics 2222A and 2223B or Mathematics 106A.

3339B Introductory Econometrics II, lect.: 3 hrs.; W.A. MacLean.

The aim of this class is to familiarize the student with the practical problems associated with economic data and with model specification and estimation. The techniques introduced in Introductory Econometrics I will be used to estimate simple economic models. Additional topics will include; multicollinearity, dummy variables and distributed lags.

Prerequisite: Economics 3338A.

Economics 3340B * 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 2220A/B and 2221A/B.

3341A/B* Urban Economics: Growth and Development of Urban Areas, seminar: 3 hrs.; T.A. Pinfold.

The purpose of this class is to study the economic aspects of urban growth historically and in modern times. Cities are treated as macro-economic aggregates in the analysis. Topics include historical development of cities, the location in space of economics activity and the location of cities, the economic processes involved in urban economic growth, optimal city size, economic relationships between cities, cities as growth poles and the relationship of urban development to overall development, and specific economic models useful in analyzing the economic structure of cities such as the economic base model, and input-output analysis. Participants in the class will deliver seminar papers and write one major analytical paper.

Prerequisite: Intermediate Macro-economics is strongly recommended.

3342A/B* Urban Economics: Economics Analysis of Urban Problems, seminar: 3 hrs.; T.A. Pinfold.

This class focuses on the economic aspects of problems that emerge from the on-going, dynamic functioning of life in urban areas. Urban problems are defined as being integrally related to land use within the city, and as such have a highly inter-related character. The tools of micro-economics are used to study intra-urban location choices made by households and businesses, urban transportation, consumption and production of housing and urban renewal, urban poverty and the results of discrimination, the provisions of public goods in urban areas, property tax and municipal finance, the economics of land use zoning, environmental deterioration, urban planning and policies for alleviating urban problems. Participants in the class will prepare seminar papers and undertake a major analytical paper.

Prerequisite: Intermediate Micro-economics. Introductory Statistics is desirable.

3350A/B* Social Cost Benefit Analysis, seminar: 3 hrs.; T.A. Pinfold.

The major objective of this class is to develop the methodological base of social cost benefit analysis and to demonstrate some practical applications. Social cost benefit analysis and capital budgeting are two approaches to investment decision making. The former is used by public sector agencies, the latter is employed by private sector firms. Highlighting similarities and differences in the two approaches is a second objective of the class. Solving problems which illustrate basic concepts and a paper reporting on an actual application of the methods taught will form important elements of the class.

Prerequisites: Introductory Economics; Intermediate Micro-economics and Introductory Statistics are desirable.

3432* Regional Economics, seminar 3 hrs.; F.M. Bradfield.

This class analyses why economic growth tends to be differentiated regionally. A variety of growth theories are examined, followed by a discussion of empirical efforts and an assessment of them from the various theoretical points of view. The final part of the classwork involves policy discussion and the presentation of seminar papers. The basic goal of the class is to provide the student with some framework for understanding the reasons for the development of regional problems. The focus of the discussion is on the underdeveloped regions of developed nations, although the issues discussed are different more in degree than kind from those of underdeveloped nations.

Prerequisite: Economics 2220A/B.

4400A Linear Models I, lect. 3 hrs.; S. Dasgupta or E. Klein.

4409B Linear Models II, lect. 3 hrs.; S. Dasgupta or E. Klein.

4420A Micro-Economic Theory, lect. 3 hrs.; E. Klein.

4426B 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 2221A/B. It is advantageous for students to have completed Economics 3326A as well.

Economics 4431B 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.

Prerequisites: Economics 2221A/B and Economics 3330A or Economics 2220A/B and Economics 3326.

4433B Intergovernmental Fiscal Relations, lect., and seminar: 2 hrs. J.F. Graham.

This class is concerned with the principles of intergovernmental fiscal adjustment and their application in a federal political system, particularly Canada, at both federal-provincial and provincial-municipal levels.

Prerequisites: Economics 2220, 2221, 3324. Economics 3324 may be taken concurrently. Political Science 3220A and 3221B are recommended, though not required. Students may also be admitted by permission of the instructor.

4440 Applied Development Economics, seminar: 2 hrs. and tutorials; R.I. McAllister.

This is a more advanced class, following the outline of Economics 2250, but requiring a substantial background in economics, political science, history, sociology, and commerce. Economics 1100 is a prerequisite, as is a basic course in statistics.

4446B Classical Liberalism, and Democracy (Seminar in Philosophy, Politics, and Economics), 2 hrs.; D. Braybrooke.

(Same as Philosophy 447A and Political Science 4479A.)

4448A Social Choice Theory (Seminar in Philosophy, Politics, and Economics), 2 hrs., D. Braybrooke.

(Same as Philosophy 448A and Political Science 4480A.)

4449B The Logic of Questions, Policy Analysis, and Issue Processing (Seminar in Philosophy, Politics, and Economics), 2 hrs., D. Braybrooke.

(Same as Philosophy 449B and Political Science 4490B.)

Graduate Studies

The Department offers a graduate programme leading to the M.A. and Ph.D. degrees. Details of these programmes, including a list of graduate courses, are given in the Calendar of the Faculty of Graduate Studies. Senior undergraduates may be admitted to some graduate classes at the discretion of the instructors concerned.

Education

Professors
E.Z. Friedenberg
W. Hare
D. Myers

Associate Professors
A. Barton
A. Burton
R. Gamberg
D. Huegel
P. Keane
E.T. Marriott
H.E. Poole
J.B. Roald
S.W. Semple
S.S. Sodhi

Assistant Professors
T. Laidlaw
J. Manos
J. Newman
A. Wood

Lecturers
M. Crowley
L. Dubinsky
B.E. Gesner (Dept. of French)
A. Manicom
J. Manning
E. Ricker
D. Russell (Dept. of Biochemistry)

Adjunct Professor
M. DeWolf

Demonstrators
J. Altheim
R. Imai
B. James
W. Kwak
H. Marentette

The problems of education have been the subject of serious study since at least the time of Plato and Aristotle. What kinds of things can be taught? How are we to choose those who will teach our children? What is worth learning? It is now clearly recognised that education is an important and interesting field of study in which historical, psychological, philosophical and sociological inquiries, among others, can be pursued. Many students who elect to take classes in the Department of Education do so because they are interested in the questions raised for their own sake, and as a way of developing their skills in the disciplines in which they are majoring as undergraduates. Others are interested in education as a programme of professional preparation. Such students will include in their programmes classes in methodology and field experience, but even here it is not the view of the Department that such preparation can be construed narrowly as training. It is true that educational studies in professional preparation programmes must be to some extent applied if they are not to be remote and irrelevant; but they must not become relevant to practice at the cost of being theoretically feeble. The study of education should alert the student teacher to the assumptions which lie behind the methods of teaching being considered, and should ensure that these assumptions do not go unchallenged. It is important that we do not become so fascinated with the question of how something can be taught that we forget to ask if it should be taught at all. A consideration of this question leads inevitably to issues in those disciplines which chiefly illuminate educational theory.

Facilities of the Department

The Department occupies three buildings: the white house at 1460 Oxford Street, the small white building south of the white house known as the MacIntosh building, and the Education Centre on the corner of Coburg Road and Oxford Street. Faculty offices are located in each building. The Education Centre has faculty offices, student lounge, Learning Materials Unit, Elementary School Workshop area, Audio-Visual unit, and the Dalhousie University School.

Education students may participate in the Dalhousie University School programme. This programme is not limited to elementary students. It may be used by professors and students from other departments in consultation with the Department of Education.

Programmes:

1. A sequential B.Ed. course of one year which may be taken by students who have already completed a B.A., B.Sc. or B.Com. degree course or otherwise fulfill the requirements for admission to the B.Ed. programme.

2.Part-time study toward a B.Ed.

3. Classes which may be used for credit toward a B.A. or B.Sc. These classes may be chosen from the following areas: Sociology of Education, History of Education, Philosophy of Education, and Educational Psychology. Students intending to take education classes for credit toward a B.A. or B.Sc. degree should consult Arts and Science regulation 5.2.1.5. Some classes are cross-listed with other departments, e.g. French, German, Philosophy, so that a student who is not enrolled in a B.Ed. programme, may register for such a class through the cognate department.

4. 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.

5. B.Ed. for Vocational Teachers.

Traditionally the programmes are divided into Elementary and Secondary. The divisions are much less distinct now, and this is reflected in the large number of options available in some courses.

The department encourages the development of experimental projects involving alternative courses to the traditional ones. Students interested in participating in such projects are invited to indicate this on the Departmental Application form and to discuss possibilities during their interview for admission.

B.Ed. Elementary and Secondary Programmes

Entry Requirements
1. B.A., B.Sc., or B.Com. by September in the year of application. Candidates with other bachelor degrees should enquire from the Secretary, B.Ed. Programme.

2. Applications from all students are welcomed. Opportunity to draw attention to strengths is provided by the letter of application.

Application
Upon request, a student will receive a Dalhousie University Application form, the Department of Education Application form, two reference forms, and further details from the Admissions Office, Dalhousie University, Halifax, Nova Scotia. Application should be made by May 30. Decisions for admission will be made as early as possible. Since enrollment is limited there will be no guarantee of admission after May 30, although applications will be considered until August 15.

An interview is arranged with the Department of Education after initial application has been made. The date of interview must be confirmed by the applicant.

Selection is based on:
1. Academic record: All applicants, including Dalhousie graduates, must ensure that their transcripts are forwarded to the Admissions Office.

2. References; and

3. Responses on application form.

Students completing this process, and satisfactorily meeting the criteria established by the Department of Education of each of these stages, will be required to attend a personal interview. Other arrangements are made for applicants from outside the Maritime Provinces. Only after the interview or its substitution will a decision be made as to whether a student will be offered a place in the B.Ed. programme.

Classes in the B.Ed. programme may be grouped into three general categories:

Educational Foundations—Classes which are intended to develop theoretical perspectives as a basis for professional performance. There are four main subdivisions in this category—sociology of education, history of education, philosophy of education, and educational psychology. These classes are found in the calendar under course numbers—4000 to 4399.

Methods and Field Experience—Classes which deal essentially in an applied manner with teaching and learning and the evaluation of learning. These classes are found in the calendar under course numbers—4500 to 4999.

Electives—These classes should provide supporting experience for other classes in Education, additional academic preparation, or an introduction to areas of potential student interest. Electives may be chosen from any course offered in the B.Ed. programme or classes in other departments of the Faculty of Arts and Science.

1. B.Fd. Sequential Course

A. Elementary
Candidates for the degree of B.Ed. (Elementary) must complete successfully the following: a total of three full credits made up of any combination of the four Education Foundation areas—sociology, history, philosophy, and educational psychology, with a minimum of one-half credit in each of these areas; 4 half-credit courses in Elementary methods; Education 4900 (Field Experience); one elective. A total of 7 full classes constitutes a complete B.Ed. programme.

B. Secondary
Candidates for the degree of B.Ed. (Secondary) must complete successfully the following: a total of three full credits made up of any combination of the four Education Foundation areas—sociology, history, philosophy, and educational psychology, with a minimum of one-half credit in each of these areas; a full credit in a methods course in their major subject area; Education 4900 (Field Experience); two electives. A total of 7 full classes constitutes a complete B.Ed. programme.

Students planning a B.Ed. following a B.A., B.Sc., or B.Com. should be aware that at present certain areas of concentration in the first degree might not easily lead to teacher certification. They are advised to consult with the Coordinator of the B.Ed. Programme when drawing up their programme for the first degree.

2. Part-time study toward a B.Ed.
Students registered part-time at Dalhousie University are permitted to take courses in Education leading to a B.Ed. degree, elementary or secondary. Individual timetables may be planned in consultation with the Department of Education, Dalhousie. See course requirements for B.Ed. Sequential—elementary or secondary.

3. Education Foundation Classes
Acceptable for credit towards a B.A. or B.Sc. degree. Classes are numbered from 4000 to 4399. See Arts and Science regulation 5.2.1.5.

4. B.Ed. Elementary and Secondary Integrated (Four-year) Course
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. Students may also enter the integrated programme after their second year.

The ten classes in Arts and Science taken in the second and subsequent years must meet the requirements set forth in Degree Programmes, section 5.2.1.

Education course requirements for elementary and secondary integrated students are the same as those required by sequential students. The year of study in which the various education classes are to be taken is up to the individual student. An exception to this is the methods and field experience. The integrated student, both elementary and secondary, should plan their third and/or fourth year classes in consultation with the Department of Education so that methods classes and field experience may be accommodated. It is advised that all integrated students meet with their Faculty Advisor early in their second year to plan a suitable programme.

Students admitted into the integrated programme must maintain a minimum of a B-average in work completed for both degrees.

Enquiries, and application for admission to the Integrated Course, should be made to the Secretary, B.Ed. Programme, Dalhousie University by May 30 of the student's first or second year at Dalhousie University.

Students wishing to obtain a B.Ed. and a B.A. or B.Sc. with honours should consult the Department of Education and the department or departments in which they wish to do their honours work not later than the beginning of their second year in order that a proper sequence of classes may be arranged. Five years from senior matriculation will normally be sufficient to complete this course of study.

5. B.Ed. for Vocational Teachers

Entry Requirements
The applicant must:
1. Be employed in the industrial services or technical occupation fields in a vocational school or in a similar capacity in the field of public or continuing education.

2. Have had the required number of years, specified below, of specialized training and experience in the industrial, services and technical occupation fields. The number of years will be that required by the Nova Scotia Department of Education for employment in the area of specialization.

Application
Write to the Registrar, Dalhousie University, asking for University Application form, the Department of Education application form and two reference forms.

Candidates for the degree of B.Ed., admitted under the regulations in this section, will complete 15 credits, selected in accordance with the following rules:

1. Five of the fifteen credits *must be* in education selected as follows:
Three classes in education foundations with a minimum of one-half credit in each of the following categories:
(a) Sociology of Education (class numbers 4000 to 4090)
(b) History of Education (class numbers 4100 to 4190)
(c) Philosophy of Education (class numbers 4200 to 4290)
(d) Educational Psychology (class numbers 4300 to 4390);
Two other education classes.

2. Ten credits in classes offered in the Faculty of Arts and Science, selected so as to satisfy the following requirements:
(a) Three of the ten credits may be education classes or Arts and Science classes.
(b) Seven of the credits must be classes offered in the Faculty of Arts and Science outside the Department of Education. At least two of the seven credits must be at the second-year level or above.

3. Transfer Credit
The candidate may receive up to three credit transfers for completion of the three-year interprovincial summer school programme of basic training. This includes credit for practice teaching which meets Department of Education requirements. Evidence of candidate's performance as a teacher is required.

Transfer of Credit
Decisions concerning transfer of credit will be made following consideration of transcripts and students' intended areas of study. Normally, 3-1/2 credits from another university or non-degree status will be considered for transfer credit. Enquiries should be directed to the Secretary, B.Ed. Programme.

Students who wish to obtain the degree of B.Ed. with transfer of previous credit must obtain the degree of B.A., B.Sc., or B.Com., and apply for admission to the B.Ed. programme. Graduates of non-degree granting Teachers Colleges should note that the following guidelines will be used in transfer of credit:

Graduates of an acceptable three-year programme will be required to take an additional two and one-half classes.

Graduates of an acceptable two-year programme will be required to take an additional three and one-half classes.

Graduates of an acceptable one-year programme will be required to take an additional five classes.

The actual selection of classes is to be made to suit the needs of each student and the student will be advised accordingly when his/her file is examined.

See also Regulations 1.5 and Admissions, Sec. 4 for further details.

Certification of Teachers
Licenses to teach are issued by the Department of Education, Province of Nova Scotia. According to the regulations of the Province of Nova Scotia, every applicant for a Teacher's license or Professional Certificate must submit with his application, documentary evidence (in a form prescribed by the Minister of Education) respecting the applicant's moral character, age, health, training, and qualifications. Further information may be obtained from the Registrar, Nova Scotia Department of Education. Graduates with senior matriculation are entitled to a Teacher's Certificate, Class 5 in Nova Scotia. All other B.Ed. Graduates should consult the Registrar, Nova Scotia Department of Education concerning class of Teacher's Certificate. Students from other provinces should consult the appropriate provincial department of education for certification and licensing information.

Classes Offered

The following list represents the 1980-81 classes. Minor changes will be noted in the preregistration material sent to the students who are accepted into the programme.

Certain Education classes are offered in Summer School. Details may be obtained from the Director of Summer School and Extension. Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered.

Educational Foundations

1. Sociology

4000 Sociology of Education

This class consists of two lecture hours per week. Mainly theoretical, the accent is placed on the rationale and assumptions of educational systems, socialization in Canadian Society, and the positing of alternatives to traditional educational practices.

Offered as two half classes: 4001A: first term (one-half credit), 4012B: second term (one-half credit).

4020 Sex Roles

The identification and analysis of problems deriving from sex roles will form the core of this class. Emphasis will be placed particularly on female roles—actual and potential—in contemporary Canadian society. The analysis will focus, in part, on socialization and the internalization of sex roles. The significance of factors, such as class and race, which relate to an understanding of the subject will also be considered. Towards the end of the class, some attention will be given to possible approaches to solutions of the problems which have been identified and analysed.

4030 Education, Ideology, and Revolutionary Change in China.

Beginning with a brief examination of the forces and conditions that led to the 1949 revolution in China, this class traces economic, social, political and ideological developments to date. Special emphasis is given to the Cultural Revolution of the 1960's and its impact on ideological outlooks and social policies. The major theme underlying this consideration of revolutionary change in China is the education of children both in and out of school, and the education and re-education of adults through a wide variety of means—mass campaigns and movements, study groups, cadre schools, the media, etc.

4040 Anthropology of Education

This class will consider some main cultural implications of education process. Emphasis will be placed on these areas: Education and Underdevelopment, Enculturation, Comparative Educational Systems and Situations, Ethnographic Approaches to Schools and Children, Education and Ethnic Minorities.

*4090 The Relationship Between Theory and Practice in Education

This seminar is an attempt to develop a field-based foundation course. Its purpose is not to engage in practice, but to analyse practice and the relationship between theory and practice. Through examining educational practices within a critical perspective, we will attempt to link educational theory and instructional technique productively. This class provides an opportunity for a number of faculty members whose primary individual interest is either curriculum or foundations to address themselves to the theory/practice problem in a concrete and intensive way with a small group of students.

This class is primarily for B.Ed. students at the elementary level. (1/2 credit in Sociology of Education, 1/2 credit in History of Education).

2. History of Education

*4101A The History of Western Educational Thought

As societies change, ideas about the purposes and methods of education also change. The education of the mediaeval Christian was approached differently from that of the citizen of twentieth-century secular society. Yet the existence of civilization presupposes both continuity and change in all aspects of culture. This is a course in the history of educational ideas in the West. Through lectures and discussions of readings from some of the major thinkers in the Western tradition from Plato to Lord Russell, we will try to understand more fully the place of education in the ancient, mediaeval, early-modern, and modern worlds. Having examined the educational thought of past ages on their own terms, we can better understand the development of our own educational ideas and submit them to more sophisticated criticism.

*4112B The History of Western Educational Thought

This class is a repeat of Education 4101A offered first term.

4121A New Education in a Canadian Context

Beginning with the state of public schooling in Canada in the 1890's, this history class will explore the New Education curricular changes, institutional experiments and philosophical goals that affected Canadian education at the turn of the century. Some of the areas to be dealt with will include the introduction of manual training, domestic science, natural science, school gardening and handwork classes, the beginning of rural school consolidation, and a shift from a book-centred to a child-centred curriculum, especially in the kindergarten-primary grade levels. Foreign influences, particularly American and British, as well as economic, political and cultural forces in Canadian society that affected public schooling will be examined.

The students will be given an opportunity to investigate primary source material at the Provincial Archives of Nova Scotia to determine the extent to which Nova Scotian curricular changes during this period (1890-1911) were affected by these trends. The class will be arranged in a seminar-lecture form. In this way the students' research can be guided each week. The term will culminate with each student submitting a research paper which will synthesize his or her findings.

4132B Progressive Education in a Canadian Context

Continuing many of the themes explored in the previous term (Education 4121A), this history class will investigate significant institutional shifts of emphasis which occurred in Canadian public schooling after World War I. These included a movement towards increasingly bureaucratic management, employment of experts to conduct provincial surveys of school systems, use of standardized measurement techniques throughout the public school system, and the introduction of "rotary" organization with increased streaming of pupils and specialization of teachers. Again, outside American and British influences on the curriculum, as well as on the stated intentions of educators will be examined. Primary source material applying to Nova Scotia will be investigated to determine whether or not the Progressive Education movement had any significant effect on the schooling of children in this province between 1911 and 1940. It will not be necessary for students to take 4121A as a prerequisite. Students who wish to continue this course into the second term, however, will be welcome. A seminar-lecture form will be followed. A term paper will be required in which the student will consolidate his or her findings.

4141A Educational Issues in Canadian History

This class provides an overview of major social and political issues in Canadian education. Initially selected case studies are used to acquaint students with the method of identifying and asking appropriate questions about the nature of issues and conflict. Then the historical antecedents of a number of major contemporary issues in education are explored in depth. The following is a representative selection of topics that are considered using this method: social class bias in education; the linguistic rights of English and French speaking Canadians in different provinces; the back-to-the-basics movement in education; the professional training status of teachers; the "Canadianization" of education; cultural problems and rights of minorities (Indians, blacks, immigrant groups); textbook censorship and the making of curriculum policy; education and the economy; etc. The class concludes with a consideration of the "issue approach" to history in relation to various schools of historical thought about education.

4142B Educational Issues in Canadian History

This class is a continuation of 4141A but with a different selection of topics. A student is free to take the first half, second half or both.

*4171A The Teacher in History

The emphasis in this class will be on the connections between the historical experience of teachers and the contemporary situation in which teachers, individually and collectively, find themselves. The political characteristics of the education system will be critically analysed and the development of the occupation of teaching, in comparison with other occupational groups, will be examined. Particular topics related to the changing roles, attitudes and influence of teachers in terms of educational and social policy will be discussed. Students will be expected to complete a number of reading and writing assignments.

*4172B The Teacher in History

This class is a repeat of Education 4171A offered first term.

3. Philosophy of Education

4201A Philosophy 218A Analytical Philosophy of Education

An introduction to the analysis of the central concepts in educational theory with particular attention to certain attitudinal concepts, such as open-mindedness, which have been widely neglected in contemporary philosophy of education.

4202B Analytical Philosophy of Education Section 1

This class is a repeat of the above.

4202B Analytical Philosophy of Education Section 2

An analytical examination and discussion of some pivotal educational concepts.

4221A Introduction to the Philosophy of Education.

An introduction to problems of educational theory from a philosophical standpoint.

4222B Introduction to the Philosophy of Education.

An introduction to the philosophy of education which will emphasize the role of the arts in education and concepts such as invention and diversity.

4290 The Adolescent

A class for secondary B.Ed. students about being an adolescent: what it feels like, how one's mind develops, what one learns of other people and of oneself. Students study books, films, tapes, records, papers and radio programmes, and are encouraged to frame specific questions for discussion in tutorials following presentations in several media. A number of disciplines are involved in the class which counts as 1/2 credit in Philosophy of Education and 1/2 credit in Educational Psychology.

4. Educational Psychology

4311A Psychology and Education of the "Exceptional" Child

This class will attempt to provide a broader understanding of the term "exceptional child." An attempt will be made to discuss the genetic and environmental causes that determine and sustain the exceptional behaviour. Psychodiagnostic and remedial processes to help children with expressive and/or receptive behavior problems (speech, hearing, vision, neurological and nonsensory impairments) will be considered. Administrative use of standardized tests which has generated artificial labels, and has led to recent court cases in North America will be discussed. Myths in Special Education will be considered using Psycho-social Model of "exceptional behavior".

4322B Learning in the Classroom

The substance of this class is the psychology of learning, involving an examination of certain internal and external conditions which influence the direction and efficiency of the learning process. There will be an orientation throughout the class to classroom learning, the focus of enquiry will be fundamental psychological processes and not specific methodology in teaching.

4340 Developmental Psychology

An examination of the area of human development with particular emphasis placed on cognition; personality, social and moral development. Some of the major theorists considered include Freud, Erikson, Piaget, Kohlburg and Skinner. An attempt will be made to relate theory and relevant experimental data to cultural contexts.

*4352B Myths in Special Education

The objective of this class will be to examine special education practices which attempt to help the "special child" "adjust" to the school as it presently exists. Diagnostic approaches which lead to "suspicion confirming" and "pigeonholing" of the child will be considered: alternatives to special and remedial education will be examined.

4361A Understanding Reading

The class examines psychological and linguistic factors relevant to the skills of fluent readers and to the process of learning to read. Students will participate in an analysis of the reading process; the major objective is to promote an understanding of what the skilled reader can do and how the beginning reader develops the skill. Reading instruction will be discussed with the emphasis on "how a child learns" not on specific methods of instruction.

4371A Social Psychology of Education

The psychological climate of the classroom will be examined from a traditional, behavioral, and humanistic viewpoint. Emphasis is placed on the teacher-student relationship found in these three approaches to education and the resultant psychological effects on both the teachers and students. Human development will be viewed from a communicational context.

4372B Social Psychology of Education

This class is a repeat of Education 4371A offered first term.

*4381A Introduction to Counselling

A study of the fundamental concepts and philosophies of counselling with particular attention given to the role of the teacher-counsellor in both elementary and secondary schools. Theories and methods of counselling of individuals and groups will be discussed.

*4382B Introduction to Counselling

This class is a repeat of Education 4381A offered first term.

Educational Electives

4500 or 4502B Media

This half or full credit class examines the role and impact of several media on schools and schooling. The class begins with a consideration of a number of theories about media including those associated with Marshall McLuhan and John Berger. The rest of the class is devoted to the study of certain media such as advertising, film, radio and television. As well, students are asked to probe other media of their choice.

4560 Geography in Education

The class is open to any student who wishes to explore the spatial dimension as one avenue for increased understanding of the world; and hence to consider its potential contribution to education.

The class will provide an introduction to the structure of geography and consider contributions to geographical thought. The class will be intensive, closely integrated, and with opportunities for practical work.

Rural field trips will be held on two weekends in the fall and will involve absence from Halifax over two nights. Local field trips will also be conducted from the campus at various times during the academic year.

4620 Theatre 220 Developmental Drama

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. Improvisations, 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 taking it will work out an individually practical scheme to put into subsequent use.

4642B PE 382B Principles of Outdoor Education

A study of the concept of taking the classroom out of doors and the possibilities of introducing various activities which such a concept would encompass. Various issues such as conservation, preservation ecology, re-cycling, environmental studies and adventure activities will be discussed. The place of outdoor education in the total life style of Nova Scotians in and out of school will be considered.

4873C Further Educational Studies

Students may apply to instructors for permission to undertake either a specially designed readings course in a given area, or to undertake additional work in their first teaching method, for credit. *This may also be done with prior consent in writing from the instructor to the Coordinator, B.Ed. programme. The instructor thus assumes personal responsibility for supervising the work of a student enrolled in this half credit elective course.*

4893A or B or C Additional Curriculum Projects

Students may apply to instructors for permission to undertake additional project work in the area of curriculum design, implementation, and evaluation, for credit. *This may be done with prior consent in writing from the instructor(s) to the Coordinator, B.Ed. Programme. The instructor(s) thus assumes personal responsibility for supervising the work of a student enrolled in this half credit elective course.*

4910B Additional Field Experience

This one-half credit class will be made available to the B.Ed. students as an elective which they may choose to supplement the basic requirement for field experience. These additional field experiences will be acquired through a block of three weeks spent in the schools at the end of the academic year. This block will be completed in time for Convocation. *This course can only be taken with the permission of your major methods instructor.*

4932B Measurement and Evaluation

This class will study the writing of objectives, teacher-made tests, standardized tests, random variation, basic statistical ideas, and the evils of testing.

4962B Canadian Studies in the Curriculum

This class is designed to examine issues related to teaching about Canada. The class will consider the rationale for selecting goals, content, and procedures in Canadian Studies. Students will be engaged in a critical examination of approaches and resources in Canadian Studies. The class is open as a general elective for all students in the B.Ed. programme, elementary and secondary, who have an interest in the field or who expect or desire to teach subjects or topics with a significant Canadian content.

1. Elementary Methods

4703C Methods of Teaching Language Arts in Elementary Grades

This class will introduce students to the theoretical background and practical techniques necessary to develop a full language arts programme. How children acquire language, what sorts of experiences facilitate creative oral and written work, the skills involved in reporting, oral discussion, and written discourse will be explored. The class also will include the teaching of spelling and handwriting, the development of vocabulary and grammatical skills, and the integration of language arts with other subjects.

4713C The Development of Early Mathematics Learning

Theories of mathematics learning, curriculum development in elementary mathematics and the teaching of mathematical skills and concepts are explored in this class.

4721A Methods of Teaching Science in Elementary Grades

This class will study the ways children investigate and learn about the world. Special consideration will be given to the child as the principal agent in his/her own learning with emphasis on concrete experiences and practical learning activities.

4732B Methods of Teaching Social Studies in Elementary Grades Section 1

In this class, students will develop two major curriculum units for elementary school children. While focussing on Social Studies based on local resources, the approach is interdisciplinary, and as such, the class serves to integrate the various components of the Elementary Methods Programme.

4732B Methods of Teaching Social Studies in Elementary Grades Section 2

This class will study the curriculum project: *Man: A Course of Study*. Three questions define the concerns of this social studies project. They are: What is human about being human beings? How did they get that way? How can they be made more so? Materials for this project have been created from ethnographic film studies and field research, heretofore unavailable to elementary school children. Using the project materials, students will explore together the roots of MAN'S social behaviour through the study of selected animal groups and an intensive examination of a remote human society.

4742B Reading Instruction

The basic intent of this class is to further students' understanding of what happens when a child reads, and to clarify the kinds of questions which serve as a basis for instructional decisions. In order to achieve this objective, the class is divided into three major topics: (1) Analysis of oral reading behaviour; samples of children's oral reading behavior (transcripts and/or tapes) will be examined to illustrate certain aspects of reading. (2) Reading Instruction; the specific approaches and techniques commonly employed will be examined and some alternatives investigated. (3) Reading failure; possible causes, the role of diagnosis and directions for instruction will be discussed.

Prerequisite: Education 4361A is required.

4791C Alternative School Curriculum

This class will look at the concept of alternative school curriculum from both a historical and practical perspective. Consideration will first be given to the political-philosophical and psychological basis for alternative curriculums, then practical experiences will be planned for studying and analyzing various alternative curriculum programmes and activities. The psychological referents for the course will include writings from Jerome Bruner, Jean Piaget, and Richard Jones; the political-philosophical content will be selected from the works of Paul Goodman, Jules Henry and Loren Lind.

Although the class work will be organized primarily for students intending to work with children in the elementary grades, much of the class content would be appropriate for young adolescents.

4940 Experimental Curriculum

A full-year undergraduate class dealing with practical efforts to make a new curriculum work. The curriculum is designed for the Dalhousie University School, twenty-five children ranging from 3 to 11 years. Students are expected to teach the children specified points and encouraged to devise means of doing so.

2. Secondary

4750 Methods of Teaching English to Junior and Senior High Schools

The aim of this class is to help teacher candidates develop their own personal approaches to the teaching of English at the secondary school level. Weekly classes will involve teacher candidates in those activities which they will probably encourage as teachers themselves: discussion, reading, composition, role playing, improvisation, and other creative activities. The class will acquaint teacher candidates with a range of classroom procedures and teaching methods, and will attempt to foster an imaginative and critical approach on the part of teacher candidates to the particular demands of teaching English in today's schools.

Teacher candidates, without extensive backgrounds in creative drama are encouraged to consult with the instructor about related course offerings in this area. Special work in this area is required of English teachers who wish to use developmental drama as a teaching method.

4760 Methods of Teaching Social Studies in Junior and Senior High Schools.

Various aspects of curriculum development and competing teaching strategies will be explored. This examination is intended to aid the student in developing a consistent approach to history and social studies education.

4770 Methods of Teaching Geography in Junior and Senior High Schools.

The class will explore the objectives of geographic study; the acquisition of skills and the development of concepts and appreciations.

The class is open to all students, but those wishing to take it without previously having taken an undergraduate class in geography must also take Education 4560, Geography in Education, as one of their electives.

In its early stages the class work emphasizes competencies in classroom teaching. After field experience the class concentrates on aspects of curriculum planning and development as they relate to geography.

4780 Methods of Teaching Mathematics in Junior and Senior High Schools

Computing and mathematics, the nature of mathematical education and its development in school, problem solving, micro-teaching situations, and contact with the work in local classrooms, form the framework for the class.

4840 Methods of Teaching French in Junior and Senior High Schools

Deals with objectives, methodology, techniques, materials (including visual aids), language laboratories, and testing. Emphasis will be placed on the teaching of spoken French, and practice in the development of teaching skills will be an integral part of this class. Open only to students who have demonstrated adequate competence in French language and culture. Interested students should contact the instructors concerned in the Department of French as soon as possible regarding their eligibility.

4880 Methods of Teaching Science in Junior and Senior High Schools

This class aims to examine critically the art of the science teacher. The topics to be discussed will depend to some extent on the experience and interests of the students, and may include, e.g., aims and objectives of science teaching; the nature of science; methods and techniques of science teaching; assessment and feedback; safety; the social context of training and education in science, etc. Part of most class meetings will be devoted to students' presentations of topics in educational foundations that they are studying concurrently, viewed in the context of science teaching. Considerable stress will be laid on the laboratory and on the experiencing by pupils of the objects of scientific study. Students will each devise their own method of illustrating, practically but with the minimum of formal 'apparatus', at least one central principle in their specialist field. Pupil safety will be emphasized. Finally, since most students will wish to teach in Nova Scotian schools, the textbooks in current use in the province will be examined and evaluated. Students are encouraged to talk to the class coordinator *before* they decide what two elective classes to take.

4961A Canadian Studies: Methods of Teaching

This class will introduce students to various approaches,

issues, and strategies of teaching Canadian Studies. This class will also provide for an examination of general methodology related to teaching Social Studies. The class is open only to students who wish to fulfill their major methods requirement in the area of Canadian Studies. Students who register for this class are *required* to complete the companion class, Education 4962B, Canadian Studies in the Curriculum. (see description under Electives)

Field Experience

4900 Field Experience

It is the primary objective of the field experiences to provide students with opportunities to analyze, compare, and participate in a variety of teacher-learning situations.

Students who intend to apply for a Nova Scotia Provincial Teachers' Certificate should plan to log a minimum of 100 hours of field experiences in a public school classroom. Students who intend to apply for a New Brunswick Provincial Teacher's Certificate should plan to log the equivalent of 12 weeks field experience.

All arrangements for field experiences are made through the Field Development Office and Methods Class Instructor.

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. Kennedy
M.A. Klug
S. Mendel
C.J. Myers
J.B. Stovel
H.S. Whittier

Assistant Professors
S.A. Adams
R.S. Hafter
R.M. Huebert
P. Monk
H.E. Morgan
N.S. Poburko
R.L. Raymond
H.D. Sproule
R.R. Tetreault
J.A. Wainwright

Post Doctoral Fellows
M.A. Berg
W. Herendeen
L. Kendrick

Special Lecturer
H.J. Brady

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 of 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 234 (and 301)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. **A supplement describing Upper-year**

General and Honours classes in detail is available from the English Department.

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 the Advisor may be assigned.

Degree Programme

B.A. Programme

Students in the B.A. programme must take from four to eight classes in English beyond 100. The Department expects all of its students to consult with their faculty advisors and to form coherent programmes of study; it strongly recommends that these programmes contain at least *six* classes in English beyond 100.

(1) English majors must take at least one class from each of the following groups, unless they have departmental permission to use an honours class to meet a group requirement.

GROUP I	207	Canadian Literature
	209	20th-Century Fiction
	212	British Literature of the 20th Century
	213	American Literature of the 20th Century
	217	African Literature
	231	Modern Canadian and American Novels
	232	Modern Drama
	233	Science Fiction and Fantasy
	234	The Short Story
	301	Modern Poetry
GROUP II	206	American Literature of the 19th Century
	208	English Novel to 1900
	215	Romantic Poetry
	218	Mediaeval Literature
	224	Renaissance Poetry
	229	Victorian Literature
GROUP III	200	Advanced Composition
	201	English Language
	202	History of the English Language
	203	Masterpieces of Western Literature
	204	European Novel
	214	Shakespeare
	216	Gothic Novel
	220	English Drama
	225	Epic, Romance, and Fantasy
	226	Tragedy
	227	Comedy and Satire
	228	The Short Poem in English

The purpose of the requirement stated above is to insure that each student has some variety in his or her programme. The Department recommends that the student take at least one class that concentrates on poetry and one that concentrates on fiction, and at least one class from each of two different historical periods. There is, of course, more to a sound programme than variety. From the Department's offerings, students may approach the study of English literature in a number of different ways. They may choose programmes which offer a broad historical background, which focus on specific genres, or which concentrate on specific historical periods such as the 19th or 20th century. There are numerous other possible combinations. In any case students should give careful consideration to planning their programmes to meet their individual needs and interests, and should consult with their departmental advisor if they need help in doing so.

(2) The following programme of study is recommended for English majors intending to become teachers of English at the high-school level:

200 Advanced Composition, or 201The English Language, or 202 History of the English Language
207 Canadian Literature
214 Shakespeare
228 The Short Poem in English, or 215 Romantic Poetry, or 301 Modern Poetry in English
220 English Drama, or 226 Tragedy, or 227 Comedy and Satire, or 232 Modern Drama
208 English Novel to 1900, or 209 Modern Fiction, or 212 British Literature of the 20th Century, or 213 American Literature of the 20th Century

At least one class chosen from the last three groups should involve a substantial amount of literature written prior to the 20th Century.

The student may also choose a maximum of two more classes in English.

(3) Classes numbered from 201 to 234 (excepting 201, 202, 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 systematic 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 Honours 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. English 201, 202, 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 7 2for 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 German
English and History
English and Philosophy
English and Spanish
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. Not all classes shown are taught every year.

(Tentative List)

200 Advanced Composition, lect.: 3 hrs.; P. Monk.

This is an advanced composition class 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 class, which is NOT a remedial class, 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. MacG. Dawson.

This class provides an introduction to the historical development of the English language. The growth of our "wordhoard," 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 classes.

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.A. Cowan, H. J. Brady.

This class is an introduction to American literature through representative works by major writers from 1800 to 1900. Among those studied are Cooper, Hawthrone, Poe, Emerson, Melville, Whitman, Dickinson, and Twain. Correlated reading in the literary history of the United States helps the student place each writer in perspective.

207 Canadian Literature, lect.: 2 hrs.;J.A. Wainwright.

This class 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.; H.D. Sproule.

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.; A.R. Bevan, 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.; S.A. Cowan, E. Bobak.

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, H. Whittier.

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.; R.R. Tetreault.

This class is an introduction to the spirit of an age and its manifestations in literary art. Examples of shorter and longer lyrics and excerpts from longer narrative and dramatic poems will be drawn from the works of Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats. Although devoted to the study of a period, the class will begin with a general introduction to the reading of poetry.

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-mediaeval developments in saga and romance, concluding with a look at some post-mediaeval uses of the inherited matter in Tennyson, Morris, Lewis and Tolkien.

220 English Drama, lect.: 2 hrs., R.M. Huebert.

An introduction to some of the major plays and playwrights in the history of English drama. Special emphasis is given to plays by such leading dramatists as Marlowe, Webster, Wycherley, Shaw, Pinter, and Stoppard. Some attention is paid to the principal changes in staging practices from the mediaeval beginnings of English drama to the recent experimental theatre. The objective of the class as a whole is to sample the richness and diversity of the English dramatic tradition.

224 Renaissance Poetry, lect.: 2 hrs., S.A. Adams.

This class will study a representative selection of English poetry from the early sixteenth to the mid-seventeenth century, concentrating on those authors whose works have exercised a continuing influence: Sidney, Spenser, Shakespeare, Donne and Milton.

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.

Comedy and satire have a common basis in laughter, that sudden, inexplicable, and distinctively human outburst. This class will attempt to define each genre by studying poems, plays and novels drawn from throughout English literature.

228 Short Poems in English, lect.: 2 hrs.; A. Kennedy.

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.

229 Victorian Poetry, lect.: 2 hrs.; C.J. Myers.

This class centres on the poetry of Tennyson, Browning and Arnold with some attention to works by Swinburne, the Rossettis, and Morris. The poetry will be studied against the intellectual context of the Age, that is, the social and political, the religious and scientific, and the philosophical ideas current in Victorian England. Attention will also focus on the poets' concern with how best to speak to their audience, a concern which raises questions of poetic theory and form. There will be one essay each term and a final examination.

231 Modern American and Canadian Novels, lect.: 2 hrs.; J.A. Wainwright.

This class is designed for those students whose primary interest is modern Canadian fiction. Six Canadian and four American novels will be studied, covering the decades from the 1920's to the 1970's.

232 Modern Drama, lect.: 2 hrs.; R.M. Huebert.

An introduction to the 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, P. Monk.

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. Each student will be responsible for self-disciplined study of the history of science fiction and may expect to be examined in detail on his knowledge. Non-majors are welcome.

234 The Short Story, lect. 2 hrs., A. Kennedy.

This class attempts to combine detailed consideration of a wide-range of the best short stories of the last 150 years with discussion of general questions about the nature of the genre itself. As much as anything else it is a class in 'reading and writing' intended to improve reading ability and to develop the capacity to understand and interpret literature.

301 Modern Poetry in English, lect.: 2 hrs. S.E. Sprott, N.S. Poburko

A study of modern poetry in English is based on the seminal poets Yeats, Stevens, Pound, Eliot and Williams; then selected developments of poetry from 1930's to the present are investigated.

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.; M.G. Parks, S.A. Adams.

This is a class in the poetry and prose of the English Renaissance from its beginnings up to the 1590's. The main writers to be studied are Sir Thomas More, Sir Philip Sidney, Edmund Spenser, and William Shakespeare. There will also be some exploration of the work of a selection of other writers, such as Elyot, Hooker, Wyatt, Surrey, Daniel, Davies, Marlowe, Nashe. The literature to be studied is part of a culture very different from our own. Therefore some attempt will be made to understand the two main traditions, the classical and the Christian, as they influence and even permeate the literature of the century. As the bulk of required reading in prose and verse is not great, there will be time for some background reading and study.

252 Shakespeare and the Drama of His Time, lect.: 2 hrs.; S.E. Sprott, R.M. Huebert.

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, H.E. Morgan.

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, R. Mac G. Dawson.

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.; M.G. Parks.

This class studies the poetry and prose (excluding drama) of the later Renaissance from about the turn of the century to the Restoration. Among the poets, John Donne and John Milton will be given special emphasis; selected poems of Ben Jonson, George Herbert, Henry Vaughan, Andrew Marvell, Robert Herrick, and Richard Crashaw will also be read. Prose works to be studied are by Francis Bacon, Donne, Robert Burton, Sir Thomas Browne, and Milton. The study of Milton's poetry, in particular **Paradise Lost,** will occupy a major part of the second term.

Class sessions will be a mixture of lectures and discussion; grades will be derived from a combination of term essays (one each term), a pre-Christmas test, and a final examination.

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.; J. Gray.

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 class concentrates on the development of poetry in Canada from approximately 1867 to 1967.

360C Old Norse, lect.: 1 hr.; H.E. Morgan.

Prerequisite: One of English 218, 253, 351 or instructor's permission.

452 Nineteenth-Century Prose and 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 group will discuss novels by Conrad, Wells, Joyce, Lawrence, Woolf, Forster, Greene, Cary, Burgess, and Lessing, plays by

Shaw, Beckett, Pinter, and Stoppard, a work of non-fiction by Orwell, and poems by Yeats, Eliot, Auden, Larkin, Hughes, and others.

454 Literary Criticism, lect.: 2 hrs.; R. Hafter, P. Monk.

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
J.R. Lawler

Associate Professors
J. Brown (Chairman)
R. Kocourek
D.W. Lawrence
H.R. Runte
R. Runte

Assistant Professors
M. Bishop
E. Boyd
T.P. Carter
B.E. Gesner
W.T. Gordon
M. Sandhu
K. Waterson

Lecturers (part-time)
H.E. Bednarski
M. Ross

The Department of French offers students not only the opportunity to develop fluency in classes backed up by excellent laboratory facilities, but also the possibility of studying the literature and culture of France, French Canada and the other nations of the French-speaking world, and the linguistic structure and development of French.

Classes are available for beginners and for those with a background in the language who wish to improve and maintain any or all of the following skills: speaking, listening, reading, and writing. Other classes are specially designed for students who are interested in teaching, translation, or other areas of language study. The role of French in Canada and in the Maritimes is stressed in classes in Acadian and Québecois literature and civilization. The literature of France and French-speaking nations is brought to life in classes organized around a theme, a genre, or a historical period.

The Department of French urges students to practise the language as much as possible. The *Maisons françaises* are three houses on campus in which students may live with native speakers in a francophone environment. The French Club organizes many activities including films, French meals, parties and plays in which all students may participate. Exchanges with Québec and individual student travel and study are encouraged.

A B.A. degree in French with Honours or with Honours in French and another subject combined may lead the student to a career in education, written or oral translation, or may provide the background for careers in many fields including radio, television, law, social work, public relations, business, diplomacy, journalism and library science. Students considering French as an area of concentration in a B.A. degree course are invited to discuss the matter at any time (the earlier the better) with a member of the Department. The accent is on the individual and his/her particular needs and aspirations. An Honours degree is normally required for access to graduate studies and an M.A. degree may be pursued in the Department (see Graduate Catalog).

Degree Programmes

B.A. Programme

Students should consult the Chairman or a Department Advisor about their choice of classes. The Department expects students majoring in French to form coherent programmes of four to eight full classes or equivalents beyond 1020 or 1000. Students should note that:

(1) 2200 is a recommended class; and that at least one full credit must be taken at the 3000-level. Students will be encouraged to choose up to three full credits at the 2000-level. An additional class at this level may be approved, if it is thought desirable in the context of an individual student's total programme. Other classes may be chosen from any 3000- and 4000-level offerings described below.
(2) there is no bar to changing to an Honours Programme after the second year of studies. Students wishing to do so, or to continue in Graduate Studies, should consult the Chairman or the Honours Advisor.

B.A. with Honours in French

This programme offers systematic, comprehensive and individualized study of French language and/or literature both within and without the classroom. It is, therefore, an option which should be considered seriously by any student who, with career or personal objectives in mind, wishes to obtain a strong background in French and by those who plan to teach or earn a graduate degree in French.

Honours students are strongly encouraged to enrich their more traditional learning experience by living in one of the *Maisons Françaises* and by spending at least one summer in a French-speaking area. Alternatively, students may also wish to inquire about participation in the Mount Saint Vincent University Joint Honours Programme.

Financial support may be available. Please consult the Chairman of the Department.

Students intending to enter the Honours programme should consult the Honours Advisor to discuss their programme as early as possible. It is recommended that eleven classes be taken beyond the first year level. Normally no more than three credits at the 2000-level and no more than five credits at the 3000-level may be included. The following outline is offered *as a guide*.

1st year: French 1020 or 1000 (either possibly combined with 1060)

2nd year: 2200 and 2 other 2000-level credits

3rd year: the equivalent of 4 full credits chosen from French 3000B, 3010, 3020, 3040, 3100, 3200, 3300A, 3401, 3500A, 3601B, 3700A, 3801B, 3900A, 3901B, 3910A

4th year: the equivalent of 4 full credits chosen from French 4000, 4011B, 4010A, 4015, 4040, 4300A, 4301B, 4400A, 4401B, 4500A, 4501B, 4600A, 4601B, 4700A, 4710A, 4810B, 4800A, 4801B.

a research paper or a comprehensive examination.

French 1000R Beginners French lect.: 3 hrs.; language lab: 3-6 hrs., according to individual need.

This class is designed for those with little or no previous knowledge of French. Students having had French through Grade 12 may not be admitted to this class; they should take French 1020 (below).

Although French 1000 focusses primarily on the spoken word, it is *not* a class in "conversational French" where the goal is to learn stock phrases and sentences for travelling or other limited contexts. Rather, it is a class where the basic patterns used in forming *any* sentence are taught through an oral approach. It is an intensive class and is intended for those who are serious about acquiring a working knowledge of French and are willing to apply themselves towards this end.

In addition to the three scheduled class meetings per week (additional tutorials will be arranged to suit students' timetables), the approach to learning is keyed to self-instructional materials available in the Dalhousie Language Laboratory. Students should have sufficient motivation and maturity to assume the responsibility for studying and practicing basic language structures on their own. Material thus learned in the Language Laboratory is then reinforced in classwork through dialogues, oral exercises, directed free expression, and communicative activities. During the second half of the year, short reading selections and discussion of these will be introduced. Writing is included in that students will learn to spell what they have already learned to say.

Grading in this class will be based largely on class *participation, accuracy* in self-expression, and overall *facility* in communication. Evaluation will not, however, be to the exclusion of the reading and writing skills.

Sections of French 1000 are limited in size and early registration is therefore advisable. Students may not add this class after the first week of classes.

1020R Spoken and Written French in Review, lect.: 3 hrs.; language lab: 1-2 hrs., according to need.

This class is designed to develop proficiency in speaking and listening skills, as well as in reading and writing. Classes will be taught in French and will involve much oral practice: discussions, exercises, etc. which will be based on a variety of reading and listening materials. Short written exercises and occasional compositions will reinforce this work. A largely self-instructional lab program will be available to help improve listening and oral performance. Testing will reflect the balance among the four skills.

This is the usual first-year class for those students who have studied French throughout high school. A basic knowledge of verb tenses, agreement of adjectives, placement of object pronouns, etc. will be assumed, since these and other items will be dealt with as review items. Students having little or no acquaintance with such structures should take French 1000.

1060R French for Reading, lect.: 3 hrs.

This class 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, by itself, suitable for students who plan to major in French. It may, however, be taken by those with no prior training in French.

1070R Contemporary Literature in Translation, lect.: 3 hrs.

This class 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).

Note: *All classes above this level are normally given in French.*

2000A Intermediate Oral French, lect.: 3 hrs.

This class is intended to provide training and practice in oral self-expression, primarily for graduates of French 1000 and French 1020. It is *not* intended simply as a conversation course. Much of the work will centre on the mechanics of oral paraphrase: *recognizing* oral paraphrase as a typical feature of language use, *judging* the adequacy and limits of paraphrase, *activating* known alternate structures and vocabulary, *learning* and *practicing* additional related techniques. Grading in the class will be based on accuracy in pronunciation and use of syntactic structures, fluency, communicative precision, and demonstrated improvement in the use of paraphrase methods.

2020A/2021B Practice in Language Skills, lect.: 3 hrs.

This class is designed to follow 1020 or 1000. It is normally taken in the second year of study and provides the student the opportunity to practice and improve language skills already acquired. Some of the sections approach language learning through a subject area (such as Acadian studies, African and Caribbean civilisation, cinema, journalism, the occult, or the detective novel) while others focus on a particular skill (such as simultaneous translation or listening comprehension). All classes and assignments are entirely in French. Students must choose sections with different topics to earn credit for both A and B. However, it is not necessary to take both A and B and students may elect to study one semester only. Students should consult the current timetable, as the topics offered change each year.

2040R Composition, lect.: 3 hrs.

Detailed and comprehensive coverage of grammar, with various exercises including dictations, translations, and compositions.

2110A/2111B Civilization of French Canada, lect.: 3 hrs.

The first part of this class concentrates on the major historical and political trends and events of French-Canadian society in recent years. An attempt is made to understand the problems facing the francophone minorities across the country, as well as those encountered by the Québécois of today.

The second half of the class examines French Canada in the light of its cultural out-put—such as music, theatre, painting, poetry, cinema etc. These cultural aspects are studied not as aesthetic works but rather as artistic expressions of a particular society.

2200R Introduction to French Literature, lect.: 3 hrs.

An introduction to the literature of France and Québec, treating writers such as Molière and Voltaire, Apollinaire and Sartre. The class will involve discussion of theme and form in a small selection of well-known works of prose, poetry and theatre, with particular emphasis on the 20th Century. Attention will be paid to the development of both oral and written expression of ideas.

3000B Advanced Oral French Workshop, seminar lect.:, 3 hrs.

Class discussions and oral presentations. Continues the work of 2000A.

3010R 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.

3020R 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).

3040R Composition, lect.: 3 hrs.

This class aims at further developing the skills acquired in French 2040. Through a variety of exercises, students will be taught to express themselves in clear, accurate, idiomatic French, and to perform a number of tasks of a practical nature: writing reports, summaries, letters, etc. . . A good knowledge of grammar is essential.

3080R Methods of Teaching French, lect.: 2 hrs. (same as Education 4840)

Deals with objectives, methodology, techniques, materials (including visual aids), language laboratories, and testing. Emphasis will be placed on the teaching of spoken French. Practice in the development of teaching skills will be an integral part of this class. Open only to students who have demonstrated adequate competence in French language and culture. Students taking this class will normally be completing a B.Ed. Other students interested must consult the instructor concerned regarding their eligibility.

3100R 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.

3200A 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 Mediaeval French Literature, lect.: 3 hrs.

Textual analyses of selected works representing the major literary genres (epic, romance, theatre, poetry) from the *chansons de geste* to François 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.

3401B Introduction to 16th-Century French Literature, 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 17th-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 Literature, lect.: 3 hrs.

Basic survey class designed to introduce the student to the literature of the 18th century which includes works by such authors as Voltaire, Rousseau, Diderot and Marivaux. Each year the readings and class discussions will be centred

on a different theme (for example: the hero and the anti-hero, women, philosophy and form).

3700A Introduction to 19th Century French Literature, 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 Literature, lect.: 3 hrs.

Poetry and Theatre, 1900-1979: Study of modern poetry from Dada and Surrealism to the work of contemporary poets such as Yves Bonnefoy, Jacques Dupin and Michel Deguy; and of modern theatre from Jarry to Beckett and Ionesco.

3900A/3901B Introduction to French-Canadian Literature, lect.: 3 hrs.

In-depth study of a few major works of French-Canadian literature with emphasis on the period from 1945 to the present day. Each course deals with a specific genre (e.g., 3900A Poetry, 3901B Novel) and choice of genre may differ from year to year.

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 follow Acadian Studies (2020A/2021B).

4000R 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.

4010A Evolution of Modern Linguistics, lect.: 3 hrs.

Examination of selected issues in 20th-century linguistics: the class will trace the development from de Saussure to the various structuralist schools and the generative approach, without neglecting independent scholars who were not affiliated to any particular school of thought. A variety of French texts by great linguists will be introduced, interpreted and discussed in class.

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 the coining of new expressions.

4015R Advanced Translation into English, lect.: 3 hrs.

This class aims at developing awareness of the expressive resources of French by dealing with problems and techniques of translation into English. The texts of weekly translation assignments, which account for 50% of the final grade, progress from expository and descriptive prose to poetry. Topics introduced through instructor's lectures and oral class reports by students include categories of translation, style, context and choice, context and meaning, ambiguity, verb systems of French and English, textual redundancy, simultaneous interpretation, and translation of metaphors. Occasionally, alternate English translations of a French text are studies for revealing contrasts.

4040R Composition, lect.: 3 hrs.

Continues the work of 3040, but more literary in nature. The class aims at teaching students to express themselves with elegance and refinement.

4300A/4301B, lect.: 3 hrs.

A) *Le Roman courtois*
A close literary analysis of mediaeval 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 9th to the 15th centuries. Early texts in modern French translations.

4400A 16th-Century French Literature, lect.: 3 hrs.

A seminar-style study of poetic theories and practices from the *Rhétoriqueurs* to the *Pléiade* and to Malherbe. French 3401 recommended.

4401B 16th-Century French Literature, lect.: 3 hrs.

An in-depth study of major currents of Renaissance thought: humanism, scientific awakening, the beginning of *littérature engagée,* and the emergence of the *moralistes* and *philosophes.*

4500A/4501B 17th-Century French Literature, lect.: 3 hrs.

The focus of these classes, which examine, at an advanced level, a major figure, movement, genre or theme in 17th-century French literature, will vary frequently. Please consult the professor for detailed information on the topic to be treated in any given semester.

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.Please consult the professor for information on the theme treated and the works to be studied in any given semester.

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; 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 Symbolist Poetry, lect.: 3 hrs.

The object of this class is to study the evolution of the language of poetry from 1870 to the First World War. It will take as its starting point Stéphane Mallarmé, who discovered a wholly new role for the poet. Other figures to be critically analysed will be Rimbaud, Verlaine and Laforgue.

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 class 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.

4811B French Poetry from Valéry to Char, lect.: 3 hrs.

Post-Symbolist, Surrealist and post-Surrealistic works will be studied. Poets to be critically analyzed will include Valéry, Claudel, Apollinaire and Char.

4994A/4995B; 4996A/4997B; 4998A/4999B (460A/B), Independent Research for Honours Students.

Graduate Level Courses
Classes in the 5000 series are for graduate students who, for more detailed information, should consult the Graduate Calendar and arrange to meet the Graduate Co-ordinator. 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:

5124R Linguistics Seminar

The seminar will give students an opportunity to get acquainted with a number of outstanding and quite recent contributions to French linguistics. The topics will be considered from angles that would suit the interests or thesis areas of the participants.

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 Students.

Geology

Chairman of Department
D.J.W. Piper

Undergraduate Advisor
G.C. Milligan

Professors
H.B.S. Cooke (Carnegie Professor)
J.M. Hall
G.C. Milligan
P.E. Schenk

Adjunct Professor
M.J. Keen

Associate Professors
D.B. Clarke
F. Medioli
G.K. Muecke
D.J.W. Piper (jointly with Oceanography)
P.H. Reynolds (jointly with Physics)
M. Zentilli

Assistant Professors
R.A. Jamieson
I.D. Reid

Instructor
P. Wallace

Special Lecturer
T. Hennigar

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's gross national product.

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? 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.

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 100 level class in Geology at Dalhousie.

UNDERGRADUATE PROGRAMMES
(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, and Geology 140, especially designed for part-time students.

(ii) Two-hundred level classes taught in the evening: 240, 241B, 242A, open to all with 100, 140 or good grades in 102. These particular classes are not normally suitable for students whose major is geology.

(iii) For engineering students and science students in other disciplines:
Biologists: 100, 223B, 240, 241B, 242A, 423A, 436B, 437
Chemists: 100, 201A, 204B, 301A, 302B, 439B, 440B
Engineers: 103B
Physicists and mathematicians: 100, 205B, 313A, 427A, 428B, 429B.

(2) General Degree Programme
Three-year 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 as a qualification for a professional career 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 under (3) below). This programme may not be suitable for all students, and others can be arranged. All students intending to major in geology are required to take Geology 100. Geology 100 is normally also available in the second summer session. The core programme for a major in geology must include Geology 201A, 202A, 204B and 223B or 205B. Faculty regulations permit a student graduating with a general degree with a major in Geology to convert it to an honours degree by certificate. Note that Geology 240, 241B and 242A do not form a part of the core programme for concentrated honours in Geology and cannot count as credits towards an honours degree although they can form part of the General Degree Programme.

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.

Honours degree programmes
An honours degree is almost essential for any professional work in earth sciences, and for graduate study. Students **must** take the second and third year classes of the Geology core programme listed below. The recommended programme is:

Year 1
1. Geology 100
2. Mathematics 100A/101B
3.-4. One Class in two of Physics, Chemistry, Biology
5. Elective (normally selected to meet the faculty requirement for a class in which writing ability is emphasized).

Year 2
6.-7. Core program: Geology 201A, 204B, 202A, and **either** 223B **or** 205B
8.-9. One class in two of Physics, Chemistry, Biology, Mathematics
10. Elective

Year 3
11.-13. Core program: Geology 301A, 302B, 312B, 314B, 315A and **either** 311A **or** 313A.
14. One class in Physics, Chemistry, Biology, Mathematics
15. Elective

Year 4
16. Geology 420
17.-19. Three 400 level classes in Geology
20. Elective

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 take Geology 100 in the summer session or may take 100 and 201A/204B in Year 2, if he or she has a B+ standing in Year 1. A student who has taken Geology 100, but whose programme does not meet the other requirements should consult the department.

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. 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 220A/221B or 230A/233B, Mathematics 200, 220, 206 (or 106/107), 225/227.

Students wishing to take combined honours in geology and another subject should discuss their programme in detail with the undergraduate adviser.

Suggestions for the first three years of study are given below:

Combined honours with Biology: Students should follow the Geology honours programme in Years 1-3, including Geology 223B and 311A; but should take either a Biology class, or Geology 423A/436B, or Geology 437 in place of Geology 301A/302B. Suggested Biology classes are 1000 or 2000 in Year 1, 2040A/B and 2060A/B in Year 2, and 2000 or 3321 or 3323 in Year 3.

Combined honours with Physics (a possible geophysics programme): Students should follow the Geology honours programme in Years 1-3, including Geology 205B and 313A, but should take a Physics class in place of Geology 301A/302B. Suggested Physics classes are 110 in Year 1, 230A/233B in Year 2, and two of 220A/221B or 300A/301B or 320A/321B and 316A/317B in Year 3. Math 200 should also be taken in either Year 2 or 3.

Combined honours with Chemistry: Students should follow the Geology honours programme in Years 1-3, but should take a 300 level Chemistry class in place of Geology 312B and 311A/313A. Suggested Chemistry classes are 110 in Year 1; 220A/211B and 231A/232B or 240 in Year 2; any 300 level Chemistry in Year 3.

Students in combined honours and unconcentrated honours programmes will normally attend the field camp which is 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.

Field Camps
Students in a concentrated honours programme must complete one field camp at the end of second year and a field exercise 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.

Thesis and Honours Qualifying Examination
A student in an honours degree programme may choose one of three options:
(a) A thesis as Geology 420, followed by an oral examination, based on the general subject area of the thesis. This oral examination will then count as the honours comprehensive examination.

(b) A thesis as Geology 420, and a written comprehensive examination, reflecting the content of the 300 and 400 level classes which the student has taken.

(c) An honours thesis in addition to five regular classes in the fourth year, in which case the thesis will count as the honours comprehensive examination.

Theses must be completed by the second Monday in March of the fourth year. 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 for the following academic year, pay the fees for that class, and graduate at the spring convocation of that academic year.

Classes Offered

* *Offered only in alternate years, beginning 1981-82.*
† *Offered only in alternate years, beginning 1980-81.*

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.

Students who wish to major in Geology but have unresolvable scheduling conflicts with Geology 100 should consult the undergraduate advisor.

102 The Earth and Man, lect.: 3 hrs.; tutorial/ lab.: 1 hr.; H.B.S. Cooke and G.C. Milligan.

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. Students with good grades in this class may enter Geology 240, 241B, 242A.

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 class 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.-lab.: 3 hrs., one evening per week; P.E. Schenk.

This is an introductory class in physical geology that requires no previous background in geology. There are no prerequisites, but Grade 12 Chemistry, Physics and Biology will be advantageous. This is an evening class intended primarily for part-time and off-campus students, or for full-time students who cannot take a regular day-time geology class because of *insoluble* timetable conflicts. Geology 140 is suitable for entering Geology 240, 241A and 242B; it is not normally suitable for entering Geology 201A, 202A, 223B, 204B and 205B.

201A Introduction to Mineralogy, lect.: 3 hrs.; lab.: 3 hrs.; M. Zentilli.

Minerals are the crystalline building blocks of rocks, gemstones and mineral deposits. The amazing regularity of crystals, their internal ordered structure, the mechanisms by which they grow and the environments in which they form are discussed in the lectures. This leads to the understanding

of how rocks are generated and altered, and of what makes some mineral concentrations economically interesting or environmentally damaging. The laboratories of this class are dedicated to learning systematic techniques to identify individual mineral species and their aggregates, including a brief introduction to the petrographic microscope, x-ray diffraction and radioactivity-measuring devices.

Prerequisite: Geology 100 or equivalent.

202A Sedimentology and Historical Geology, lect.: 3 hrs.; lab.: 3 hrs.; D.J.W. Piper.

The first part of the class 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 class examines the geological evolution of the North Atlantic region, especially Nova Scotia. Emphasis is placed on the interpretation of the sedimentary rock sequences.

Prerequisite: Geology 100 or equivalent.

204B Introduction to Geochemistry, lect.: 3 hrs.; lab.: 3 hrs.; M. Zentilli or G.K. Muecke.

Geochemistry is the study of geological phenomena involving chemical change. This class attempts to pick up ideas from elementry physics and chemistry and put them to work in the handling of geologic problems, such as the crystallization of minerals from magmas, hydrothermal ore-forming solutions or surface waters, or the chemical changes involved in the metamorphism, alteration and weathering of rocks.
The laboratories of this class are dedicated mainly to learning the basic skills necessary for the study of minerals and rocks using the petrographic microscope.

Prerequisite: Geology 100 or equivalent.

205B Introduction to Geophysics, lect.: 3 hrs.; lab.: 1 hr.; I.D. Reid.

Geophysical methods are increasingly important in geological studies. The object of this class is to provide a sound basis of understanding the principles of the various techniques, their powers, and limitations. These include the use of gravity and magnetic fields, electromagnetism and seismic methods. The class is intended primarily as a foundation for later more practical classes, but will include project work on aspects of computer modelling, interpretation of seismic data, etc.

Prerequisite: Physics 110 and a first-year class in mathematics.

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 provided that they have some background in Geology.

Prerequisite: Geology 100 or equivalent.

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 and Resource Geology,** lect., lab. and discussion: 3 hrs.; one evening per week, G.K. Muecke.

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/D.J.W. Piper.

The surface features of the earth are undergoing constant modification, and their present form is the result of a variety 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.

301A Igneous Petrology, lect.: 3 hrs.; lab.: 3 hrs.; R.A. Jamieson.

Igneous petrology includes the study of the field relations, mineralogy, texture, and geochemistry of volcanic and plutonic rocks. Lectures will discuss the classification, graphical representation means of production, differentiation, and emplacement of igneous rocks, and their grouping into co-magmatic provinces. Labs will involve using the petrographic microscope to determine the crystallization history of igneous rocks through their mineralogy and texture.

Prerequisite: Geology 201A, 204B.

302B Metamorphic Petrology, lect.: 3 hrs.; lab.: 3 hrs.; R.A. Jamieson.

Metamorphic petrology is concerned with the way in which pre-existing igneous, sedimentary, and metamorphic rocks respond to changes in pressure, temperature, and geochemical environment. The lectures will discuss the mechanisms of metamorphic reactions and recrystallizations, the stability relations of minerals and mineral assemblages under various physical and chemical conditions, and the concept of metamorphic facies series In the labs, microscopic mineralogy and texture will be used to decipher the metamorphic history of rocks.

Prerequisite: Geology 201A, 204B, 301A.

311A Field Methods, lect.: 3 hrs.; lab.: 3 hrs.; J.M. Hall and R.A. Jamieson.

This class is an introduction to field techniques useful to the practising geologist. Approximately one third of the class work 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 camp conducted at Antigonish at the end of the second year is considered a part of this class; a field exercise conducted at Halifax during registration week of the third year is also an integral part of this class (see note on Field Camps above).

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. Establishment of time-surfaces within this rock is essential for interpretation of complexes of depositional environments - the paleogeography. The purpose of the course is to show how rock may be attacked for such reconstruction.

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.

Laboratory assignments involve statistical and stratigraphic map problems aided by the computer. Although statistics and machine-aids are introduced, some prior knowledge is helpful.

Prerequisite: Geology 202A

313A Physical Properties of Rocks, lect.: 3 hrs.; lab.: 3 hrs; every other week, P.H. Reynolds.

In this class we attempt to answer such basic questions as: What is magnetism and how is it acquired by various rocks and minerals? How do rocks conduct electricity? What elements give rocks their radioactive properties? How is heat produced in rocks and how is it transported? What happens when you apply mechanical stresses to rock systems? In answering these and other questions, we will focus to a considerable extent on various geophysical exploration methods.

Prerequisite: Geology 205B.

314 B 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.

315A Economic Geology, lect.: 3 hrs.; lab.: 3 hrs.; M. Zentilli.

This class provides an overview of the principles and data basic to understanding the genesis and localization of fossil fuels, ores and minerals associated with them. In addition the methods and techniques used by the geologist from mineral discovery to mineral production are covered both in the lectures and the laboratories.

Prerequisites: Geology 201A, 204B, 202A.

410 Research Project

This class is designed for those in the fourth year of a non-honours programme. For details, consult the undergraduate advisor.

420 Honours Thesis

A research project and thesis are a normal part of the Honours B.Sc. programme and may be counted as a class under certain conditions. Special regulations govern this, and the student should consult the undergraduate advisor.

***421B Siliclastic Sedimentology,** lect.: 3 hrs.; lab.: 3 hrs.; D.J.W. Piper.

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: Geology202A.

422A Carbonate Petrology, lect: 2 hrs.; lab.: 3 hrs.; P.E. Schenk.

This class deals primarily with depositional and diagenetic environments of carbonates, although other authigenics such as sulfates and chlorides are also reviewed.

The class 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.

Prerequisite: Geology 202A.

***423A Invertebrate Palaeontology,** lect.: 2 hrs.; lab.: 3 hrs.; H.B.S. Cooke or P.E. Schenk.

This class deals with macropaleontology.The students collect their own fossiliferous material and, with the help of the instructor, they prepare, identify and photograph it. The results of the studies are then summarized in a final report which, ideally, should be of publishable quality.

In the course of the exercises the students are instructed in the following techniques: 1) fossils preparations, 2) Palaeontological nomenclature, 3) use of the literature, 4) Palaeontological photography, 5) Binocular microscopy, 6) Photomicrography, 7) Scanning elecron microscopy.

Prerequisite: Geology 202A and 223B or Biology 2000 and/or 3321. The class is suitable for Biology students.

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 honours and graduate students.

Prerequisite: prior consent of instructor.

427A Applied Geophysics, lect.: 3 hrs.; I.D. Reid.

This is a class in geophysics which concentrates on the application of geophysical methods to petroleum and mineral exploration. Topics introduced in 205B and 313A are treated at a more advanced level. We also discuss briefly the contribution of geophysics to our general knowledge of the earth.

Assignments will be project-oriented and will attempt to involve the student in interpretation of realistic geophysical data via computer modelling, inversion techniques, etc.

Prerequisite: Geology 205B, 313A, or consent of instructor.

***428B Marine Geophysics**, lect.: 3 hrs.; lab. and occasional sea trip to be arranged; I.D. Reid.

We consider the application of the various geophysical techniques to the study of the sea floor, particularly in the deep ocean, and examine the principal results obtained. We then consider, from a physical point of view, the processes involved in the creation, evolution and destruction of ocean basins and the implications of the experimental observations.

Prerequisite: Geology 205B, 313A, 427A or consent of instructor.

†429B Advanced Solid Earth Geophysics, lect.: 3 hrs.; C. Beaumont (Oceanography).

This class is essential for geology or physics students who intend to be geophysicists. The class covers the physical state and behaviour of the Earth as a whole. It shows how studies of geomagnetism, the Earth's electrical conductivity, earthquake seismology, the Earth's gravity field and the loss of heat from the Earth contribute to our present detailed picture of the Earth's interior. 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.

Prerequisites: Geology 205B, 313A and 427A, or consent of instructor.

430B Advanced Economic Geology, lect.: 3 hrs.; lab.: 3 hrs.; M. Zentilli.

This is a class for those interested in mineral exploration. Different tectonic, magmatic, metamorphic, sedimentary or weathering environments are associated with specific kinds of ore deposits. We discuss their empirical distribution, define the environments and evaluate the hypotheses and models proposed for their genesis and preservation. Most exploration geologists seldom see "ore"; more commonly they work with a variety of rocks or their altered products, and look for "clues" based on hypothetical models. In this class we attempt to integrate concepts and ideas from all facets of geology and geochemistry to understand the metallogenic history of specific parts of Canada and the world. Part of the class is dedicated to fossil fuels.

Prerequisite: Geology 315A.

†431B Marine Geology, lect.: 3 hrs.; lab and occasional trip on small boat to be arranged; D.J.W. Piper.

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.

***434A Precambrian Geology**, lect.: 3 hrs.; G.C. Milligan, R.A. Jamieson, G.K. Muecke.

The Precambrian includes 85% of earth history. The possible physical, chemical, and biological evolution of the earth from the earliest Archean to the latest Proterozoic will be discussed and contrasted with Phanerozoic geology. The Precambian geology of Canada will be discussed in detail, emphasizing the metamorphism, tectonics, and mineral deposits of the various structural provinces.

Prerequisite: Geology 314A.

†435A Appalachian Geology, lect.: 3 hrs.; R.A. Jamieson, P.E. Schenk, G.C. Milligan, D.B. Clarke.

The physiography and resources of Atlantic Canada reflect its location at the northern end of the Appalachian Mountains. The late Precambrian to Carboniferous evolution of this orogenic belt is discussed in terms of structure, stratigraphy, metamorphism, ore deposits, and plutonic history, with emphasis on tectonic style. Plate tectonic interpretations of the Appalachians and the role of Nova Scotia in the system will also be discussed in detail.

Prerequisite: Geology 314A.

***436B Principles of Pleistocene Geology**, lect. and seminar: 3 hrs.; Staff.

A class designed to expose the student to the special problems involved in the interpretation of Pleistocene deposits, rather than to a particular study of Pleistocene stratigraphy. The matters covered include: the origin, distribution and nature of snow and ice; movement in glaciers and ice caps; glacial stratigraphy; sea level fluctuations; ocean floor deposits; climatic changes evidenced in non-glaciated regions; theories of ice ages.

Although a good background in geology is expected, some students with advanced standing in biology may be admitted. Reading forms a substantial part of the class.

†437 Micropalaeontology, lect.: 2 hrs.; lab.: 3 hrs.; F. Medioli.

The class offers a general systematic study of the major groups of microfossils, mainly foraminifers, ostracoda and calcareous nanno-plankton. Particular emphasis will be put on recent microfauna and techniques for sampling and studying them.

Prerequisite: Geology 223B or senior standing in Biology (with consent of instructor).

438A Advanced Geochemistry, lect.: 3 hrs.; lab.: 3 hrs.; G.K. Muecke.

This class will concentrate on geochemical aspects of ore formation and the exploration for economic mineral deposits. The emphasis will be on demonstrating how principles of crystal chemistry, isotope fractionation, thermodynamics, solution chemistry, etc., are applied to the investigation of hydrothermal solutions, modes of ore deposition and redistribution, and geochemical cycles. Geochemical surveys, exogenic element dispersion and the origin and evaluation of geochemical anomalies will also be discussed.

In the laboratory the student will be introduced to the most common methods of rock and mineral analysis and the processing of geochemical data.

Prerequisites: Geology 301A, 302B, 315A.

†439B Advanced Mineralogy and Igneous Petrology, lect.: 3 hrs.; lab.: 3 hrs.; Staff.

This class 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.

Prerequisite: Geology 301A, 302B.

***440B Advanced Mineralogy and Metamorphic Petrology**, lect.: 3 hrs.; Staff.

This class considers 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.

Prerequisites: Geology 301A, 302B.

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. Please consult the Graduate Calendar and seek advice from the Department.

German

Professors
J. Doull
F. Gaede (Chairman)
P. Michelsen

Associate Professors
H.G. Schwarz
D. Steffen

Assistant Professors
J. Lowry
A. Roulston

Lecturer
G. Josenhans

German is the most widely used language in Central Europe and is spoken by approximately 100 million people as their native tongue in Austria, the two Germanies, Switzerland and some parts of Eastern Europe. The cultural, economic, and scientific role of the German-speaking countries makes the knowledge of German indispensable to the study of most academic disciplines.

The departmental programme "German Studies" is the investigation of German culture and its place in the formation of the modern world. The programme concentrates on significant aspects of the cultural tradition of the German-speaking countries. From Luther to Nietzsche, Freud, and Marx, German writers have moved men and nations to change the course of the world. The literary and intellectual development of Germany culminated around 1800 in the epoch of Classicism. The authors of this epoch (Lessing, Herder, Hegel, Goethe, Schiller) founded their writings on a thorough knowledge of the cultural tradition of Europe, especially of the Greek culture. As scientists, historians, and politicians they described in their literary works problems and questions of a universal nature. They became the first historians of literature and created the discipline of aesthetics. The universality of the authors of German classicism results in their present actuality and makes the study of German important and attractive.

Degree Programmes

B.A.
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 astudent 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

Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered.

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 fulfills the writing requirement for first-year students.

The class or its equivalent is a prerequisite for all classes on the 200 level.

101 German for Beginners, lect.: 3 hrs.; G. Josenhans, A. Roulston.

An introductory language class, using the same methods and goals as German 100. This course does not fulfill the writing requirement for beginning students.

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.; D. Steffen.

Readings, essays and discussions will promote fluency in the language on the advanced level.

Prerequisite: German 100 or equivalent.

Study of German Literature

*** 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.

*** 324 Literature of the 19th Century,** lect.: 2 hrs.; F. Gaede.

*** 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.

Study of German Culture

Aesthetics, Philosophy, Religion

*** 230 Sources of Modern Thought: From Luther to Nietzsche,** lect. and sem.: 2 hrs.; F. Lowry

Beginning with an examination of the ideas of self-consciousness as the major principle of the modern world, the class aims to investigate, through a consideration of several crucial texts, the modern idea of freedom.

*** 235 Germanic and Greek Mythology,** Lect.: 2 hrs.; J. Lowry.

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.**

*** 245 Kant and the History of German Idealism,** Sem.: 2 hrs.; D. Steffen.

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.

A study of the three critiques.

*** 335 Hegel's Aesthetics and the Ancients,** Sem.: 2 hrs.; F. Gaede

*** 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 Hegel's Philosophy of Nature, J.A. Doull.

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.

*** 410 Aesthetic Theory,** Sem.: 2 hrs.; F. Gaede.

A historical study of the development of literary theory.

*** 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 (Chairman)
J.E. Flint
P. Fraser
H.S. Granter
R.M. Haines
P.D. Pillay
P.B. Waite
J.B.Webster

Associate Professors
J.E. Crowley
J. Fingard
G.S. Kealey
N.G.O. Pereira
L.D. Stokes
D.A. Sutherland
G.D. Taylor
M. Turner

Assistant Professors
M. Burson
J.F. Godfrey
J.T. O'Brien
E. Bruce Tucker
F.Szabo
S. Vittoz

Post Doctoral Fellow
R. Cooter

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 an 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.

1. Bachelor's 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: Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered.

Classes Offered at the 1000 Level

1050 Revolution, War and Society in the Modern World, lecture, 3 hrs; Staff.

This course is a survey of the major events and movements in Europe from the time of the French Revolution to the present.

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.

***1300 United States History,** 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 - India 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 intended to introduce first-year students 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.
Some of the sections that may be offered:
(1) The Atlantic World, and Colonization of The Americas, 1500-1800 (Crowley)
(5) Medieval Life and Thought. (Haines)
(7) Fascism and Nazism (Stokes)
(8) British Imperialism and Nigerian Nationalism. (Webster)
(10) America and the Cold War, 1945-1975. (Taylor)
(13) From Artisan to Worker: Canadian Working Class History. (Kealey)
(14) European Intellectual History. (Pereira)
(19) The Canadian Rebellions. (Burroughs)

Classes offered at the 2000 level

History 1050, 1200, 1300, 1400 and 1990 provide appropriate preparation for 2000 level classes.

European History

2000 Mediaeval Europe, lecture/discussion, 2 hrs; R.M. Haines
This class surveys the thousand years between the end of the classical world and the beginnings of modern Europe. Original source materials in translation will be carefully studied to understand the mediaeval world-view and the ways in which mediaeval history is written, and students will be introduced to wide range of topics including the intellectual, artistic and social history of the Middle Ages. Particular attention will be paid to developing an appreciation of the richness of an age usually characterized as dark and unknowable.

2011A Renaissance and Reformation Europe, 1450-1650, lecture/tutorial, 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, lecture/tutorial, 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 Modern Russia, lecture/tutorial, 3 hrs.; N.G.O. Pereira
A survey of the last two centuries of modern Russia, from 1801 to the present, with particular attention to factors which contributed to the decline and fall of the Romanov dynasty and the formation of the Soviet state. Readings will include representative samplings of contemporary opinion as well as the most recent scholarship. No prior knowledge of Russian history is presumed.

2031A Germany in the 19th Century, discussion/tutorial, 2 hrs; L.D. Stokes

2032B 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 Modern France: From the Fall of the Bastille to the Rise of De Gaulle, lecture 3 hrs.; J.F. Godfrey.

This class will focus on selected topics in French political, military, economic and cultural history from the Revolution of 1789 to the end of the Second World War.

***2050 Europe in Two World Wars,** Seminar, 2 hrs; Staff.

British and British Imperial History

2100 History of England to 1763, lecture/tutorial, 3 hrs; H.S. Granter

This is England before the industrial revolution: Merrie England. It is the England of Alfred, of Canute, of William the Conqueror, of Saint Thomas Becket, of Magna Carta, of Henry VIII, Elizabeth, Drake and Raleigh, of Charles I who was beheaded, of the Bill of Rights and the freeborn Englishman, of the founding of an empire 'in a fit of absence of mind'.

In the lectures certain broad themes will be stressed: the Anglo-Saxon foundations of England; the Norman Conquest and the changes it brought; the singular features of feudal England, strong under a feudal monarchy; the foundation of the Common Law and of Parliament; the withdrawal from France, adventures of the High Seas and the founding of empire; the religious and constitutional struggles of the sixteenth and seventeenth centuries leading to Protestantism and limited monarchy; the founding of the Royal Society and Isaac Newton; the rich agricultural and commercial economy of the eighteenth century and the wealth of India.

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, 3 hrs; P. Burroughs, P.D. Pillay

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.

North American History

2210 The Social History of Canada, seminar, 2 hrs.; D.A. Sutherland

This evening session 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.

2230 Canada in the Twentieth Century, 3 hrs; lecture/tutorial, 3 hrs.; 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: It is helpful to have had a 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.

2330 The United States: A Political and Economic History, seminar, 2 hrs; G.D. Taylor

American history features many colourful personalities and episodes from the Boston Tea Party to Watergate. Underlying these events are broad patterns of change: population movements, religious and ethnic conflict, economic development, the organization of political parties and interest groups, and unheralded but enduring shifts in the law and public opinion. This class examines public life in America from the time of Benjamin Franklin to Jimmy Carter in the context of these general processes of social, economic, and cultural development.

***2340 Social History of the United States,** seminar, 2 hrs; J.T. O'Brien

This class will survey the major social and economic forces which transformed the United States from an agrarian republic to an industrial nation. Attention will be drawn to the process of industrialization and such allied topics as urban growth, immigration, the rise of the corporation, the changing nature of work, and the role of government in fostering economic growth. It will also look at the history of labour organizations, protest movements, and business groups that sponsored new forms of economic activity in the period from the founding of the Republic to the Great Depression. Attendance and class participation in seminar discussion are required. Students will sit two one-hour examinations and write two short papers.

African and Third World History

***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.

***2380 Latin America: Independence and After,** lecture/discussion, 2 hrs; M. Turner

The countries of Latin America achieved political independence early in the nineteenth century but the continent continues today in the grip of American imperialism. This class investigates the processes which have led to this situation. Attention will be paid to the independence movements, the role of British and American capital in the nineteenth and twentieth centuries and the political responses of Latin American countries, in particular Argentina, Brazil and Chile.

2400 History of Tropical Africa, lecture/tutorial, 2 hrs; J.B. Webster

In lectures and tutorials students will absorb some of the major themes of African pre-colonial and post-colonial history by a study of the internal politics and development of African states and societies such as the Yoruba empire, Ashanti and Dahomey in West Africa, and states in East, Central and Southern Africa. The theme of cultural contact and its effects will be prominent in considering Islamic and Christian penetration. This will be followed by an examination of the impact of European colonial rule, the partition of Africa and African responses which culminated in the emergence of independent African states.

Classes offered at the 3000 level

European History

3000 Mediaeval Civilization: Sources and Literature, seminar, 2 hrs; R.M. Haines

History 2000 provides the appropriate background for this class. Each year a number of topics are chosen, wide enough to be used as central themes in the context of which mediaeval civilization can be studied; for this 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.

3020 Topics in Soviet History, seminar, 2 hrs; N.G.O. Pereira

The basic institutions of contemporary Soviet society are considered both in terms of their own historical antecedents and useful comparisons with European counterparts. Topics may include the role of official culture, party machinery, the individual in society, relations with the West, science and technology, and the economy.

3031A The Weimar Republic, seminar, 2 hrs

3032B 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.

3040 French Intellectuals in the 20th Century, seminar, 2 hrs; J.F. Godfrey

In France, political life and intellectual life are inseparable. This class will examine the intellectual careers of Block, Maritain, Bernanos, Saint-Exupéry, Malraux, DeGaulle, Sartre, Camus, Teilhard de Chardin and Lévi-Strauss in the context of the political history of France in the twentieth century.

***3070 The History of Science,** lecture/discussion, 2 hrs; J. Farley

This class has been designed to accommodate history students without a background in the sciences. The first term will focus on the Scientific Revolution—the period between Copernicus and Newton—while the second term will deal with the professionalization of science in the nineteenth century and the industrialization of science in the twentieth. In addition, selected topics such as the evolutionary theory and disease theories will be discussed. Also listed as Biology 3400 for history students who might want a credit in biology.

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 from Gladstone to Asquith, Labour and Socialist movements, or the ideals, theories and practices of imperialism in the palmy years of the Empire. Topics for selective study include Irish Home Rule, social theories, reform movements, electioneering, journalism, party organisation, the monarchy and the constitution, and naval and military reoranganisation under the committee of Imperial Defence.

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.

North American History

***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, 1760-1914, seminar, 2 hrs; P. Burroughs

This class 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 Scotian Experience, 1749—1945,** seminar, 2 hrs; D.A. Sutherland

Major themes in the social, economic and political evolution of provincial society are explored in an effort to identify the major forces which, since the mid 18th century, have worked to shape the Nova Scotian identity. Discussion involves both existing historical literature and original student research. No prerequisites exist but participants should have some familiarity with Canadian history.

3275 Halifax: Themes from the City's Past, seminar, 2 hrs; J. Fingard

This class will explore the major themes in the history of Halifax. Class discussions will focus on the strategic and military character of the town; the city's regional role as a metropolitan centre; commerce and industry; and urban development. The rich archival sources available will enable students to undertake original research on a variety of aspects of the city's history.

3280 Disreputable Pleasures: Popular Diversions and Common Vices in Canada, lecture/tutorial, 3 hrs; M.S. Cross

Popular diversions, whether sports and games or social drinking, tell much about the character of society, its values and its classes. This class will investigate such diversions in Canadian history, with some discussion of the foreign roots of diversions. It will explore the significance of sports, popular music, rioting, prostitution, drinking and other pleasures. On the other end of the social scale, the response of the respectable to popular diversions will be studied. Among topics to be considered are: lower class drinking, the temperance movement and industrial discipline; the invention of sport in the nineteenth century; sports violence, including the Richard hockey riot of 1955; changing attitudes to prostitution; Nova Scotian sports and games; and contemporary technological diversions. There wil be two lectures and one tutorial each week. Grading will be based on essays and class participation.

3285 The Urban Experience in Canada, seminar, 2 hrs.; D.A. Sutherland

The rise of the city and the evolution of urban society constitute a major theme in Canada's history. It is now recognized that the nation's past has been influenced decisively by its urban component, from the beginnings of settlement through the growth of the staples trade, to the emergence of an industrial order. This class will draw upon a rapidly expanding body of historical literature to offer students a general overview of the economic, social and political forces at work in shaping our urban experience. No prerequisites but some background in history would be helpful.
Assessment: based on one major research paper as well as two term essays and at least two seminar presentations.

***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.

3330 Canada and the United States in the Industrial Age, 1878-1978, seminar, 2 hrs; G.D. Taylor

During the past century both the nations of North America have developed from sparsely settled agricultural societies to complex, highly industrialized urban states. This class examines the parallel experiences of Canada and the United States in the age of corporate industrial development, and the numerous and often controversial linkages between them, including the rise of big business and the labour movement, the rise of national government and eclipse of regional autonomy, the expansion of Amercian multinational enterprise in Canada since the Second World War, and the impact of American media on North American culture.

3340 Popular Culture in the United States, 1750-1930, seminar, 2 hurs.; E.B. Tucker

This class will examine selected themes in the history of popular culture in the United States from 1750-1930. Beginning with pre-industrial forms of popular consciousness, the course will explore such topics as religious revivalism, food riots, sport, leisure, popular journalism, and music. In the second half of the class, students will assess the impact of industrialisation and urbanisation on popular culture in order to discover how men and women coped with the industrial revolution. The class will conclude with an examination of the emergence of mass culture in the form of radio, advertising, and film in the early decades of the twentieth century.

3341B Revolutionary America, 1760-1815, seminar, 2 hrs.; J.E. Crowley

This class studies the origins of the American revolution in colonial society and politics and investigates the alterations of social, economic and political life resulting from the crises. Themes of particular interest are the popularization of politics, the social conflicts resulting in Loyalism, the development of a national political economy and constitutional tradition, and the cultural changes associated with republican government and egalitarian ideology.

3350A Family and Community in America, 1600-1800, 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.

3380 United States Foreign Policy Since 1914, 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 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.

African and Third World History

3440 African History from Oral Tradition, seminar, 2 hrs.; J.B. Webster

History 3440 is designed for those students who have a keen interest in African history. The class 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 class 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.

***3460 Modern China, 1919-1968,** seminar, 2 hrs; M. Turner

Between the May revolution of 1919 and the Cultural Revolution of 1968 China was transformed. Traditionally the sick man of Asia, China developed in the space of fifty years into a significant world power. This class studies the means by which China achieved this transformation. Particular attention will be paid to the role of the Chinese Communist party both before and after liberation in 1949 and to China's distinctive contributions to socialist economics and education.

***3490 Studies in Decolonisation,** seminar, 2 hrs; P.D. Pillay.

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: The History of Women's Liberation Struggles, seminar, 2 hrs.; J. Fingard and M. Turner

Women have been "hidden from history" for even longer than workers and blacks. In this class 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 class and opportunity will be given for students to present research papers in areas of special interest.

Other classes

***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.

***4000B Directed Readings,** Staff.

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.

Classes marked * are not offered every year. Please consult the timetable on registration to determine if these classes are offered.

History of the Sciences

* **Biology 3400/ Physics 340/ History 3050, The History of Science,** J. Farley (Biology), R. Ravindra (Physics).

* **Biology 3401A, A History of the Biological Sciences,** J. Farley.

Psychology 458, History of Psychology, J.W. Clark.

Philosophy of the Sciences

* **Philosophy 241A, Philosophy and Psychology,** T. Vinci.

* **Philosophy 242B, Philosophy and the Biological Sciences,** T. Vinci.

* **Psychology 353A or B, Philosophy of Science and Experimental Psychology,** W.K. Honig.

Biology 3410B, Man in Nature, K.E. von Maltzahn.

* **Religion 351, Religion and Science,** R. Ravindra.

Linguistics

The departments of French and German each offer classes in linguistics, details of these classes will be found under the departmental listing.

Marine Biology

The Biology Department offers an Honours Programme with specialization in Marine Biology. See *Biology* for details.

Mathematics

Professors
E. Blum
M. Edelstein
P.A. Fillmore
H. Radjavi
R. Rosen
A.J. Tingley

Associate Professors
H. Brunner
J.C. Clements
K.A. Dunn
C.A. Field
B. Garner
L.A. Grünenfelder
R.P. Gupta
C.S. Hartzman
L.L. Keener
R. Paré
W.R. Smith
P.N. Stewart (Chairman)
W.R.S. Sutherland
S. Swaminathan
K.K. Tan
H.J. Thiebaux
A.C. Thompson

Assistant Professors
T. Bollis
J. Borwein
A. Finbow
G. Gabor
R.D. Holmes
E.B. Mercer
R.J. Nowakowski
J. Phillips
J. Richman
C.C.M. Sastri
W. Schelter
A. Sedgwick
G.N. White
R.E. Woodrow

Lecturers
R. Barkhouse
B. Burnell

Postdoctoral Fellows
C. Bleecker
S. Niefield

Research Associates and Special Lecturers
S.M. Shah
R. Wood

Degree Programmes

One full credit in mathematics other than Mathematics 102 and 110 is required for a B.Sc. degree.

Mathematics as 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: Mathematics 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, Computer Science, Pure Mathematics and Statistics. Students wishing to major in Computer Science should consult the Computer Science section of the calendar.

Those students who wish to arrange inter-disciplinary programmes (with such fields as Physics, Chemistry, Biology, Engineering, Psychology and Economics; are invited to discuss their interests with the department.

Honours in Mathematics

One of the following programmes will normally be followed by students who plan to take honours in Mathematics. The cooperative programme has not yet been implemented and interested students should contact the Mathematics Department.

	Honours	Honours (cooperative programme)
year 1	100-101	100-101 and CS 140-141
year 2	213 and 250	213 (or 203 and 227), 250, 206 and CS 245-270
years 3 & 4	303, 350 and at least five additional classes in Mathematics (some (of which may be taken in year 2) at least two of which must be numbered 400 or above.	303 or 350 and at least five additional classes in Mathematics at least two of which must be numbered 400 or above. Students must also successfully complete four work terms and consequently will normally complete this programme in the fall term of their fifth year.

Students may choose programmes with a concentration in Applied Mathematics, Computer Science, Pure Mathematics or Statistics. Students who wish to concentrate in Computer Science should consider Combined Honours in Mathematics and Computer Science. 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 consists of a written paper of about 20-30 pages researched and prepared by the student during the spring term. The topic is decided on in conjunction with the supervisor of the Honours seminar. The papers are also presented to the seminar.

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.

Class descriptions for Computer Science can be found in the calendar under Computer Science.

Classes marked * are not offered every year. Please consult the timetable on registration to determine if the classes are offered.

001R Fundamentals of Mathematics, lect.: 3 hrs. (non-credit class).

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, etc.), as well as for further study in Mathematics.

These two half-classes are offered in both terms.

100A/B Differential and Integral Calculus, lect.: 3 hrs.

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 Mathematics 101.

Students are expected to attend tutorials one hour per week.

Prerequisite: Nova Scotia Mathematics 012 or equivalent.
Credit will be given for only one of Mathematics 100, 110, 112, and 128.

101A/B Differential and Integral Calculus, lect.: 3 hrs.

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.

Students are expected to attend tutorials one hour per week.

Prerequisite: Mathematics 100.

Credit will be given for only one of Mathematics 101 and 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.

Topics will include elementary number theory; finite and infinite sets; graph theory; colouring problems; elementary topology; topics from geometry.

Prerequisite: Nova Scotia Mathematics 012 or equivalent.

This class may not be used to satisfy the requirement that B.Sc. students must have at least one full university class in mathematics.

106A/B Introductory Statistics for Non-Mathematicians, lect.: 3 hrs.

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 class will be on statistical concepts, rather than mathematical manipulations.

The principal aim of the class 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 class with Mathematics 107.

Topics will include descriptive statistics, elementary probability and distributions, estimation, hypotheses testing and regression.

Mathematics 107 is a natural sequel for this class.

Prerequisite: Nova Scotia Mathematics 012 or equivalent.

107A/B Statistical Techniques of Scientific Experimentation, lect.: 3 hrs.

This class 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 class 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: Mathematics 106.

Not more than one credit will be given for Mathematics 106-107 and 206. Students planning to take higher level statistics classes are strongly advised to take Mathematics 206 instead of 106-107. However, students with a B standing in Mathematics 107 plus Mathematics 100 may then take Mathematics 334, 335, 338 or 339.

108A Introductory Statistics for Pharmacy Students, lect.: 3 hrs.

This class is designed primarily to fit the specifications of the College of Pharmacy. Most of the class is devoted to a study of elementary statistics with applications to the Health Sciences. Topics include descriptive statistics, estimation, hypothesis testing, regression and analysis of variance. The last 20% of the class is intended to prepare students for Mathematics 112B. Topics include functions and graphs, linear and quadratic equations, exponential and logarithmic functions.

Prerequisite: Nova Scotia Mathematics 012 or equivalent.

Credit will be given for only one of Mathematics 106, 108.

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 together with an introduction to matrix algebra, the simplex method, 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.

Prerequisite: Nova Scotia Mathematics 012 or equivalent.

This class may not be used to satisfy the requirement that B.Sc. students must have at least one full university class in mathematics.

112B Introductory Calculus for Pharmacy Students, lect.: 3 hrs.

This class is the sequel to Mathematics 108 and is designed primarily for Pharmacy students. Calculus is introduced and computational techniques stressed. The techniques are applied to commonly occurring functions in pharmacy: namely power, exponential, logarithmic, and S-shaped functions. Basic topics include limits and continuity, the derivative, and the definite integral. At the end of the class elementary differential equations and their application to pharmacokinetics are discussed.

Prerequisite: Mathematics 108.

Credit will be given for only one of Mathematics 100, 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 polynomials, 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: Nova Scotia Mathematics 012 or equivalent.

200R Intermediate Calculus, lect.: 3 hrs.

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: Mathematics 101.

Credit will not be given for more than one of Mathematics 200, 220, 248-249 and 250.

***202R Logic, Sets and Number Systems**, lect.: 3 hrs.

Basic concepts from set theory and logic form the basis of this class. 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: Mathematics 101.

203A/B Matrix Theory, lect.: 3 hrs.

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.

Prerequisite: Nova Scotia Mathematics 012 or equivalent.

204B Linear Algebra, lect.: 3 hrs.

Topics will include the following: vector spaces, bases, dimension, linear transformations, representation of linear transformations by matrices.

Prerequisite: Mathematics 203.

Not more than one credit will be given for Mathematics 203-204 and 213.

*** 205R Problems in Geometry**, lect.: 3 hrs.

This class will be organized around a sequence of stimulating geometrical problems. A set of approximately 20 challenging problems will be given to the students at the beginning of the year. The students are expected to attempt these problems throughout the year. Good students should be able to do some of these problems and will be encouraged to present their solutions to the class for extra credit on the final grade.

These problems will be chosen so that their solutions use a wide variety of geometrical ideas (from Combinatorial, Projective, Inversive, Transformational, Topological, Differential and Non-Euclidean Geometry). These ideas and some of the theory to go along with them will be discussed week by week with successive problems.

Prerequisite: Mathematics 101.

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 class is well-suited for any student with a knowledge of calculus who wants a basic understanding of statistical procedures and tests.

Topics include: probability, discrete and continuous random variables, sampling, sampling distributions, estimation, tests of hypotheses, regression, analysis of variance, general experimental design.

Prerequisite: Mathematics 100.

Natural sequels for this class are Mathematics 334, 335, 338 and 339.

Not more than one credit will be given for Mathematics 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.

Prerequisite: Mathematics 101.

Not more than one credit will be given for Mathematics 203-204 and 213.

220R Applied Intermediate Calculus , 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 and series of functions of two and three variables.

Prerequisite: Mathematics 101.

Credit will not be given for more than one of Mathematics 200, 220, 248-249 and 250.

227B Numerical Methods (same as Computer Science 227B) lect.: 3 hrs.

This class provides an introduction to linear systems of equations, interpolation and approximation, non-linear equations, quadrature, and ordinary differential equations. The emphasis will be on the use of numerical methods for the computer solution of such problems.

Prerequisite: Mathematics 101, 203 and Computer Science 140.

230B Introduction to Models of Applied Mathematics, lect.: 3 hrs.

This class provides an introduction to the application of mathematics in the social and life sciences. About six problems will be analyzed by developing and solving mathematical models. Deterministic, axiomatic, probabilistic, and simulation models will be covered. Areas from which the problems will be drawn include assignment and transportation problems, measurement theory, social choice, conflict resolution, inventory management, queuing, epidemiology, and resource management.

Prerequisite: Mathematics 101 and Computer Science 140.

248A/249B Intermediate Calculus for the Four-Year Engineering Programme.

Mathematics 248A has three lecture hours and three tutorial hours each week.

Topics include functions of several variables, partial derivatives, multiple integrals, indeterminant forms, improper integrals, matrices and linear equations.

Mathematics 249B has four lecture hours and two tutorial hours each week.

Topics include infinite series, power series, Taylor and MacLaurin series, complex valued functions, ordinary differential equations and an introduction to Laplace transforms.

Prerequisite: Mathematics 129.

Credit will be given for only one of Mathematics 203, 248.

250R Introductory Analysis, lect.: 3 hrs.

Mathematics 250 is designed for honours students and other serious students of mathematics. This class forms the first half of a 2-year sequence in analysis and advanced calculus; Mathematics 350 completes the sequence.

Topics included in the class: 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 Mathematics 101 and concurrent registration in Mathematics 213.

Credit will not be given for more than one of Mathematics 200, 220, 248-249 and 250.

254B Basic Set Theory, lect.: 3 hrs.

This class 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: Mathematics 100.

260B Theory of Interest, lect.: 3 hrs.

This class 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 Examination 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 class should appeal to students in mathematics, economics and commerce. Students interested in an actuarial career should take this class and are urged to consult the department for guidance in class selection and additional information.

Prerequisite: Mathematics 101 or 110.

280A Applied Mathematics for the Life Sciences, lect.: 3 hrs.

This class is intended to prepare students for the mathematical aspects of advanced courses in ecology, genetics, and physiology. Topics covered include: complex numbers, vector spaces, discrete mathematics and linear algebra, and differential equations. Students will be introduced to each area through examples drawn from various areas of biology.

Prerequisite: Mathematics 100. *Recommended:* Biology 1000.

Mathematics majors may not apply credit for Mathematics 280 towards the major requirements, although they may take Mathematics 280 as an elective.

300R Advanced Calculus, lect.: 3 hrs.

This class will continue the study of functions of several variables as introduced in Mathematics 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 Mathematics 350.

Prerequisite: Mathematics 200.

Not more than one credit will be given for Mathematics 300, 328, 350.

*** 301A Mathematical Logic,** lect.: 3 hrs.

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: Mathematics 200 and 204.

*** 302A Set Theory and Foundations of Analysis**, lect.: 3 hrs.

This class 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, the axiom of choice and its equivalents, and axiomatics in set theory.

Prerequisites: Mathematics 200 and 213 (or 204).

303R Abstract Algebra, lect.: 3 hrs.

In this first class 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: Mathematics 204 or 213.

304B Metric Spaces and Elementary Topology, lect.: 3 hrs.

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: Mathematics 200 and 213 (or 204).

*** 305R Differential Geometry and Tensor Analysis**, lect.: 3 hrs.

The material presented in this class 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: Mathematics 200 and 213 (or 204).

*** 307B Theory of Numbers**, lect.: 3 hrs.

The following topics will be discussed: 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.

Prerequisite: Mathematics 204.

308A Introduction to Complex Variables, lect.: 3 hrs.

This class introduces 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: Mathematics 200.

311A Differential Equations, lect.: 3 hrs.

One of the aims of this class 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 class 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: Mathematics 200.

312B Differential Equations, lect.: 3 hrs.

The topics discussed in this class 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: Mathematics 311.

320R Introduction to Numerical Analysis (same as Computer Science 320R), 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).

Prerequisites: Mathematics 200 and 227.

328R Applied Mathematics for Engineers, lect.: 3 hrs.

This class 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) linear 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: Mathematics 200 or 220.

Credit will not be given for more than one of Mathematics 300, 328, 350.

330A Linear and Integer Programming, lect.: 3 hrs.

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: Mathematics 200, 203.

331B Discrete and Dynamic Programming, lect.: 3 hrs.

This class extends the variety of optimization models of Mathematics 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: Mathematics 330.

*** 332A Applied Group Theory,** lect.: 3 hrs.

This interdisciplinary half-class is intended for third and fourth year undergraduate and first year graduate students in Chemistry, Mathematics and Physics. With some additional reading in Physics, it is equivalent to Physics 448A. Topics include: review of matrices, fundamentals of groups, normal subgroups, homomorphisms, representations, character, orthogonality, symmetry groups in crystallography, role of symmetry groups in quantum physics and chemistry, normal modes and molecular vibrations.

Prerequisites: Mathematics 200, 203.

*** 333B Graph Theory and Combinatorics**, lect.: 3 hrs.

The following topics will be discussed: 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.

Prerequisites: Mathematics 200, 204.

*** 334A Regression and Analysis of Variance**, lect.: 3 hrs.

This class provides 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, analysis of variance models and an introduction to non-linear least squares.

This class will make extensive use of computer packages.

Prerequisite: Mathematics 100, 206 or 106/107 with a grade of B or better. Some knowledge of matrices will also be assumed.

*** 335B Applied Multivariate Analysis**, lect.: 3 hrs.

The class 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, categorized data, analysis of interdependence, structural simplification by transformation or modeling, and hypothesis construction and testing.

Prerequisite: Mathematics 100, 206 or 106/107 with a grade of B or better.

*** 336A Probability**, lect.: 3 hrs.

This class is intended to engender an understanding of the basic concepts of probability, and to illustrate the great variety of practical applications of probability in 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.

Prerequisites: Mathematics 200 and 206.

*** 337B Stochastic Processes**, lect.: 3 hrs.

This class 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. There will be an emphasis on practical applications. The ability to translate from a physical context into the language of a probability model will be stressed.

This class is a natural sequel to Mathematics 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.

*** 338B Sample Survey Methods**, lect.: 3 hrs.

This class deals with the 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: Mathematics 100, 206 or 106/107 with a grade of B or better.

*** 339B Non-parametric Methods**, lect.: 3 hrs.

This class 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, and the comparison of more than two treatments including randomized complete blocks.

Prerequisite: Mathematics 100, 206 or 106/107 with a grade of B or better.

350R Intermediate Analysis, lect.: 3 hrs.

Mathematics 350 continues the analysis sequence begun in Mathematics 250.

Topics include: 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.

Prerequisite: Mathematics 213, 250.

Credit will be given for only one of Mathematics 300, 328 and 350.

*** 360A Data Structures,** lect.: 3 hrs. (same as Computer Science 360A).

*** 370B Operating Systems,** lect.: 3 hrs. (same as Computer Science 370B).

*** 390B Introduction to the Theory of Computing,** lect.: 3 hrs. (same as Computer Science 390B).

401A Introduction to Measure Theory and Integration, lect.: 3 hrs.

This class will discuss Lebesgue'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, Lebesgue measure and the existence of non-measurable sets; the Lebesgue integral; differentiation of monotonic functions (e.g. the Cantor function), absolute continuity, the classical L^p spaces, Fourier series.

Prerequisite: Mathematics 350.

402B Analytic Function Theory, lect.: 3 hrs.

This is a second half-class 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, including the Riemann mapping theorem.

Prerequisites: Mathematics 300, 308.

403R Advanced Abstract Algebra, lect.: 3 hrs.

This second class 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: Mathematics 303.

*** 405R Introduction to Algebraic Geometry**, lect.: 3 hrs.

This class provides an introduction to the basic concepts of algebraic geometry. Topics include: irreducible algebraic sets, the Zariski topology, affine varieties, pre-varieties, dimension, spec, affine schemes, pre-schemes.

Prerequisite: Mathematics 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 class 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, and the applicability of the results will be stressed.

The topics covered will include the following: point estimation, consistent, sufficient, efficient and unbiased parameters, method of maximum likelihood, method of least squares, method of moments, method of minimum chi-square, 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: Mathematics 200 and 206.

*** 410B Statistical Decision Theory,** lect.: 3 hrs.

Statistics may be 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 consequence in various circumstances.

The central ideas of statistical decision making models will be studied in this class: general decision problems, Bayers and minimax solution of decision problems, admissibility, invariance, sequential decision rules, testing as a decision problem empirical Bayers rules.

Prerequisites: Mathematics 203, 206 and consent of instructor.

*** 412R Ordinary Differential Equations**, lect.: 3 hrs.

This class is intended to be of interest to physicists and biologists as well as mathematicians. No previous class in differential equations is necessary. The class 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, the Poincare-Bendixson theorem and non-autonomous equations.

Prerequisite: Mathematics 350.

*** 414A Introduction to Functional Analysis**, lect.: 3 hrs.

This class provides 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: Mathematics 213 and 304.

*** 415B Functional Analysis**, lect.: 3 hrs.

Topics include: 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: Mathematics 414.

*** 416B Operator Theory**, lect.: 3 hrs.

This class provides 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; and the spectral theorem.

Prerequisites: Mathematics 401 and 414.

*** 417A Introduction to General Topology**, lect.: 3 hrs.

This class provides an introduction to topological spaces and includes the following topics: classification in terms of cardinality of bases, separation, etc., product spaces, Tychonoff theorem, compactness, compactifications, Tychonoff spaces, metrization.

Prerequisite: Mathematics 304.

*** 418B Introduction to Algebraic Topology**, lect.: 3 hrs.

This class introduces algebraic topology and includes the following topics: homotopy type and the fundamental group, geometry of simplicial complexes, homology theory of complexes, chain complexes, homology groups for complexes, subdivision, induced homomorphisms, axioms for algebraic topology, singular homology, the singular complex, properties of cell complexes.

Prerequisite: Mathematics 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 and Fourier and Laplace transforms) 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: Mathematics 311.

*** 430A Optimal Control Theory and Applications**, lect.: 3 hrs.

Initially the classical 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: Mathematics 300.

*** 431B Nonlinear Programming**, lect.: 3 hrs.

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 class is a basic prerequisite for understanding and contributing to recent developments in mathematical programming.

Prerequisite: Mathematics 300.

*** 462B Data Analysis,** lect.: 3 hrs.

Many aspects of the application of statistics to research problems do not arise naturally out of technique-oriented classes in statistics. This class is a problem-oriented approach to statistical analysis. The problems discussed will be based on real life data and an attempt will be made to expose the general underlying principles that are required for the specific analysis.

Students will be encouraged to develop novel approaches for data analysis problems of the case studies. It is expected that the students will work on the problems that interest them most. Some general techniques which arise in non traditional data analysis will be presented in the class. Students will be required to make a formal presentation of their work, which may involve data analysis of the case studies, or it may be mathematical development motivated by the case studies.

Prerequisites: Statistical techniques useful as background for this class would include any techniques covered in Mathematics 206, 334, 335, 336, 337, 338 or 339 although it is not necessary to have taken all of these prerequisites. Admission to the class 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 Mediaeval 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)

Microbiology

Professors
K.R. Rozee (Head)
K.B. Easterbrook
L.S. Kind
C.E. vanRooyen (Emeritus)

Associate Professors
J.A. Embil
S.H.S. Lee
D.E. Mahony
E.S. McFarlane
C. Stuttard

Assistant Professors
G.C. Johnston
R.S. Martin
D.B. Stoltz

Lecturers
R. Rajaraman
G. Faulkner

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 M.L. Cameron (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

Biology 4100A, Marine Microbiology

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, C. Stuttard.

This class introduces the basic concepts of microbiology through lectures, laboratory sessions, and demonstrations. Topics to be examined include the structure, ecology, growth, genetics and physiology of microorganisms, as well as basic immunology . This course is a prerequisite for all the other microbiology classes listed below, with the exception of 302 and 3023A. 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 either Biology 3111B or Microbiology 3118B 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 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 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.

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: Grade of B– or better in 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 biennially, commencing January 1980.

4040R The Mammalian Cell as a Microorganism; lect., 2 hrs.; lab., 3 hrs.; R. Rajaraman.

This class consists of an in-depth analysis of recent advances in cellular and molecular biology in relation to the mammalian cell viewed as a microorganism. Various aspects of cell biology including life span, cell cycle, cytogenetics, somatic cell genetics, neoplasia, differentiation and aging will be discussed. Laboratory exercises and projects include general principles of cell culture, cell cycle analysis, cytogenetics, cell fusion, cell transformation and detection of cellular antigens by immunofluorescence.

Prerequisite: Permission of instructor.

4114B: Topics in 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. Grade of B– or better in 3114A.

4115B: Topics in 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.

4700: Special Topics

Consult department.

4900: Honours Research and Thesis.

Music

Professor
W.H. Kemp (Chairman)

Associate Professors
R. Byham (History and Keyboard Skills)
D. Farrell (Theory)
J. Morris (Voice)
S. Tittle (Theory and Composition)
W. Valleau (Cello)
D. Wilson (History)

Assistant Professors
P. Djokic (Violin)
C. Ford (Theory and Composition)
E. Gonnella (Voice)
L. Stodola (Piano)
C. van Feggelen (Guitar and Lute)

Lecturer
T. Zonneveld (Piano)

Part-Time Faculty

Music Education Lecturers
J. Armitage
K. Dimock
J. Harmer
A. Manicom
H. Schoales

Special lecturers and Musicians
B. March
D. Palmer
J. Sorenson
A. Tilley
W. Tritt

Applied Skills Instructors
P. Cooper (saxophone)
E. DuBois (flute)
P. Evans (recorder)
J. Faraday (percussion)
F. Graham (organ)
M. Graham (harpsichord)
A. Krabill (oboe)
D. Krabill (bassoon)
S. Piercey (voice)
J. Rapson (clarinet)
D. Reach (guitar)
J. Riedel (trombone)
B. Robinson (double bass)
R. Starr (French horn)
J. Stern (trumpet)

There is a great difference between liking 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 non-specialist student who wishes to increase both 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.

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 could qualify for enrolment in Music 0100 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 required to take preparatory lessons in music theory before entering a university music programme and/or be placed in a remedial section of Music 1200.

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 to ensure admission and scholarship consideration.

Students wishing to transfer from another institution into the Second or Third Year of their chosen Music programme must take validation examinations in theory, aural and keyboard skills before transfer of credits can be considered. Failure to pass an examination will necessitate enrolment in the appropriate First or Second Year class.

Bachelor of Music (B. Mus.)

The *B. Mus.* is a four-year programme with sixteen out of twenty classes in music, plus graduation requirement. Upon successful completion of the second year, students may choose to concentrate in performance, music history and literature, or composition.

Common Curriculum

First Year
1100R Applied Skills
1300R Survey of Music Literature
1200R Theory 1
1270C Aural Perception I
1271C Keyboard Skills I
Arts and Science Elective, one full credit (Writing Course Elective)

Second Year
2100R Applied Skills
2300R History of Music I
2200R Theory II
2270C Aural Perception II
2271C Keyboard Skills II
Arts and Science Elective, one full credit

Concentration in Performance

Third Year
3100R Applied Skills
3300R History of Music II
3280C Counterpoint
3282C Orchestration
Music Elective, one full credit
Arts and Science Elective, one full credit

Fourth Year
4100R Applied Skills
4300R Contemporary Scene
4280C Advanced Harmony and Counterpoint
4281C Form and Analysis
Music Elective, one full credit
Arts and Science Elective, one full credit
4199R Graduation Recital

Concentration in Composition

Third Year
3100R Applied Skills
3300R History of Music II
3280C Counterpoint
3282C Orchestration
3210R Composition
Arts and Science Elective, one full credit

Fourth Year
4300R Contemporary Scene
4280C Advanced Harmony and Counterpoint
4281C Form and Analysis
4210R Composition
Music Elective, one full credit
Arts and Science Elective, one full credit
4299R Graduation Composition

Concentration in History and Literature

Third Year
3100R Applied Skills
3300R History of Music
3280C Counterpoint
3282C Orchestration
3310R Music in Canada

Fourth Year
4300R Contemporary Scene
4280C Advanced Harmony and Counterpoint
4281C Form and Analysis
4368A & 4369B Special Studies
Music Elective, one full credit
Arts and Science Elective, one full credit
4399R Graduation Thesis

Standards:

1. a) All students wishing to enter the third year of the B.Mus. programme must achieve an overall average of B- in the music classes of the first and second years, including a minimum standing of C in both Music 1200 and 2200 and a minimum of B- in Music 2100.
   b) Students wishing to enter the concentration in performance must achieve an average of B+ in Music 1100 and 2100; in history and literature, an average of B+ in Music 1300 and 2300, and demonstrate acceptable writing ability; in composition, submit one or more original pieces for assessment by the composition faculty.
2. a) Students in the B.Mus. programme are expected to maintain a minimum standing of B- in each of the music classes of the third and fourth years.
   b) Students who at the end of the third year have not obtained at least five credits of B or better in their music classes above the 1000 level will not be admitted to the fourth year without the explicit recommendation of the Department and the prior approval of the Committee on Studies.
   c) Students must achieve a minimum standing of C in each of their Arts and Science electives.

Bachelor of Music Education (B.Mus.Ed.)

The *B.Mus.Ed.* is a four-year course combining instrumental or vocal instruction, basic theoretical aural and keyboard skills, historical knowledge, and the methods, techniques and repertoires needed by the teacher in the elementary and/or secondary school. Observation and practice in community

classroom settings constitute an important part of the programme. Students entering third year choose between curricula in Classroom Music and Instrumental Music. The *B.Mus.Ed.* leads to certification by the Nova Scotia Department of Education.

Common Curriculum

First Year
1100R Applied Skills
1300R Survey of Music Literature
1200R Theory I
1270C Aural Perception
1271C Keyboard Skills
Arts and Science Elective, one full credit (Writing Course Elective)

Second Year
2100R Applied Skills
2200R Theory II
2270C Aural Perception II
2271C Keyboard Skills II
One of: 2300R, 3300R, or 4300R; History I, II, or Contemporary Scene
Education 4340R Developmental Psychology

Classroom Music

Third Year
3101R Applied Skills
3400R Elementary Methods
3470C Field Experience
4460A Choral Conducting and Literature
One half-credit elective in Music Education
The equivalent of one and a half credit electives in Music or Music Education.

Fourth Year
4101R Applied Skills
4400R Secondary Methods
4470C Field Experience
One-half credit elective in Music Education
The equivalent of two full-credit electives in Music or Music Education.

Instrumental Music

Third Year
3101R Applied Skills
3282C Orchestration
Either 3480 C Band Instruments, *or*
3481C String Instruments
Either 3400R Elementary Methods
3470C Elementary Field Experience
or 4400R Secondary Methods
4470C Secondary Field Experience
The equivalent of one and a half credit electives in Music or Music Education.

Fourth Year
4101R Applied Skills
4460C Choral, Band and Orchestral Arranging
Either 4450A Band Teaching Methods
4451B Band Field Experience
or 4453A String Teaching Methods
4454B String Field Experience
One half-credit elective in Music Education
The equivalent of two full-credit electives in Music or Music Education.

Standards

1. All students wishing to enter the third year of the B.Mus.Ed. programme must achieve an overall average of B- in the music classes of the first and second years, including a minimum standing of C in both Music 1200 and 2200, and a minimum of B- in Music 2100.
2. See *Arts and Science General Faculty Regulations (Item 3)*

Other Requirements, B.Mus. and B.Mus. Ed.:

1. All students enrolled in Applied Skills classes play before a jury at the conclusion of the academic year.
2. With special permission, a student in the B.Mus.Ed. programme may give a graduation recital.
3. With the permission of the Department, a student in the B.Mus.Ed. programme may enroll in additional Education classes to the maximum equivalent of one full credit elective.
4. All students in the four years of the B.Mus. and B.Mus.Ed. programme are required to participate on a regular basis in an ensemble (Chorale, Chamber Choir, Brass Ensemble, Concert Band, Jazz Band, Guitar Ensemble, other instrumental chamber ensembles, Musica Antiqua).

One Year Certification Programme

Students with an appropriate undergraduate degree may apply to take a one-year course leading to certification by the Nova Scotia Department of Education. Details are available from the Music Department.

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 complete Music 1100R, 1300R, 1200R, 1270C and 1271C before entering the third year. Other classes, to a maximum total of 6 full credit classes, may be selected in consultation with the Department to suit a student's individual needs and interests. Music Education classes 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 wishing to transfer from another institution into this course may be required to enrol in an Applied Skills Class at the First-Year level, depending upon the standard of their performance proficiency demonstrated in the audition-interview.

Classes for Non-Majors

Classes offered as arts electives for non-majors are as follows:
1000R Man and His Music
2007R Guitar and Lute
2088C Electronic Composition
2089C Experimental Music
4400R The Contemporary Scene
2010R Music of Non-Western Cultures
2011R History of Opera
2012R Music and Psychology
2013R The Evolution of Jazz

Applied Skills classes 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

Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered.

A. History and Literature of Music

1.) *History:*

1300 Survey of Music Literature, lect: 3 hrs.; D. Wilson

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.

2300 History of Music I, lect: 3 hrs.; D. Wilson

A study of the history, literature, craft and practice of music in the Middle Ages, Renaissance and Baroque.

Prerequisite: 1300, or permission of the Department

3300 History of Music II, lect: 3 hrs.; R. Byham

A study of the history, literature, craft and practice of music after 1750, the age of tonality; Classicism and Romanticism in music.

Prerequisite: 2300, or permission of the Department

***3310 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: 1300, or permission of the Department

***3311 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

***2310 Music in non-Western Cultures,** lect: 3 hrs.

This class will examine the functions and styles of traditional musics outside the Western traditional repertoire of composed music.

Prerequisite: permission of the Department.

***3312 Music and Psychology,** lect: 3 hrs.

In this class will be examined the interrelationship of music and psychology, as it relates to and informs the listener, student, educator and professional musician. Topics include: a) the perception of tones as a foundation for the appreciation of musical experiences, music as passing time and as information; b) musical taste and aesthetics from a psychological point of view; c) the social psychology of music; d) theories of learning and of behaviour as appropriate to musical training and performance; e) the diagnostic and evaluative testing of musical aptitude and ability; f) the function of music in therapy and in special education.

A working knowledge of musical notation is a prerequisite to this study; no previous classes in Psychology are necessary.

Prerequisite: permission of the Department.

***3313 The Evolution of Jazz,** lect: 3 hrs.

A survey of the historical and social background of jazz and its musicians. The evolution of jazz styles will be illustrated in live performances as well as on recordings. A knowledge of musical notation is not a prerequisite to this class.

4300 The Contemporary Scene, lect: 3 hrs.; S. Tittle

This class will attempt to develop an understanding of the main trends in 20th century "serious" music, with particular emphasis on "new" musical practices. The class also may include opportunities for performance/composition-oriented activities in contemporary styles.

Prerequisite: permission of the Department and an interview with the instructor.

4368A & 4369B Special Studies

Individually directed research and writing under the supervision of an appropriate member of the Department.

Prerequisite: 2300 and 3300

4399 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.

***3350A Keyboard Music to 1750**

***3351B Piano Literature, 19th and 20th Centuries**

***3352A Chamber Music, to 1800**

***3353B Chamber Music, 19th and 20th Centuries**

***4370C The Organ and its Literature**

B. *Theory and Composition*

1.) *Theory and Related Skills*

1200 Music Theory I, lect: 3 hrs.; D.M. Farrell

In the first term a thorough knowledge of musical rudiments is presumed. The class 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.

1270C Aural Perception I, lab: 3 hrs.; D.M. Farrell

A class designed to correlate with 1200 and 1271C. 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

1271C 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

2200 Music Theory II, lect: 3 hrs.; C. Ford

This class is a continuation of 1200, 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 counter-point in two voices will be offered to develop skill in polyphonic writing.

Prerequisites: 1200, 1270C, 1271C

2270C 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 2200.

Prerequisites: 1200, 1270C, 1271C

2271C Keyboard Skills II, lab: 3 hrs.; R. Byham

A continuation of 1271C.

Prerequisite: 1271C

3280C 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: 2200

3282C 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: 2200, 2272C

4280C 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: 2200 and 3280C

4281C Form and Analysis, lect: 2 hrs.

Analytic study of the form and content of selected compositions in various styles and idioms.

Prerequisites: 2200 and 3280C

2.) *Composition*

3210, 4210 Composition I, II
Particular works will be analysed to serve as a springboard for original composition by the student. Students' works will be evaluated in small group discussions and in individual tutorial sessions.

Prerequisites: permission of the Department, an interview with the instructor, and the submission of a folio of original compositions for assessment by the composition faculty.

2089C Fundamentals of Electronic Composition, lab: 2 hrs.; S. Tittle

Introduction to the Experimental Sound Studio. Recording, mixing and tape manipulation techniques; analysis and composition of tape music. Voltage control concepts, synthesizer theory and practice; composition and live performance with electronics.

Prerequisite: personal interview with instructor.

Normal co-requisite: 2089C

2089C Experimental Music, lab: 2 hrs.; S. Tittle

Historical background and aural analysis. Group improvisation and composition with both Studio and personal resources. Design and execution of live performance situations, which may include verbal, visual and other theatrical elements.

Prerequisite: personal interview with instructor.

Normal co-requisite: 2088C

***4271C Advanced Improvisation and Keyboard Harmony**

Intended for keyboard students, the class involves the development of skills in transposition, score reading, and continuo realization.

Prerequisite: permission of the Department and an interview with the instructor.

4282C Choral, Band and Orchestral Arranging

See **4482C,** *Music Education*

4299 Graduation Composition

C. *Performance*

0100 Probational Applied Skills

A non-credit class restricted to students proposing to complete the first year of 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 1000 level.

Through a jury examination at the completion of the class, or, with special permission of the instructor, at the end of the first term, the student must satisfy the admission standards of the Department in order to qualify for enrolment in the sequence of Applied Skills courses.

This class may be taken only once.

1100, 2100, 3100, 3101, 4100, 4101, Applied Skills

Offered in all band and orchestral instruments, guitar and lute, piano, organ, harpsichord, recorder, voice.

Normally all students receive one hour weekly individual lesson in their major performance idiom.

1102, 2102, 3102, 4102 Second Applied Skill

With special permission of the Department, a student enroled in a music degree programme may study a second performance idiom. Required standards of entrance and achievement are the same as those for the major applied skill.

1170C, 2170C, 3170C, 4170C Partial Applied Skill

As above, but with individual lessons the equivalent of one hour every two weeks.

Note: 1. The various levels of applied study indicate the year of study in the Department and are not intended solely as an indication of relative standard. Term gradings are based upon progress as well as upon the actual performing standard displayed in the jury examination.

2. In addition to the one-hour lesson, and appropriate to the idiom, group instruction in technique and repertoire is a required part of all sequences of Applied Skills classes.

3150A, 3151B, 4150A, 4151B Opera Workshop, lab: 4 hrs.

Study and performance of selected opera scenes. Students have the opportunity to experience basic principles of stagecraft and to participate in stage productions.

Prerequisites: permission of the Department; concurrent vocal studies.

4199 Graduation Recital

D. *Music Education*

Prerequisites for all classes: permission of the Department, and an interview with the designated member of the Music Education faculty.

1.) *Core Classes*

3400 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.

3470C Classroom Field Experience

Practicai application in elementary schools of skills explored in 3400, including observation.

3480C Band Instruments, lab: 2 hrs.; staff.

A practical introduction to the principal band instruments. Group instruction will be offered in flute, oboe or bassoon, saxophone, trumpet or French horn, trombone, and percussion. This class normally is restricted to students majoring in wind, brass or percussion instruments.

3481C String Instruments, lab: 2 hrs.; staff

A practical introduction in group lessons to the instruments of the string orchestra. This class normally is restricted to students majoring in a string instrument.

4400 Secondary Teaching Methods, lect: 3 hrs.; J. Harmer

Exploration of different methods of teaching the various facets of music in the secondary school.

4470C Classroom Field Experience

Practical application in secondary schools of skills explored in 4400, including observation.

4486C Band Teaching Methods, lect: 2 hrs.; J. Armitage

A survey of the principles of conducting, rehearsal methods, literature, purchase and maintenance of band instruments; specific band methods for schools.

4487C Band Field Experience

Three weeks of supervised band leadership practice in the school setting.

4488C String Teaching Methods, lab: 2 hrs.

A survey of the principles of conducting, rehearsal methods, literature, purchase and maintenance of string insturments, specific string methods for schools.

Prerequisite: Music 3481C or permission of the Department.

4489C String Field Experience

Three weeks of supervised string teaching practice in the school setting.

2.) *Electives*

4460A Choral Conducting and Literature, 2 hrs.; K. Dimock

Basic principles of choral conducting and voice production; a survey of repertoire suitable for the school setting.

4471C 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.

***4473C Contemporary Music in the Classroom,** lect: 2 hrs.; A. Tilley

A study of certain specific 20th-century works and trends; active music making in the classroom; survey of the literature related to the use of contemporary music materials in the classroom (Schafer, Self, Paynter, etc.)

***4474C The Recorder in the Classroom,** lab: 2 hrs.; P. Evans

Technique, methods, and literature of the recorder family as applied in the school setting.

***4475C Classroom and Recreational Instruments,** lab: 2 hrs.; staff

Basic techniques, methods, maintenance and literature of various portable instruments (ukulele, zither, autoharp, percussion, etc.) suitable to their creative application in school and recreational settings.

***4482C Choral, Band and Orchestral Arranging,** lect: 2 hrs.; D.M. Farrell, H. Schoales

Arranging for the school choral and instrumental ensemble.

Prerequisite: 3282C

Classes Available to Non-Majors

1000 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 notation 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.

2007 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

The following classes, previously described are also available:

2088C = 2288C Electronic Composition
2089C = 2289C Experimental Music
*2010 = 2310 Music of Non-Western Cultures
*2012 = 3312 Music and Psychology
*2013 = 3313 The Evolution of Jazz
2014 = 4300 Contemporary Scene

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 the University and civic community by audition. Works performed in the 1979-80 season included Berlioz's *Roméo et Juliet*, Orff's *Carmina Burana* and Bach's *St. John Passion.*

Other ensembles sponsored by the Department include the Dalhousie Concert Band (Director, Brian March), the Dalhousie Brass Ensemble (Director, Jeffrey Stern), the Dalhousie Chamber Orchestra (Director, Philippe Djokic), the Dalhousie Jazz Band (Director, Don Palmer), the Musica Antiqua (Director, David Wilson), the Opera Theatre, and several instrumental chamber ensembles such as a woodwind quintet and saxophone quartet.

Philosophy

Professors
A.H. Armstrong
D. Braybrooke
W.F. Hare
F.H. Page
R.P. Puccetti

Associate Professors
S.A.M. Burns
R.M. Campbell
I.A. MacLennan
R.M. Martin
P.K. Schotch (Chairman)

Assistant Professors
S. Sherwin
T. Tomkow
T. Vinci

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
106 Science in Today's World
107 Justice, Law, and Morality
108 Ethics in the World of Business

These classes will share some meetings with corresponding classes in the 200-level, but students who take them at the 100-level may 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 may fulfill the Faculty "Writing Requirement". (Check with the Department.

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, provided that they have not taken the corresponding class at the 100-level.The 200-level Exploratory Classes are:

201 Great Philosophical Problems
202 Great Philosophers
203 Death and the Mind
206 Science in Today's World
207 Justice, Law, and Morality
208 Ethics in the World of Business
211 Symbolic Logic
213 Principles of Logic
215 Language and Reasoning (half-year)
216 Philosophical Issues of Feminism (half-year)
217 Existentialism
218 Philosophy of Education
220 Philosophy of Religion
225 Religion and Human Behaviour
226 Philosophy and Art (half-year)
241 Philosophy of Psychology (half-year)
242 Philosophy of Biology (half-year)
254 Does History Make Sense? (half-year)
255 The Marxist Approach to Historical Change (half-year)
266 Chance and Choice (half-year)
270 Philosophy in Literature
275 Right or Wrong
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 of 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
315 Self-Deception (half-year)
330 Philosophy of Language
335B Ancient Philosophy
344 Personal Identity
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 to VI Century A.D.
338 History of Mediaeval 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 Seminars
451 Topics in the Philosophy of Language
460 Contemporary Theories of Religion
465 Philosophy of Science
499 Directed Reading

Degree Programmes

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 down through the ages.

102 Great Philosophers 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.

103 Death and the Mind R.P. Puccetti
An enquiry into the nature of death, the possibility of sur-

vival, immortality and reincarnation, and the relevance of belief in an afterlife to the way we live our lives.

106 Science in Today's World Staff
This class will examine the nature and philosophical implications of modern science.

107 Justice, Law, and Morality 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)

108Ethics in the World of Business D. Braybrooke
Business practices, like the conduct of individual businessmen (and women), vary in being sometimes in accord with moral principles, sometimes at odds with them. Where in business is it easiest to be scrupulous—and kind? Where is it hardest? Could things be changed for the better, and if so, what would be involved?

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.

206 Science in Today's World
See description for 103, above.

207 Justice, Law, and Morality D. Braybrooke
See description for 107, above.

208 Ethics in the World of Business D. Braybrooke
See description for 108, 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 Staff
Students are introduced to an artificial language constructed so as to make the operations of reasoning more precise.

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.

215 Language and Reasoning (half-year) T. Tomkow
Attention is devoted primarily to the study of reasoning in the English language.

216 Philosophical Issues of Feminism (half-year) 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 Staff
An examination of works of four major philosophers in the existentialist tradition: Kierkegaard, Nietzsche, Sartre, and Heidegger.

218 Philosophy of Education W. Hare
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 S.A.M. Burns
Examines questions such as: what is art? are judgements of artistic value absolute or relative? by what standards should works of art be judged?

241A Philosophy of Psychology T. Tomkow
What are the philosophical presuppositions of the scientific study of the mind?

242B Philosophy of Biology R. Campbell
What are the philosophical presuppositions of biology?

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?

255B Marxist Theory 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. (Same as Pol. Sci. 2455B)

266A 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.

275 Right or Wrong R.M. Martin
How can one solve moral problems that arise from situations found in everyday life, like suicide, abortion, sexual exploitation, violence, discrimination, and unfair business tactics?

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 T. Vinci
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 P.K. Schotch
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 main 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.

330B Philosophy of Language R.M. Martin
What does it mean to say that the elements of language have meaning? *Prerequisite:* Any Exploratory Class.

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)

344 Personal Identity R.P. Puccetti
A consideration of what it is to be one and the same person through time, of the roles of memory and bodily continuity in this, and of the concept of a person. (Formerly Phil 345 Problems of Self.)

351B Philosophy of the Social Sciences D. Braybrooke
An examination of the philosophical questions about the presupposition, aims, and methods of the social sciences, for example, whether the quantitative methods of the natural sciences are appropriate in the social sciences. (See Pol. Sci. 3496B for fuller description.)

361A The Rationalists S.A.M. Burns
Descartes, Leibniz, and Spinoza. *Prerequisite:* Any Exploratory Class.

362A The Empiricists S.A.M. Burns
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 (half-year) Staff
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 Mediaeval Philosophy R. Crouse
Anselm, Aquinas, Ockham, some XIII Century Augustinians and Averroists and late Mediaeval mystics will be studied most closely; attention will be given to related political, literary, and theological concerns. (Same as Classics 338)

408B Seminar in Exact Philosophy P.K. Schotch
Application of the techniques of formal logic to philosophical issues. Principal subjects: ethics (Deontic logic), philosophy of science (logic of empirical theories), logic of possibility and necessity.

419A Topics in the History of Philosophy Staff
Subject will change from year to year. *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.

446 Mind and Brain R.P. Puccetti
An interdisciplinary approach, combining philosophical analysis and neuroscientific data, to current controversies about the relation between brain function and conscious experience such as why consciousness evolved and whether it is singly or doubly organized in the normal human brain.

447 Utilitarianism, Classical Liberalism, and Democracy (half-year) 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 combination 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. 4479 and Econ. 4446)

448 Social Choice Theory (half-year) 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 447. (Same as Pol. Sci. 4480 and Econ. 4448)

449 The Logic of Questions, Policy Analysis, and Issue Processing (half-year) 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 447. (Same as Pol. Sci. 4490 and Econ. 4449)

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.

499 Directed Reading (half- or full-year) 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.

Physics

Professors
M.G. Calkin
D.J.W. Geldart
C.K. Hoyt
M.H. Jericho, (George Munro Professor of Physics)
D.B.I. Kiang (Chairman)
G.F.O. Langstroth
R.H. March

Associate Professors
B.L. Blackford
J.G. Cordes
D.F. Goble
W. Leiper
B.E. Paton
R. Ravindra
P.H. Reynolds
A.M. Simpson
C.G. White

Assistant Professors
G. Stroink
D.A. Tindall

MacGregor Research Associate
C. Blaauw
J.T. Folinsbee

Instructor
F.M. Fyfe

Demonstrator
T.R. Dyer

Engineering-Physics
Professors
H.W. Jones (Director)
H.W. King

Associate Professor
S.T. Nugent

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 seemingly 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.

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 all give a general introduction to physics, but each has its own particular approach and selection of topics. Only one of them may be used for credit towards a degree.

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 health sciences.

Physics 129B is primarily for students headed for the study of Engineering.

Degree Programmes

Bachelor's 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 130 will not normally be included in a 'Major'. Physics 245, 340, 402B may not be included in a 'Major'. At least two 300-level classes must be included.

B.Sc. Major in Physics (example only, other possibilities exist):

Year I, 110 (Math 100A & 101B), science, arts, elective.
Year II, 220A, 221B, 230A, 233B (Math 200 or 220), science, elective.
Year III, Two 300-level Physics classes; one additional Physics class is recommended; electives.

B.Sc. Major in Physics, with Diploma in Engineering.
The physics content of this programme might be as follows:
Year I Physics 110
Year II Physics 220A, 221B 230A, 233B
Year III Physics 316A, 317B, 334A, 335B
Other possibilities exist.

For the remainder of the programme, consult the Engineering Department.

Geophysics
For those interested in Geophysics, refer to classes 427A, 428B, and 429B, listed under Geology.

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. Mathematics 311A, 312B.
13-15. Three Physics classes, including 300A, 301B, 314A, 320A, 321B.

Year IV
16. Arts, science or mathematics elective.
17-20. Four physics classes at the 400 level including 400B, 409A, 410B, 416A, 415A, 423B. A thesis and a comprehensive examination are also required.

Programme in Engineering-Physics
Engineering-Physics or Applied Physics is the study of physics oriented towards its application to engineering problems. The area is interdisciplinary and the study is suitable for students whose interests involve experimental work in the physical sciences or who contemplate research or development work in industry or resource development. The mathematical content of the course is similar to that of physics with, however, special emphasis on applications. The physics content is identical with that of honours physics in the first two years, but has special requirements in the last two years dealing with system design, information and control theory, materials science, instrumentation and measurement techniques. The course leads to the degree of Bachelor of Science in Engineering-Physics, which has honours standing.

Completion of the course is excellent preparation for industrial research or graduate studies in applied sciences.

B.Sc. in Engineering-Physics

Year I
1. Physics 110
2. Mathematics 100A, 101B
3. Chemistry 110
4. Engineering 120A, Computer Science 140B
5. Elective (chosen to meet writing requirement)

Year II
6.-7. Physics 211 and 212
8. Mathematics 220 or 200
9. Mathematics 200-level class
10. Engineering 340A, 341B

Year III
11-14. Physics 300A, 301B, (305A or 344A), 314A, 315B, 334A, 335B, Engineering 331B
15. Mathematics 311A, 312B
16. Elective (Arts)

Year IV
17-20. Physics (344A or 305A), 400B, 420A, 421A, 430B, 433A, 435B, 480B
21. Physics 400-level class.

Combined Honours
Students interested in both Physics and another science may wish to take a B.Sc. with Honours in Physics and the other subject combined.

Students contemplating such a programme should in any case consult the Departments before the beginning of their second year of study.

Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is offered.

100 Survey of Physics, lect.: 3 hrs.; problem session: 1 hr.; P.H. Reynolds.

This is a survey class requiring no previous preparation in physics and offered primarily for students in arts, pre-medicine 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, a set of problems is assigned as homework each week. A one-hour tutorial is scheduled for the purpose of going over the weekly assignment and providing help for any difficulties. There are no laboratory experiments in this class.

Text: J.B. Marion, *Physics and the Physical Universe*, 2nd Ed., Wiley.

110 Introduction to Physics, lect.: 3 hrs. (2 sections); lab.: 3 hrs., every 3rd week; M.G. Calkin, D.F. Goble.

This is an introductory class in physics primarily for students interested in the physical sciences. Students beginning this class should be familiar with algebra, graphs and trigonometry, and should be taking Calculus (Math 100/101) concurrently. Previous work in physics is helpful but not essential.

This class concentrates on three main areas: mechanics, oscillations and waves, and electricity and magnetism. In as far as possible, the basic ideas are introduced through inclass demonstrations, enabling students to relate the verbal and mathematical descriptions to events in the real world. In addition, students are able to explore the physical world via labs every third week.

Quizzes given every third week enable students to assess their progress.

Text: Tipler, *Physics*, Worth, 1976.

129B. Electricity and Magnetism, lect.: 3 hrs.; laboratory: 3 hrs., R.H. March

This class 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.

130 Physics In and Around You, lect.: 3 hrs., tutorial: 2 hrs., G. Stroink.

This class gives an introduction to physics for students in biology, pre-medicine, pre-dentistry 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.

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 class should be familiar with trigonometry, solving algebraic equations, and should be prepared to study some basic algebraic functions.

Text: Fuller, *Physics, Including Human Applications,* Harper and Row.

211 Mechanics, lect.: 3 hrs.; lab.: 3 hrs.; C.K. Hoyt.

212 Electricity, lect.: 3 hrs., lab.: 3 hrs.; B.L. Blackford.

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 212).

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 pulses will be included.

Text: Berkeley Physics Course, Vol. 1 *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 magnetic 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.

220A Waves and Vibrations, lect.: 3 hrs.; lab.: 3 hrs.; B.E. Paton

221B Electromagnetic Waves, lect.: 3 hrs.; lab.: 3 hrs.; A.M. Simpson.

Applied Physics is 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.

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 demonstrate 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.

220A Waves and Vibrations

Subject material: theory of measurements, mechanical vibrations, synthesis of waves, acoustics, resonance, interference.

Prerequisite: a first-year class in physics.

Text: French, A.P., *Vibration and Waves*, Norton.

221B Electromagnetic Waves

Subject material: Electromagnetic spectrum, geometric optics, interference, diffraction, matter waves, theory of solids, semiconductors.

Prerequisite: 220A. *Text:* to be announced.

222A* Radiation Physics, lect.: 2 hrs.; G.F.O. Langstroth. Offered in alternate years beginning in 1978-79. Enrollment is limited.

Contents include: nature of radiation, particularly gamma- and x-rays; interaction of radiation with matter (tissue); applications in the medical field; radiation protection; some medical instruments; a visit to a Radiology or Nuclear Medicine department of a local hospital.

Prerequisite: First year physics course or approval of instructors.

223B* Radiation Physics, Applications, lect.: 2 hrs.; G.F.O. Langstroth. Offered in alternate years beginning in 1978-79. Enrollment is limited.

The class follows on the background obtained in Physics 222A. It discusses the detection of radiation and its application in the health sciences. It then continues to treat the physical principles of several instruments commonly used in the life sciences. This may include optical instruments and electronic instrumentation. Topics will vary according to the interest of the students.

Prerequisite: Preference given to students who have taken 222A.

230A/233B

These two half-classes 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.; A.M. Simpson.

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 rotation and planetary orbits.

Prerequisites: 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.

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.

Prerequisite: Physics 230A.

Text: Tipler, *Physics*, Vol. 2, Worth.

245 Astronomy, lect.: 3 hrs.; D.A. Tindall.

An introduction to Astronomy for the general science student, **not** the physics specialist.

Topics discussed include: the observation and exploration of the planets, the origin and evolution of stars (including white dwarfs, pulsars, quasars, black holes), the structure of galaxies, and cosmology.

Prerequisite: One first-year science course.

Text: Pasachoff and Kutner, *University Astronomy*, Saunders, 1978.

250* Astronomy and Introductory Astrophysics, lect.: 3 hrs.; C.K. Hoyt. Offered in alternate years, beginning in 1979-80.

This is a basic class 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, luminosities, 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.

Prerequisite: Physics 110 or Physics 100.

Text: Smith and Jacobs, *Introductory Astronomy and Astrophysics*, Saunders, 1973.

[illegible]0A/301B Experimental Physics, lab.: 6 hrs.; lect.: 1 hr.; W. Leiper.

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, nuclear 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.

Prerequisites: For honours students, Physics 211, 212. For major students, Physics 230A, 233B, 220A, 221B. Exceptions have been made.

305A Electromagnetic Theory, lect.: 3 hrs., S.T. Nugent.

Topics include a review of electric and magnetic fields emphasizing the solution to Laplace's and Poisson's equations. Maxwell's equations are discussed and are used to explain plane waves in infinite media, reflection and refraction, guided waves, resonators, radiation and antennas.

Prerequisite: Physics 212.

Text: Reitz, Milford and Christie, *Foundations of Electromagnetic Theory*, 3rd Ed., Addison Wesley.

314A Introduction to Quantum Physics, lect.: 3 hrs., J.C. Cordes.

This introductory class in quantum physics first analyses difficulties of classical physics (black body radiation, radiation from accelerated charges and atomic spectra). The experimental basis of the wave-particle duality of light is discussed and the existence of diffraction patterns for particles is used to motivate the construction of wave equations for particles. The determination and interpretation of solutions of Schrödinger's equation is illustrated by simple examples. A comprehensive study is made of the quasi-stationary states and transition rates of hydrogen.

Prerequisite: Mathematics 200 or its equivalent.

315B Modern Physics, lect.: 3 hrs., C.G. White.

This class provides further application of the basic quantum mechanical principles presented in 315A to topics in atomic, nuclear and solid state physics.

Prerequisite: Physics 314A.

316A Topics in Physics, lect.: 3 hrs., R.H. March and staff.

This class is designed to extend the range of topics available to students enrolled in the three year major programme. The first part of the class will be an introduction to semiconductor electronics, followed by optics.

Prerequisite: at least one second-year level physics class.

317B Topics in Physics, lect.: 3 hrs., C.K. Hoyt and staff.

This is complementary to 316A. Topics will include acoustics and elementary nuclear physics.

Prerequisite: At least one second-year level physics class.

320A Thermodynamics, lect.: 3 hrs., M.H. Jericho.

This class introduces the student to the laws and basic concepts in classical thermodynamics. Topics to be covered include equations of state, heat engines, thermodynamic functions, and phase equilibriums.

Prerequisite: Some knowledge of partial derivatives; Mathematics 200, or its equivalent, which may be taken concurrently with the class.

321B Statistical Mechanics, lect.: 3 hrs., M.H. Jericho.

In this class the tools will be developed to link the physical laws of the microscopic world to those of the macroscopic world, and the underlying atomic processes of the laws of thermodynamics will be explored.

Prerequisite: Physics 320A, or its equivalent; Mathematics 200, or its equivalent.

334A Electronics, lect.: 3 hrs., H.W. Jones.

Topics to be discussed include: carrier transport in semiconductors, properties of diodes and transistors, amplifiers, oscillators, modulation, demodulation and rectification, operational amplifiers, linear and nonlinear analog systems.

Prerequisites: Physics 212 or 230A/230B; Mathematics 200 or 228.

335B Networks, Lines and Filters, lect.: 3 hrs., H.W. Jones.

Topics discussed will include: network reduction, the 4-terminal network and solution by matrix methods, properties of distributed constant transmission lines, active and passive filters.

Prerequisite: Physics 334A.

340* History of Science, lect.: 2 hrs.; tutorial: 1 hr.; R. Ravindra (Physics), J. Farley (Biology). (Same as Biology 3400 and History 3010. Class description to be found under Biology 3400.)

344A 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 230A/233B, or Physics 212, or Physics 221B and Mathematics 220.

The students should be familiar with vector analysis, Maxwell's equations and the use of complex exponential functions.

Text: Stone, *Radiation and Optics,* McGraw-Hill.

400B Advanced Physics Laboratory, lab.: 6 hrs.; M.H. Jericho.

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 determination; 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.

409A/410B Advanced Classical Mechanics and Electrodynamics, lect.: 3 hrs.; D. Kiang.

In the first term the class will study Lagrangian and Hamiltonian mechanics, covering, for example, Lagrange's equation, Hamilton's principle, two body central force problems, Hamilton's equation of motion, transformations, 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.

Prerequisites: Physics 211, 212, Mathematics 311A, 312B, or their equivalents.

Text: Landau and Lifschitz, *A Shorter Course of Theoretical Physics,* Vol. 1, *Mechanics and Electrodynamics.*

415A Quantum Mechanics, lect.: 3 hrs.; D.A. Tindall.

Topics discussed include: concepts and formulation of quantum mechanics, harmonic oscillator, angular momentum, the central force problem and approximation methods.

Prerequisite: Physics 314A.

Text: R.H. Dicke and J.P. Wittke, *Introduction to Quantum Mechanics,* Addison-Wesley.

416A Mathematical Methods of Physics, lect.: 3 hrs., J.G. Cordes.

Topics discussed include: complex variable theory, Fourier and Laplace transform techniques, special functions, partial differential equations.

Prerequisite: Mathematics 311A/312B or permission of the instructor.

Text: Arfken, *Mathematical Methods for Physicists* (2nd ed.), Academic.

417B Topics in Mathematical Physics, lect.: 3 hrs., J.G. Cordes.

This class is a continuation of Physics 416A and deals with special topics in mathematical physics, such as the Green's function technique for solving ordinary and partial differential equations, scattering theory and phase shift analysis, diffraction theory, tensor analysis.

Prerequisite: Physics 416A.

Text: Arfken, *Mathematical Methods for Physicists* (2nd ed.), Academic.

418B* Nuclear Physics, lect.: 3 hrs.; D. Kiang.

This is an introductory class. Topics discussed include: nucleon-nucleon interactions, nuclear structure, gamma transitions, alpha decay, beta decay and nuclear reactions.

Prerequisite: Physics 314A.

Text: T.B.A.

420A Signals, Spectra and Information Theory, lect.: 3 hrs.; S.T. Nugent.

Topics discussed include: discrete and continuous spectra, energy density spectra, sampling theory and approximations, discrete probability theory, continuous random variables, statistically independent random variables, probability density functions, density functions of sums, density functions with discrete components, ergodic processes, autocorrelation functions, networks and random inputs, autocorrelation inputoutput relationships, optimum systems, and basic information theory.

Prerequisites: Mathematics 311A, 312B.

Text: Hancock, J.C., *An Introduction to the Principles of Communications Theory,* McGraw-Hill.

421A Microcomputer Based Instrumentation, lect.: 3 hrs.; computer programming: 1 hr.; B.E. Paton.

Subject material: measurement theory; modern sensors; microcomputer architecture; simple chip computers; software simulation of digital electronic circuits; machine language programming; assembly language programming; interfacing techniques; development of "intelligent" instruments.

Prerequisite: Physics 221B or 300A/301B.

422B Microcomputer Based Instrumentation, lect.: 2 hrs.; lab.: 3 hrs.; B.E. Paton.

Subject material: instrument design; analog to digital and digital to analog techniques; custom interfacing to sensors; algorithms; parallel and serial output data links; software testing and debugging; hardware testing and debugging; research project.

Prerequisite: Physics 421A.

Text: Paton, *Microcomputer Based Instrumentation.*

423B Introduction to Solid State Physics, lect.: 3 hrs.; A.M. Simpson.

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 314A. Registration requires prior departmental consent.

Text: Kittel, *Introduction to Solid State Physics,* Wiley.

430B Applied Acoustics, lect.: 3 hrs., H.W. Jones.

Three areas of acoustics will be discussed as separate topics so that the needs of students from different disciplines can be catered for. The instruction will be by guided reading, supplemented with a small number of general and introductory lectures, together with a limited series of specialised lectures related to each of the particular topics.

The three topics are (i) physical acoustics for psychologists, (ii) ultrasonics and underwater acoustics, and (iii) physical acoustics allied to noise control, architectural and building acoustics and sound recording and reproduction.

Prerequisite: At least one class in Physics, beyond first-year level.

433A Physical Properties of Materials, lect.: 3 hrs.; H.W. King.

This class 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 315B.

Text: Hutchinson and Baird, *Physics of Engineering Solids,* Wiley 1968.

Reference: Nye, *Physical Properties of Crystals,* Oxford Univ. Press, 1969.

435B Energy, Sources and Conversion, lect.: 3 hrs.; H.W. King.

Topics discussed include: extent and use of world energy supplies, thermodynamics of heat engines, thermojunction generators and refrigerators, solar generators, thermionic generators, fuel cells and related devices, chemical primary and secondary cells, magnetohydrodynamics, nuclear fission processes, and breeder reactors.

Prerequisites: Physics 314A, 315B, Engineering 340A.

440B* Laser Optics, 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,* Holt, Rinehart Winston.

446A/B* Optics, lect.: 3 hrs.; C.K. Hoyt.

This class is a continuation of Physics 344A and deals with coherence, polarization, scattering by matter, the electromagnetic properties of matter, including crystals, reflection, refraction and double refraction.

In any given year, only one of 446A and 446B will be offered.

Prerequisite: Physics 344A. Registration requires prior Departmental consent.

Text: Stone, *Radiation and Optics,* McGraw-Hill, and assigned readings on related topics.

448A Applied Group Theory, lect.: 3hrs.

This is cross-listed with Mathematics 332A, but for students in Physics 448A, additional reading will be required.

Offered in alternate years beginning in 1979-80.

465A/466B Relativity and Cosmology, lect. and tutorials: 3 hrs.; R. Ravindra. Offered in alternate years, beginning in 1980-81.

The purpose of this class is to introduce students to both the theoretical and observational basis of modern physical cosmology. The first half of the class will be devoted to the development of the 4-vector formalism for the Special and the General theories of Relativity. Einstein's field equations will be developed and some realistic cosmological models, based on these equations, will be discussed. The emphasis will be on intuitive and physical insight rather than mathematical rigour. The second half will be devoted to understanding available observational data in cosmology in the light of previously developed theory.

In addition to solving regularly assigned problems, each student will be expected to make a departmental presentation towards the end of the year concerning the latest developments in a topic of his/her choice, such as 'black holes', 'age of the universe', or 'primordial radiation'.

Prerequisites: Physics 211 and 212, Mathematics 311A and 312B, or the consent of the instructor.

480B Modern Control Theory, lect.: 3 hrs.; S.T. Nugent.

Topics discussed include: transfer functions, the signal flow diagram, state space concepts, the transition matrix, characteristic control system responses, sensitivity, accuracy, transient response, performance indices, Routh-Hurwitz stability method, Nyquist stability criterion, Bode diagram method, Root locus method, compensation, introduction to optimal control, controllability and observability, calculus of variations, dynamic programming, Pontryagin's maximum principle.

Prerequisite: Physics 420A.

Text: Shinners, *Modern Control System Theory and Application,* Addison Wesley.

Graduate Studies

The Department of Physics provides courses 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
P.C. Aucoin (Associate Director, School of Public Administration)
J.M. Beck
D. Braybrooke
D.M. Cameron (Director, School of Public Administration)
K.A. Heard
M.K. MccGwire
D.W. Stairs
G.R. Winham

Associate Professors
R. Boardman (Acting Director, Centre for Foreign Policy Studies)
K. Booth
L. Collins
R.L. Dial
D.J. Munton
D.H. Poel (Chairman)
T.M. Shaw
H. Silverstein

Killam Senior Fellows
E.M. Borgese
J. Eayrs

Assistant Professors
H. Bakvis
Y. Bangura
P. Brown
R. Eden

Research Fellows
W.L. Dowdy
J.A. McDonnell

"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 political 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 major programme or honours programme. The specific classes 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 subfields of Political Science or may consist of a general selection of classes from the Department's offerings.

Requirements - Major Programme
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. A minimum of two additional classes should be taken from third-year level offerings, and will be chosen in consultation with the faculty. Professor K.A. Heard is the Departmental Coordinator for Major Programmes and will happily assist students in the planning of their programmes in Political Science.

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. 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. 2494 Introduction to Political Inquiry
International Politics and Foreign Policy
P.S. 2500R World Politics
P.S. 2510R Canadian External Relations

Honours Programme
An honours programme will normally consist of a first year level class and not less than 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 subfields. 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. 2494 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. 2494 Introduction to Political Inquiry.
(ii) at least four advanced classes at the third and/or fourth year level, including the honours essay.

The core class requirements are designed (1) to give breadth to the honours programme, (2) to provide all honours students with a grounding in the normative questions of the discipline as well as the foundations of empirical inquiry, and (3) to expose prospective honours students to the various sub-fields that may be chosen for emphasis in individual programmes. Overall, these requirements leave a minimum of two optional credits, which may be taken at the second, third or fourth-year levels.

In the exceptional case of students who have delayed their decision to enrol in an honours programme until late in their third year, or who have decided at the end of their general programme to pursue an Honours Certificate, third-year or higher level classes may be substituted on occasion for one or more of the core classes. Such substitutions, however, must reflect the same distribution of sub-fields within the discipline as is specified by the core-class requirement, and they must have the approval of the Honours Supervisor. Students who think they may eventually pursue an honours degree or certificate are strongly advised to complete their core-class requirements as early in their undergraduate careers as possible.

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. A guide for preparing the honours essay is available from the Department office.

Combined Honours
Several of the more common honours programmes are:
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 or in discussing other possible 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 Coordinator 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 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 advisors 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. 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.

Classes marked * are not offered every year. Please consult the timetable on registration to determine if these classes are offered.

1. Introductory

1100
Section 1, **Democratic Government and Politics**, lect.: 3 hrs.; K.A. Heard.

This class seeks to provide some insight into topics covered in the three main areas of political science, viz. political philosophy, political institutions and international relations. The method chosen is more akin to sampling than to comprehensive coverage.

In the political philosophy section, students will be introduced to some of the major ideas of a selection of particularly influential thinkers of the past—e.g., Hobbes, Locke, Rousseau, Mill and Marx.

The class then turns to the constitutions and politics of Canada and either the U.S.A. or Britain, attempting an overview of the main characteristics, and their similarities and dissimilarities.

Finally there will be a briefer discussion of some of the main features of the international system and its institutions.

Section 2, **Introduction to Political Science**, lect. and discussion: 3 hrs.; D. Munton.

This class will provide a general introduction to political science by examining the domestic politics and foreign policies of Canada and the United States. In the fall term the focus will be on the Cold War and other features of the international setting of Canadian and American politics, on social and economic conditions of both countries, and on the roles of constitutions, interest groups, elites, political parties and elections. In the spring term the focus will be on the structures of government, such as the executive, bureaucracy, legislatures and courts, and on the way in which domestic and foreign policies are chosen and implemented. This class is intended both for students who plan to take further courses in political science and for those who do not.

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
Section 1, **Introduction to Political Science,** lect.: 3 hrs.; R. Boardman.

This class will introduce various aspects of politics in Canada, the United States, and the Soviet Union, and will also 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 will usually 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 totalitarianism 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.

1103
Section 2, **Introduction to Political Science,** lect. and discussion: 3 hrs.; J.H. Aitchison.

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, with emphasis on Canada. This is a writing class.

2. Canadian Government Politics

2200 Canadian Government and Politics, lect.: 3 hrs.; multiple sections, one in the evening; P. Brown, P.C. Aucoin.

The sections will have 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.; P.C. Aucoin.

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 participatory 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 a completely new written constitution required to meet the contemporary crisis 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 class will bring together an emphasis on cross provincial, empirical research with an interest in the value context of provincial policy. Primary class goals are (1) to stimulate enough interest in provincial politics for the student to develop evaluation research questions and (2) to provide the student with sufficient research skills to successfully participate in the annual programme evaluation project which is undertaken by the class as a whole. Throughout the class, 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.; P.C. Aucoin.*

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.

3216/5216A Local and Regional Government, seminar: 2 hrs.; D.M. Cameron.

This class will deal with the development, organization and operation, as well as the present legal and fiscal positions of various forms of local and regional government in Canada. Special attention will be paid to the city manager system, to the reform of local government, to the special problems of metropolitan government, and to the reliance on special purpose boards and commissions.

It is open to graduate and senior under-graduate students.

3220A/5220A Intergovernmental Relations in Canada, seminar: 2 hrs.; H. Bakvis.

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.

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.; H. Bakvis.*

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 parties 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.; Staff. *

The aim of this class is to explore the interaction between business and government in Canada. Particular attention will be given to the principles or economic philosophy which determine the role of agreement and the nature of its intervention, regulation, ownership and management of the Canadian economy. Discussion will centre on the major policy issues raised in this regard especially as viewed by those who actually work in the private and public sectors. The principle concern will be to come to a better understanding of how and whether broader principles of political economy apply in the practical problems of developing and administering economic policies.

Prerequisite: P.S. 2200 or permission of the instructor.

3250 Introduction to Public Administration, lect. and discussion: 3 hrs.; A.P. Pross.

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 class centres on 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, rational 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. *

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. *

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.

Prerequisite: Political Science 2200 or 3250 or another class in Canadian Government.

4258B/5258B Problems in Provincial Public Administration, Seminar: 2 hrs.; P. Brown.*

The objectives of this class are, to develop an appreciation of the questions of structure, organization and public policy at the provincial level, utilizing both established literature in the areas and theoretical notions derived elsewhere; e.g., from the nature of government structure and organization at the national level or, comparatively, with state governments in the U.S.A. and elsewhere, with particular reference to the Atlantic area. In this exercise, an analysis, on a case study basis, of the organization and public policies of provincial governments will be important. Students will thus derive an appreciation of both the substance and theoretical underpinnings of provincial government activities and organization.

Prerequisites: P.S. 2200, 3250 or another class in Canadian Government.

4266A/5266A Natural Resource Administration in Canada, seminar: 2 hrs.; A.P. Pross.*

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 of the instructor.

3. Comparative Government and Politics

2300 Comparative Politics, lect.: 2 hrs.; K.A. Heard.*

Canadian classes in political science, history, literature, etc., are important for Canadian students; but almost equally important are classes that provide a broader perspective, such as those in comparative politics.

In this particular class, we shall study in a comparative manner the ways in which a number of different states organize their political life. Among the topics discussed will be constitutions and constitution-making, the institutions of government, political parties, modes of popular participation, the effect of political culture on political institutions and behaviour, and the incidence and causes of military coups and the failure of regimes.

Prerequisite: P.S. 1100.

2305 European Comparative Politics, lect. and discussion: 2 hrs.; R. Boardman.

Since Europe includes more than 30 countries varying in size from 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 will be on the three major western countries - France, West Germany and Britain. The political life of other countries such as Sweden and other Scandinavian countries and Italy and other Mediterranean countries will also be investigated; 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, lect. and discussion: 2 hrs.; D.H. Poel.*

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, public opinion and voting behaviour, personality and political culture. Research methods utilized within these areas of study will necessarily be an important secondary consideration.

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 class 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 class has no prerequisites and is not restricted to political science majors.

3301B/5301B Comparative Analysis, seminar: 2 hrs.; R. Boardman and D. Poel.

The focus of this class will be on the epistemological and methodological questions in the field of comparative politics. 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 class is recommended for graduate and honours students, and is open to senior undergraduates with permission of the instructor.

3303B/5303B Human Rights and Politics, lect. and discussion: 2 hrs.; K.A. Heard.

Issues arising from the claim to rights and from alleged infractions of rights continue to arouse a great deal of public controversy within individual states and also within the international community, e.g. the U.N. This class will examine the types of rights: individual, collective (e.g. of minorities) and types of rights: individual, collective (e.g. the "right" to national self-determination). It will examine the bases of the claims to such rights, the domestic, social and political responses to these claims, and the international treatment of the issues. The approach will be comparative, but members of the class will be expected, as well, to undertake case studies relating to the general topics.

Prerequisites: P.S. 1100 or 1103 and, preferably, P.S. 2300, P.S. 2305 or P.S. 2400; or with the permission of the instructor.

3404A/5304A Comparative Federalism, seminar: 2 hrs.; H. Bakvis.*

3315A African Politics, seminar: 2 hrs.; T.M. Shaw.
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.

3340A/5340A Problems of Development: The Politics of New States, discussion and seminar: 2 hrs.; K.A. Heard. *

This class will cover such subjects as concepts of development and underdevelopment; cultural cleavages in developing nations; the impact of colonial regimes on political and economic development; industrialization; urbanization, class formation and socialization; communication, ideology and nation-building; economic problems and planning policies; the role of the military; stability and instability of political systems.

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 class 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 class may be usefully matched with P.S. 3574B/5574B, Chinese Foreign Relations.

3370/5370 The Theory and Practice of Government in the United States, lect. and discussion: 3 hrs.; J. Aitchison.

Among the themes that will be given special attention are the role of the judiciary and the centralization of authority in the United States.

4. Political Theory and Methodology

2400 Justice, Law and Morality, seminar: 2 hrs.; D. Braybrooke.

(Same as Phil. 107/207.)

This class, for which there is no prerequisite, serves as an introduction to the history of political philosophy; and also (allowing for the emphasis on political applications) to philosophical ethics. It is, however, designed to be a self-sufficient class, with an argument (a "plot") of its own. In the first term, the classical view of justice formulated by Plato in *The Republic* and reflected in St. Thomas's doctrine of natural law confronts the savage realism of Hobbes' *Leviathan*. As the class will learn by pursuing the subject through the writings of Locke, Hume, Bentham, Mill, and Marx, the concept of justice has had a mixed career since Hobbes' time. It has often had only a limited and subordinate role; sometimes it has appeared redundant, even when firm foundations for choosing social institutions have been claimed. In our own time, a major effort has been made by John Rawls to restore justice to a central place in ethics. The class will wind up the second term considering his theory, after examining a general view (by Stephen Toulmin) of the current state of ethics, and a contemporary account (by Lon Fuller) of the extent to which law must be moral to be genuine.

2402 Representative Government in Theory and Practice, lect. and discussion: 3 hrs.; R. Eden.

"The science of politics, however, like most other sciences, has received great improvement. The efficacy of various principles is now well understood, which were either not known at all, or imperfectly known to the ancients. The regular distribution of power into distinct departments; the introduction of legislative balances and checks, the institution of courts composed of judges holding their offices during good behaviour; the representation of the people in the legislature by deputies of their own election: these are wholly new discoveries, or have made their principal progress towards perfection in modern times. They are means, and powerful means, by which the excellences of republican government may be retained and its imperfections lessened or avoided."

In this passage from *The Federalist* No. 9, Hamilton points out that the science of representative government is a modern discovery from which many of our institutions, and indeed our modern forms of government in general, are derived. In this class we will try to recover this science, reconsidering achievements in practice.

2455B Marxist Theory and Its Upshot in the Modern World, seminar: 2 hrs.; R. Eden.

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 uncompromising 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.

Prerequisite: A class in philosophy or a class in Political Science.

2494 Introduction to Political Inquiry, lect. and discussion: 3 hrs.; H. Bakvis.

Students in this class will be engaged in a critical examination of a variety of methods employed in contemporary political analysis to explain political events. This will include consideration of the general question of the requirements of explanation in political science.

The class will emphasize causal explanation and problems in the development and verification of social scientific theory.

A particular substantive issue will act as a unifying theme through the discussion of the various methods of explanation and the class will undertake a research project in that substantive issue that will allow the use of some of the tools of analysis discussed in connection with social scientific theory. There is no prerequisite for this class.

3410/5410 Man, Society and Politics: the Concept of Community, seminar: 3 hrs.; staff.*

3430C/5430C The Political Philosophy of Plato, seminar: 2 hrs.; R. Eden.*

3435A/5435A Machiavellian Politics, seminar: 2 hrs.; R. Eden.*

This seminar will explore Machiavelli's contribution to modern politics and political science.

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. Seminar participation will constitute part of the grade.

3451A/5451A The Critique of Democracy in Modern Political Philosophy, lect. and seminar: 3 hrs.; R. Eden.*

This class 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 class 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.

We shall assume that the student is coming to both authors, and to the problem of liberal democracy, for the first time. The class 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.

3470B/5470B Futurology and Politics, seminar: 2 hrs.; D. Munton.*

3495/5495 Research Methods and Data Analysis, seminar: 2 hrs.; D.J. Munton.

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 data, etc.), measurement, and analysis are explored using substantive readings from various subfields of the discipline.

The major assignment in the class 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.

3496A/5496A Philosophy of the Social Sciences, seminar: 2 hrs.; R. Eden.

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 Classical Liberalism, and Democracy (Seminar in Philosophy, Politics and Economics), 2 hrs.; first term, D. Braybrooke.

(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 Bentham 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 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 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.)

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: The same as for 4479A/5479A.

4485B/5485B The Theory of Games as an Approach to the Foundations of Ethics and Politics (Seminar in Philosophy, Politics and Economics), 2 hrs.; spring term, D. Braybrooke.*

The most innovative recent work in ethical theory has applied the theory of games, invented by von Neumann and Morgenstern, but considerably elaborated by mathematicians and economists since, to the perennial problem of the social contract. To what extent can any organized society to which people freely adhere be represented as constituted by rules arrived at by rational agents trying each to arrive at the best bargain about rules with the other agents present? These rules can be regarded simultaneously as the foundation of political organization and as elementary rules of ethics (though they may fall short of providing for every aspect of moral life and moral community). The chief author to be studied in this seminar will be David Gauthier, but there will also be readings in works by John Rawls, Kurt Baier, James Buchanan and Gordon Tullock, and Russell Hardin, and, to begin with, some introductory readings in the theory of games.

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.)

4495B/5495B Problems of Quantification, seminar: 2 hrs.; Staff.*

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.; T.M. Shaw.

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.

2505 International Politics in the Post-War World, lect. and discussion: 3 hrs.; D.W. Stairs.

As a survey of international politics since World War II, this class is designed for students who have a general interest in international affairs as well as for those who wish eventually to study the subject in greater depth. Emphasizing politicosecurity issues, the class will begin with an analysis of wartime diplomacy and the post-war settlement, and move on to consider such topics as the founding of the United Nations, the evolution of the Cold War, the construction of post-war alliance systems, early problems of de-colonization in Asia and the Middle East, the wars in Korea and Indo-China, the course of negotiations on arms control and disarmament (and their relation to changing weapons technologies and strategic doctrines), the emergence of the "third" and "fourth" worlds, the origins and limitations of "detente", and the changing role of social, economic, and ecological issues on the international agenda of the 1960s and '70s. Considerable attention will be paid throughout to identifying alternative explanations for these various phenomena, and to showing how such explanations are related on the one hand to different theoretical premises about the nature of international politics and on the other to the kinds of prescriptive remedies that often result.

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 class presents a brief survey of the discipline of international relations. It then focuses specifically on three timeless problems of international relations: conflict and war; the nature of economic disparities and imperialism; and the organization and interaction of nation-states. The class is a study in politics, but course readings are multidisciplinary. Students will be expected to read the work of historians (e.g., Toynbee, Thucydides), economists (e.g., Rostow, Galbraith), social psychologists (e.g., McClelland, Rapoport), as well as the work of political scientists.

This class 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 participate regularly in seminars and to write a series of essays during the year.

3530/5530 The United Nations in World Politics, seminar: 2 hrs.; H. Silverstein.

Since 1945 there has been a continuous evolution in the structure, functions, power and influence of the United Nations. Originally conceived as an organization with a strong bias towards international stability and the status quo, in recent years it has emerged as an engine of social change. This class traces 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 aspirations and demands of the Less Developed Countries. It reviews the shift of power within the UN and the relevance of this shift to the "real" world outside, analyses the substance of the United Nations' influence, and considers whether there have been significant trends in this area. The seminar begins by surveying the development of international organizations in the twentieth century and assessing the contribution of the United Nations to international peace and security since 1945. It then addresses contemporary problems such as food, population, energy and resources and the United Nations' involvement in these issues. It concludes by looking to the more distant future, and considers the continuing relevance of the United Nations in world politics, and how its role and objectives should be determined.

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 class 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.; T.M. Shaw.

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 class 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 class 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 integration, 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.J. Munton and D.W. Stairs.

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 class 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 class 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 class 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 essay is expected near the end of each term.

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, evening seminar: 3 hrs.; H. Silverstein.

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.

3595/5595 Theories of War and Peace, seminar: 2 hrs.

3596/5596 Introduction to Strategic Studies: Politics, Strategy and War, seminar/lecture: 3 hrs.; K. Booth.

This class traces and analyses the way in which strategic thought has developed since the nineteenth century. Its aim is to introduce the student to an intellectual tradition of thinking about military force as an instrument of state policy, and about the phenomenon of war. The subject matter is a mixture of the history of warfare and military planning, and the writings of the major strategic thinkers. Particular attention will be placed on the aptness of the theories and plans to the political ends they were ostensibly designed to serve, and to the problem of the accelerating pace of technological innovation.

3597/5597 Science, Technology, and International Affairs, seminar: 3 hrs.; H. Silverstein.

Our most important international problems ranging from nuclear arms races to energy shortfalls, from world food stortages to competing economic systems all intimately involve scientific and technological components. The objectives of this course are to examine the processes of scientific and technological advance and diffusion, identify the intergovernmental and transnational actors involved, and assess the socio-economic and political ramifications of their activity for both "Spaceship Earth" and national diplomacy. The approach taken is *interdisciplinary,* and a science background is not necessary nor assumed.

4600 Honours Essay

4625 Reading Class: Advanced American Government, J.H. Aitchison.

Psychology

Professors
J.C. Fentress (Chairman)
P.J. Dunham
G.V. Goddard
W.K. Honig
P.H.R. James
V.M. LoLordo
J.A. McNulty
S. Nakajima
K.E. Renner
R.S. Rodger
M. Yoon

Assistant Professors
R. Brown
S. Bryson
P. Jusczyk
J. Mates
I. Meinertzhagen
B. Rusak

Izaak Walton Killam Research Professor
D.M. Regan

Associate Professors
J. Barresi
K. Bloom
J.W. Clark
M. Cynader
B. Earhard
R. Klein
D.E. Mitchell
B.R. Moore
M. Ozier
R.L. Rudolph

Research Associates and Postdoctoral Fellows
J. Barbur
K.I. Beverley
Z. Boulos
P.W.D. Dodd
A. Frohlich
L. Harris
W.J. Jacobs
M. Kaye
D. Quine
D. Regal
A. Sagar
C. Shaw
V. Waterfield

Instructors
R. Hoffman
L. White

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

B.A. or BSc.
Students enrolled in the bachelor's (i.e., three-year) programme 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 bachelor's degree:
1. Psychology 100 or Psychology 101.
2. Psychology 200A
3. At least three more 200-level classes.
4. At least two more credits 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. J.W. Clark, Dr. R. Klein, Dr. I. Meinertzhagen, 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. Rudolph 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 class has both lecture and laboratory requirements. In lecture, we will pro-

ceed 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.; S. Bryson.

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.

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 class 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 class: a knowledge of high school arithmetic and algebra is generally a sufficient background.

Prerequisite: Psychology 100 or Psychology 101.

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 class 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 groups of animals Foraging and communication, predation and defense, sex and aggression, homing and migration will be studied as they occur in such organisms as bees and ants, moths, bats, chimpanzees and various birds.

Prerequisite: Psychology 100 or Psychology 101 or Biology 1000.

217A or B Hormones and Behaviour, lect.: 3 hrs.; R.E. Brown.

This class covers the endocrinological basis of the mammalian social behaviour. The emphasis will be on the mechanisms by which the hormones of the hypothalamus, pituitary gland, gonads and adrenal gland control sexual, aggressive and maternal behaviour. Some of the topics covered are: hypothalamic hormones; hormone receptors in the brain; the pituitary gland; the adrenal gland and behaviour; hormones and aggression; the menstrual cycle and human reproduction; puberty; sex differences in the brain; the pineal gland; neuro-transmitters, pregnancy, lactation and maternal behaviour; pheromones; crowding and social stress.

Prerequisite: Psychology 100 or Psychology 101 or Biology 1000.

227A or B Human Neuropsychology, lect.: 3 hrs., G. Goddard.

"Within the human brain (and affected by its diseases) lies the energies that drive the world, the emotions that divide it, and the illnesses . . . psychosis, senility, stroke . . . which cause some of our largest public health problems." This class deals with the scientific information that has resulted from studies of patients with various types of brain damage, including surgical, or other sources of brain abnormality. Concepts to be stressed include aphasia, agnosia, alexia, apraxia, epilepsy and, to some extent, the action of neuroleptic drugs.

Prerequisite: Psychology 100.

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, R. Rudolph.

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.; V.M. LoLordo, W.K. Honig, B. Moore.

This class deals with the principles of learning, motivation, and memory derived from research with animal and human subjects. Since research with animals has been the main source for the development of these principles, primary emphasis is placed on animal learning. Motivation is not presented as a separate topic, but is discussed in terms of its effects on learning and performance. In addition to a review of classical and instrumental conditioning, the class offers a discussion of mechanisms of reward, avoidance conditioning, stimulus control, and animal memory. The discussion of human learning is primarily concerned with concept attainment, memory, and amnesia. Laboratory projects are carried out over the course of several weeks and then written up as

individual reports. Original experiments rather than "canned projects" are planned for the laboratory.

Prerequisite: Psychology 200 and 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 200.

307 Physiological Psychology, lect.: 2 hrs.; lab.: 3 hrs.; S. Nakajima.

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.

Prerequisite: 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.

Prerequisite: Psychology 200.

***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 200.

312 Issues in Clinical Psychology, lect.: 2 hrs.; seminars and labs.: 2 hrs.; S. Bryson.

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 200, Psychology 213 or consent of instructor.

319 Psychology of Language, lect.: 3 hrs.; lab.: 1 hr.; 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 319 provides students with a basic introduction to how psychologists study language. The class 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.; M. Yoon.

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 hr. labs/wk.; M. Yoon.

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.

Prerequisite: Psychology 200.

*** 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.; practicum: 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.

360A or B Biological Rhythms, lect.: 3 hrs.; B. Rusak.

Virtually all physiological and behavioral parameters in animals and humans are rhythmic. Rhythms of critical interest are those that correspond to major geophysical cycles: daily rhythms (sleep-wakefulness, feeding, body temperature, performance); lunar rhythms (tidal activity rhythms); and annual rhythms (hibernation, seasonal reproduction). Research in this area ranges from studies of cell biochemistry to studies of star-map orientation; the aim of the class is to present a broad introduction to this highly interdisciplinary subject.

Prerequisite: Psychology 100 or Psychology 101 or Biology 1000.

364 Ethology, lect.: 2 hrs.; R.E. Brown and J. Mates.

Ethology is the biological study of behaviour. It uses psychology, genetics, physiology, ecology and evolutionary theory to solve problems in the development, function and causation of behaviour across all animal species.

The class presents these diverse approaches to the study of animal behaviour in naturalistic and experimental situations. In laboratory exercises students make qualitative and quantitative records of behaviour, both in the field and in the laboratory.

There are two examinations (Xmas and final), several group research projects (first term) and an individual research project (second term).

Prerequisites: Psychology 100 or Psychology 101 and Psychology 201A or B or Biology 1000.

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.; R. Klein.

*** 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.

*** 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.

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.

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.

Religion

Professor
R. Ravindra

Assistant Professor
T. Sinclair-Faulkner
(Acting Chairman)

Adjunct Professor
W.C. Smith (Harvard)

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.

B.A.
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 classes offered by other Departments. Programmes should be planned in consultation with the undergraduate adviser, Dr. C.T. Sinclair-Faulkner.

Classes marked † are offered in 1979-80. Please consult the Department to determine when other classes will be offered.

†100 Love, Death and Religions, lectures: 3 hrs; R. Ravindra and T. Sinclair-Faulkner

What is love? Why is something so universal and important also so problematic? What is death? What meaning can life have in the face of the inevitability of death? In the form of a dialogue between the great religious traditions of the East and the West this class explores how people deal with love and death. For instance, does individual identity come to a complete end with death or does one continue existence in some form, as some religions assert? Besides serving as an introduction to the academic study of religion the class deals directly with the problem of religious pluralism. We live in a community in which there are atheists, agnostics, Jews, Christians, Muslims, Hindus, etc. They marry one another and they die side-by-side; is it possible for them to live together tolerantly as well as religiously?

101 Introduction to the Study of Religion, lectures: 2 hrs.; section meeting 1 hr.; 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 class fulfills the first-year Writing Requirement. A detailed syllabus is available from the Department of Religion.

†201 Western Religious Experience, Seminar format: 2 or 3 hrs.; 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.

202 Religion and Culture in India, lectures and seminars: 3 hrs.; R. Ravindra

This class will provide an introduction to the rich variety of spiritual and religious expressions in the vast and ancient culture of India. Some of the major ideas (such as knowledge that transforms and liberates), practices (such as yoga and meditation) and gods (like the dancing god Shiva) of the Hindus will be presented. Then we shall look at the continuity of these ideas and practices as well as the radical departure from them in the development of Buddhism. Then we shall examine the consequences of the encounter of Hinduism with Islam and much later with Christianity in India.

After this extensive introduction to the religions of India, much of the second term will be devoted to an intensive study of the *Bhagavad Gita*, perhaps the most important psycho-spiritual document in the long history of India. The emphasis in the second term will be on the relevance of the material in the course to the life situation of modern Western men and women.

Lectures and seminars will be based on texts, stories, myths, visits to temples, films and works of art. Cultural evenings may be planned in conjunction with the class, depending on student interest.

† 203 Religion in Story, lectures and seminar: 3 hrs.; T. Sinclair-Faulkner

It is no accident that stories always seem to be associated with religion. When religious people have sought answers to ultimate questions, or when they have tried to come to grips with the mystifying phenomenon of the Holy, they have turned to stories as an important means of doing so.

Modern novels and short stories, particularly Canadian works, will be the primary reading assignments in this class. They will be set in the context of related material from the broader western culture: Jewish and Christian scriptures, folk tales, classics like *The Epic of Gilgamesh* and *The Pilgrim's Progress*. In this fashion the class will explore religion as a way of life, as an experience of the Holy, as an encounter with God, touching on issues posed by death, religious leadership and religious "doing".

204 Introduction to Comparative Religion, lectures and tutorials: 3 hrs.; R. Ravindra

A class in comparative religion can be designed to prove that other religions are not as good as our own, or that all other religions are better than the one our parents nominally belong to, or some other combination of these conclusions. It is obvious that each of the major religious traditions of the world has an enormous variety of doctrine and expression which has undergone a great deal of historical change. It is also sadly true that most of the adherents of each religion display a large gap between the ideal of their tradition and their actual behaviour. It is possible to focus on the ideals of one religion and the actual practice of another, or to have a microscopic view of one but a telescopic view of another for comparison, thus arriving at almost any conclusion one wishes to.

The task of a comparativist is a difficult one and very challenging, demanding integrity, empathy and self-critical awareness. It is also a radical task, calling into question the very roots of the other and of oneself. The first half of the class will be devoted to basic general questions such as "What is to be compared?", "What materials are comparable?", "What attitude is necessary for such a study?", "Are the internal and external understandings of a tradition

complementary?". The second half will be devoted to a comparative study of the four gospels and the *Bhagavad Gita* around the themes of "love", "knowledge", "action", "death", and "the meaning of life".

† 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 Religion in Canada, lectures and seminars: 3 hrs. 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.

251 Mystical Consciousness and Modern Science, Seminar: 2 hrs.

Traditional spiritual disciplines, such as the ones represented by Yoga, Zen, Sufism, Jesus Prayer, have developed an enormous amount of experiential and theoretical material about human consciousness and its variation from ordinary consciousness to mystical or cosmic consciousness. The first term will be devoted to a typology of human consciousness based on traditional sources. The second term will be devoted to a critical examination of this typology in the light of the latest scientific discoveries and models in the relevent fields.

Prerequisite: One class in Religion or one class in Science (preferably both).

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 or higher level may take the course; others will be permitted only with the consent of the instructor.

Russian

Professor
Y.Y. Glazov (Chairman)

Assistant Professors
J. A. Barnstead
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 thorough 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 219—Russian Drama; Russian 222A—Slavic Fantasy and Science Fiction; Russian 224B—Theories of Literature; Russian 243A—Dostoevsky and Tolstoy; Russian 245B—Pasternak and Solzhenitsyn; Russian 250A—Tolstoy; Russian 252B—Chekhov and Turgenev; Russian 260B—Russian Satire and Humour; Russian 303A—Russian Intellectual History; Russian 309A—Soviet Society Today; Russian 315A—Introduction to Russian Literature (conducted in Russian); 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/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.

104A Russian Culture and Civilization, lect.: 2 hrs.; Y.Y. Glazov

Conducted in English.
No prerequisites.

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 Russia.

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.

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 outstanding 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.

207B Russian Literature and Culture after Stalin's Death, lect. and discussion: 2 hrs.; Y.Y. Glazov.

Conducted in English.
No prerequisites.

This class traces the literary, cultural, and political history of Russia after 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.

219 Russian Drama, lect. and discussion: 2 hrs.; J.A. Barnstead.

Conducted in English.
No prerequisites.

A survey of Russian stage literature from its beginnings at the court of Tsar Alexis to the present day. Its nature as an imported genre. The classical drama of the eighteenth century. Masterpieces of the Golden Age: Pushkin's *Boris Godunov* and *Little Tragedies*. Griboedov's *Woe from Wit*. Gogol's *The Inspector General* and *The Marriage*. The plays of Ostrovsky, Turgenev, and Tolstoy.

The second semester begins with Chekhov and the Moscow Art Theatre. Discussion of the theories of Stanislavsky and Nemirovich-Danchenko. Gorky (*The Lower Depths*). Andreev. Meyerhold's theories. Modern Soviet Drama.

222A Slavic Fantasy and Science Fiction, lect. and discussion: 2 hrs.; J.A. Barnstead.

Conducted in English.
No prerequisites.

Fantasy and science fiction as genres. Their roots in Slavic folklore. The structure of the fairy tale. Utopian and anti-Utopian Russian literature. A.N. Tolstoy (*Aelita, The Deathray of Engineer Garin*), M. Bulgákov (*The Fatal Eggs, Heart of a Dog*). Contemporary Soviet science fiction (the Strugatsky brothers and others). Polish science fiction (Stanislaw Lem); Ukrainian science fiction (Vladko, Berdnyk); Bulgarian science fiction.

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 characterizing 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. Formalism and American "New Criticism". Topics treated include formalism, early Marxist criticism, Socialist Realism, post-Stalin Marxist criticism, Structuralism, 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.

250A Tolstoy, lect. and discussion: 2 hrs.; I. Vitins.

Conducted in English.
No prerequisites.

An introduction to the work of this enigmatic spiritual giant of Russian literature; the impact of his philosophy and writing on world literature and thought. Reading will include the epic *War and Peace, Anna Karenina,* and the controversial *Kreutzer Sonata.*

252B Chekhov and Turgenev, lect. and discussion: 2 hrs.; I. Vitins.

Conducted in English.
No prerequisites.

Close analysis and discussion of the major work of Turgenev, sensitive portrayer of socio-political and psychological issues of the second half of the nineteenth century in Russian, and Chekhov, unequaled short-story writer and radical innovator in modern theatre. Reading will include: *First Love, Fathers and Sons, In the Ravine, Ward No. 6,* and *Cherry Orchard.*

260B Russian Satire and Humour, lect. and discussion: 2 hrs.; Y.Y. Glazov.

Conducted in English.
No prerequisites.

The class treats Russian satirical and humorous literature written within the last two centuries. Russian satire and humour have made a great contribution to the world's treasures in this genre. Students will be asked to read masterpieces by Gogol (*Dead Souls*) and Dostoevsky (*The Devils*). Lectures will cover some of the immortal comedies of Russian literature and the early humorous stories of Chekhov. For the period after the 1917 Revolution stories by Soviet satirists, including Zoshchenko and Bulgakov, will be discussed as well.

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.

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.

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 artistically 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.

490 Russian Special Topics, staff.

Conducted in Russian.
Prerequisite: permission of the Department.

This class is designed to offer the student an opportunity 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)
Ieva Vitins (Assistant Professor of Russian, Coordinator of the Programme)
John Barnstead (Assistant Professor of Russian, Coordinator of the Programme)

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 at Dalhousie or some other Canadian university, the second half at the Pushkin Institute in Moscow, USSR. Enquiries and applications should be addressed to the Coordinator of the Programme.

Classes at Dalhousie September-December

309A Contemporary Russian Society, Seminar: 2 hrs.; Staff.

(This class corresponds to History 3090A).
310A Intensive Grammar, Seminar: 5 hrs.; Staff.

Double credit.
This is an intensive version of Russian 300.

312A Intensive Russian Prose and Poetry, Seminar: 5 hrs.; Staff.

This is an intensive (double credit) version of Russian 302.

Classes at Pushkin Institute, Moscow January-May

301B Grammar, Seminar: 8 hrs.
(Double credit.)

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. Gamberg
R.C. Kaill (Chairman)
V.P. Miller
J.G. Morgan
V. Thiessen
J. Stolzman

Assistant Professors
R. Apostle
P. Butler
P.G. Clark

Honourary Assistant Professor
A. Roadburg

Visiting Assistant Professors
J. Burke
N. Jabbra

Visiting Lecturers
A. Davis
R. Smith
S. Williams

Research Associates
R.C. MacKay
F. Wien

Honorary Visiting Research Associate
P.C. Willett

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 human social life exhibits regularity and recurrent patterns, and that people are essentially social animals. 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. 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 therefore 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 concerns with the complete range of human societies and cultures in all historical and geographic settings. Its primary emphasis is upon preindustrial 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, and 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.

Career Options

Career possibilities in sociology and social anthropology include research and managerial positions in government, industry, or university, and teaching at the high school or university levels.

Degree Programmes and Course Offerings

Degree Programmes

The department offers integrated programmes in Sociology and Social Anthropology leading to general and honours B.A. degrees.

B.A. Degree
Students enrolled in the bachelor's (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 majoring in Sociology and Social Anthropology include:

100, 201 or 410, and either 224A or 225B. In addition, at least one class must be taken from a selected list of classes at the 300 level. (See year III, below).

Recommended Course Structure

Year I
1. 100.
2. At least one of Economics 100, Political Science 100, Psychology 100 or History 100.
3-5. Three other classes chosen from fields other than Sociology and Social Anthropology.

Year II
6. 201A or B or 410.
7. 224A or B or 225B.
8. Two other classes in Sociology or Social Anthropology.
9-10. Two classes in fields other than Sociology or Social Anthropology.

Year III
11. At least one full class credit from 303, 306, 309, 318, 319, 321, 326, 337, 338 and 339.
12-13. Two other classes in Sociology and Social Anthropology.
14-15. Two classes from fields other than Sociology and Social Anthropology.

Honours B.A. Programme
The department offers a programme leading to an honours degree in Sociology and Social Anthropology. An honours degree is recommended and frequently required preparation for advanced study in Sociology or Social Anthropology. Interested students should contact Professors H. Gamberg or V. Miller.

The nine classes in Sociology and Social Anthropology required for the honours degree include:

224A or B Introduction to Sociological Theory, or

225B Introduction to Anthropological Theory,

310 Research Methods,

401A History of Sociological Thought and

405B Contemporary Sociological Theory

401 Statistics, and

450 the Honours Seminar.

The seminar paper produced in 450 will be examined as an honours thesis, to be presented in an opening 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.

The following course outline represents a typical, well-rounded honours programme in Sociology and Social Anthropology.

Recommended Course Structure*

Year I
1. 100.
2. At least one of Economics 100, History 100, Political Science 100, or Psychology 100.
3-5. Three classes chosen from fields other than Sociology and Social Anthropology.

Year II
6. 224A or B or 225B.
7-8. 2-1/2 other classes in Sociology and Social Anthropology.
9-10. 2 classes in fields other than Sociology and Social Anthropology.

Year III
11. Sociology 310.
12. At least one credit from 303, 306, 309, 318, 319, 321, 326, or 327.
13. One other class in Sociology and Social Anthropology.
14-15. Two classes from fields other than Sociology and Social Anthropology.

Year IV
16. 410.
17. 401A and 405B.
18. 450.
19-20. Two other classes from fields other than Sociology and Social Anthropology.

* Students whose major emphasis is Sociology shall take at least 1 full class credit from the following courses in Social Anthropology: 232, 225B, 227, 316, 336, 337, 338, and 339. Students whose major emphasis is Social Anthropology shall take at least 1 full class credit from the following courses in Sociology: 203, 206, 208, 211, 212, 224, and 306.

Combined and Unconcentrated Honours
Combined honours programmes can be arranged between sociology and social anthropology, and economics, history philosophy, political science, and psychology. Combined honours involving other disciplines than those listed may be arranged, if the departments concerned agree. 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. Clark.

African Studies Programme
The Department is cooperating with several other departments in offering an African Studies Programme. Interested students should contact the chairman of the Undergraduate Committee.

Sociology and Social Anthropology Classes Offered

100 Introduction to Sociology and Social Anthropology
The purpose of this class is to introduce students to the disciplines of Sociology and Social Anthropology.
Emphasis is placed on basic concepts, unique perspectives, logic of social inquiry, and major theoretical and methodological issues in the field. Substantive course contents include the study of culture in its many aspects, socialization, deviance, social organization, institutions and change. Students will be expected to attend two lectures and one tutorial weekly.

201A & B Social Research
This class is designed to acquaint students with the skills used by sociologists to analyze social phenomena. A variety of quantitative and qualitative methods will be introduced which will enable the student to understand and evaluate fact-finding and problem-solving studies of social phenomena which are routinely carried out by sociologists, and by practitioners in such fields as business, government, social work, health, and education. The class begins with a consideration of the selection and formulation of the research problem and ultimately includes discussion of the techniques of data preparation and analysis.

202 Comparative Sociology/Social Anthropology
The starting point for this class is the vision of the founding fathers of sociology that the discipline was to be a comprehensive and comparative science of society. Modern sociologists view comparative studies primarily in large scale cross-societal terms, while modern social anthropologists (equally the intellectual descendants of the founding fathers) tend to be more interested, in addition to a comparative approach, in the natural history of smaller societies, and in applying the methods learned in these to more complex societies.

The first part of the class will be devoted to a treatment of several topics from the social anthropological perspective. The second part of the class treats the major figures and ideas in social anthropology and general sociology from an historical perspective. Student field projects will be an important part of the learning process in addition to the more usual kinds of student assignments.

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.

207 Socialization
Socialization is the process by which a society's values and customs are perpetuated, passed along to the younger generation. This is seen as the function of certain institutions, such as the family, the churches, and the schools. These, however, require support from the larger social milieu. Our own rapidly changing society appears to be at a point of crisis in this regard. Recent social changes have undermined traditional means by which children acquire a sense of allegiance to their elders, and take to themselves the society's major values. This change will be described, along with the situation of modern parents, who must train their children in the absence of certain traditional supports. This class is designed primarily for parents, for people who are working with children and youth in such fields as teaching, recreation, the social services, and medical fields, and for persons who otherwise have experience in child-care. Problems in training children for responsibility, in a modern-urban milieu, will be dealt with in some detail.

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 are dealt with, in addition to such subcommunities 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 Youth Organizations
This class is based on a comprehensive survey of those organized activities for teenagers in North America which attempt to give substantial socialization experiences to at least some of the youth who participate. Organizations which offer leadership training, high-school clubs and extra-curricular activities, youth programmes by the churches, programmes of volunteer work and paid employment, junior auxiliaries of political parties and military reserve units, hobby groups, cities' recreation departments, sports programmes, summer camps and travel programmes, wilderness and environmentalist groups are reviewed, along with such organizations as the Y, the Scouts, 4-H, and Junior Achievement. Cities' information offices, voluntary action centres, learning exchanges, and other systems for disseminating information about youth programmes are also reviewed. Certain towns and cities are compared with respect to their offerings for teenagers. Persons who have had experience in youth work, or as teachers or parents, are especially invited to enroll in this course.

210 Ecology and Culture
It is clear that the ecology (meaning the natural environment) is affected by the way people live. It is clear how the way people live is affected by their ecology or environment. This class deals with the way 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-gatherer, 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: Introduction to Sociology and Social Anthropology.

211 Canadian Society
An analysis of selected aspects of Canadian society employing theoretical perspectives and empirical materials. The aim of the class is to develop a composite view of the society as a whole through an understanding of the interrelationships be-

tween 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.

214 Industrial Sociology

This class will examine the social relations of industry at both the micro- and macrosociological levels of analysis. The class 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 degradation 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 student is exposed to sociological views of the occupational structure, and of the constraints and influences that bear upon persons in various occupations. During one half of the course, the student is helped with his own career plans.

217A Political Sociology

This class 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 Sex Roles in Cross-Cultural Perspectives

What difference does sex make socially? And why? Are our sex roles made for us by biological inheritance or by sociocultural traditions, or do we make them ourselves? Or is some combination of these factors involved? What are the variations and similarities in the ways human beings have treated sex differences throughout the many human societies about which we know? Why do we have Women's Liberation and the conservative backlash? Where do we go from here? These are the main questions we will be exploring in this class. Taking a broad comparative framework, we will examine sex roles in the contexts of daily life, of economics, politics, kinship, social stratification, religion and values, and socialization. With these data as background, we will then take a look at sex roles in Canada and in Nova Scotia. Students of both sexes are invited to take this class.

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 class will be devoted to a consideration of some of the cross-societal 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 with particular reference to the Canadian scene. 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

Groups influence individuals and individuals react (resist, adapt to, cooperate with, or use to their own advantage) to these influences. The processes involved in such person-group relationships will be explored in a number of different settings, such as the family, mental hospitals, and universities. The class will focus on both a critical review of the actual studies done and on social-psychological interpretations or "theories" of these findings.

Prerequisite: Sociology and Social Anthropology 100 or consent of the instructor.

223 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: Introduction to Sociology and Social Anthropology, or Psychology 100 or permission of the instructor.

224A & B Introduction to Sociological Theory

The class provides a systematic introduction into major topics in sociological theory. Classical theorists up to 1920 are treated (Saint-Simon, Marx, Weber, Durkheim, Pareto, etc.).

225B Introduction to Social Anthropological Theory

A class designed to acquaint students with the foundations and development of social anthropology. The growth of theory in social 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 social anthropology points. Special efforts will be made to expose students to the original writings of prominent anthropologists.

Prerequisite: Sociology and Social Anthropology 100 or consent of the instructor.

226 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: Sociology and Social Anthropology 100 or permission of instructor.

227 Language and Culture

This class 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 into meaningful units for the speakers of that language.

Prerequisite: Sociology and Social Anthropology 100 or consent of the instructor.

229A 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: Sociology and Social Anthropology 100.

231 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.

Prerequisite: Sociology and Social Anthropology 100 or consent of the instructor.

236 Social Anthropology of North America

This class considers 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 class will treat representative tribes of each geographic "culture area" in North America. It will conclude with a discussion of present-day Indians in Canada and the United States.

Prerequisite: SSA 100 or consent of the instructor.

237 Social Anthropology of the Middle East

We know the Middle East as the cradle of civilization, the scene of the Crusades, and the focal point for a variety of international tensions. But beyond history book and newspaper are real people with their own modes of social organization, values, ways of thinking and making a living, and their own valued resources. If Western nations, including Canada, are to deal effectively with this increasingly important region, their people must come to understand the values and aspirations of the people of the Middle East.

In this class we will touch upon some of the common trends and diversities which characterize the region from Persia and Afghanistan to Morocco: geography and population; ethnic groups and languages; religion; social organization; modes of subsistence; values; and the impact of the West.

238 Social Anthropology of Africa

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 Programme are cordially invited to register for this class.

Prerequisite: SSA 100 or permission of the instructor.

239 Social Anthropology of Asia: The Development of Civilization

Recent anthropological research has made it abundantly clear that *Africa* and not *Asia* was the cradle of mankind. *Asia*, however, can be regarded as the cradle of civilization. The ancient Near East and the ancient Far East are of paramount importance, for it was in these geographical areas that one encounters for the first time all the spiritual and material elements which make up our modern way of life. We shall examine these ancient civilizations in the light of latest archaeological research—In order to understand the Present one has to study the Past.

Lectures will be illustrated with slides, many of which were photographed on the spot by the instructor.

Prerequisite: Permission of instructor.

240 Medicine and Health Across Cultures

Every culture has its own concepts of health and nutrition, its own treatments and practices. The strengths and weaknesses of our own system grow clearer when medical anthropologists compare it with that of other societies. This class's specific topics will vary from year to year but will always include: native theories of the etiology of illness; transcultural vs. culture-specific disease syndromes; pregnancy and childbirth in other cultures and our own; senescence and death viewed cross-culturally; the conflict between traditional medical systems and the Western physician and hospital; patients' expectations and the medical subculture; the physician as secular priest; and food and nutrition across cultures. Special attention will be paid to Canada's native and immigrant peoples.

Prerequisite: Either an introductory class in anthropology or in sociology.

301A/501A Sociology of Work Roles

Examination of structure and dynamics of management-employee relationships from sociological perspective. There will also be consideration of horizontal relationships among workers at various status levels. Organizations to be studied will include both small and large-scale work structures. Consideration of the implications of collective bargaining procedures on work roles will also be included.

302B/502B Comparative Economic Organizations

Critical examination of the nature of economic organizations. There will be particular focus on developmental trends, including consideration of alternative and futuristic models. Organizations to be examined include elitist specialist merchandising operations, as well as mass service distribution systems.

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.

306B 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, and appropriate areas of Canada.

307 Human Nature and Anthropology

Can anthropologists explain why we feel sexual jealousy or why we tend to follow a dominant leader in times of stress? Can the evolutionary theories explaining why we have fingerprints and flat nails explain our behavioral traits? This class reviews the fossil record of human evolution and recent developments in the theories which deal with it, in order to examine critically biological explanations of human sex dif-

ferences, culture, infant behavior, racial prejudice, altruism, aggression, and other topics.

Prerequisite: An introductory class in sociology or anthropology, or in psychology or biology.

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 demographic factors: 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.

312 Social Conflict

This class 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 class 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.

315 Sociology of Education

This class examines the nature of human learning within its cultural context. Analysis of social learning mechanisms and processes receive major consideration.

316 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? This course involves extensive use of slide materials.

Prerequisite: Permission of instructor.

318B Issues in the Study of Society

This seminar consists of an intensive examination of a selected substantive issue within Sociology and Anthropology. Since the specific topic or research problem which receives special treatment will differ from year to year, students are advised to consult the department prior to registration.

319 Social Movements

The general topics of unstructured group activity encompasses phenomena traditionally classified as collective behavior incidents, as well as reformist and revolutionary social movements. Although there is considerable overlap, the collective behavior literature tends to focus on relatively brief and spontaneous activities, like panics, disasters, and crazes, while work on social movements examines relatively more organized and enduring group activities which still fall outside the realm of normal institutions. This class will investigate problems emerging from both areas of concern. Emphasis will be given to relevant Canadian materials.

320B Comparative Social Organization

This class is about the ways in which human beings organize themselves in common purpose. Examples of such ways include kinship structures, voluntary associations, role structures, class and caste systems, and networks. We will emphasize pre-industrial societies and non-industrial sectors of industrial societies, placing them in a comparative framework.

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 behavior 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: Sociology and Social Anthropology 100 or permission of the instructor.

323 Sociology of Crisis Intervention

Emphasis is placed on understanding and investigation of the social significance and impact of the Distress Centre phenomenon within our society. The class 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.

324 Criminology

This class treats crime as a form of social deviance. The significance of official crime rates is analyzed, and the various forms of criminal structure and behavior are examined. The second part of the class deals primarily with societal response to offenders, tracing the judicial and correctional processes in Canada.

325 Sociology of Science and Ideas

Science, like other areas of human endeavor, is deeply influenced by the society and culture within which it operates. At the same time, scientific institutions exert strong pressures upon society and culture. In the attempt to understand the reciprocal interaction between science and society we shall stress a comparative approach, examining science in different cultural groups and different historical periods. Various modern scientific disciplines will be compared in different countries, including developing and developed countries, with differing economic and political organizations. Students will be encouraged to examine the interplay between science and society *in Canada* compared with other societies.

The social organization of science will be investigated through the application of micro-sociological analysis (e.g. small groups and organizational sociology theory). In particular, we shall focus upon tensions and conflicts within the scientific community which are understandable in sociological terms. We shall examine innovation and change within the scientific community, including the processes by which new fields emerge and new ideas are evaluated. The impact of technological change upon the organization of scientific work will be investigated giving particular attention to the impact of electronic technology upon science.

We shall engage in some attempts to forecast future directions of science and technology. Will the future of science be that of the "endless horizon" of ever new breakthroughs and discovery or that of a demise of creativity and discovery?

Course evaluation will be based upon a combination of short written assignments, examinations, and a term paper.

326A The Development of Sociology as a Discipline

This is a class 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 classes in the history of sociological thought and in the sociology of knowledge.

327/527 Sociology of Careers

Careers in the humanitarian, social service, working-with-people area will receive especial emphasis, as will sociological studies of the unemployed. This is a seminar for graduate students and advanced undergraduates, with individualized research projects.

328 Juvenile Delinquency

This class treats juvenile delinquency as a form of social deviance. Current issues in delinquency are defined and analyzed from a sociological perspective. Substantively, the class focusses on etiologies of delinquency, the juvenile justice system and sentencing alternatives.

330 Cross-Cultural Study of Socialization

In this class 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 Asis, 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: Sociology and Social Anthropology or permission of the instructor.

331 Time and Society

This seminar will examine the organization and utilization of time in human societies. We shall examine several attempts by social scientists to develop theories (and perhaps revise them) through the empirical examination of patterns and correlates of time use in different societies and cultures. We will be studying both preliterate and developed societies and will utilize both "anthropological" (e.g. ethnographies) and "sociological" data (e.g. surveys).

The class will be conducted as a seminar with discussion of assigned readings and class reports dealing with ancillary readings. Students will be expected to participate regularly in the seminar and make oral presentations of their research papers. One or two short research paper(s) will be required in the first half year, with a major paper being due in the spring. Topics for these papers will be developed in consultation with the instructor. The final class grade will be based on the following criteria: Seminar presentations and discussion (25%), short paper(s) (25%), and a major paper (50%).

350 Seminar in Social Anthropology

Offered sporadically, this seminar is designed to allow small groups of students to pursue a particular area in social anthropology for which no regular course is offered. The topic and requirements for the class are jointly decided by the students and the professor involved.

Prerequisite: SSA 100 and consent of the instructor.

401A History of Sociological Thought

This class will deal with selected theorists in the history of sociological thought. Students wil make one oral presentation and present a written report at the end of the term.

405B 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.

410 Social Statistics

The logic behind a statistical approach to the solving of problems is emphasized in this class. A step-by-step unfolding of statistical reasoning is presented in the lectures. Students are then expected to apply these steps to an analysis of some sociological data. The resulting analysis will be written in several drafts of the same paper. An appreciation of the interplay between methods, theory, and statistics will be emphasized. A grasp of Grade 9 algebra is asumed.

(Third-year students wishing to take courses 401A, 405B, or 410 above, should contact the instructor concerned.)

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

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.

Prerequisite: Written permission of instructor.

Spanish

Associate Professors
S.F. Jones, Chairman
A. Ruiz Salvador

Assistant Professors
J.E. Holloway
J.M. Kirk

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 today, 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.

The Salamanca Programme at the Colegio de España
The Salamanca Programme is a special inter-disciplinary course of instruction designed to allow Dalhousie students to undertake both an intensive study of the Spanish language and courses in Hispanic culture. In order to participate, students must normally have completed Spanish 201B with at least a standing of 'B'. The programme takes place during the fall,lasts for one term, and is offered at the Colegio de España in Salamanca, Spain. Dalhousie University will grant 2-1/2 credits to those students who successfully complete their courses in Spain. The cost of attending the programme at Salamanca including return transportation, would be approximately the same as that incurred in a term at Dalhousie. Enquiries and applications should be addressed to the Coordinator of the Programme.

Spanish Studies to be taken at the Colegio de España

Spanish 310 A	**Advanced Grammar**	**(1 credit)**
312 A	**Spanish Art**	**(1/2 credit)**
314 A	**Spanish Literature**	**(1/2 credit)**
316 A	**Spanish History**	**(1/2 credit)**

Spanish Degree Programmes

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

Classes marked * are not offered every year. Please consult the timetable on registration to determine if this class is 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, Kirk. Lecture and discussion, 2 hrs.

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, Kirk. 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, Kirk. Discussion and conversation, 2 hrs.

Emphasis will be placed on perfecting conversational skills as the reading material is discussed in class.

*** 208B 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.

*** 209A Women in Latin America,** Jones. Lecture and discussion, 2 hrs.

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.

*** 211B The Cuban Cultural Revolution,** Kirk. 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.

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,** Kirk. 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.

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.

*** 221A The Novel of the Mexican Revolution,** Kirk. Lecture and discussion, 2 hrs.

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. Conducted in English.

*** 223B Contemporary Latin American Prose,** Holloway. Lecture and discussion, 2 hrs.

Conducted in English. Open to students in all departments. No prerequisites. No knowledge of Spanish necessary.

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, Carlos 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. Lecture 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.

302B Translation, Staff. Lecture and discussion, 2 hrs.

Exercises in translation from Spanish to English and from English to Spanish.

303A Composition, Staff. Lecture and discussion, 2 hrs.

Training towards accuracy in writing Spanish. Vocabulary building, free composition.

***307A The History of Latin America,** Kirk. Lecture and discussion, 2 hrs.

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.

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.

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,** Ruiz, Lecture and discussion, 2 hrs.

Conducted in Spanish. A study of representative works.

*** 351A Contemporary Spanish American Literature,** Holloway, Lecture and discussion, 2 hrs.

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.

*** 450A Golden Age Theatre,** Staff. Lecture and discussion, 2 hrs.

*** 451B Golden Age Poetry and Prose,** Staff. Lecture and discussion, 2 hrs.

498A Reading course for Honours students.

499B Reading course for Honours students.

Theatre

Faculty

Alan Andrews
Robert Doyle, Costume Studies
Lionel Lawrence, Chairman
Robert Merritt
Arthur Murphy
John Neville
David Overton
Peter Perina, Scenographer
Pat Richards

Special Instructors
Ian Pygott (Technical Direction)
David Porter (Properties)
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.

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
(The core programme is under revision, at the time of printing, especially the offerings in second, third and fourth year. Students should check with the department before enrolling for 1980.)

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 fourth-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
(First year electives should be: Architecture 100, Mathematics 102R, and Physics 100.)
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.*

Major in Theatre

A proposal to institute a three-year major in Theatre is currently under consideration. Students considering enrolling in this programme should consult the department.

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: Overton and faculty. 6 credit hrs.

3 one-hour sessions weekly (1 lecture session, 2 smaller discussion/workshop sessions). This class provides an introduction to the nature of the production process and to the contemporary theatre in a Canadian context through lectures, discussion, demonstration, script analysis, and practical scene work. One of the discussion/workshop sections is designed for students who wish to pursue the professional actor training programme and is open by audition only; the other sections are open to all students.

105: Theatre Organization and Stagecraft, 2 hrs. lectures; 3 hrs. labs and work in productions. Perina, and 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. This is not a class in film production.

Year 2

201: The History of the Theatre, 3 hrs. lecture, discussion, demonstration, Andrews, 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 mediaeval 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. In the second half of the year the class 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 movement, 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 Playwriting in Canada, 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 hrs.

This class is concerned with the play as a vehicle for performance rather than as a literary work. Through weekly writing exercises dealing with specific dramaturgical problems, the craft of playwriting is explored. Simultaneously, a basis for understanding the nature of dramatic forms is provided through detailed analysis of the structure and techniques of plays representing a broad spectrum of styles, genres, and historical periods. With this background, the class then writes plays, both individually and collaboratively, which plays are then revised, critiqued, and rewritten.

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.

Prerequisites: Theatre 105, 270. Acting students must consult with instructor.

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.

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., Lawrence, 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.

Prerequisites: Only available to honours theatre students who have taken Theatre 105, 270, 280 and 360.

470 and 471: Special Topics, Faculty, 6-12 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.

490: Dramatic Theory and Criticism, and the Aesthetics of the Theatre, 4 hrs., Andrews, 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.

Classes in Costume Studies

These classes make up an entire programme. They are not available for credit towards degree, i.e. B.A., programmes. Students accepted for the Costume Studies programme concentrate their work solely on these classes.

Year 1.

0175 Costume Studies 1, 4 hrs. daily. Doyle and staff. 30 credit hrs.

This class involves a basic outline of the history of costume; a history of textiles; pattern drafting; a designers method for the media; and practical costume construction.

Year 2.

0275 Costume Studies II, 4 hrs. daily. Doyle, visiting professional designers and staff. 30 credit hrs.

This covers advanced pattern drafting; decoration techniques; millinery; costume accessories; the wearing of costume; and costume making.

Year 3.

0375 Costume Studies III, In residence and professional theatre apprenticeship. Doyle. 30 credit hrs.

On the basis of outstanding performance in the first two years, five or six students will be selected for the third year. During this year, these chosen students will be responsible for the total production of costumes required for use within the theatre department. It is intended that during part of this year the student will be placed under the supervision of the Dalhousie course director to assist in bridging the gap between student projects and the profession.

During this year, these students will learn to direct and supervise hired staff within the specific needs of today's professional theatres. They will also learn all aspects of budgeting related to costume design and manufacture for major stage productions.

Women's Studies

Although there is no programme in Women's Studies, the following classes are offered at Dalhousie University and may be taken as electives or form part of a major programme. For further information, consult the Department under which they are listed.

Comparative Literature 215 Women in Literature and Society.

Education 4020 Sex-Role Differentiation and the Educational Process.

Education 5270 Issues in Education: Women's Studies.

French 2021B Le Deuxième Sexe.

Philosophy 216/516 Philosophical Issues of Feminism.

Psychology 477B/577B Psychology of Women.

Sociology 219 Sociology of Women.

Spanish 209A Women in Latin America.

History 360 Women and Society 1789-1968 (or Bread and Roses: the history of women's liberation struggles 1789-1968).

These classes on women are offered at Dalhousie in other faculties:

Law School: 2024A/2025B Legal Status Based on Sex.

Library School (summer) LS 714 Women's Studies: Current Literature and Resources.

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