## University of King's College

FOUNDED A.D. 1789

|  | January       <br> $S$ $M$ $T$ $W$ $T$ $F$ $S$ <br>   1 2 3 4  <br> 5 6 7 8 9 10 11 <br> 12 13 14 15 16 17 18 <br> 19 20 21 22 23 24 25 <br> 26 27 28 29 30 31  | $$ | $$ | April       <br> $S$ $M$ $T$ $W$ $T$ $F$ $S$ <br>   1 2 3 4 5 <br> 6 7 8 9 10 11 12 <br> 13 14 15 16 17 18 19 <br> 20 21 22 23 24 25 26 <br> 27 28 29 30    |
| :---: | :---: | :---: | :---: | :---: |
|  | $M a y$       <br> $S$ $M$ $T$ $W$ $T$ $F$ $S$ <br>     1 2 3 <br> 4 5 6 7 8 9 10 <br> 11 12 13 14 15 16 17 <br> 18 19 20 21 22 23 24 <br> 25 26 27 28 29 30 31 | $$ | $$ | August        <br> $S$ $M$ $T$ $W$ $T$ $F$ $S$  <br> 3 4 5 6 7 1 2  <br> 10 4 5 6 8    <br> 10 11 12 14 15 9   <br> 17 18 19 20 21 22 23  <br> 24 25 26 27 28 29   <br> 31       29 <br> 30        |
|  | September       <br> $S$ $M$ $T$ $W$ $T$ $F$ $S$ <br>  1 2 3 4 5 6 <br> 7 8 9 10 11 12 13 <br> 14 15 16 17 18 19 20 <br> 21 22 23 24 25 25 27 <br> 28 29 30     | October       <br> $S$ $M$ $T$ $W$ $T$ $F$ $S$ <br> 5  1 2 3 4  <br> 5 7 8 9 10 11  <br> 12 13 14 15 16 17 18 <br> 19 20 21 22 23 24 25 <br> 26 27 28 29 30 31  | November       <br> $S$ $M$ $T$ $W$ $T$ $F$ $S$ <br>  1     1 <br> 2 3 4 5 6 7 8 <br> 9 10 1 12 13 14 15 <br> 16 17 18 19 20 21 22 <br> 23 24 25 26 27 28 29 <br> 30       |  |
| $\cdots 76$ | January       <br> S M T W T F S <br>     1 2 3 <br> 4 5 6 7 8 9 10 <br> 11 12 13 14 15 16 17 <br> 18 19 20 21 22 23 24 <br> 25 26 27 28 29 30 31 | February $\begin{array}{\|rrrrrrr} \mathrm{S} & \mathrm{M} & \mathrm{~T} & \mathrm{~W} & \mathrm{~T} & \mathrm{~F} & \mathrm{~S} \\ 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ 8 & 9 & 10 & 11 & 12 & 13 & 14 \\ 15 & 16 & 17 & 18 & 19 & 20 & 21 \\ 22 & 23 & 24 & 25 & 26 & 27 & 28 \\ 29 & & & & & \end{array}$ | $$ | $$ |
|  | May       <br> S M T W T F S <br> 2 3 4 5 6 7 1 <br> 9 10 11 12 13 14 15 <br> 16 17 18 19 20 21 22 <br> 23 24 25 26 27 28 29 <br> 30 31      | $$ |  | $$ |
|  | September       <br> S M T W T F S <br>    1 2 3 4 <br> 5 6 7 8 9 10 11 <br> 12 13 14 15 16 17 18 <br> 19 20 21 22 23 24 25 <br> 26 27 28 29 30   | $$ | $$ | $$ |
| $\cdot 77$ | January       <br> S M T W T F S <br> 2 3 4 5 6 7 1 <br> 9 10 11 12 13 14 15 <br> 16 17 18 19 20 21 22 <br> 23 24 25 26 27 28 29 <br> 30 31      | $$ | March       <br> S M T W T F S <br>   1 2 3 4 5 <br> 6 7 8 9 10 11 12 <br> 13 14 15 16 17 18 19 <br> 20 21 22 23 24 25 26 <br> 27 28 29 30 31   | April       <br> $S$ $M$ $T$ $W$ $T$ $F$ $S$ <br> 3 4 5 6 7 1 2 <br> 10 11 12 13 14 15 16 <br> 17 18 19 20 21 22 23 <br> 24 25 26 27 28 29 30 |
|  | $$ | $$ | $$ | $$ |
|  | September      <br> S M T W T F <br>     S  <br>    1 2 3 <br> 4 5 6 7 8 9 <br> 1 10     <br> 11 12 13 14 15 16 <br> 18 17     <br> 25 26 20 21 22 23 <br> 24 28 29 20   |  | $$ | December       <br> S M T W T F S <br>     1 2 3 <br> 4 5 6 7 8 9 10 <br> 11 12 13 14 15 16 17 <br> 18 19 20 21 22 23 24 <br> 25 26 27 28 29 30 31 |

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## Registration Procedure

During the appropriate registration period specified in the Academic Calendar, King's Arts and Science students will go first to Dalhousie and then to the Registrar's office at King's to:
(a) submit approved selection of classes.
(b) pay fees. (Resident students will be assigned rooms)

Inanac

| 1975 | Monday, 22 <br> First day for change of course or class in Arts and Science. | Monday, 23 Study break. |
| :---: | :---: | :---: |
| osday, 1 <br> University holiday. |  | March, 1976 |
|  | Wednesday, 24 Registration and payment of fees for all | Monday, 1 |
| vednesday, 2 <br> Last day for receiving applications for admission to Arts and Science from transfer students and those who do not meet the normal admission requirements. | Extension Courses - 7:00 to 10:00 p.m. | Classe |
|  | Monday, 29 Last day for adding classes (except "B" classes). Arts and Science. | Monday, 8 Last day for withdrawing from " $B$ " classes, Arts and Science. |
| Summer School registration (2nd session). | tober, 1975 | April, 1976 |
|  | Monday, 13 | Wednesday, 7 |
| Thursday, 3 Summer School classes begin. | University holiday. | Last day of classes, (Regular Programme) |
| Nonday, 21 <br> Halifax Natal Day (University holiday). | November, 1975 | Friday, 9 |
|  | Tuesday, 11 University holiday. | Last day of classes, Foundation Year |
| August, 1975 |  | nd |
| Wednesday, 6 <br> 12:00 noon Dartmouth Natal Day | Friday, 14 <br> Last day for withdrawing from "A" classes, Arts and Science. |  |
|  |  | Friday, 16 <br> Good Friday (University holiday). |
| Tuesday, 12 <br> Last day for receiving applications for admission to full-time study, Arts and Science. | December, 1975 | day, 30 Last day for submitting work, Found |
|  |  | tion Year |
|  | Wednesday, 10 <br> Last day of classes, Arts and Science. | May, 1976 |
| Friday, 15 <br> Final day of classes, Summer School. | Classes end in the Foundation Year Programme. | Thursday, 1 <br> Last day for receiving applications for admission from foreign students (Other than Americans) Arts and Science. |
| September, 1975 | Thursday, 11 <br> Examinations begin, Arts and Science. |  |
| Monday, 1 <br> University holiday. | Sunday, 21 Student holidays begin. | Sunday, 9 <br> 11:00 a.m. Baccalaureate Servi |
|  |  |  |
| Tuesday, 2 <br> Last day for receiving applications for admission to part-time study, Arts and Science. | Thursday, 25 University holiday | Wednesday, 12 <br> Encaenia Day - King's Convocation |
|  |  | Arts and Science. |
|  | January, 1976 | Thursday, |
| Monday, 8 <br> Tuesday, 9 <br> Class and course approval, registration and payment of fees for new full-time students, Arts and Science. | Thursday, 1University holiday. | Friday, 14 Dalhousie University Convocations. |
|  |  |  |
|  | Monday, 5 Classes resume. (Regular | Monday, 17 |
| Thursday, 11 tion Year Programme). |  | Summer School registration (1st ses- sion). |
|  |  |  |
| Registration and payment of fees for returning full-time students and parttime students, Arts and Science. | Monday, 19 Last day for adding " B " classes, Arts and Science. | Tuesday, 18 <br> Summer School begins (1st session) |
| Thursday, 11 <br> Classes begin in the Foundation Year Programme. | Thursday, 29 Last day for withdrawing from fullyear or "C" classes, Arts and Science. | Monday, 24 <br> Victoria Day (University holiday). |
|  |  | June, 1976 |
| Saturday, 13 <br> 8:30 a.m. - 12 noon. Registration and payment of fees for part-time and special students in Arts and Science. | Friday, 30 Munro Day (University holiday). |  |
|  |  | Wednesday, 30 <br> Summer School ends (1st session). |
|  | Saturday, 31 Winter Carnival |  |
| Monday, 15 <br> Classes begin in Arts and Science. |  | Office Hours |
|  | February, 1976 | Week days (Monday-Friday) 9:00 a.m. |
| Sunday, 21 University Church Service - Chapel 4:30 p.m. | Wednesday, 11 <br> Meeting of Convocation 8:00 p.m. | 5:00 p.m. <br> 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 Most Reverend the Lord Archbishop of Nova Scotia and Metropolitan of the Ecclesiastical Province of Canada.
Chancellor
The Hon. Mr. Justice R. A. Ritchie, O.C B.A. (Vind et Oxon.), D.C.L. (Vind) LL.D. (Dal.),
177 Coltrin, Rockcliffe Park, Ottawa
President and Vice-Chancellor
J. Graham Morgan, B.A. (Nott.), M.A. (McM.), D.Phil. (Oxon.) 6360 Coburg R.., Halifax, N.S

Board of Governors
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5732 College Street, Halifax, N.S
The Rt. Rev. H. L. Nutter, B.A., B.S.Litt., M.A., D.D., LL.D.,

791 Brunswick Street, Fredericton, N.B
The Rt. Rev. G. F. Arnold, M.A., B.D., D.D.,

Suffragan Bishop of Nova Scotia,
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426 King Ave., Bathurst, N. B.
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B.S.Litt., D.D., B.S.Litt., D.D.,

Diocese of Nova Scotia
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## David Secord

Miss J Yvonne Spurr Blanch
Miss Marlene Mulley
Co-opted Members
G. R. K. Lynch, B.A., LL.B., C.L.U ${ }_{(1977)}$ Suite 6009 Quinpool Rd., Halifax, N.s. (1977)
R. G. Smith, Esq.
(1977) Inglis St., Halifax, N.S. B3H 1 K 7 (1977)

## The Very Rev. E. B. N. Cochran, B.A

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## ric Balcom, D.C.L.

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The Bishop of Fredericton
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Mr. R. V. A. Swetn
Dr. J. P. Atherton
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Prof. L. P. Edwards
Prof. L. P. Edwards
The Very Rev. Dr. H. R. Cooper
The Rev. T. W. F. Crowther
Th 2067 Delmar Dr., Ottawa 8, Canada C. Bruce Cochran, B.Comm., M.L.A

Rowland C. Frazee, B.Comm The Royal Bank of Canada, Head Office,
Place Ville Marie, Mintreal Place Ville Marie, Montreal 113, Quebec
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W. J. Hankey, B.A., M.A.
$\underset{\substack{\text { Unversity } \\(1975)}}{ }$ of King's College, Halifax, N.S.

## Officers of Convocation

The Hon. Mr. Justice R. A. Ritchie, Q.C., B.A.
(Dai.),
Chancello Chancellor
J. Graham Morgan, B.A. (Nott.), M.A. (McM.), D.Phil. (Oxon.), Vice-Chancellor
The Rev. R. D. Crouse, B.A. (Vind.), S.T.B (Harv), M. Th. (Trin.), Ph.D. (Harv.), Clerk

Chancellors of the Universit
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.CS., 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

Mr. Justice Roland 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, 1836-187 The Rev. Dr. John Dart, 1875-1885 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, 1937-195 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

## Academic Staff

King's Faculty of Arts and Science (1974-1975)
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Lecturer in Humanities and Social Sci-
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Hilton Page, M.A. (Tor.), D.D. (Pin Hill)
Professor of Philosophy,
i135 Rockcliffe St., Halifax, N.S.
C. J. Starnes, B.A. (Bishops), S.T.B. (Harv.), M.A. (McG.)

Lecturer in Humanities and Social Sciences, Cherry Hill P.O., Lunenburg Co., N.S.
J. Stolzman, B.A. (Oreg.), M.S. (Fla. St.), Ph.D. (Oreg.)
Assistant Professor of Sociology and Anthro-
H. G. Yesus, B.A. (Haile Selassie), M.A. (Illinois et Brandeis)
Lecturer in Humanities and Social Sciences University of King's College, Halifax, N.S.

Historical Sketch
The history of higher education in Canada began in 1789 with the founding at Wind,
sor, Nova Scotia, of the University of King's sor, Nova Scotia, of the University of King's
College. At the time of its establishment it was with the exception of the fifteenthcentury King's College 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 Kings College, New York, chartered by
George II in 1754, it did not survive the 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 them migrated, along with the Loyalists them
selves, 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 and instruction of youth and students in
Arts, to continue forever and to be called Arts, to continu"
King's College."
Since that time, King's has maintained in Canada certain of the Oxford traditions
In 1920, when the original building were In 1920, when the original buildings were
destroyed by fire, the University moved to Halifax, where, with the assistance of the Carnegie Corporation, new buildings were eventually erected on the campus of Dalhousie University. In 1930 it entered into partnership with Dalhousie which, with a of Canada's senior universities. This novel arrangement, by which the English and Scottish University traditions were united, is upheld by a special agreement under
which the two have maintained joint faculwhich the two have maintained joint faculties of Arts and Science, so that undergrad-
uates of King's read for the B.A. and B.Sc. uates 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.
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 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 Divinity Hall (for the United Church of
Canada) and the Corporation of the Roman Canada) and the Corporation of the Roman
Catholic Archdiocese of Halifax to found Catholic Archdiocese of Halifax to found
the Atlantic School of Theology. This unique institution provides ecumenical as
well as denominational theological educawell as denominational theological educa-
tion for candidates for the ministry and for
laymen tion for candidates for the ministry and for
laymen. During 1974 the School received
incorporation as a degree granting institu-
ion of higher education; thus the work pre- narted Chapel Bay, Middle Bay, Viously done by the Faculty of Divinity of School. King's continues to grant degrees in Divinity on the recommendation of the General Synod of the Anglican Church, bu
holds in abeyance its powers to grant de grees 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, an integrated and interdisciplinary approac in Canadian higher education.

The University of King's College having entered an association with Dalhousie University, the students registered in Art and Science attend classes jointly with
Dalhousie students. These classes Dalhousie students. These classes are
given by Dalhousie professors on the King's Foundation, depending on the course taken. The students of both institutions follow the same curriculum, take the same examinations, and must attain the same cademic standard. The University of King's College Foundation Year Programme, however, is available only to students regis
tered with the University of King's College

King's College is residential, on the Oxford and Cambridge pattern, and, in addition to he day students who live out, 125 men and 100 women can be accommodated in resi-
dence. Dinner in Prince Hall is formal with Latin grace; the wearing of academic dress is required of all members of the College in statu pupillari and the emphasis is everywhere upon the corporate life 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 resi dential facilities at all, or the English pro vincial plan of housing a proportion of th
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 "ontinent, since it is designed to educate he whole man and not simply to train hin for specific examinations.
In addition to its athletic activities, the College runs a Debating Society, known a he "Quintilian", and a Dramatic Society which stages two plays each year. Daily ser 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 Faculty may themselves be resident and unction in the traditional manner as "dons" for the staircase (i.e. "bays"). The bays are Angel's Roost. Alexandra Hall residence for women.

Now that there are many larg
universities which find it difficult if
imporssible to concentrate impossible to concentrate upon anythol
not strictly connected with a not strictly connected with a students graduation at the eariest possible time,
there is all the more reason for the enco agement of the small residential university wherein the future leaders of society may be educated towards the acceptance social and moral responsibility. The educa. individual, not a mass, basis.

King's tries to be a miniature of the Christin ideal of the larger community. It is this rather than any more superficial resem.
blance, which links Kings universities of Britain and makes the older in Canada.
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 Presid University, the Vice-President, the Trea surer, 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 Nova Scotia and Fredericton, and not more
than eight co-opted members. The Gover than eight co-opted members. The Gover
nors have the management of the funds and property of the College, and the power of appointment of the President, professor and officials. The Board appoints an Executive Committee
Convocation consists of the Chancellor and the Vice-Chancellor, together with al
Bachelors of Divinity and Masters and Do tors of the University. of Governors and of the Faculty of Arts and Science who hold the degree of Master or
Doctor from any recognized University Doctor from any recognized University
Fellows of the University and Bachelors the University of five years' standing who an recognized by the Clerk of Convocation
All degrees are conferred by Convocation

Exemptions Granted by Other Institutions
Oxford University exempts from Respon ions an undergraduate in Arts of this Uni
versity who has passed in the subjects o versity who has passed in the subjects of
the second or a higher year. A Bachelo o
Arts with Honours is further exempted from Arts with Honours is further exempted from
four terms of residence. The Trustes four terms of residence. The Trustes ol
Rhodes Scholarships exempt from the qual.
ifying examination candidates who are ex ifying examination candidates who ard
empt from Responsions by Oxford
versity. empt fro
versity. trar, the Bursar, the Faculty, and the Presi dent are willing to help, counsel, and ad-
vise any student at any time, and will act The Library hours are:
as much as is within their power in the as much as is within their power in the
best interest of the students and the College.

King's College Library
King's College Library was founded in 1789. Just after the Royal Charter was
granted to the College in 1802, Bishop granted to the College in 1802, 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 re Akins. From Mr. Akins the library re-
ceived most of its rare collection of some ceived most of 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 such a small
library.

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 Profes sor Burns Martin' Memorial Fund coa
to aid the library's growth in this area.

With the help of the William Inglis Morse Endowment for Canadiana, this importan area of study is growing steadily as more and more works are being published about our country.
The largest proportion of books, however, is tion is large and comprehensive and is being kept up to date constantly. The Joh
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

Monday to Friday 9:00 a.m. - 5:00 p.m.
say
9:00 a.m. - 12:00 noon
1:00 p.m. $5: 00$ p.m.
2:00 p.m. - $5: 00$ p.m.
6:00 p.m. - 10:00 p.m.
Sunday

## The student loan period for all books exce

 those on reserve is one week.Fines are charged for overdue books at the books.
Students are given the privilege of borrow ing books for the summer

## Degree

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.
Convocation confers a Bachelor of Divinity and Associate of Theology (on recommendation of the Board of Examiners of the General Synod of the Anglican Church of Canada), and the Master of Sacred Theology In Pastoral Care on recommenda the stitute of Pastoral Training. Convocation stitute of Pastoral Training. Convocation King's College (Nova Scotia).
Pre-professional work in Arts and Science by students intending to enter one of the
Dalhousie professional schools may be Dalhousie professional schools
taken as a student of King's College.


## University Regulations

Alt students are required to report their versity, to the Office of the Registrar, on or siust be reported promptly

## Place of Residence of Students.

For the purpose of admission to the Uni-
versity the place of residence versity the place of residence of a student 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 stablished a place of residence elsewhere.

Admission
No person under sixteen years of age is admitted to any class

Special Cases: The University will consider for admission students who are lacking the normal high school preparation, provide that the applicant can show (by record, intests) that his qualifications in other respects re acceptable
Occasional students are those who wish to take one university class because wish t interest in it. No class may be offered as a credit towards a degree or diploma, and no official transcript will be issued.
A student taking more than one class with out credit towards a degree or diploma at Dalhousie-King's may be admitted, if qual
ified, as a special student.

Admission Ad Eundem Statum: Student King's University mas desirng to study a factory certificates be on producing satis vanced standing and given credit for classe equivalent to those offered by Dalhousie King's.
No student shall be admitted to a degree in a course in this university unless he has work in the Faculty in question, and that essentially the last year of the degree course. In the Faculty of Arts and Science one year's work is interpreted to mean a least five classes of university grade

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 ond de made, and to pay the any. class or taking any examination.

Under no circumstances may a student reg.
ister unless all previous accounts, including ister unless all previous accounts, including
fees, library fines, and other fines, to the
Late Registration
Late registration in the Faculty of Arts and Science requires the approval of the Reg-
istrar istrar.
Withdrawal
See the ind
See the individual faculty regulations, and the Fee Section
 nofficial 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 critificate will be enclosed with the transcripts.

## Discipline

The University reserves the right to suspend or dismiss a student and require him to withdraw from the University at any time
if he fails to attain prescribed academic standards or if he has conducted himself in manner that shows he is unfit, for a ser ous non-academic reason, to continue in

If a student is required by a Faculty to discontinue attendance in the Faculty solely because he has failed to maintain the required academic standing, he is not re darded as dismissed on grounds of general
discipline and his right to be considered for admission to another faculty is unaf fected.

When the work of a student is unsati factory, or his attendance is irregular with from one or more classes, or from the Uni versity

No return of fees will be made to any stu rom the University. classes, residence, or from the University

Dalhousie Libraries
King's students enjoy the same privilege in the Dalhousie Libraries as Dalhousie the current Dalhousie calendar.

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

## STUDENT SERVICES AND

 STUDENT AFFAIRS
## Student Employment

The Department of Manpower and Immi gration, Manpower Division, in co-operation
with the University with the University, maintains a year-round
Canada Manpower (Student Union Building, Dalhousie). Tampus. is done to assist students in obtaining This ployment.
All students wishing assistance in obtaining part-time and summer work, or graduate part-ine and summer work, or graduates 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 Counselling Service
Students worried or anxious about any ma ter, whether a personal or learning problem are invited to visit the Student Counselling Centre at Dalhousie, fourth floor of the Student Union Building. Counsellors with broad experience in assisting with problems
offer a free confidential service to students Tutors
The student body has an academic mittee which arranges tutorial services for students.
University Health Service
The university (Dalhousie) operates an o patient service and in-patient infirmary in
Howe Hall. Howe Hall
Further specialist services in a fully a redited medical centre are available when indicated.

Medical Care - Hospital Insurance
Students must be able to provide proof that they are properly enrolled in any Hospital. Medicare scheme in their home province
in order to qualify for service. This apin order to qualify for service. This ap
plies particularly to residents of any provplies particularly to residents of any pro-
ince requiring a premium. for Medicare Insurance.
Canadian students remaining in Nova Scotia less than twelve months have their hos pitalization paid by their home province.
For residents of Saskatchewan and Ontario (and any other provinces with similar regu lations) this requires that the student premium for hospitalization Medicare b paid
study.
dian students who have resided Scotia for more than three month w intention of remaining more than months are regarded as residents of Scotia and hence qualify for N.S. ization and Med
dent who is not covered by any of bove insurance, private insurance special rates are available through alth Clinic.
istration Requirements
istration Requirements
Iny student who has had a serious illness previous to submit a statement from his doctor.
All returning students are required to mplete an annual med
time of registration.

Students from overseas are required to
it a recent certificate of health
Ill information gained about a student by Health Service is confidential and may
be released to anyone without signed ssion by the student.
berculin Tests
he tuberculin tests and reading is a reending King's.
Emergency Treatment
In the event of a medical emergency stu-
dents should telephone the University Health Service, 424-2172 or appear at the clinic in

Exclusions
University Health Service does not proe the following:
(a) Medical or Surgical care other than that provided by, or arranged through, the University Health Service.
(b) X-ray or Laboratory service, except as
authorized by the University Health Service.
(c) Medications. (Prescriptions, drugs, etc.).
(d) Dental treatment
(d) Dental treatment.
(e) Treatment for illness attributable to misconduct.
(g) Costs arising as a result of same.
(g) Costs arising as a result of pre-existing
condition.

Note:
The University Health Service will not pay accounts for hospital or medical service, in-
cluding x-ray, laboratory service, rendered off-campus except in emergency cases or where prior approval was received.

## Prescriptions Medications

Prescriptions
Medications prescribed by Health Service physicians or consultants to whom the stu-
dent is referred by the Health Service are paid by a prepaid drug plan operated by the
Student Union (Dalhousie) Student Union (Dalhousie). All other pre-
scriptions are at the student's expense. scriptions are at the student's expense.

## Athletic Programme

All students in their first year of attendance at the University are encouraged to participate in some form of physical activity. basketball, fencing, soccer, badminton, volleyball, swimming and hockey

Non-Academic Student Activities
Students representing the College in non academic activities must be in good stand ing. Those who are ineligible for such representation are as follows
(b) Students registered for fewer than te
ectures per week a period of two atory hours being regarded for this purpose as equivalent to one lecture. failures in college subjects.

These regulations do not apply to the Dramatic Society.
Canadian Armed Forces

## ubsidization Plans

Canadian Forces Recruiting and Selectio Unit,
Sir John Thompson Buildin
1256 Barrington Stree
Halifax, Nova Scotia.
Phone: 422-5956 or 423-6945

## Children of War Dead (Education Assistance). <br> Children of War Dead (Education Assist nce Act) provides fees and monthly allow ances for children of veterans whose deat was attributable to military service. E quiries should be directed to the neare District office of the Department of Vet erans Affairs.


the (50

The Regular Officer Training Plan (ROTP Medical Officer Training Plan (MOTP) and he 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. officers in the Canadian Armed Forces for varying compulsory periods after graduation
or further information on above plans, stu For further information
dents should contact the

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## Admissions

1. General Statement

For further information on admission to the Faculty of Arts and Science, visit, write o elephone: the Registra's Office, Universit

## Minimum age

No person under sixteen years of age is adSenate.

Language requirement
Applicants for admission whose native language is not English must give evidence ten English. This may be done by pre senting 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 tion Service, Ann Arbor, Michigan 48104 U.S.A.

## Definitions

(a) Undergraduates are students andidates for a Bachelor's degree, for a diploma. (For details of admission to a fessional courses, see entries in the calendars of the faculties concerned)
(b) Part-time students are students regis-
tered for three full credit classes or less. ered 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. Theré are two categories of special students: no degree students, who may receive credit for classes taken; and
auditors or audit students, who receive no auditors or audit students, who receive no
credit and to whom no official transcript is issued.
(d) Matriculation standing: Senior matricu
lation designates the level of studies attain lation designates the level of studies attain ed by students who have successfully com Nova Scotia.
e) Credits: See General Faculty Regula tions 2.

## General

The normal minimum requirement for admission to King's College is completion of inations in Nova Scotia Grade XII examgramme, or the equivalent Preparatory Programme, or the equivalent. In past years
an average of $60 \%$ in Grade XII high school an average of $60 \%$ in Grade XII high school
examinations, or Province of Nova Scotia Grade XII examinations, or the equivalent, was required. The same standard will apply in the current year. However, the Admissions Office does not apply criteria mechanically. It has discretionary power
to admit students who do not meet the to admit students who do not meet the
normal requirements, but who appear acceptable on other grounds. Any student who submits the required documents will be considered for admission. (See Application
Early Admission
Students who have been receiving good marks (a general average of $65 \%$ or more) may be considered for admission while
still in their Senior Matriculation year Such students are encouraged to apply early in their last year at school.
Application Procedure
Candidates for admission to the Faculty of Arts and Science must submit a completed missions 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
(a) evidence of successful completion of Grades XI and XII in the University Pre-
paratory 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 Princ pal's report;
(b) recommendations from teachers and principal;
Decisions on admission will be made known to applicants through the joint Admissions
Office (Dalhousie-King's), as soon as sible after their -ings), as soon beensible after their cr
ceived and studied.

Preparation for Admission
Students wishing to study at King's College from a University Preparatory Programme

## They should read the

 endar headed Degree Programmes the $C$ grammes of Study, and in particular,description of the first-yen Many departments make -yur programmes high school preparation in the des about of their own introductory prograptions (These are found in the section entitles. Programmes of Study). Students who lack preparation (in. Grade XI and Grade lack in Mathematics, English, and at least one
other language may find themselves initill other language may find themselves initially
cut off from certain programmes. Guid counsellors in high schools can also offer advice on the suitability of individual high school programmes.
advice is the Registrar's Office, whic
arrange interviews, whenever arrange interviews, whenever possible, be. tween prospec
of the Faculy.
3. Admission from Outside Noya Scotia at Senior Matriculation Level

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

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

Equivalences
The following levels are considered equiva. lent to Senior Matriculation (Grade XII) in Nova Scotia:
(a) Newforinces of Canada
(a) Newfoundland: first year Memorial Uni-
versity. (b) New Brunswick: requirements
same as for Nova Scotia (see above).
(c). Prince Edward Island: requirements
are the same as for Nova Scotia (see above). (d) Quebec: Senior High School Leaving Certificate; or first year of CEGEP General programme; or first year of university
fegial programme. Well qualified studen may be admitted after one year of CEGEF

Graduation Diploma), or very high
toba, Saskatchewan, Alberta, British ia: Grade XII.

## Countries

SA: first year at a recognized university similar institution of higher learning standing will be considered if they. standing will be considered if they
exceptionally well qualified, for ex on the basis of CEEB scores or ad placement work.
$t$ Britain, West Indies, West Africa: Certificate of Education with pass in at least five subjects, of which
two must be at Advanced level, must be English.
gong: GCE as for Great Britain; University of Hong Kong Matriculation ate under same conditions as for

India, Pakistan: Bachelor's degree with $t$ or second-class standing from a recog-first-class standing in the Inter examinations in Arts and Science, vided the candidate has passes at the
versity level in English, Mathematics a language other than English.

Countries not men
4. Transfer from other Colleges and Universities
Deadlines for Receipt of Application
Canada and the USA: August 1st.
Other countries: May lst
Other countries: May 1st.
Applications received after the above dates
will be considered, but prompt processing not be assured.

Documents to be Submitted a) Completed applicat
b) Official academic transcripts (or certified copies)
sities attended
c) Copies of calendars (or similar publications
ed;
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. calen-
dar pages) are acceptable in lieu of originals. Certificates in languages other than English or French must be accompanied by certified Transfer of Credit
Students who have attended a recognized juniosent satisfactory certificates may be granted Senior Matriculation standing provided the work has been done in approved aca-
demic courses. For work completed beyond demic 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 ad-
mitted under these conditions can complete mitted under these conditions can complete
the requirements for a general degree in two years, or for an honours degree in three years. Such 'transfer is regularly accepted
from the Convent of the Sacred Heart in from the Convent of the Sacred Heart in
Halifax, or the Nova Scotia Teachers Col.
lege or Nova Scotia Agricultural College lege, or Nova Scotia Agricultural College in Truro.
Students who have attended another recog nized university may, on presentation of
satisfactory documentary evidence, be grantsatisfactory documertary evits for appropriate classes, within the Regulations set out below.

General Regulations Concerning Transfer
a) A student from another college or univer
a) A student from another college or univer
sity who is not eligible for re-admission to sity 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 condi tionally
c) To graduate from King's College, all or the most important part of a student's academic work must be done here. This is interpreted to mean at least five full classes,
of which at least three are in the candidate's of which at least three are in the candidates
area of specialization (normally classes taken at second-year level or higher).
d) A student in a King's honours pro gramme must attend 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 Bach elor's degree or the principle subject re-
quirement of an honours programme with out specific approval from the departments concerned at Dalhousie.
f) Transfer credits may be granted only for classes equivalent to classes offered a having standing in a faculty of Arts and Science.

[^0]
## General Faculty Regulations

Changes of Regulations usually beome
effective upon opubication in the Calendar
of the Faculty of Arts and Science. Students are subject to changes in regulations and
are courses made after their first tegistration un-
less specifically excused by the Faculty. All less specifically excused by the Faculty. All
enquiries about the regulations hereunder enquiries about the regulations hereunder
should be made to the Registrar. Any student suffering undue he hardshistrar. from applica-
tion of any of the revulations may anpeat for tion of any of the regulataions may appeal for for
relief through the Registrar to the Commit reiee through the Registrar
tee 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.
Duration of Undergraduate Studies A student is normally required to complete
his undergraduate studies within ten years his undergraduate studies within ten years
of his first registration

Auditing
Audiling
A full-time student registered at King's Col-
lege may, with the permission of the inlege may, with the permission of the in-
structor concerned, audit any class in the
Faculty of Arts and Science, provided that it Fraculty of Arts and Science, provided that it
is clearly understood that he will not be is clearly understood that he will not be
eligible to write examinations in the class and will not in any circumstances be grant

## Advanced Placement

A student possessing advanced knowledge of a subject, which he has acquired otherwise than at a university; will be encour-
aged to begin his studies in that subject at 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 classes an equal number of other classes; not
necessarily in the same subjects (i.e., he must complete at the University the full must complete at the University the full an honours degree).
Counting of Classes toward Two Undergraduate Degrees
A student who holds one undergraduate
degree (B.A., B.Sc., or B.Com) and who degree (B.A.,., B.Sc., or B.Com.) and who gree must fulfil the requirements of the second degree and meet the following
stipulations: stipulations
a) only classes that are applicable to the ed 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, of which four must be ir a dectared major subject;

## hosen.

Note: Conversion of a General degree to a Honours degree (degree Programmes sec
tion) does not involve the award of a second degree; hence it is not subject to this regulation.
Concurrent Registration at University of King's C Ordinarily no student may register at King's concurrently taking work in another edu
 utlines procedures to be followed to secure waiver of this general regulation. Regular tration at affiliated institutions.
Forced Withdrawal Consequent on UnsatisChory Performance When the work of a dent becomes sfactory 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 elevant examinations, or may advise him to ithdraw temporarily from the University
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 egular (September to May) academic year. Credits may
sity-level studies a) normally duri ear; or exceptionally the regular academic b) during a summer session or by corre ondence
c) by transfer from other universities atended prior to entrance to University of King's College,
d) in other Faculties of Dalhousie, or King's.
Regulations governing each of these ways of earning credit are presented below in sec tions 4 through

## Gaining Credit

To gain credit toward a degree or diploma student must meet the requirements rele vant to that degree or diploma 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 satis factorily.
Credit Contingent on Settling Debts to the University
To gain credit, a student must settle alt ob ligations 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 Assessmen In determining pass lists, the standing
attained in prescribed class field or laboratory work, and in the examinations, may be taken into conario tion by an instructor. Each instructor m ensure that students are informed of the method of evaluation to be used in a class within two weeks or the meeting of the class; within four weeks after the beginning must report to the Dean at Dalhousie che method of evaluation to be used by each structor in each class
The
The passing grades are $\mathrm{A}+, \mathrm{A}, \mathrm{A}$
$\mathrm{B}, \mathrm{B}-, \mathrm{C}$ and D . The failing grades ar
$\mathrm{F} / \mathrm{M}$ and F . $\mathrm{F} / \mathrm{M}$ and F .
Submission of Grade
On completion of a class, the instructor is
required to submit grades to the Regitr required to submit grades to the Registra
such grades to be based on the instructor evaluation of the academic performance the students in the class in question. Chris mas grades must be submitted to the Reg trar in 100-level full-year classes with enro mas grades are normally submitted in oth full-year classes. Christmas grades in cl other than A classes should be submitted early as possible and in no event later than January 2nd; for "A" classes grades must be is one given in the first ending in December).

## Incomplete

Each student is expected to complete clas
work by the prescribed deadlines. Ordi deadines. Ordin extend such deadlines. Incomplete wo in a class may not be completed for year in which the class was taken, ncomplete notation will be changed by the Registrar after that date.
Change of Grade
Correction of errors in the recording of date for grade changes any time. The September 1 following the other reas such changes to be made only after the cedures for reassessment of a grade

Examinations and Tésts
A period of roughly two weeks in the spring for the week in December will be set asid written examing by the Registrar of fo written examinations. An instructor
wants an examination scheduled by Registrar for his class must so inforn the Registrar for his class must so infornn
Registrar by October 15 for the Christma period and February 15 for the Spring per od. Departments will advise the Registral on request, of examinations to be scheduled
by the Registrar. An instructor may als arrange his own examinations at a thime place of his choosing (including the

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
follow
ssessment of a Grade
payment of a fee, a student may appeal Registrar at Dalhousie for reassesss-
of a grade in a class. The Registrar of a grade in a class. The Registrar
lirect the request to the Chairman of Department concerned, who will ensure
the reassessment is carried out and red to the Registrar
al Examinations
examinations
in case of genuine illness, supported by nts in case of genuine ilness, supported by eptional circumstances. Medical certifes must be submitted at the time of the
ss and will normally not be accepted s and will normally not be accepted a lapse of one week from the date of
examination. A student wishing to ear as a candidate at a special examinashall be required to give notice of his nhall be required to give notice of his
ention to the Registrars Office at Dal-
disie on or before July 10 . Sudents wish. sie on or before July 10. Students wish-
to write at outside centres must apply to writ
July 10 .

## Supplemental Examinations

A student is permitted to write a supple-
mental examination in one class which he nental examination
ailed provided that:
a) he obtained a final grade of $\mathrm{F} / \mathrm{M}$
he has satisfied the requirements for the
(see Regulations);
a final examination or test in the. class in the final grade (the supplemental examination should -at the discretion of the department - constitute the same prōportion
of the final grade as did the final examinaon during the regular session);
n). $P$ 2
ee supplemental examination must be written in August immediately following
the failure. It may not be deferred. Notice the failure. It may not be deferred. Notice
of intention to write, together with the required fee, must be presented to the Regis-
trar's Office at Dalhousie no later than July

A student who fails to pass the supplemental
examination can obtain credit for that class only by repeating it.
o more than one supplemental examina
on may be written by any student on the ork of any one year.
o student may write both a supplemental
ramination and an examination at the end
f the Summer School in the same class in
supplemental examinations are allowed
lasses taken at Summer School
No more than five passes obtained as a
esult of supplemental examinations may be
sult of supplemental examinations may b
gistered unless:
the year is the first he has spent at passes in only two classes (ii) he is taking engineering or engineering
( physics, when he is required to pass in not fewer than two-fifths of his classes in his frst university year and three-fitth after;
(iii)
he is a part-time student, when he must pass at least one half-class.
The , results reported in the pass lists of the cademic year determine whether a stude has passed or failed his year
Penalty for Failed Year
Penalty for Failed Year
(a) A student who has failed his year for the irst occasion is required to reapply to the faculty for consideration for readmission. (b) A student who fails a year on two occasions will be ineligible to return to the University as either a full-time or a part-
time student. Ordinarily an appeal will be allowed only if illness has seriously inter rupted the student's studies and this is es ablished by submission of a medical cer ificate from the physician attending the fudent to the Registrar at the time of the illness.

## 5. Summer School and

Correspondence Classes

## Limits on Credits

Up to five credits foos $S$ mat pio from Sumer Schol and owards 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
classes normally given at King's.

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

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 below. Institutions
Institutions School Classes at Other A student wishing to take, at a university other than Dalhousie, a Summer School
class to be counted for credit towards a Dalhousie-King's degree must:
Da) obtain an application form from the (a) obtain of the Registrar at Dalhousie University;
(b) obtain from the university he proposes

Schōol classes (or alternative classes) he wishes to take: usually the Summer School calendar will suffice;
(c) make application to the Registrar of Dal housie University and submit the class de scription 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 Regisceiving university will favourable, the re ceiving university will be so advised by th
Registrar's Office.

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

Students should make application for Summer maoy as early as possible in order that obtain a list of the text-books required.
6. Transfer Credits

Upon receipt of an application for admission students will be advised of the number of credits which may be transferred from another university. However, provisional assessme can be made on interim tran
scripts.
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 re-
to the regulations of that Faculty with re-
spect to these classes.

8. Credits from Other Universities
under Concurrent Registration
A student, while registered at King's wish-
A student, while registered at King's wish-
ing to take classes at another institution,
must make an application to the Registrar at must make an application to the Registrar at
Dalhousie and provide a description of the Dalhousie and provide a description of the
classes offered at the other institution. A classes offered at the other institution. A
letter of permission will be provided if 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. student at Dalhousie-King's,
(b) the classes are approved
The class fee will be pave
egistered as a part-time by the student if registered as a part-time student at Dal-
housie-King's.
9. Change of Registration

Changing a Class
Class changes will not be permitted during
he first week after commencement of cide 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 frm which must be approved by the in-
structor concerned and by the Registrar at Dalhousie.
Withdrawing from Classes
(a) The last day for withdrawing from a class without academic penalty is: for A
clath November, for B classes: week after study break, for C classes: 31st
January, for full year classes: 31st January January, for full year classes: 31 st 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 in
structors concerned and by the Registrar. structors concerned and by the Registrar.
(b) No class may be dropped after the la 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 he term in which that class begins (se
Regulations). d) A student
part-time status by withdrawing from classes after the deadlines listed (see Regu-
lations). lations).
Withdrawing from the University or Chang A ing to Part-time Status A registered student who wishes to with-
draw from the University, or one who wishes to change from full. -time to part-time
status must write to the Registrar tatus must write to the Registrar at Dal housie and King's explaining his circum-
stances. In either case, the student should not discontinue attendance at any clas
until his application has been approved. A until his application has been approved. A
student proposing withdrawal will normally student proposing withdrawal will normally
be invited to discuss his situation with the Dean or the Assistant Dean of Student
Services at Dalhousie.
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 listed in departmental offerings, may be
formed on the initiative of students or formed on the initiative of students or of
faculty members. 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 stu dents or on the initiative of faculty mem-
bers, the faculty members who wish to take part must obtain the consent of their department.

The classes may be of one-year half-year length.
A class shall be held to be formed when
least one faculty member least one faculty member and at least eight
students have committed themselves taking part in it for its full length, and in
the case of one-half year classes whe in the case of one-half year classes when a cla in the other one-half year is availabie.
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 here time before the end of the second week ony classes in the Spring term. If they of formed long enough in advance to be are
nounced in the Calendar they nounced in the Calendar, they shall be
announced, in a section describing the announced, in a section describing the Ex. perimental 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 ex. One faculty member taking part in each ex-
perimental class shall be designated the rapporteur of the class. It shall be his re. sponsibility (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 at Dalhousie 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 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 compar sons with more familiar types of classes).
A student may have five one-year length experimental classes (or some equivalent com
bination of these with classes) counted as satisfying class for cla any of the requirements for the degree, st ject of the rulings of the Curriculum Con mittee (above) and (where relevant) to the approval of the departments.

## ACULTY OF ARTS <br> AND SCIENCE

offers 4 Programmes of Study leading grees in Arts and Science.
(General) three years
A. (Honours) four years
c. (General) three years
(Honours) four years
s provides an alternative to the ordinary and B.Sc. first year programmes.
ordinary
he King's alternative first year programme, $e$ Foundation Year Programme, is a first programme for both general and hon
students. Bachelor of Arts students ed in the Foundation Year Programme led in the Foundation Year Programme
ne class in addition to the Foundation e. Bachelor of Science students in Bachelor of Science students in
ramme do two additional classes.

## Foundation Year

## Programme

| te Prog |
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## The University of King's College, in asso- ciation with Dalhousie University, offers

 Foundation Year Programme in the year of the Bachelor of Arts and Bache
Science. First offered in 1972-73 Programme has proved a successful way nary course for first year students. A
and 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 de-
grees of Bachelor of Arts or Bachelor of
Sis Science granted by the Senate of Dalhousie
University or will be engaged in one of the University or will be engaged in one of the
pre-professional courses in medicine, den-
tistry, law, architecture, divinity, social
work, daw, ation, etc.

The Foundation Year Programme is a new
approach to the first year of University approach to the first year of University.
Literature, history, philosophy, political and 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 intestudied together in one course in an integrated manner which sees thè as interde-
pendent elements in the development of western culture. The movement of this cul-
ture is ture is understood through the examination
of some of the most basic works in our his of some of the most basic works in our his-
tory. 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 concetion of the nature of our sohave a conception of the nature of our so-
ciety and culture is to have a basis for
thoughtful living. To provide these is the im of this new programme

Many scientists are acutely aware of the need to understand the relation of science to 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 favourabation of the student's work within one course permit the course to offer
a wide variety of experiences and allow it to a wide variety of experiences and allow it to
help students analyze, focus, and evaluate 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 deattention to be paid to each student's de-
velopment. The exposure to many differvelopment. The exposure to many differ-
ent aspects of our civilization, and the large ent aspects of our civilization, and the large
number of departments recognizing the number of departments recognizing ine
Programme as a substitute for their intro-
ductory class, give Foundation Year students Puctory class, give Foundation Year students
both a wider experience from which to judge both a wider experience from which to judge
their interests and wider options for second their intere
The instructors in the programme are specialists in a wide variety of university sub-
jects. All take the view, however, that first yects. Al take the view, however, that first
year stud univerity can profitably be
devoted to attempts to integrate knowledge devoted to attempts to integrate knowledge
and understanding rather than to premature and understanding rather than to p
specialization in particular subjects.

Occasional Lecturers 1974-75
A. H. Armstrong, M.A. (Cantab),
Professor of Classics.
I. Artes, Ph.D. (Toronto),
Lecturer in German.
M. Farmer, Mus. Bac. (Toronto), F.R.C.O.,
L.R.A.M., D.C.L. (Vind).
J. Farley, B.Sc. (Sheffield), M.Sc. (West Ont.), Ph.D. (Man.),
Associate Professor of Biology.
D. M. Farrell, B.A. (St. Norbert), M.Mus.,

Ph.D. (Wis.), $\qquad$
J. Fol.) Graham, B.A. (U.B.C.), A.M., Ph.D
(Col.),
Fred . Manning Professor of Economics.
B. E. Gesner, B.A., B.Ed., M.A. (Dal.),

Assistant Professor of French.
J. C. T. Kwak, B.Sc., MSc., Ph.D. (Amst.),

Assistant Professor of Chemistry.
K. E. vonMaltzahn, M.S., Ph.D. (Yale),

George S. Campbell Professor of Biology.
R. P. Puccetti, B.A. (III.), M.A. (Tor.), Ph.D.
(Sor.),
Professor of Philosophy and Chairman of the Department.
W. C. Smith, B.A. (Tor.), M.A., Ph.D. (Prin.), McCulloch Professor of Religion and Chair-
man of the Department. man of the Department

Admission Requirements
The admission requirements are those per-
taining to the Faculty of Arts and Science in taining to the Faculty of Arts and Science in
general, i.e. Nova Scotia Grade XII or its equivalent. Applications are also invited
from mature students, individuals who have from mature students, individuals who have
been out of school for some time and who may or may not have completed their hhigh
school course, and from exceptional students school course, and from exceptional students
completing junior matriculation Nova Scotia
Grade XI Grade XI). These students will be individ-
ually considered for admission without the normal requirement. All students are admitted to the three year general or four
year honours degrees. Scholarships
Students of the Programme are eligible for
the scholarships the scholarships open to all entering stu-
dents. In addition, the Henry S Cousins Scholarships of $\$ 1,000$ and $\$ 750$ per year,
the Dr. Norman H. Gosse Entrance Scholarthe Dr. Norman H. Gosse Entrance Scholar-
ship of $\$ 400$ and the Foundation Year Enship of $\$ 400$ and the Foundation Year En-
trance Scholarships of $\$ 550$ are open only trance Scholarships of $\$ 500$ are op
to students entering this Programme.
Grading and Credit
The Programme is to be regarded as a complete unit. It is not possible for students to enrol in only part of the course. Evaluation
of the students' performances is continuous ond made on the basis of tutorial participa-
and tion and essayse. There are no examinations. The final grade is a composite of all evalua-
tions. Final grading is the result of discustions. Final grading is the result of discus-
sion among all those teachers who have had
grading responsibitie. grading responsibilities. Grades are given
in terms.of the letter grade system pre in terms-of the letter -grade system of the
Faculty of Arts and Science.

Successful completion of the Programme twenty-four credit hours or four class coredits toward the Bachelor of Arts degree. These students do one other class besides the plete first year. Bachelor of acheve a comdents do two science classes in addition to their work in the Foundation Year Programme. The course for science students carries eighteen credit hours, i.e. three class
credits. credits.

Upon succesfful completion of the Programme the normal departmental require-
ment of passing an introductory course in the discipline concerned is waived by the ollowing departments
lassics (except in
English Language and Literature.
German (except in the case of courses in
History
Political Science.
Sociology (except for courses in Anthro-
pology).
In addition the following departmental pro-
visions have been established
German:
Successful completion of the Foundation
Progen Programme may be regarded as a substitute
for German 221.

Economics
Honours students in Economics who have
completed the Foundation completed the Foundation Year Programme
are exempted from doing one economics course.
Philosophy:
Successful
Successful completion of the Foundation
Programme may be regarded as a substitute Programme may be regarded as a substitute
for Philosophy 230 .

Religion:
The Department of Religion has indicated
its intention to recognize the Foundation its intention to recognize the Foundation
Year Programme as the prerequisite for some of its upper level courses when its programme of studies is worked out.

Pre-Professional Training
The Faculties of Medicine and Dentistry of Dalhousie University have approved the
Foundation Year Programme as Foundation Year Programme as part of the
pre-professional work they require for admis-pre-professional work they require for admis-
sion to their respective faculties. Students
may substitute the Programme for may substitute the Programme for the appro-
priate requirements laid down by these priate requirements laid down by these
faculties; for details of these provisions consult the Director of the Foundation Year Programme. The Department of Educa-
tion 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.

## Course Designation, Lecture and

 Tutorial HoursThe formal designation of the Programm
courses is as follows:
King's Interdisciplinary Studies
K100 (Arts): Foundation in Social
and Humanities; Lectures and Humanities; Lectures M. W. Th. F.
9:35 a.m. - 11:25 a.m.; Four hours of tutor-
ials to be arranged.

K110 (Science): Foundation in Social Sci
ence and Humanities; Lectures ence and Humanities; Lectures M. W. F
$9: 35$ a.m. - $11: 25$ a.m.; Four hours of tuto 9:35 a.m. - 11:25 a.m.; Four hours of tuto
ials to be arranged.

Outline of the Foundation Year Programme

The course has its own logic; it is not just a
collection of diverse materials but integrates collection of diverse materials but integrates
them in accord with the interpretation of our them in accord with the interpretation of our
culture which it develops. As we work this interpretation, we consider works of various kinds, some of the most crucial
works in this culture. These we consider n matter what discipline ordinarily matter what discipline ordinarily studies
them. Thus we look, for example, Mozart's Don Giovanni, early Greek urns,
Michelangelo's "Prisoners" Michelangelo's "Prisoners", and Brookly
bridge, these are usually understood to bridge; these are usually understood to be
long to the disciplines of music, archaeolog art history and architecture. We read
Homer's Iliad Marlowes Homer's Iliad, Marlowe's Faust, Dicken'
Hard Times; works usually studied by the Hard Times; works usually studied by the
departments of classics, theatre, and English literature. We analyse St. Anselm's Proslog ion, Descartes' Meditations, and Luther
The Freedom of a Christian which The Freedom of a Christian, which are
usually studied by departments of philoso phy, theology and religion. We stud Mhy, heology and religion. We s
Houssan's The Waning of the Middle
Rouseau's Social Contract, Marx's Cap Rousseau's Social Contract, Marx's Capital Sweezy's Moder Capitalism works
to belong to history, political theory nomics and sociology. We read selections
from Copernicus' On the Celestial Spheres from Copernicus' On the Celestial Spheres,
Newton's Optics, Darwin's On the Origin of Newton's Optics, Darwin's On the Origin of
the Species; texts taken from the history of
astronomy, physics and biology.
The logic we develop to integrate the dif
ferent stances of these various works is 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 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 histo periods.

The following are the teaching units of the course. One or more of the aspects of cul
ture mentioned above tends to be stressed ture mentioned above tends to be stressed
in each unit in accord with the difference between the general character of each per iod and the particular character of approach of the person responsible for
ordinating the teaching of the period ordinating the teaching of the period. F
teaching weeks are devoted to each of th
units.

Ancient Wor institutions and beliefs of the (d) Economic institutions. rn world in Greece, Rome, and Israel. on maniesting itsef in art, myth and
tions provides a focus for our approach statis epoch. Co-ordinator: Dr. Atherton.
The Medieval World: The formation of distendom. The forms of the City of God ed in the assimilation of ancient cul
Christianity provide the elements Christianity provide the elements
consideration of this period. We to grasp their unity, as the medieit, through the Divine Comedy of
Co-ordinator: Dr. Crouse.

Reformation and Renaissance: The up of the medieval world in the ition of faith and nature. We begin to
iter philosonhy, science, politics: the ider philosophy, science, politics: the
lar arts in general, as self-consciously ular arts in general, as self-consciously io achieve secularly what it proclaim
ligiously. Co-ordinator: Mr. Starnes.
4. The Age of Reason: The enlightenment; Trotestant freedom developed in relation to ature and society. Special attention is paid
political theory and natural science in opolitical theory and natural science
his section. Co-ordinator: Dr. Steffen.
5. The Triumph of the Bourgeoisie: Bour-
feois culture from its triumph in the French geois culture from its triumph in the French
Revolution to its collapse in World War I. kevolution to its collapse in World War I.
The nineteenth century is mainly treated in
terms of the revolutions: political and indus-
ms of the revolutions: political and indusal. Marx provides a crucial analytical ocus; novels provide a new form of lite
xperience. Co-ordinator: Dr. Morgan.
6. The Contemporary World: From the
decline of the European empires to contemdecline of the European empires to contem-
porary industrial society. The focus is the
stand stand point of the new social sciences which ne into view in our investigation of the
eteenth century. The revolutions of the twentieth. century are cons
Co-ordinator: Dr. Gamberg.
At least, one major paper will be required of
both Arts and Science students during each unit. Arts students (i.e. students registered
in K100) will write approximately twice the number of papers written by students regis-
tered in the Science section of the Programme. Some of this additional work will
relate to the Thursday lectures which are relate to the Thursday lectures which are
required for Arts but not for Science stu-
dents. This additional lecture will consider one. text or topicicina detail during the whole
unit. A different kind of work will be conunit. A different kind of work will be con-
sidered in each period so that instruction is sidered in each period so niques appropriate
given in the differt techno
to literature, philosophy, history, etc.. As to literature, philosophy, history, etc.. As
the mark for the course is based on papers and class performance, no student will be
able to pass the course without completing he written requirements.
The following are the recurring general
topics which are discussed in each of the lopics which are
units outlined above
(a) Political institutions, the modes of au-
thority the polititical ideal. (b) Theolo
and forms.
(c) nd forms.
(c) The conc
the (c) The conception
natural science. presentation of these aspects of culture can part of the teacing
Required Reading (1974-75)

The following list of required reading for $1974-75$ gives an indication of the theoretical works through which our understanding
these aspects of our culture is developed.
This is a list of the reading required for arts
students (K100) and science students (K10) The items marked ( ${ }^{\circ}$ ) are required reading for arts students but not for science students; the items marked $\left({ }^{\circ} \circ\right)$ are required for ence students but not for arts student
"The Akkadian Genesis Homer
Sophocles Sophocles
Sophocles
Soles Sophocles
Sophocles
Plato Plato
Coulanges The Bible

## Eusebiu

Augustine
Sayers (tyans)

$$
\begin{aligned}
& \text { Theogony selections } \\
& \text { Iliad } \\
& \text { Oedipus Rex } \\
& \text { Antigone } \\
& \text { Oedipus at Colonus } \\
& \text { The Republic } \\
& \text { The Ancient City } \\
& \text { The Fourth Eclogue } \\
& \text { Exodus 3, 19, 20 } \\
& \text { Job 1-14 and 40-42 } \\
& \text { Psalm 89 } \\
& \text { Epistle the Romans 1-8 } \\
& \text { Epistle to the Ephesians } \\
& \text { 1-6 } \\
& \text { Vita Constantinae. } \\
& \text { (selections) } \\
& \text { The City of God } \\
& \text { (hoort selection) } \\
& \text { The Song of Roland }
\end{aligned}
$$

Documents illustrating medieval social life, for example,
Charlemagne Epistola
Colendis texts showing a feudal contract, rules of the Cistercian Order etc
Documents illustrating the Investitute Controversy e.g.
Gelasius on the Two Powers,
Norman Anonymous on Kings and Priests St. Benedict
Helen Waddell Helen Wadde
Wippell and
Wother Wother
Aquihas

Virgil
Dante
Dante
Huizinga
Mirandola

## Julian of

## Julian of Norwich

 Machiavelli Thomas MoreCohen Cohen
Marlowe

Regula
(extensiv (extensive selections)
Peter Abelard Medieval Philosoph (extensive selection
Summa Theologica, Questions I and II Aeneid, Book VI
Divine Comedy: Infern Divine Comedy: Inferno,
Purgatorio, and Paradisio The Waning of the Middle Ages
Oration on the Dignity of Man (a substantial portion) Man a substar Divine Love
Revelations of Ditens) (extensive selections) (extensive se
The Prince
Utopia
Birth of the New Physics
Doctor Faustus

Descartes
Hobbes
Locke
Hume

## Divinity

Director of Parish Field Work and Divinity
Secretary
Rev. Canon J. H. Graven, M.A. (Dal.), L.Th.
,
With the establishment of the Atlantic School of Theology during 1974, the work of King's College was transferred to that School and the Faculty dissolved as a teaching component of King's College.
King's College remains a recognized institution for the conferring of divinity degrees
and diplomas on recommendation of the General Synod of the Anglican Church.
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 King' 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 Theol ogy in the field of pastoral care. Particu
lars concerning regulations for this degree lars 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.
Diploma of Associate of King's College (Nova Scotia) (A.K.C. (N.S.) The University of King's College has estab College (Nova Scotia), A.K.C., (N.S.), to encourage further study for those persons who are not eligible for the B.D. It combines extramural and intramural work, and includes Pastoralia. Pariculars concerning
regulations for this diploma may be had upon application to the Registrar. (No new registrations after July 1,1974 ).


Bachelor of Divinity (B.D.)
Students who have received the M.Div,
B.S.Litt., or B.S.T. and graduate sturt who have qualified for the LTh students. ceed to the final examination for the evro. mural degree of B.D. under the Gextra. mong all Anglican Theological Collement Canada, the Degree of Bachelor of Divinity is now awarded only by examination by the
Board of Examiners of General Synod new registrations after November 30 . ( $\mathrm{N}_{0}$

Associate in Theology (A.Th.)
By arrangement among all Anglican Theolo gical Colleges in Canada, the Title of Associate in Theology is now awarded only by examination by the Board of Examiners of General Synod. Particulars concerning
regulations for this Title may be had application to the Registrar. (No new ren istration after November 30, 1973).

## stitute of Pastoral Training


#### Abstract

ersity of King's College Intic School of Theology leadidical Fa Faculty of Dalhousie University organization of the Institute in collaon with Pine Hill Divinity Hall, the College Acadia University, Presian College, (Montreal), Medical Ity of Dalhousie University, pioneered jaculty of Dalhousie University, phoneered his modern development in Theological ation on the Canadian scene. It is the tive of the Institute to bring pastors ctive of the Institute to bring pastors theological students face to face with an misery as it exists both in and out of utions, through courses in Clinical ral Education in both general and 1 hospitals, reformatories and juvenile homes, for the aged, alcoholism homes for the aged, alcoholism connection, the Institute now spon-six-week courses in Clinical Pastoral ation, usually commencing mid May, e Nova Scotia Hospital, Dartmouth tal), the Nova Scotia Sanatorium, Kent- the Victoria General Hospital, Halifax, the Victoria General Hospital, Halifax, ster, King's County Hospital, Water and Springhill Medium Correctiona Springhill. the above mentioned courses aim arily at increasing the pastoral compe-


## Extension Courses

Extension courses are given in the evenings it the University of King's College. These courses are available in a number of topics.
All extension courses are designed for their All extension courses are designed for their
teneral interest and are not taken as credits feneral interest and are not taken as credit
in degree programmes. Academic require in degree programmes. Academic require-
ments for admission are not necessary, the ments for admission are not necessary,
expectation being simply that persons who enrol in the courses will do so on the basis of their interest in pursuing the topic. Spe-
cific courses to be offered are announced in cific cours
the Fall.
Registration for all courses will occur on
the the evening of September 24 from $7: 00$
10:00 p.m., fees being payable at that time.

Public Relations (A Survey of the Entire Field) Instructor: G. Hancock, B.A., Dip lourn. 25 sessi
October to April.
These lectures attempt a practical application of the theory of communications Subjects discussed include: History and Philosophy of Public Relations, commu nications research (persuasion and publi
lanning and action evaluation, improv ing PR standards, image, language of
public relations, the publics (shareholders, employees, customers, the community, PR for business and industry, utilities, welfare agencies, churches, schools, government; technique of communications (mass media, printed and spoken word,
films, speeches, displays, advertising), films, speeches, displays, advertising),
case histories. Seminar discussions include letter writing, human conflicts and publicity.
B. Journalism (A Survey of the Entire Field) Instructor: G. Hancock, B.A., Dip. Journ. ${ }_{\text {Aptil. }}^{25}$ se
These lectures attempt a practical application of journalistic theory and mechanisc. Subjects discussed include: Canons of journalistic practice, newspaper organ-
ization, ethical standards, physical asization, ethical standards, physical as journalism, editorial policies, new mechanical devices, nature of news (what people read), gathering news, reporting techniques, art of news writing in various
categories (civic, social, labor, accidents,
er, students of particular aptitude and interest can be guided in further theological
training to become qualified teachers of training to become qualified teachers of
these subjects in theological courses, direc tors of Clinical Training Courses, and insti tutional 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 significant role to play in partnership with

A recent development in this field was the formal constitution in December 1965 of The Canadian Council for Supervised Council for Supervised Pastoral Education officially adopted the shorter and now more appropriate title of Canadian Association fo nate training across Canada, establishing and maintaining high standards, accrediting training courses, and certifying supervisors The Institute of Pastoral Training has link with the Council, a former Executive and as a member of the Board of Directors, and two members of its Executive have been serving on the Council's Committee on Accreditation and Certification. Professor R. J. R. Stokoe of Atlantic School of The at the Nova Scotia Hospital, Dartmouth and now directs courses at the V.G. Hospita
rertified as a Chaplain Supervisor, by the, Canadian Council and also by the Association for Clin
in the United States.

Other goals of the Institute include the proOther goals of the Institute include the pro duction of teaching materials, the prom a first
of workshops, and the establishment of class library and reference center at the Institute office.
A number of one-day and four-day workshops have already been held in various 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 SecreUniversity 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 any of the courses offered. Applications to attend the courses from bona fide enquirers belonging to other professions are welcomed and receive equal considera tion.
science, education, crime, business and science, education, crime,
industry, sports, etc.), editing the news.

Is a Dialogue Between Christians and Marxists Possible? Instructor: H. G. Yesus, B.A., M.A. 8 sessions of 2 how each. October - November
D. A Canadian Identity: Our National Dream Instructor: J. A. Lennon, B.A., M.A. 8 sessions
ber - November

Detente and Disar Russian - American Triangle. Instructor: H. G. Yesus, B.A., M.A. 8 sessions or

The Uses and Abuses of Propagand Instructor: J. A. Lennon, B.A., M.A. 8 sessions of 2 hours each. Mid January Mid March.
G. The Confluence of East and West in th Modern World. Instructor: C. J. Starnes, B.A., S.T.B., M.A. 8 sessions of 2 hours

Payment must be made in Canadian funds by cash or negotiable cheque. Please make cheques payable to the University of King's
College for the required amount.

## Residences

A complete session is defined for students registered in the faculty of Arts and Science as being from the first day of regular regis tration (including Sunday, September 8 )
until the day following the last regularly until the day following the last regularly Arts and Science (for students in this Faculty). The annual charges for these periods for board, light, meals, are as fol

Double Single
Men's Residence
Double
$\$ 1150.00$
Single
$\$ 1225.00$
$\$ 125.00$
$\begin{array}{ll}\text { Women's Residence (Suite) } & \$ 122500.00\end{array}$
graduating resident student may stay in residence without charge after these period p to and including the last day of Encaenia ativities, but will be expected to pay fo meals during this time.

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

Students in residence must make a deposi of $\$ 650.00$ at commencement of the first January. New students are expected to deposit $\$ 50.00$ when pre-registering and returning students $\$ 20.00$ before April 15 increasing this deposit to $\$ 50.00$ by July 15 The room deposit will be refunded only when notice of cancellation of accommoda
tion has been received by the Registrar tion has been received by the Registrar or

Resident students as well as non-resident, must pay the following at commencemen Gown $\$ 15.00$, Student Body Fees $\$ 40.00$, Gown $\$ 15.00$, and any tuition fees payable for non-resident students are optional)

## Surcharges

If deposit is not paid within 21 days of reg.
istration day a surcharge of $11 / 2 \%$ will be charged. The same applies to charges pay-


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

## Caution Deposit

On enrolment each resident student is re quired to make a deposit of $\$ 25.00$ as cauture, etc. This amount, less deductions will remain a credit on the books until 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 before that month. All for the care of furnishings within their re spective rooms. Losses or damages incurred during the session will be charged to the caution deposit
Each year a student, on returning, is expecttions so that his credit may be maintained tions so the
at $\$ 25.00$.
The items above, together with a key deposit of $\$ 5.00$ are, payable at King's Business

## Tuition

Faculty of Arts and Science
King's Students $\$ 681.00$ 1st instalment $\$ 456.00$ 2nd instalment $\$ 230.00$
The above charge includes class fees, labora tory fees, library fees, examination, diploma hospital clinics where applicable.
Incidental Fees are collected for the Stuents' Union

These charges include in
Part-time students are students registered or three credits, or less. Total fees must be paid at registration
one full credit class $\$ 150.00$
tudents registering for $1 / 2$ credit class $1 / 3$ credit class $\$ 50.00$
Audit students (This charge does not entitle students to any privileges other than attend nce at class,
Students not candidates for University credit who wish to take one university lec ture class because of their interest in it. No
credit or official transcript will be issued to credit or official transcript will be issued to
such students. Total fee must be paid at registration.
1 full credit
1 full credit class $\$ 75.00$ $1 / 2$ or $1 / 3$ credit class $\$ 37.50$

A student enrolled at King's is require pay the King's Council of Students' fee
$\$ 40.00$, but not the Dalhousie Counci Students' fee, or the Rink and Athletic $F_{i}$ Jee. However, any King's student wh
wishes to participate in the Council of Students' activities Dalhou both of the above Dalhousie fees. Dust pay students resident at King's College m King's College Council of Students' fee
$\$ 30.00)$. $\$ 30.00$ ).
Divinity
Full-time students, M.S Part-time students
at Master's level Arts and Science
H. .................... $\$ 150.00$ A.K.C. Examinations. . on application $\$ 10.00$ A.K.C. Examinations: per paper to be paid
by the preceding December by the preceding December 1 , and no
refundable ................... \$5.

Regulations for Payment of Tuition Fees
Payment of tuition fees for Arts and Science students is to be made to Dalhousie Univer. sity Business Office. Please note that cheques are to be made payable to Dalmade. for any cheque returned by the bank and penalties as shown below for unpaid accounts may be added. Post-dated cheques cannot be accepted.

## Full-Time Students

Students registered for more than three

## Payment

Fees are payable in full at registration or if preferred, in two instalments, the first payable at registration, the second instalment

S
A carrying charge of $\$ 5.00$ is added if fees are not completely paid at registration. Registration is not complete until the first instalment is paid.
The Dalhousie Business Office does not issue bills for tuition fees; the receipt is at registration will show the balance any, which is outstanding.
Students planning to pay the first insta ment of fees from a Canada Student Lo should apply to their Province as early
possible so that funds will be available registration.

## s for Late Payment

ts unable to pay the first instalmen fees may register conditionally. of $\$ 5.00$ per day, to a maximum o commencing on the first business llowing the regular registration day
charged. To accounts outstanding charged. To accounts terest from October 1 will be added.
and interest charges will be wáved dents paying accounts from provincia who pay by October 31 and give e of having received the loan from rovince. Students who produce evi-
that their application for a provincial hat their application for a provincial 31 will also have penalty and in harges waived.
who receive payment or notifica rejection of application from the after October 31 and pay account waived, but interest will be charged October 1. Proof must be provided to Awards Officer that an application for a vincial loan was made prior to August 15 that payment or notification of rejection of applicatio
October 31.
erest at $11 \frac{1}{2 \%}$ will be charged on second intalments outstanding after January 23 .
No examination results will be released, nor vill the student be permitted to register for nother session until all accounts are paid
full. The names of graduating students
se accounts are not completely paid by
ii 25 will not be included in graduation
Part-ime Students . Fee must be paid at registration.
Audit Students - Fee must be paid at regis

## ation.

ships awarded by King's College will mally 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

The student should enquire at the Office to ascertain if the Dalhousie siness. Office has been informed of the ingessent.

## Late Registration

dents are required to register on the
egular registration dates as shown in the Academic Schedule. Late registration requires the approval of the Registrar, and paymen of day, to

Diplomas (Divinity)
Diploma fees are payable
the final year of the course,
gistration in
$\$ 12.00$
20.00
M.S.T.
B.D., A.Th.
B.D., A.Th. .
Examinations

An application for a supplemental examina-
tion must Supplemental and Special (per examination)
Each examination written at...$\$ 15.00$ centre (extra fee) ............... $\$ 10.00$ Fee for re-marking of a paper . ..... $\$ 3.00$ Application for re-marking must be made in writing to the Registrar within
of the date of the examination
If application for refund of supplemental examination fee is not made on or before July 31, the fee will be forfeited.

## Degree in Absentia

A graduating student must notify the Regis-
trar prior to May 9 if not planning to trar prior to May 9 if not planning to be
present to receive a degree. If this notificaprion is not given and the student does not
attend the graduation ceremony, charge of $\$ 10.00$ is required to be paid to the University (to Dalhousie for Arts and Science students) to cover additional costs before the degree is $x$ eleased.
Transcripts
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. An application for a transcript must be accompanied by the proper fee. First transcript, no charge; additional copies, each original, $\$ 1$; extra
copies, $\$ .50$ each. No transcript will be copies, $\$ .50$ each. No transcript will be
issued until all charges owing to the univer sity have been paid in full.

Student Photograph
At time of first registration at King's each
student will be asked to supply two pic-
student will be asked to supply two pic tures.
Laboratory Charge
No laboratory deposit is charged. Students
will be charged for careless or wilful dat
No laboratory deposit is charged. Student
will be charged for careless or wilful dam-

## Parking on the Campus

ach student who has a car on campus may obtain a parking permit from the Genera and license number for a charge of $\$ 15.00$.

Students with motorbicycles may obtain parking permits under the same conditions for a charge of $\$ 2.50$, and will be required to park them in a designated area.

## Refund of Fees

A student who has completed registration and wishes to withdraw must obtain written approval from the Registrars of Dalhousie and King's.
Until this is done a student is not entitled fees.
A student withdrawing within two weeks of the date of the commencement of classe will be entitled to full refund of fees paid.
A student withdrawing after two weeks of A student withdrawing after two weeks o
the date of commencement of classes will 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 units; a full charge will be made for the
month in which the withdrawal is approved moluding the month of December.
A student withdrawing in January will be A student changing before February 1 from full-time to part-time status, with the
aproval of the Registrar, will be eligible approval of the Registrar, will be eligible
for an adjustment in fees for the remainde of the session.
t student who is dismissed from the University for any r Application for a refund or adjustmen
should be made to the Business Office afte the approval of the proper authority has een obtained. N.B. - King's College Bursar, King's College.

Fee For Student Organizations
At the request of the King's student body, a ee of $\$ 40.00$ is collected on enrolment from each student who takes more than one clas. This fee entitles the student to the privileges of the various students' organizations and RECORD.

## King's College Residences

Dean of Residence
Kenneth Clare, B.A
Dean of Women
Diane A. Morris, A.B

Dons (1974-75)
Mr. Gene Barrett
Prof. John Godfrey
Prof. W. J. Hankey
Miss JoAnn Radbourn
Miss Jean Sherrard
Mr. Hagos Yesus
Residence life at the University is encour
aged for all students because the commun ity life there enjoyed forms an essentia part of the student's education. Exception ing to reside in a home or lodging outside the university
All students registered at King's College are guaranteed residence accommodation sould they wish it, on completion of the and subject to the approval of the applica tion by the Dean of Residence (for men) and the Dean of Women (for women).
Male students live in the men's bays (Chapel Middle, Radical, North Pole, Cochran and The Roost), each housing $22-26$ men, under
he supervision of the Dean of Residence. Female students live in Alexandra Hall, residence accommodating 100 women, u.

All rooms are furnished with bed, dresser, desk, and chairs. Students are required to provide their own bedding and towels, and ments. Coin-operated 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 ooms being given to students in their senior year.

The residences have been designed to provide for the comfort and convenience of the
students, and to facilitate study. In the men's residence, two students occupy a suite of two rooms.
The Women's Residence was built in 1962 and is modern in every respect. Traditional in addition the Residence provides a library, laundry room, 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.

Meals are prepared and served to all resierected indents in Prince Memorial Hall,

Students accepted in residence by the
Deans are expected Deans are expected to remain for the
whole session, or, in the case of withdrawal during the session, must-obtain substitutes satisfactory to the Dean. All residents will
session and will be liable for this unless or until a substitute has assu obligation to the University for the balan
No student may withdraw from the dence without notice to the Dean.
It should be noted that the University sumes no liability for personal property the case of theft or damage.
The residence will be open for new students
from the evening of September 7 , from the evening of September 7, 1975, and for returning students September 9,1975 , until December 20, 1975, and from the eve. ning of January 4, 1976, to the morning of ating year will be expected to vacate the ating year will be expected to vacate
residence 24 hours following their last amination). Resident students in faculties whose terms exceed these periods may re side in the College by permission of the deans on payment of rent; and, when Prince Hall is open, meals may be eaten by ar-
rangement with the Deans th the Dean
Except under unusual circumstances and with the permission of the appropriate Dean,
no student is permitted to occupy the no student is permitted to occupy
dences 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 for all applications Business Office. Deposits must be received by that date. Applications for residence accommodation made after July 15 must be accompanied by the
$\$ 50.00$ deposit. Cancellation of application received by the Registrar or the Deans prior to August 15 th will entitle the student to a refund of the $\$ 50.00$ deposit.


Alexandra Hall

## Day Student Hostels

For the first time in 1975-76 session, limited overnight accommodation will be available for King's Day Students in the form of small male and female "hostels" on campus, each of which can accommodate four persons at once. Space is on a first-come first of three nights per week per student charge. Locke first served basis the safe storage of personal effects. By providing limited overnight accommodation Day Students will be able to more comfortably utilize campus facilities such as the library, attend campus functions such as evening lectures and debates, and in general participate
more fully in the total life of the King's more fully in the total life of the Kings community. Further each Day Student early in the fall term.
student Organization

## University of King's College

 gudents' Union
ing's College Women's Amateur Athletic Association
The object of this association is the pro
tion of women's amateur sports at
College. The K.C.G.A.A.A. is a men
of the Atlantic Women's Intercolleg
Athletic Association and competes in
Intermediate section of this Associa
field hockey, volleyball, and basketball
played at the Intercollegiate level,
foor hockey, badminton, table tennis,
swimming are available on a regu
sheduled basis in the University
nasium.
King's College Amateur Athletic
Association

The object of this association is the pro motion of amateur sports at the College of Khe Atlantic Intercollegiate Athletic As sociation and a full member of the Nova Scotia College Conference. The University competes in interscholastic competition in he following sports: soccer, golf, hockey volleyball, and basketball. There is also
strong inter-bay or inter-residence competi strong inter-bay or inter-residence competi-
tion in volleyball, road racing, softball, hockey, volleyball, basketball, and floor hockey. The gymnasium also has available for personal use a swimming pool, weight

King's College Dramatic and Choral Society
This society was founded in 1931 to further
rogramme of the society might include, for exanple an evening of one.act plays dur ing the first term, and a three-act play. play evening and enters a play in the Connolly Shield Competition.
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 and construction, and lighting under the
direction of experienced instructors. King's direction of experienced instructors. Kings
students are invited to participate in the activities and productions of the Worksho on the same basis as Dalhousie students.

## The King's College Record

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

The Quintilian Debating Societ
This Society was founded in 1845. Quint ilian sponsors interbay debates in compe-
tition for the Alumni Association (Halifax Branch) Interbay Debating Award. In addition further campus debates are seen in competition for the Rev. Canon A. E. Andrew Memorial Award for Block De bating. During the Easter weekend of each year a High School competition Exhibition Shield being awarded to the successful school in the Metro area (the Shield having been given by the Alumni Association, Saint John Branch). Annual tours of Upper Canadian Colleges and Uni versities complete the

The Haliburton
The Haliburton was founded and incor porated 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, manadian History and Literature. College students and interested residents of the metro area meet to listen to papers which are given by literary figures and by the students. The Ancient Commoner

Church, especially in the Maritime Provinces. The annual meeting is held on Saint Andrew's Day, or as near to it as possible. Through the efforts of this organization, divinity students are provided with summer charges and foreign students have been afforded the opportunity of studying Theology at King's. The status of this Society is at present under review in
the light of King's participation in the Atlantic School of Theology

## 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 " term, a student may receive a silver "K"
upon amassing 160 points and a gold " upon amassing 250 points.
In addition several awards are presented to students for outstanding achievements in extra-curricular activities.

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.
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 R. L. Nixon Award. This award is given annually to the resident male stu-
dent who in the opinion of his fellows, dent who, in the opinion ore life in King's.
contributes most to residence
The Prince Prize. This prize is designed for the encouragement of effective public speaking. The recipient is chosen
judicators in an annual competition.

The H. L. Puxley Award. Awarded annual ly 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 the College

The "Ancient Commoner" is the students newspaper.

The Students' Missionary Society
This society was founded in 1890. Its obThis society was. founded in 1890. Its ob-
ject is to promote interest in missionary ject is to promote interest in missionary
work and to further the missionary work of

## Scholarships, Prizes and Bursaries

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 tenure. This arrangement increases the value of the Scholarships Funds, as it en-
ables other students of scholarly attainments to attend the University.
All Scholarships, Prizes and Bursaries, ex cept awards to Graduating Students, will be paid in cash.

No special application forms are required
as all students who have been admitted are as all students who have been admitted are Sutomatically considered for a scholarship are encouraged to apply for admission by March 15.

In order to retain scholarships tenable fo more than one year, a B average must b subject. year, with no failing mark in any

## ARTS AND SCIENCE

A. Entrance 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 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 pro vided that the student maintains a first class average, and lives in residence each year until the regulations of
Medical School require otherwise.
By the terms of the will preference is given By the terms of the will preference is given
to a descendant of Dr. William Johnstone Almon.

Henry S. Cousins Scholarships - (a) $\$ 1000$ year, maximum $\$ 4000$ for four years (b) $\$ 750$ a year; maximum $\$ 3000$ for fou years. Established by the University from
the legacy of Anna H. Cousins in memory of her husband Henry S. Cousins, these scholarships are open to students enterin the Foundation Year Programme only.
Susanna Almon Scholarships - $\$ 750$ a year by the University from the legacy of Susann by the University from the legacy of Susanna
Weston Arrow Almon, these scholarships
are tenable for four years.

Foundation Year Scholarships - A number of entrance scholarships varying in amounts dents entering the Foundation Year Pro gramme only.

Board of Governors Scholarships - $\$ 350$ a year, maximum $\$ 1,400$ for four years. Es-
tablished by the Board of Governors, these scholarships are tenable for four years.

Dr. Norman H. Gosse Scholarship - $\$ 400$. Established from a bequest of Dr. Norman H. Gosse, former Chancellor of the Unistudent entering the Foundation Year Programme.
Halifax-Dartmouth Scholarships - $\$ 300$. An entrance scholarship for students entering the Univ Alumni
"Annual Giving" Scholarships 600. Established by the Alumni Associaentering students, but consideration will be given to applications from students who are already members of the College and who are in good academic standing. The hold-
ers of Alumni "Annual Giving" ers of Alumni "Annual Giving" Scholarships
will normally be required to live in residence.

Margaret and Wallace Towers Bursary $\$ 600$ a Year. Established by Dr. Donald R. Towers, an alumnus of King's, in memory of his mother and father. This bursary, tenable for four years, is open to a student of versity 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 county in any one year, the bursary for
that year only will become available to a student resident anywhere outside the student resident anywhere outside the Mari-
time Provinces of Canada. The holder must live in residence.
Winfield Memorial Entrance Scholarship 200. Established by Mrs. W. A. Winfield in memory of her husband.
The Alumni Scholarships $-\$ 300$. The Alumni Association has established two
scholarships of $\$ 300$ each: one restricted to students of King's College Scheol restricted to Collegiate, Edgehill, Netherwood or Hali fax Ladies College; and one unrestricted.
Keating Trust Scholarships - \$125. Award ed from a bequest to the College. from the
Rev. J. Lloyd Keating to students Rev. J. Lloyd Keating to students entering
College with outstanding marks in Science, these scholarships, according to the will of he donor, are intended to encourage students, and preferably Divinity students, in he study of chemistry and physics, and one class in physics the year in which they hold the schola ship.

hip $-\$ 300$ a | four years. The Nova Scotia Power Cor |
| :--- | $\$ 300$ a year, tenable for three or fourship of

Nova Scotia Teachers College Bursary 500. Awarded on the recommendation of the Principal to a graduate of Nova Scotia time student in the Faculty of Arts full Science.
The Halifax Rifles Centenary Scholarship n entrance scholarship. For partices as apply to the Registrar.

King's College Naval Bursary - $\$ 300$ a year. In order to commemorate the unique
and valuable relationship between the versity of King's College and the Royal Wanadian Navy during the Second World War, ships and establishments of the Atenable 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. Academic achievement and promise will be the first consideration in selecting a candidate. Purpose, industry, and character are to be carefully weighed, together wi the likelihood that the candidate will make good use of higher education to benefit

The Bursary is awarded annually b intended to be tenable by the same student 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.
Deihl Bridgewater Bursary - $\$ 250$. Deih1 Bridgewater Bursary $-\$ 250$. To
assist needy students of suitable standing, resident in the town of Bridgewater, or within six miles of the town. Bequeathed by the late Lena Ruth Deihl.
Walter Lawson Muir Bursary - $\$ 175$. be awarded at the discretion of the Scholarship Committee either to a student entering college for the first time or to a student returning to college who won high
scholastic standing in the scholastic standing in the previous Endowed by Mrs. W. L. Muir
The United States Scholarship - $\$ 500$. Awarded annually by Friends of New York
State Corporation, to the United States, 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 the United States and Canada. In any year the scholarship
among two or more students.

Oil Higher Education Awards. Oil Limited offers annually free d other compulsory fees to all chilor wards of employees and annuitants
proceed to higher education courses. - proceed to higher education courses. yin years, or the equivalent, at the under-
duate or bachelor degree level. er information and application forms
be obtained from The Secretary, Comon Higher Education, Imperial Oil be on
ted, 111
ntario.

Bursaries, value $\$ 100$ to $\$ 200$. do entering students who show
ic ability and financial need. Adic ability and financial need. Adary, Provincial Chapter, I.O.D.E., Parker St., Halifax, N.S. B3K 4T6.

College Bursaries - The University limited number of small bursaries to g students of satisfactory academic
and in need of financial assistance.
3. Scliolarships, Bursaries and Prizes Awarded in Course
The Honorable Ray Lawson Scholarships $\$ 00$ and $\$ 400$. Established through the enerosity of the Hon. Ray Lawson, Chan-
Allor of the University 1948-56, these scholellor of the University $1948-56$, these schol-
whhip a are awarded to students entering ships are awarded to students entering
eir second year. Preference will be given
students who hold no other scholarship. The President's Scholarship $-\$ 250$. Three
scholarships of $\$ 250$ will be awarded to stuhents entering their second, third and fourth
lin
lin ears respectively. Preference will be given
o students who hold no other scholarship.
he Stevenson Scholarship - $\$ 120$. Found d by the Rev. J. Stevenson, M.A., (some-
(some Professor of Mathematics), of the value of $\$ 120$ a year tenable for two years, thi of $\$ 120$ a year tenable for two years,
scholarhip will be awarded to a student
with the highest average on the five best with the highest average on the five
subjects in the first year examinations.

Alexandra Society Scholarship - $\$ 300$. A
innual award offered by the Alexandra S annual award offered by the Alexandra So
ciety of King's College to a woman student ciety of King's College to a woman student
who stands highest in the second or third
year examinations, provided that she lives in Who stands highest in the second or third
year examinations, provided that she lives in
rexidence. If the student who stands high residence. If the student who stands high
set is otherwise ineligible, the award shall
he t be is otherwise
be left to the
Ship Committee.
The Claire Strickland Vair Scholarship 8300. An annual award to be offered a student beyond the first year who displays ex-
vellence 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 award
a scholarship of $\$ 100$ each year to a woman student entering her senior year in a Mari student entering her senior year in a Mari
time University. The award is made to a student from the City or County of Sain John, with consideration being given to both academic attainment financial need For particulars apply to the Registrar, be

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 the greatest
second year.
Dr. M. A. B. Smith Prize - $\$ 25$. Established Dr. M. A. B. Smith Prize $-\$ 25$. Established
by a bequest of $\$ 500$ from the late Dr. M. A.
B 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 preferenc will be given to a Divinity student.

Bishop Binney Prize - \$20. This prize, which was founded by Mrs. Binney, is given to the undergraduate with the best examinaion results at the end of the second year

The Akins Historical Prize - $\$ 100$. Founde
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 The award
stump in Ca
competition.
Essayptition. must be handed in, under a nom de plume, with the writer's name in an attached envelope, on or before the 1 st day of April of
the year concerned. Essays become the property of King's College.

The Beatrice E. Fry Memorial - $\$ 50$. Esablished 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 th 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 - $\$ 15$. The luate Rev. Henry D. deBlois, D.C.L., a
$\$ 200$ to of King's College, left the sum of $\$ 200$ to the Governors of the College to establish a prize in English. Awarded to
the studdent of the 2nd, 3rd or 4th year in Arts or Science who submits the best essay on some subject relating to English Litera-
ure. For conditions, apply to the Registrar. All of King's College by April 10 .

The Almon-Welsford Testimonial - $\$ 30$ The Honourable William J. Almon, Esq.
M.D. $(1816-1901)$ and his family endowed prize to commemorate the gallant and loya deeds of Major Augustus Frederick Welsforc
who died in the Crimean War (1855) and who died in the Crimean War (1855) and encourage the study of Latin. The prize is
awarded annually to the student in his first year who makes the highest mark in either
Latin 100 or Latin 200, provided the mark Latin 100 or

The McCawley Classical Prize - $\$ 35$. E ablished as a testimonial to the Rev. G. office of President. Open to
first year.
The Zaidee Horsfall Prize in Mathematics 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
first year Mathematics

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 considto the
The Binney Bursary $\mathbf{-} \mathbf{\$ 5 0}$. Founded in the year 1858, by Miss Binney, sister of the late
Bishop Binney, and daughter of the late Rev. Hibbert Binney, in memory of her father This scholarship is intended to aid students who may require assistance, and who shall
have commended themselves by their exemplary conduct, although their abilities and achievements may not qualify them to
be successful competitors for an open schol be succe
arship.
Charles Cogswell Bursary - $\$ 20$. Charles Cogswell, Esq., M.D., made a donation of
$\$ 400$ to the Governors of King's College, $\$ 400$ to the Governors of Kings s ollege, the object of the students and encourage
the health of in the prosecution of their studies".
The Harry Crawford Memorial Prize - $\$ 40$. Offered annually by a friend in memory of
Harry Crawford, son of Thomas H. and 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. 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 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, Ox ford.
C. Graduate Scholarships,

Medals and Prizes
The Governor General's Medal. Awarded to the candidate who obtains the highest
standing in the examination for 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. and King's Students.

The Rhodes Scholarship. This scholarship is of the annual value of 750 pounds sterling. Before applying to the Secretary of the
Committee of selection for Committee of selection for the Province (which application must be made by No-
vember 1), consult the Registrar, King's College.

Rhodes Scholars who have attended the University of King's Colleg
1909 Medley Kingdom Parlee, B.A., 08 1910 Robert Holland Tait, B.C.L.,' 14
1916 The Rev. Douglas Morgan Wiswell,
B.A., '14 M.A.,' 16

1916 The Rev. Cuthbert Aikman Simpson, B.A.,'15, M.A., '16

919 The Rev Cordon Errst, B.A., ' 17
1924 M. A.' 2 . Gerald White, B.A., '23,
1925 M. Teed, B.A. ' 25
1936 Allan Charles Findlay, B.A., ' 34
1938 John Roderick Ennes Smith, B.Sc.,'3
946 Nordau Roslyn Goodman, B.Sc.,' 40 ,

$$
1 \text { M.Sc., '46 }
$$

49 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
962 Roland Arnold Grenville Lines, B.Sc
1963 Peter
ter Hardress Lavallin Puxley, B.A
1969 John Hilton Page, B.Sc., '69
University Women's Club Scholarship
\$500. The University Women's Club Halifax offers a scholarship of the value of
$\$ 500$ every send $\$ 500$ every second year, 1976 -19e a woman graduate of Dahousie University
or King's College, to assist her in obtaining graduate school. For particulars apply to he Registrar

The Canadian Federation of Universit information apply to the Registrar

The Imperial Order Daughters of the Em pire Post-Graduate Scholarships - $\$ 5000$
(for study overseas) and $\$ 3000$ (for study in Canada). For information apply to the
(rorseas) and $\$ 3000$ (for study in
Regren Registrar.

Imperial Oil Graduate Research Fellowship $\$ 3000$ for three years. For information apply to the Registrar.
Commonwealth Scholarships. Under Plan drawn up at a conference held in Ox ford in 1959, each participating country of
the Commonwealth offers a number scholarships to students of other Common wealth 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 allowance. For details of the awards offered by the various countries consult, the Registrar's office or write to the Cana dian Universities Foundation, 75 Alber Street, Ottawa.

Rotary Foundation Fellowship. Open to graduate students for advanced study
abroad. Available every second academic year, 1975, 1977, etc. Applications must be considered before August lst of previous
year. Information may be obtained from year. Information may be
Rotary Clubs or the Registrar.

## DIVINITY

Scholarships in Divinity are tenable at the 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 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 pref-
erence being given (1) to native residents of erence 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 the late Robert H. Morship was founded by 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 by the President and Divinity Faculty to the
most deserving member of the present or
recent graduating class of th School, who has been at King's at least twity
years, and who, in the years, and who, in the opinion of the two
ulty, would benefit from travel in Britain, the USA or some and/or stud outside the Atlantic Provinces of $C$ area provided he reaches a satisfactory stand Applications, stating the use which the applicant expects to make of the Scho
must be submitted to the Divinity must be submitted to the Divinity Secretan the applicant, if successful, year in whic the scholarship. The recipient will be use quired to serve in the Atlantic Provinces re . a minimum of three years after his retur from abroad.

William Cogswell Scholarship. students intending to work in the Dion to the direction of the Trustees of the Under Cogswell Scholarship to be awarded to the student who passes a satisfactory examin tion and who takes his Divinity course at any recognized Divinity College of the Anglican Church in Canada best fitted, in | terms ofinion of the Trust. |
| :--- |

Scholarship (B): Under the direction of the Faculty of Divinity of the University of King's College, Halifax, Nova Scotia, an en rance scholarship of $\$ 200$ or $\$ 300$ depend ing on quality of work submitted, will be warded to the properly accredited student
ntering the Divinity course for the first time and who stands highest in a special examination to be held in the month of dmission provided he reaches a satisfactor andard. The recipient will be required the Diocese of Nova Scotia for a perve in east as long as the period during which he holds the scholarship.

This examination will consist of two papers: a. A paper on the co
New Testaments, and
b. A paper on A. H. McNeile's Introduction S. New Testament (revised edition by wards will

The Daniel Hodgson Scholarship - $\$ 240$. Founded in 1883 by Edward J. Hodgson and the Reverend G. W. Hodgson in men ory of their father Daniel Hodgson, wh
died about that time. This Scholarship died about that time. This Scholarship of an annual value of $\$ 60$, tenable for
years, is for the purpose of encourag years, is for the purpose of encou
students to take an Arts Degree before tering upon the study prescribed for Orders. Candidates, who must be resid of Prince Edward Island, shall file
applications and certificates applications and certificates of
passed the full Arts matriculation re passed the full Arts matriculation requ
ments before August 15 th, and must no over 24 years of age at that time.
so satisfy the Diocesan Holy Orders as to their aptitude for the Scotia for many years linistry of the Church. At the end of each ademic year the Scholar shall file with the rustees a certificate from the President or ast year he has resided in College (or has peen excused from such residence) and has ttended the full Arts course in the College", ogether with a certificate that his mora
onduct, his attention to his studies and his
ond conduct, h
general co
he Board ard of Governo

保 who fail to comply with the fore going conditions automatically forfeit the gcholarship, 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. 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 from any Parish of the Diocese of Nova Scotia enrolled for training for work in the
Diocese of Nova Scotia or any Missionary 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 pro-
vide 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 2 nd or 3rd
year Arts students, or to older men with year Arts students, or to older men with
their Arts degree, in their 2nd or 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, Terry Creighton of Halifax, Nova Scotia,
who was an active Lay Reader and prom-

The scholarship is to be made to an outstanding and deserving Anglican Divinity Student at the conclusion of his final year of raining and who is intending to enter the
inistry in 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 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 liv ing memorial to the life and work of Mary How Donaldson, who had family connections with King's College, and of Cornwalis
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 financia厂 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, prevides an annual whe 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.

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 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.
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 great Sacred Ministry who has shown the great-
est all round improvement during his time est 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 stuent from the Diocese of Fredericton.

John Clark Wilson Memorial Bursaries 100 each. Established in 1947 by Miss

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,

Application, accompanied by a certificate of Application, accompanied the applicant's Rector, must be sent to Canada Permanent Trust Company, Charlottetown, P.E.I. on or befo 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 Orders, whose scholarship and exemplary conduct shall, in the opinion
of the Faculty, merit it. (Next award 1977).

The George Sherman Richards Proficiency Prize - $\$ 120$. In Memory of the Reverend Robert Norwood, D.D. The income from a und of $\$ 2,000$ to be awarded annually to the Divinity student who gains the highest
ggregate of marks at the end of his penaggregate of marks at the end of his pen-
ultimate 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 $\$ 2,000$ o be awarded by the Faculty to a Divinity
tudent during his second year in college. The award will be made on the basis of character and need.
The McCawley Hebrew Prize $-\$ 25$. Open o all members of the University who are below the standing of M.A.

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

This prize will be awarded to the student This prize will be awarded to the
who leads thé class in Hebrew 2 and receives a recomm.
fessor of Hebrew.
Junior McCawley Hebrew Prize - $\$ 25$. Junior McCawley Hebrew Prize - $\$ 25$. With the accumulated unexpended a
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 bined 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. 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 Pro-
fessor of Pastorali

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 Trus-
tees. Particulars may be had from the Registrar.

The Wiswell Trust Divinity Studentship -
$\$ 120$. A. B. Wiswell, D.C.L. Hon Fell. \$120. A. B. Wiswell, D.C.L., Hon. Fell (Vind.) of Halifax, N.S., in order to per petuate the memory of the Wiswell family,
augmented a bequest from members of the family, thus providing a capital sum of 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 - $\$ 60$. Es tablished by a bequest of the late Dr. S. H.
Prince. Awarded every alternate year at Prince. Awarded every alternate year, at
the discretion of the Faculty. (Next award 1975-76).

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 year of completing his Arts course. If there is no student meeting the above requirements the award will be left to the

Clara E. Hyson Prize - $\$ 5.00$. Founded by Miss Clara E. Hyson and awarded each year on vote of the Faculty.
A. Stanley Walker Bursary $-\$ 200$. Awarded by the Alexandra Society of King's
College. To be given to an Anglican student at the Allantic School of Theology for
the year 1975-76.

Johnson Family Memorial Bursary - $\$ \mathbf{6 0}$. 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 dent considered most to the Divinity stunot 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 Archbishop of Nova Scotia, and by hese must fulfill such conditions as th Bishops lay down and in every case at end a personal interview. For furthe articulars apply to the Divinity Faculty.

The King's Divinity Scholarship - $\$ 150$ The Anglican Church Women in the Dioof $\$ 150$ towards the expenses of Divinity tudents who agree to work in the Dioces of Nova Scotia after ordination.

Archbishop Kingston Memorial - $\$ 100$ Awarded annually by the Nova Scotia Dioc Divi.C.W. on recomendation of the dent.
The Wallace Greek Testament Prize $\$ 50$ A Book Prize established by the Prize - $\$ 50$ C. H. Wallace of Bristol, England in Canon ory of his father Charles Hill Wallace barrister, of Lincoln's Inn, who graduated King's College in 1823, and died in Eng land in 1845. Subject: Epistle to the Hebrews. Application to be made to th

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

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

Kenelm Eaton Memorial Scholarship - $\$ 60$ This scholarship is provided by the Synod of Nova Scotia as a memorial to The Hon. Captain Kenelm Edwin Eaton, B.Sc., L.Th.,
who made the supreme sacrifice while serving as a Chaplain in Italy, August 31, 1944 For particulars apply to the Registrar.
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 1975-76.

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 full-pledged are who have, at one time, been C.B.L. branch in Cars of any Parochial available from the Registrar

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
take up missionary work, either or overseas. Academic standing and finad cial need are taken into account in maki. the award.
Application should be made to the Divin Faculty by November 1st of each yea

The Florence Hickson Forrester Memoria Prize - $\$ 100$. The prize, presented in memory of the late Mrs. Forrester, by her
husband, is to be awarded on Encaeni Day to the Divinity Student in his penulti, mate or final-year who passes the best examination on the exegesis of the Greek text of St. Matthew, Chapter V-VII provide always
high.
Bibliography
T. W. Manson: The Sayings of Jesus (SCM) J. Jeremias, The Sermon on the Mour, Athlone Press)
(Blackwell) pp. $52-69$ Eand Recor
H. K. MacArthur: Understan mon 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 before being enrolled residents of Hali and members of a Parish Church ther who are unable to pay the cost of maintenance and education.

The Harris Brothers Memorial - $\$ 100$. T be awarded at the beginning of each colleg year as a bursary to a student of Divinit,
The student shall be selected annually b The Divinity Faculty, pelected annually to Divinity Faculty, preference being give
to a needy student from Prince Edward sland, failing that, a needy student fro he Parish of Parrsboro, and failing that any deserving student. of Divinity

The Carter Bursaries - $\$ 160$. Two bur aries of a value of $\$ 160$ each, established under the will of Beatrice B. Carter mherst, Nova Scotia, to be used

Royal Canadian Air Force Protestant Chapel Bursary - $\$ 120$. This Bursary, establishe aken in R.C.A.F. chapels, is awarded an nually at the direction of the Divinit aculty to a bona fide ordinand, preference where possible being given to (a)

The Ott Reading Prize $-\$ 25$. Established y Dr. T. Gordon Ott. Awarded annuall g of the Bible and the Services of Church.

## Ott Preaching Prize $\mathbf{-} \$ 25$. Establish- <br> Ider men preparing for ordination. The

 by Dr. T. Gordon Ott. Awarded an extempore sermon of an expositoryliam A. and Kathleen Hubley Memorial $y-\$ 175$. This bursary is designed ist students from St. Mark's Parish, from and failing a suitable candidate from any parish in the Diocese of
Scotia, who are studying for the $d$ Ministry at any recognized College the Anglican Communion, preference eing given to students studying at the
ttlantic School of Theology. The award is tt lantic School of Theology. The award is ade on the basis of need and may be relewed provided a certain acceptable stan-
dard is attained. The recommendations of Rector of St. Mark's and the Divinity fulty are necessary conditions. The ry must be applied for annually.
The Reverend Dr. W. E. Jefferson Memorial The Reverend Dr. This bursary, the gift of Parish of Granvile, N.S., is established
memory of Reverend W. E. Jefferson, D.Eng., an alumnus of King's and a gradate engineer, who was ordained late in
fe and yet was able to give nearly twenty and yet was able to give nearly twenty
s of devoted service to the ordained ofry. Preference will be given to older pursuing post-graduate studies or to

## Societies Connected With The College

| Alumni Association of King's Colleg | The Alexandra Society 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. |  |
|  | 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 |
| The Association maintains annual scholarships. | scholarship and bursary and supports the Alexandra Special Lecturer in Pastoralia (Director of Parish Field Work). |
| The annual meeting of the Association is held the day before Encaenia. | fficers 1974-7 |
| The Officers of the Association in 1974-75 President, <br> The Rev. D. F. L. Trivett, 2271 MacDonald <br> St., Halifax, N.S. | Patroness |
|  | Mrs. W. W. |
|  |  |
|  | Hon. President, Mrs. H. L. Nutter |
| Vice-President, <br> Ms. Mary L. Barker, 1149 Wellington St., Halifax, N.S. B3H 3A2 | Hon. Vice-President |
|  | Mrs. |
| Treasurer, <br> Dr. Henry Muggah, Q.C., 6033 Belmont Road, Halifax, N.S. | Immediate Past Pres |
|  | iriam Morris, 2438 Gottingen N.S. |
| Executive Secretary, <br> Mrs. Iris Newman, University of King's Col- <br> lege, Halifax, N.S. |  |
|  | Mrs. A. G. MacIntosh, 12 West Truro, N.S. |

Faculty

The Archdeacon Harrison Memorial Bursary - \$20. Established by Miss Elaine

Amherst Deanery Bursary $\mathbf{- \$ 1 5 0 \text { . Offer }}$ ed annually by the Brotherhood of Anglican Churchmen in the Deanery of Amherst. rom the Amherst region. If no candidate available from this Region, in any on student would be eligible.

## LOAN FUNDS

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, provision of copies of "The Imitation Christ" to members of each year's grad Christ to members of each years grad the income each year is to be awarded b decision of the Divinity Faculty to a deserving Divinity Student for the coming Halif A awarded to a deserving Divinity student nominated by the Divinity Faculty.
dith Mabel Mason Memorial Students Loan Fund.
Established by Alumni and friends as nemorial to the late Miss Edith Mabel Mason, M.A. a former Dean of Women and Professor of Modern Languages. Avail able to women students entering upon heir third or fourth year. Application to made in writing to the Registrar

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 ng application forms from the provincial authority in order to have the money available for registration

Vice-President
Mrs. A. MacKeigan, 68 Reserve St., Glace Bay, N.S.
Mrs. P. N.
Mrs. P. N. McIvor, 8 Lakeview Point, Dart-
Mrs. J. E. Lane, 211 Willett St., Apt. 206, Mrs. J. E. La
Mrs. C. A. Orford, 86 Kent St., Charlottetown, P.E.I.
Mrs. E. R. McCordick, 237 Brookside Dr Apt. 9B, Nashwaaksis, N.B.

Recording Secretary,
Mrs. H. B. Wainwright, 9-1-7, SS No. 2, Armdale, N.S.
Corresponding Secretary
Mrs. V. Fairn, 55 Lynn Drive, Dartmouth, N.S.

Treasurer,
Mrs. W. F. Palmer, 1652 Chestnut St., Halifax, N.S.

## Convocation 1974

## Graduating Class

Life Officers
Honorary President
Professor John Godfrey
resident,
Joseph Calvin Atkinson
Vice-President
Christine Elizabeth Zinck
Secretary,
Kathleen Annette Teresa Soares
${ }^{\text {Treasurer, }}$ John Lawrence McArel
Valedictory,
Miss Elizabeth Anne Chisholm
Doctor of Divinity (honoris causa) Randolph Carleton Chalmers
Doctor of Civil Law (honoris causa) Thomas Reagh Millman
Moses Osborne Morgan

Bachelor of Theology Pretty, The Reverend Arthur James
Calvin, New Ross, N.S.

Master of Divinity
Khokhar, Barkat Masih, B.A., Lieut Colone
India
Master of Sacred Theology Sharam, The Reverend Henry John,

Bachelor of Arts Degree
Adams, Susan Marie Adams, Susan Marie, Middleton, N.S. A.S.

Atkinson, Joseph Calvin - Distinction,
Glace Bay, N.S. Glace Bay, N.S.
Balcom, Berton $\qquad$ der (Honours in
History), Dartmouth, N.S.
Barrett, Lawren Gene, (First Class Hon-
ours in Sociology), Fredericton Chandler, Mary Catherine, Liverpool, N.S. Cole, James Edward, Port Elgin, N.B. Enwood, Morgan Wayne, Sydney, N.
Foley, Michael Earl, Head of Jeddore

## N.S.

${ }^{\circ}$ Fralick, Adah Royd, Moser River, N.S
Gregory, Martha Louise Mowbray.
fax, N.S.
Harris, Susan Elizabeth, (Honours in English), Halifax, N.S. ${ }^{\bullet} \mathrm{H}$ H.S.
Douglas, New Waterford, ${ }^{-}$-Howe, Robert Walker, Kentville, N.S. - Hutchinson, Carol-Ann Elizabeth, Dart-
mouth, N.S.

Kamperman, Barend Wilhelm, Oakfield,
N.S.
${ }^{\circ} \mathrm{K}$ Keeping, Gerald Victor, North Sydney,
McArel, John Lawrence, Glace Bay, N.S.
McNutt, Carol Lee, Truro, N.S.
Mitchell, Derek Verdun, Pierrefonds, P.Q

Dr. M. A. B. Smith Prize, Brent Halfor The Beatrice E. Fry Memorial P Bremner Zaidee Horsfall Prize in Math Cordon Brown, Margaret vonMaltzah The Almon-Welsford Testimant The Almon-W
Robert.Nickerson
The McCawley Classical Prize, Nyck Jan Wellem
The-Binney Bursary, Donna MacAulay Charles Cogswell Bursary, Robert Nickerse MacAulay
The Jackson Bursary, Robert Nickerson The Claire Strickland Vair Scholarsh The Akins Historical Prize, Berton Bal Khaki Bursary, Wendy Conrad

Divinity
The Canon W. S. H. Morris Scholarship, The Reverend Ronald Edward Harris
The George Sherman Richards Proficiency Prize, Robert Lloyd Power
McBain Tobin The Reve Prize, Vincent Cavill Pitt
The Shatford Pastoral Theol Reverend John Victor Cavill Pitt
The Kenelm Eaton Memorial Scholarship, The Reverend John Herbert Swain The Canadian Bible Society Book for the
Reading of the Holy Scripture, The Reveren John Herbert Swain
The George M. Ambrose Proficiency Prize, Keith Allan Hamlin
The Prince Prize in Apologetics, The Rev.
erend John Victor Cavill Pitt The C. Pennyman Worsley Prize, Donald Eugene Routledge

Entrance Scholarships and Bursaries Awarded May, 1974 (Ärts and Science)

Henry S. Cousins Scholarships
Debra Boutilier Cindy Ross
Roderick Sneddon
Susanna Almon Scholarship

## Michael Roulston

Dr. Norman H. Gosse Scholarship
Judith Burbidge
Board of Governors Scholarship
Susan Pyle
Foundation Year Entrance Scholarships
Agnes Buffett
Barry Corkum
Wendy Davis
Helen deMarsh
Helen deMarsh
Christopher Flerlage
Kathy Hatcher
Kathy Hatcher
David Maynard Alberta Schaap Mary Whyte
x-Dartmouth Entrance Scholarship
Allwood hynn MacLeod thent Masson sheen Makley
sathy
sownsend me Townsend

## mni Scholarshi

## averne Cluett asthleen Grant

Jumni "Annual Giving" Scholarship

## pavid Coleman

David
Doug Heish Hington
Douglas Vondette

Jill Ceccolini
eihl Bridgewater Bursary
Cynthia Campbell

The following pages contain information about the Degree Programmes, and Programmes of Study leading to the Degrees of Bachelor of Arts and Bachelor of Science and are reprinted, with permission, from the Calendar of Dalhousie University. Students enrolled at King's College in Arts and Science are admitted to the same programmes and classes as students enrolled at Dalhousie University (see p. 8), with the exception of King's College students enrolled in the Foundation Year Programme (see p. 17). The sections dealing with programmes leading to other degrees (such as Bachelor of Commerce, Bachelor of Education, Engineering, etc.) are also included for information, but only students enrolled at Dalhousie University may enter these other degree programmes.

## Degree Programmes

1. Courses of Study

Bachelor of Arts/Bachelor of Science General
Honours

Uniform Bachelor of Science for Engineering
Bachelor of Science with Honours in Engineering Physics
Bachelor of Commerce General
Honours
Bachelor of Education Sequential
Integrated
Bachelor of Music Education
Certificate in Public Administratio
2. Subject Grouping
A. Langu
French
German
Greek
Latin
nanities
Classics

Russian
Spanish
c. Social Sciences
C. Social Scien
Anthropology

Economics
Political Scien
Political Scie
Psycholoy
Sociology
Classes are offered also in other subjects:- Architecture, Ar
 Engineering, Oceanography, Human
Hebrew, Arabic, Coptic, and Syriac.
3. Numbering of Classes

The Faculty is in the process of reviewing its system of
numbering classes. Most classes are numbered with a three numbering classes. Most classes are numbered with a three digit number; others, however, are numbered with a four
digit number. The following general criteria apply to both kinds of numbering. Students are urged to consult the relevant departme
numbering system.
Classes are numbered to indicate their general level and th 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, diasses in the 100 tor series are
introductory and can normally be take introouctory and can normally be taken by fully matri culated students without any special prerequisites. Comple-
tion of a 100 -level class is normally a prereauisite for admission to further classes in the subject. Classes in the 200 + series, $300+$ +series and $400+$ sesies are normally taken in
the second, third and fourth years respectively

Certain classes in the 200, 300 , or 400 series are restricted to General Degree programmes, except with special permission General Degree
of the instructor.
Classes in the $500+$ and $600+$ series are normally regarded
graduate classes; however, some may be open to senio
undergraduates with
instructor concerned The Letters $A$ and $B$ denote classes given in the fall and winter terms. respectively. The symbol $A / B$ indicates a class etters $C$ and $R$ denote classes spread over both terms, i.e., etters $C$ and $R$ denote classes spread over both terms, i.e.i. 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 he class.
Classes with numbers below 100 do not carry credits but may be prerequisites for entry to credit classes
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 enteringthe King's Foundation Year Programme should cons
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 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 (the Curriculum 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 registering consult the Chairman of the Department of
Education regarding their programme of study. Those considering music teaching should consult the Chairman of the
5. Bachelor of Arts/Bachelor of Science General: three yeers -15 classes required
Honours: four years-20 classes required
5.1 The First Year
5.1.1 Requirements
(a) Each full-time st
(a) Each full-time student planning to take à 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
Fol equivalent, chosen trom groups, $A, B, C$, and
Foundation Year Programme is equivalent to four classes fo
Fol
(b) No stadent may ino is first year take for credit more than ment.
(c) One of the five classes chosen must be selected from a list (c) One of the five classes chosen must be selected from a list
of classes in which written work is considered frequently and of classes in which written work is considered frequently and
in detail. These classes are approved by the Curriculum
Committee and listed in the Programme Planning Guide.
${ }^{1}$ Application of Regulations to students who entered in 1972
or earlier. or earlier.
All students Alegreats who entired a General B.A. or General B.SC
degre programme prior to 1973 must meet the requirements as out lined in Sections 5.2 and 5.1 .1 (a) above; if beyond the first year the
Programme.

### 5.1.2 Recommendation

These recommendations do not apply to students entering
the King's Foundation Year Programme. (a) Students should seriously consider choosing a class from a list of classes which deal with a formal subject. This list is in
the Programme Planning Guide and has been approved by th
Curriculum Committee Curriculum Committee
(b) Students should consider becoming fluent in French.
(c) It is recommended that one class be chosen from each
the groups $A, B, C$, and $D$.
5.1.3 Special Options
(a) A first-year stud
(a) A first-year student may (but need not) declare his
intended major department and may be naccepted 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 some of the princieal works of western culture. To tak advantage of this Programme the student must be enrolled at
King's. Details are to be found in the Calendar of the King's. Details are to be found in the Calendar of the
University of King's College, and advice may be obtained
from the Director of the Programme.
5.2 General B.A. and B.Sc. - Requirements for the Second
and Third Years
A student who successfully completed the first year may Aursue a programme toward a general degree or. -if qualified enter an honours programme. (Honours programmes are
outlined in section' 5.3 below.) in the second and third years three types of options are open to the candidate for a a) Ba, © Bror
(a) Ordinary Programmies, which may be pursued in any
department in which it is possible to obtain a General B.A. or department in which it is possible to obtain a General B.A. of
B.S. In such a programme, the student must select a major sub. In such a programme, the student must select a major
structure of study in the major and elective
classes may be relatively classes may be relatively loose;
(b) Co-ordinated Programmes, offered by some departments
or groups of related departments, each programmee requiring or groups of related departments, each programme requiring
either one or two years of relatively concentrated study in
the eit the one or two years of relatively concentrated study in
the departmental or interdepartmental area of specialization
and and
(c) Individual Programmes, for students whose academic
needs are not met by the foregoing options.

The rules governing each of these options are outlined below.

### 5.2.1 Ordinary Programmes (B.A./B.Sc. Genera)

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 majors). (ii) up to two of the classes in the major subject must be selected in accordance with departmental or inter-
departmental requirements outlined in the Calendar under Programmes of Study. These requ:tirements may also designate
particular offerings of the department (e.g. service classes) as un acceptable 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. concerned.
5.2.1.3 For the B.A., the major may be chosen from French
German, Greek, Latin, Russian , Spanish, classics German, Greek, Latin, Russian, Spanish, classics, English,
history,
philosophy, music, anthropology, economics history, philosophy, music, anthropology, economics
political science, sociology, or from any of the B.Sc. subject
except engineerino poititical science, so
except engineering.
5.2.1.4. For the B.Sc. the major subject must be chosen fro
biology, chemistry, engineering, geology, mathematic physics, or psychology.
5.2.1.5 Electives may be chosen from any of the subjects
listed in the preceding two paragraphs and from listed in the preceding two paragraphs and from Architeccture
100, Art History, Biochemistry, not more than three classes in Commerce, Comparative Literature, Computer Science, Education 401 or 402, Hebrew, Humanistic Studies in
Science, Mediaeval Studies, Religion, and Thetre 5.2.2 Co-ordinated Programmes (B.A./B.Sc. General) two-year - or two one-year - integrated proarammel(s) in different departments. All such co-ordinated, they may be in different departments. All such co-ordinated programmes
have been explicitly approved by the Curriculum Committee
A department or A department or group of departments offering co-ordinated
programmes may structure programmes may structure them as it wishes; consistent with
sound academic practice and subject to the following guidel ines:
(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 discipipline.
(e) that the normal prerequisite for entry into a departmental
one-year or two-year programme be the introductory class of one-year or two-year programme be the introductopry class of
the department in question, or an equivalent that the the department in question, or an equivalent that the
department considers acceptabee, and not more than one
introductory clas in a recets department considers acceptable, and
introductory class in a related subject.
A student considering a Co-ordinated Programme should
consult as early as possible with the departments concerned. 5.2.3 Individual Programmes (B.A./B.SC. General) A student whose academic neds are not met by the
programmes offered under paragraphs 5.2 .1 and 5.2 .2 may present two one-year or a two-year programme or his own
choice to the Programme Advisory Committee for scrutiny and approval; it being understood that the Committee and /or
Faculty advisor provide assistance in Faculty advisor provide
revising such programmes.

### 5.2.4 Transfer Between Programmes

A student who transfers at the beginning of his third year
from or into an Ordinary Programme must fequirements an Ordinary Programme must meet the declare a new major subject
5.3 Honours Programmes

Able and ambitious students are urged to enter an Honours
Programme. These programmes ente Work than. these requiregrammes for the geneial a higher quality of
There ar's degree. involving a major concentration in a courses: concentrated discipline or a combined concentration in two related disciplines; and
unconcentrated, involving breadth of study in several related unconcentrated, involving breadth of study in several related
disciopines. A student may transfer from the honours to the
general programme without serious in general programme without serious inconvenience. Students considering an honours course are advised to consult as soon
as posssibe - preferably before their first registratiton 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
Hocepted by the major department concerned, which will supervise their whole programme of study. Honours students supervise their whole programme of sudy. aceepted by the
in an unconcentrated programme must be ach
Programme Advisory Committee, which will appoint an Programme Advisory Committee, which will appoint an
interdisisiflinary avvisory committee of two or more Faculty interdiscipip linary advisory committee of two or
members to supervise the programme of study.
5.3.2 Application for Admission

Application for admission to an honours course must be
made in triplicate os 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 programme must subm
department concerned.
5.3.3 Conversion to Honours of a General B.A., B.Sc., or B.Comm. Degree

Honours of a General B.A., B.Sc., or A student who has received a General B.A., B.SC., or
B. .omm. degree from Dalhousie and who is not enrolled in a A.Comm. degree from Dalhousie and who is not enrolled in a
programme of study in another Faculty, may apply for admission into an Honours B.A., B.SC., B.SC. (Eng.Phys.),
B.Comm. programme. Regulations in paragraphs 5.3.1 and S.
Engineering Physics) must be met. On, satisfying the require. Engineering Physics) must be met. On, satisfying the require-
ments of the Honours degree programme, the student will ments of the Honours degree programme, the student will
receive a certificate which converts his General degree to an
Honours degree. receive a certific
Honours degree.
5.3.4 Joint Honours: Dalhousie-Mount Saint Vincent Special arrangements exist under which students may be
permitted to pursue' an honours programme iontly 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 acceoted by the major departments concerned at both institutions. These departments will
suiprvise the supervise the entire programme of study of accepted appli
cants. Paragraph 5.3.5.1 applies fully to such joint programmes.
5.3.5 Requirements for the Second, Third, and Fourth Year
5.3.5.1 Concentrated Honours Programmes
(a) Honours in
a
(a) Hoonours in a major programme are based on the genera
requirement that the 15 classes beyond the first year of study
comprise:
(i) nine cl
classes beyond the 100 level in one subject (the majo
${ }^{(i i)}$ 'two' classes in a minor subject satisfactory to the major department; and
(iii) tour classes not in the maior field
(b) Honours in a combined programme are based on the
general requirements that the 15 classes beyond the first year general requirements that the 15 classes bey
of study comprise:
i) (i) eleven classes beyond the 100 level in two allied subjects,
not more than seven classes being in either of them; nor more classes in subbects other than the two offered to
(ii) fotisfy the requirement in the preceding clause. satisfy the requirement in the prect
(c) At the end of a concentrated honours course, a student must pass a comprehensive examination covering his honours
work and he must attain an average of not less than B- in the classes in the two disciplines in which he has concentrated attainment of an average of at least A- in this examinatio
and these classes 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 Programmes
(a) Honours in the unconcentrated programmes are based on
the general requirement that the fifteen classes beyond the the general requirememprise:
first year of study con lises
(i) twelse (i) twelve classes beryond 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
wwo subjects. wo subjects.
(b). Requirements for an Unconcentrated B.A. (Honours)
(ii) three other clases.

At least ten classes of the twenty required must be selected
from grouns $A, B$, (c) $B$,
(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 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 end of an unconcentrated henours course, a
student must obtain a grade of $B$ - or higher on an essay or a comprenensive examination regarding his honours essay or a comprenensive examination egarage of $B-$ in the
work. In addition, he must attain an average reauired advanced classes which comprise his honours programme. Aschievement of an average of at least A- on the
honours exsay oramination and in the reauired advanced
Classes is required to obtain First-Class Honours. classes is required to obtain First-Class Honours.

## 6. Uniform Bachelor of Science for Engineering

## Three Years - 16 classes required.

On successful completion of this course, the student receives a General Bacheror of Science Degree rrom Dalhousie and
qualifies for admission to the junior year of the Nowa Scotia
Technical qualifies for admission to the enior vear ostudy further at a
Technical College. Students who pan to
college other than the Nova Scotia Technical College should college other than the Nova Scotia Technical College should
consult the Department of Engineering and Engineering-
Physics on initial registration. See also Architecture below. Physics on initial registration. See also Architecture below. Details of the curriculum are given under
Engineering-Phys ics in Programmes of Study.
7. Bachelor of Science with Honours in Engineeringhysics
Four years - 21 class
This special course is based on a study of physics oriented
towards its application to engineering problems. It is designed towards its application to engineering probems. It is designed
to give students more exposure to practical applications than to give students more exposure to practical applications than
does the Honours physics course. Students are also given an
deren opportunity to specialize in such fields as electronic systems
engineering, semiconductor engineering underrater acoustics engineering, semiconductor engineering, undervater acoustics
and materials science. Completion of the course is excellent
aremation preuration for a careere in industrial research or for graduate
study in applied sciences.

Details of the curriculum for the course are given under
Engineering and Engineering--Physics in Programmes of

## 8. Bachelor of Commerce

General: Three years - 15 classes required
Honours: Four years - 20 classes requires.
For 1970 and subsequent years new students will enter a
revised programme which may permit some concentration in one of several fields of business studies. Students planning to one of severan fields of business studies. Students planning to
follow a concentration programme should consult the De
partment partment of Commerce prior to registration
(a) The Institute of Chartered Accountants in most provinces
in Canada offers exemptions to graduates in commerce of in Canada ofters exemptions to graduates in commerece of
Dalhousie who are candidates for the Diploma in Chartered Dalhousie who
Accountancy.
(b) The Society of Industrial and Cost Accountants offers
exemptions to graduates in commerce of Dalhousie who ar candidates for the Diploma in Registered Industria

Details, of the curriculum for the General and for the
Honours degree courses, are given under Commerce in Programmes of Study.

## 9. Bachelor of Education

Integrated (with General B.A. or B.S.): four years -22
classes, including field experie. Integrated (with Honours B.A. or B.S.). : five years - 27
classes, including field uding field experience.
Sequential: one year-
(Elementary and Secondary) - 7 classes, including field
experience.
B.Ed. for vocational teachers - 15 classes, also evidence of satisfactory teaching is required
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 De
Education, students 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.).
The level of certitication 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 Registrar, Nova Scotia Department of Education about certification and licensing,
Transfer of Credit:
Decisions concerring transfer of credit will be made ollowing consideration of transcripts and students' intended Enquiries sh
gramme.
Students who w ransfer of previous credit must obtain the of B.Ed. with 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 sed in transfer of credit
equired to take an additional two and one-half classes will be Graduates of an acceptable two-year programme will be equired to take an additional three and one-half classes.
Graduates of an acceptable one year programme will be Graduates of an acceptable one year
The actual selection of classes is to be made to suit the needs of each student and the studgnt will be advised accordingly

## 0. Bachelor of Music Education

Four years - 20 classes plus practice teaching required.
By arrangement with the Nova Scotia Dearartment of
Education, students completing the course are awarded a Education, students completing the course are awarded a
Teacher's Certificate (Class 5 . Details of the curriculum and
Tequirements for requirements for admission to the course are given under
Music in Programmes of Study.

## 11. Certificate in Public Administration

One year - five classes plus standing in Political Science 100
or its equivalent.
A programme leading to the Certificate of Public Administra-
tion is available to persons who meet the admission require-
ments of Dalhousie University and who neither hold a first degree nor are enrolled in a programme leading to a first
degree. Those not meeting the usual admission requirements degree. Those not meeting the usual admission requirements
may apply for admission as a Special Case /see Admissions may apply for admission as a special Case (see Admissions,
section 1.3). The Department of Political Science will review
aplications for admission applications for admission under this provision and make
recommendations thereon.
11.1 Prerequit Rer
11.1 Prerequisite Requirement
Standing in Political Science 100 or its equivalent.
11.2 Programme Requirements
(b) a class in economics;
(c) Public Administration (Political Science 311)
(d) and (e) two other classes in the social sciences chosen in
consultation with the Department.
consuraiont with Deparment.
Normally four of the five classes in the programme must be
taken at Dalhousie University. Exceot for the prerequis. class, credit will normally be given only for the classes prekequisisite
the atter he student has registered in the programme.
Classes taken for the Certificate may be credited toward a
bachelor's degree, but a student must complete at least five Cachel or's degree, but a student must complete at least tive
af the subiects reauired for the degree atter the ard of the subje
Certificate.
A degree programme and the Certificate programme cannot
be taken concurrently. A person registered in a degree Ae taken concurrently. A person registered in a degree
programme cannot also be registered in a Certificate proprogramme cannot also be registered in a Certificate pro-
gramme, nor can a Certificate in Public Administration be awarded for work taken as part of a degree programme.

## 2. 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 eefore seek ing admission.
12.1 Entrance Requirements

At: a minimum, applicants pursuing a predental course in the
Faculty of Arts and Science are required to have comel ten classes during regular attendance at a university accept-
bale to the Faculty of Dentistry ble to the Faculty of Dentistry.
a) Five of these ten classes are imperative, namely: English
100; Physics 110 ; Biology 1000 or 2000; Chemistry 110 and
240. 240.
b) Credit for the remaining five classes may be obtained in ither of the following ways:
i) by the
in (i) by the successful completion of three classes chosen from
the humanities and the social sciences plus two other elective classes.
(ii) by Bachelor's degree.

### 12.2 Dental Aptitude Tests

All Canadian applicants must submit test results from the gramme Applicanss from Dental Aptitude Testing Pro American Dental Association Dental Aptitude Testing Pro13. 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 require
ment.
13.1 Entrance Requirements
At a minumum apolicants

At a minumum, 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 tor re required to have completed ten classes in ar reqular degree are required to have completed ten classes in a regular adegree
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 and 241, and Physics 100 or 110 .
(b) The remaining five classes must include at least two in a
single subject. Ordinarily these five electives should be chosen 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, mathematics, modern languages, phil
political science, psychology or sociology.
In choosing electives pre-medical students are generally well-advised not to anticipate medi ial school subbects such as
bacteriology, biochemistry, histology, and pysiology the expense of fundamental training, but for students intending
to specialize within the medical sciences, an honours degree to specialize within the medical sciences, an honours degree
in one of these fields or in biology, chemistry or physics may prove advantageous
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 complethe Nova Scotia Technical college is the satisfactory comple-
tion of at least two years at any university or equivalent
institution or reconized standing A university course in institution or recognized standing. A university course in
nathematics is prerequisite, except that the applicant may nstead
subject.
Providing it has been undertaken at a recognized university,
virtually any course of stud ies, including arts, fine arts, virtually any course of studies, including arts, fine arts,
engineering and other technologies; science, agriculture, social sciences, education, medicine, is acceptable.
A candidate for admission to he first year in architecture
should submit to the Registrar of the Nova Scotia Technical College by July 4 the following documents; (a) an application俍 transcript of his university record; (c) a letter of recom-
mendation from some person of cacademic rank with close mendation from some person of academic rank
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 te Bachelor of Design degree in Communication Design or Design.

Professors
J.E. Flint (History)
K. A. Heard (Polititic
K. A. Heard (Political Science)
2. A. Konczacki (Economics)
J. A. Konczacki (Econom

Associate Professors
P. D. Pillay (History
R. J. Smith (Engl ish)

Assistant Professors
J. Barkow (Anthropology)
T. M. Shaw (Political Science)

The programme in African Studies offers students an
opportunity to integrate classes from a number of disciplines opportunity to integrate classes from a number of disciplines
around the focus of one maior world region. Students
wishing to
 African Studies
and regulations.
It is strongly recommended that in the first year studen should read three of Anthropology 100 , Economics 100
English 100, History 199, Political Science 100 or Sociology
classes required for a degree must be chosen according to the a) African Studies 20
(b) Four classes to be chosen from List I below (direct focus on Africal
(c) A further two classes must be chosen from List I or List I
(h) ich
the latter list being classes concerned with the problems of
develonent development and underdevelopment.
(d) Two of the ten classes.must be at the 300 level.
200 African Studies
The class is intended to provide a detailed study of one African region. (During the 1975/76 academic year West
Africa will be studied). The study involves several disciplines. The class consists of two lectures per week plus one evening session per month. Students ares graded on the basis of three
essays written during the course of the year and chosen trom essays written during the course of the year and chosen from
at least two of the disciplinary sections plus satisfactory attendance. The class consists of approximately six lectures in each of the following

1. Ethnography of East Africa; J. Barkow (Anthropology)
2. Pre-Colonial History with Special Emphasis on Uganda, B. Webster (History)
3. Imperial Intrusion \& Impact on East Africa, J. E. Flint
4. Economic change from 1890 to the Present, Z. A
Koncracaki (Ecconomics)
5. Contemporary Politics of East Africa; K. A. Heard
(Political Science)
6. East Africa and the International System; T. M. Shaw
(Political Science)
7. The East African Novel; R. J. Smith (English)

LSE respective disciplinary sections of the calendar for class
descriptions)
(See respective disciplinary sections of the calendar for class
descriptions).
Anthropology 316, Africa: Ethnography \& Modernization, J.
H. Barkow.
Economics 234 A, Pre-Colonial History of Sub-Saharan
Africa, Z. A. Konczacki.

Economics 235A, Economic Hlistory of Tropical Africa
Colonial Period, Z. A. Konczacki.
Economics 236B, Recent Economic Development in Sub. English 217, African Literature in English, R. J. Smith.

History 240, Tropical Africa in the Nineteenth \& Twentieth
Centuries, J. B. Webster \& J. E. Flint.
History 344, Origins of Tribalism and Nationalism in Africa,
J. B. Webster
History 345, History of South Africa, P. D. Pillay.
Political Science 3540B,Foreign Policies of African States, 7 .
M. Shaw.
Political Science 2315A Politics in Africa South of the Sahara,
K. A. Heard.
Political Science 318, The Politics of South Africa, K, A. Political Science 3544A, Conflict and Cooperation in Southern Africa, T.M. Shaw

Anthropology 301, Peasant Society and Culture, L. Kasdan. Anthropology 306, Social Organizations of Pre-Literate
Societies, Economics 333A, Theories of Economic Development, A. A Konczacki
Economics 423A, International Economics of Development
C. M. Ouellette. Economics 424B, Economic Development and Ecology, Z. A Konczacki.
History 213, British Commonwealth and Empire, $P$.
Burroughs, M. Reckord P.D. Pillay
History 337, Colonized and Colonizers: Studies of the
Emergent Nations in the Caribbean, M. Reckord.
Sociology 206A, Social Change and Modernization, H. V.
Gamberg.
Sociology 306B, Socio-Cultural Change: Modernization and
Development, J. J. Mangalam.

## Architecture

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

## Art History

## Classes Offered

101A Survey of the History of Art, lect.: 2 hrs .
Palaeol ithic to the end of the 18 th Century.
101B Survey of the History of Art, lect.: 2 hrs.;
The 19th and 20 th centuries: A survey of painting sculpture, architecture and allied arts.

## Biochemistry

Professors
C. W. Helleiner (Chairman)
C. W. Helleiner IC
L. B. Macperson
J. Patrick
S. . Patrick
S. W. Russell
D. Wainuright

Associate Professors
A. H. Blair
A. H. Blair
F. I. Maclean
C. Mezei
F. . Palmer
J. A. Verpoor

## Assistant Professors

W. F. Doolittl|
C. B. Lazier
L. . Stewart
L.C. Stewart
M. W. Gray
F. M. Smith
F. M. Smith
M. W. Spence

Lecturers
J.T.R. Clar
M.S. DeWolfe
R. A. Singer

Biochemistry deals with the study of the structure and
behaviour of the molecules of living things
The results- of biochemical research are applicable in almost
every aspect of life. The agricultural drug, fermentation and food processing industries, to name but a few, rely heavily on biochemical techniques and knowledge. Much of funda
mental biology is best understood in biochemical terms, and problems relating to such apparently remote areas as ecology and psychology are being referred, more and more often, to the biochemist. Medicine turns to biochemistry for explana
tions of hereditary and metabolic disorders and for an tions of hereditary and metabolic disorders and for an
understanding of the actions of drugs and is on the threshold of explaining some psychiatric conditions in biochemical terms

Where are biochemically trained people employed? In
Canada, most of them work in universities, in agricultura research, or in government or hospital lities, in agricultura remparch, ored in industrry. Training to the B.Sc. tevel enables one
emp
to work as a to to work as a technician or research assistant; more respon
sible positions usually require a higher degree Graduter sible positions usually require a higher degree. Graduates in
biochemistry can go on to further training in medicine,
pharmacosology, physiology, and various other branches of the pharmacology, phy
biological sciences.

The Biochemistry Department is located in the Sir Charles
Tupper Medical Build ing. Although administratively the department is in the Faculty of Medicine, it is also an integra part of the Faculty of Arts and Science: its members take an
active part in teach ing in both faculties and most of the active part in teaching in both faculties, and most of the
research work is as relevant to biology in general as to

## Degree Programmes

The study of biochemistry requires a prior knowledge of
elementary biology, mathematics and physics, and a elementary bioloogy, mathematics and physics, and a good
ground ing in organic and physical chemistry. Accordingly,
the honours progarame the honours programme in biochemistry is planned in such a
way that these subjects are covered in an orderly fashion
betore ste bey the studenents bebin the the study of bo bochememistry fashion
broper.
Students who are not concentrating in biochemistry, but who Students who are not concentrating in biochemistry, but who
wish to include a class in biochemistry in their programmes,
should plan to do so in their third or fourth year. They Wish to include a class in biochemistry in their programmes,
should plan too do so in their third or fourth year They
should ensure that the necessary background is provided in should ensure that the necessary background is provided in
their earlier years. The outtine of the honours programmes
will serve as a guide in this respect. It should be noted their eariier years. The outtine of the honours programmes
will serve a 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, and that one in
physical chemistry is strongly recommended B.Sc. with Honours in Biochemistry The honours programme in biochemistry aims to provide the
student with the background necessary for graduate work in student with the background necessary for graduate work in
biochemistry and allied fields. It is also a suitable preparation biochemistry and allied fields. It is also a suitable preparation
for the study of medicine or dentistry. Because the chemical
content oft content of all branches of biology is rapidly increasing biochemistry can be recommen
career in many fields of biology.
Three major programmes in biochemistry are outlined below,
with minors in biology physics and with minors in biology, physics and mathematics. Honour chemistry at the conclusion of their period of study.

Year
1-2 Two electives (See section 5 of the general regulations fo
Degree Programmes). Degree Programmes).
3. Mathematics 100
4. Chemistry 110.

Minor in Biology.
5. Biology 2000 .
Minor in Physics
5. Physics 110 .
Minor in Mathematic
5. Biology 2000 .
Year II
Year II
6. Chemistry 230
7. Chemistry 240
Minor in Biology
8. Elective
8. Elective

1. Physics 110
2. Two Bio
3. Twi Biology half classes (2020, 2030, 2040, or 2050) or
one Microbiology Class.

Minor in Physics
8. Biology 2300
8, Biology 2000.
9. Physics 230.
Minor in Mathematics
Minor in Mathe
8. Elective.
9. Physics 110
9. Physics 110 .
10. Mathematics 200 .

Year IIIr
11. Biochemistry 302
12. Chemistry 210 .
13. Additional Chemistry class.

Minor in Biology
14. Elective
15. Additional Microbiology or Biology class.

Minor in Physics
14. Elective.
15. Additional physics class,

Minor in Mathematics
14. Elective.
15. Additional mathematics clas

Year IV
16. Biochemistry 403 A and 403 B
17. Biochemistry 406 A and 406 B
18. Biochemistry 407 A and 407 B
19. Additional Biochemistry or

## Minor in Biology 20. Add itional m

Minor in Physics
Minor in Mathematic
. Additional biology or microbiology class.
Classes Offered

302 Introductory Biochemistry, lect.: 2 hrs; lab.: 3 hrs.; A. A.
H. Blair / M. W. Gray / C. Mezei / F. B. Palmer /S. J. Patrick. This class is designed to introduce the student to the various Approximately half the class. is devoted to a study of the
structures and chemical and biological properties of the tructures and chemican and biological properties incte the the biological macromolecules: polysaccharides, proteins and nucleic a cids. The properties of enzymes as catalysts and the

The remainder of the class deals with intermediary meta-
bolism: the pathways of transformations which molecules undergo in the living organism. These pathways provide for he generation of usable energy, and olecules characteristic of energy for the synthesis of new molecules characteristic of
the organism. Finally, the class includes an introduction to the organism. Finaly, the class incledes an the me whe living cell
iochemical genetics: the means by the the
siecifies the structures of the molecules to be synthesized by specifies the structures of the
itself and by its descendants.
This class, or an equivalent one, is a prerequisite to more
advanced classes in biochemistry.
Prerequisite: a class in organic chemistry; it will be assumed hat students are familiar with the structures and reactions of
he major classes of organic compounds. A basic class $i$ ohysical chemistry is very desirable. The prospective student
will be much better prepared for this class if he has some will be much better prepared for this class it he has some
prior knowledge of chemical equilibrium, pH and elementary prior knowledge
chemical kinetics.

403A Intermediary Metabolism I, lect.
Lazier/F.I. MacLean/C. Mezei/ F.B. Palmer.
This class is intended to expand and complent the of metabolism begun in the introductory class. Topics previously introduced are studied in greater detail and complexity. These are supplemented by a selection of more specialized topics of particular interest. Emplasis is placed on systems and, wherever possible both cyclic and non-cyclic systems are examined for mechanisms by which the control and direction of metabolism are achier

A consideration of the diversity of different energy yielding ysstems which occur throughout nature is pressented which includes the details of the photosy hetic phosphorylation systems as well as some fermentative pathways.
nature of complex lipids as it relates to modern concepts of membrane structure and function will be discussed, as well.

The second portion of the course is devoted to the
metabolism of amino acids followed by a consideration of metabolism of amino acids followed by a consideration of
protein synthesis. Controlling factors at all stages are emprosized.
Prerequisit
rerequisite: Biochemistry 302 or an equivalent class in basic

403B Intermediary Metabolism
DeWolfe/F.I. MacLean/F.B. Palmer.
lect.: 2 hrs.; M.S The intent of this class is the same as that for 403A; however The class is principally concerned with aspects of carbohy drate, glycoprotein and amino acid metabolism in animals, plants, and micro-or synaptic transmission in nerves and modern conceepts of mitochondrial electron flow.
Prerequisite: Biochemistry 302 or an equivalent class in basic iochemistry.

406A Advanced Instrumentation Techniques, Iab.: 6 hrs.; A. Verpoorte.

Instruction is provided for advanced students in the use of instrumentation. The principles and operation of the equip-
ment will be discussed. The class includes discussion of spectrophotometers, a spectrofluorimeter, atomic absorption spectrophotometers, a spectronlaorimeter, automatic titration equipment as well as ultracentrifuges
Prerequisite: Biochemistry 302 or an equivalent class in basic

406B Special Project in Biochemistry, lab.. 6 hirs., various staff members.
small laboratory investigation will be undertaken, The student will be expected to learn the basis of the project in depth and then plan and carry out experiments to arswer an ppropriate question. The results wif be int eport written in the standard scientific manner
erequiste Biochemistry 302 or an equivalent class in

407A Physical Biochemistry, lect.: 2 hrs.; J. A. Verpoorte. ${ }^{\text {a }}$ Selected aspects of the chemistry of biological macromolecules, mainly proteins. Topics include: discussions of the tabilizing forces in maintaining structure as well as chemical and physical methods for isolating polymers, and studying their molecular properties.
rerequisites: A basic class in biochemistry and in physical
07 Enzymes , lect : 2 hrs. A. H. Blair/J. A Verooorte.
The first part of this class deals in a general way with the binding of small molecules, including hydrogen ions, to
proteins. The second part is devoted to a study of the kinetic properties of enzymes and how the binding of various
regulatory substances influences kinetic behaviour. Such regulatory substances influences kinetic behaviour. Such
interactions are important for the control of cellular metabolism. The relationship between the structure of catalytic and regulatory sites
selected enzymes.
selected enzymes.
Prerequisite: A basic class in Biochemistry.
408 Nucleic Acids, 2 hrs.; W.F. Doolittle/M.W. Gray/C.W. Alleiner. class dealing with chemical and physical approaches to the structure of nucleic acids and the enzymology of nucleic acid biosynthesis and repair. Emphasis is and solving numberical interpreting recent research reports and solving
problems. Offered in 1974-75 and alternate years. Prerequisite: A basic class in Biochemistry and permission of he instructors

## Biology

## Professors C. M. Boyd (O

C. M. Boyd (Oce
M. L. Cameron
L. M. Dickie (Oce
F. R. Hayes (Killam Senior Fellow)
O. P. Kamra
W. C. Kimmins
W. C. Kommins
K. H. Mann (Chairman)

1. A. McLaren
E. L. Mills (Oceanography)
E. C. Pielou (Killam Research Professor)
G. A. Riley (Oceanography)

## G. A. Riley (O L. Vining

Associate Professors
R. G. Angelopo
J. Farley
E.T. Garside
L. E. Haley
B. K. Hall
B. K. Hall
M. J. Harvey

## Assistant Professors <br> A. R. O. Chapma <br> G. S. Hicks <br> P. A. Lane <br> R. W. Lee R. P. McBride <br> R. P. McBride R. K'Dor E. Zouros <br> Instructors <br> B. Pollock W. Joyce <br> W. Joyce B. Joyce P Malcolm <br> P. Malcolm D. Sarty <br> D. Sarty C. Singh C. Scho <br> W. Botaychuk S. Silcox <br> S. Silcox <br> J. Wilson T. Mobbs <br> Research Associates <br> D. Brewer J. S Craig <br> G. McLelland <br> D. Patriquin <br> T. Platt D. P Pielo <br> D. P. P. Pielou R. Rajaman <br> A. Taylor <br> J. Mortens <br> Postdoctoral Fellows <br> R. Bradbury <br> A. Jones G. Newkirk <br> P. V. Thorogood <br> D. L. Waugh <br> M. Willison

The programme in biology is designed to provide the studen with an understanding, of living things. Understanding of the
biological world is so important for us because we are part of be carry to lorld is so important for us because we are part of it We carry to a large degree the responsibility for the state of the and relate ourselves to it
The programme offered by the Department gives a basic preparation for graduate and professional work in biology medicine, dentistry, pharmacy, the heath profession, bio engineering and education, agriculure, aquaculture, forestry and environmental architecture and engineering

## Degree Programmes

The Department offers classes leading to the General B.A and B.SC. degree in biology and to a concentrated or study biology as his main subject is asked to consult the Department early in his course so that a proper programme

Honours in Biology and Preparation for Graduate Study For entrance to graduate school an Honours degree 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 arrange their course programme as early as possible in consultation with the Department. In the
fourth year a programme will normally include Biolegy 490

For some graduate programmes, a combined or unconcentrated honours programme may be the best preparation

Students having a special interest in Marine Ecology advised to obtain a good undergraduate training in general biology, mathematics and physical sciences, and specialize

Honours students must attend a weekly Honours Seminar in heir fourth year

## Unspecialized Program

specialization in to any particular area orview of Biology without specialization in any particular area are advised to take as many 2000 -level core classes as possible, possibly adding
3000 -and 4000 -level classes as their interest dictates.

## Areas of Specialization

Many classes are available to students wishing to concentrate eir 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 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 a 1-year programme in Biology. Faculty advisors are available inthe ollowing fields samong others): Molecular biology, W. C.
Kimmins, L. C. Vining; Microbiology, R. G. Brown, R. P. McBride: Geneticics, L. E. Haley. . P. Pamra, R. W. Lee, E
Zouros; EcologylEnvironmental Studies, R. W. Doyle, J.

Harvey, P. Lane, K. H. Mann, I. McLaren, J. G. Ogden, E. C
Pielou: Physiology/cell biology, E. Angelopoulos, M. L. Pielou; Physiology/cell biology, Ee Angelopoulos,
Cameron, J. Collins, R. K. ODor; Developmental Biology, B. Hall, G. Hicks; Big Picture, J. Farley, K. von Maltzahn.

## Combined Honours in Microbiology

The departments of Biology Microbiology offer combined honours program. Please consult Dr. D. E. Mahoney in Microbiology or Dr. R. P. McBride in Biology fo details.

## Classes Offered

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

Biology class offerings may be grouped into four genera type

1. Introductory biological principles - Biology 1000 . This class is designed for students with no previous biology or for students in the health services or other sciences who requir an overview of biology.
2. Core classes - These consist of a full-year class Biology 2000 and six hall-year. classes 2010A/B - 2060A/B Collectively these classes form the basis of Biology class
offerings. It is recommended that a student who takes biology as his area of concentration complete as many of thes classes as possible. Biology 2000 is required of all Biology
3. 3000 -level classes - Intermediate classes are mainly for second and third year students. The classes Biolpg 310 A-3324 represent studies of the biology of the groups of organisms specified. The other concerned particularly with principles in molecular, developmental and environmental biology. No Biology major will be allowed to register in any 3000 - or 4000 -level class withou having compieted. or being reaistered ill classes in Biology totaling at least two ful credit.
4. 4000 -level classes - These classes are primarily fo onours and graduate students. They are open to others with permission of the instructor.

Introductory Classes Offered
All students registering for a biology class for the first time regulations carefully before
(a) Course 1000 is designed for, and must be taken by, thos who did not take, or scored less than $75 \%$ in, Grade 1 Biology. It thus serves as an introductiongo in the Biology Department.
(b) Students who have achieved $75 \%$ or over in Grade 12 Biology will normally take Biology 2000 or two of: 2010A or B;
2020 A or B; 2030 A or B; 2040 A or B; 2050 A or B; 2060 A or B.
c) Students who receive credits for 2010A or B, 2020A or B, 2050A or B, or 2060A bater yea

1000 Principles of General Biology, Study Centre 3 hrs.; Tutorial Quiz $1 / 2$ hr. Lecture Assembly. 1 hr.; ;. L. Cameron.
J. Harvey, J. G. Ogden; instructors, P. Malcolm, D. Sarty.
Biology 1000 is now given in an audio-tutorial format with a study centre open on a come-any-time basis from $8: 30$ a.m. to 5:30 p.m. and evenings depending on demand. In addition egular tutorial quiz sessions are held but the traditional
lecture no longer has any great importance in the system; this atter time slot is used for question-and-answer sessions, class tests and the occasional lecture.
The subject matter puts emphasis on those features common The subject ol matter puts emphasis on houps of organisms. It thus contrasts with Biology 2000 searching for unity among organisms rather by considering the basic functions of whole organisms sy considering the basic functions of whole organisms, studying a typicisined is finer detail considering the structure organism is exlls, cell chemistry, energy needs, the coding system and protein synthesis. This leads to the topics of genetics,
evolution, ecology and systematics.

The following classes are core classes in the general biology programme. Students concentrating their studies in bioiogy
may want to include all of these classes in their programme of may wan
studies.
2000 Diversity of Organisms, Study Centre 3 hrs.; Tutorial 1 hr. and/or Tutorial Quiz 1 hr. per week; A. R. O. Chapman, J.
Farley, G. S. Hicks, P. Lane, K. E. von Maltzann, K. H. Mann: instructors, W. Bohaychuk, S. Silcox.
This class explores the great diversity of organisms from bacteria to fungi, to higher animals and plants. Althoulgh the present diversity is the outcome of long range historica changes, this class does not attempt to trace the historica change. The class is concerned principally with the presen diversity of structural design of different types of organisms a related to the performance of integrated functions.
The class is taught through the audio-visual-tutorial approach Self study in the Biology 2000 Study Centre is achieved in the framework of weekly lessons. Listening to information about a topic, guidance through demonstrations and visual instruc-
tions leading to observation and analytical experiment are the main activities within the study centre. Comprehension of specific topic of the week and understanding of it within the broader framework of the class as a whole are assiste plemented by lectures which explore the relevance of the plemented by lectures which explore
lesson to contemporary human aftairs.
Students are advised to take this class early in their programme of biology classes, since some kno
diversity of organisms is required in other classes.
2010A/B Molecular Biology, Lect. 3 hrs.; Lab. 3 hrs.; W. C. Kimmins, L. C. Vining; instructor, J. Wilson.

This class forms a bridge between biology and chemistry Beginning win le surar organization of the living world interm of physical and chemical laws. Students will acquire an introductory knowledge of the chemistry of cell constituents, and of the biochemical basis of life, growth and heredity. Th atalysing essential cellular processes is developed greater depth.

Molecular biology seeks to explain the complexity of living systems as a logical consequence of the fundamental properties of atoms. The laboratory section will introduce deductive reasoning ised to explain hilogical iques, and deductive reasoning
the molecular level.
Background in chemistry is essential.
2020A/B Cell Biology: Form and Function, Lect. 2 hrs. Discussion 1 hr.; Lab. 3 hrs.; J. V. Collins, R. K. O'Dor;

The class introduces the basic concepts of cell structure and function, through lectures, laboratory sessions, demonstra-
tions and films. Lectures correlate the, findings of light and electron microscopy with biochemistry.

Laboratory work is integrated with the lecture material and and fixed, stained material as well a light microscopy, living techniques of histochemistry, biochemistry and physiology as they are applied to the study of cell function.

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 oraly in group discussions.
Texts: Oyson (1994), Cell Biology: A Molecular Approach.
Prerequisite:
$2030 \mathrm{~A} / \mathrm{B}$ Genetics, lect. 3 hrs.: Lab. 3 hrs.; L. E. Haley, O. P. amra, R. W. Lee; instructors, A. Hicks, C. Schom
The following three questions will be discusssed in this class: 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.

2040A/B Evolutionary Bi optional laboratory, time to be arranged; R. W. Doyle, E Zouros, instuctor, s. singh.
A study of evolution as the interaction of genetic and certain areas of population and biometrical genetics explicit statement of natural selection and an ecological model of population grow th and competition. In the second half of the new species in space and time, to aspects of human cultur and biological spoliution, the evolution of complex life cycles and to the evolution of the genetic system itself.
There are two lectures and a tutorial every week with a Mendelian genetics at the senior matriculation or Biology 1000 Mendelian genetics at the senior matriculation or Biology 1000 level will be assumed from the beginning; experience
indicates that the background provided by Biology 2030 may indicates th
be helpful.

2050A/B Developmental Biology, Lect. 2 hirs.; study sessio 3 hrs.; B. K. Hall, G. S. Hicks: instructors, B. Joyce, W. Joyce This class discusses the principles of both plant and animal
development, emphasizing the experimental approach.

Topics covered include: factors initiating development; embryo-genesis; typical developmental patterns; analysis its possible reversal.
Text: Ebert and Sussex, Interacting Systems in Develop-
ment.
2060A/B Ecology, lect. 2 hrs.; Lab. 3 hrs.; I. A. McLaren
The lectures offer an overview of ecology, considering in order the ecology of individuals, the regulation of numbers in
single-species populations, various interactions among such populations, and finally the complex interactions involved in
the structure the structure, function, and development of ecosystems. The
laboratories give some insight into techniques and modes of thought used by ecologists, and include independent proiects by students.
Text: Colin
Text: Colinuaux, Introduction to Ecology.
The following is an interdepartmental half-credit majors and honours students:

## 100A/B Introductory Microbiology

S. McFarlane, R. G. Brown, R. P. McBride.
his class introduces the basic concepts of microbiology hrough lectures, laboratory sessions, demonstrations an microorganisms, their structure, growth and genetic regula ion, as well as their involvement in other fields such as medicine, industry and ecology.
Prerequisite: Biology 1000 or eat

Intermediate Classes Offered
Intermediate classes are mainly for second and third-year classes described above. Please notice, however prerequisMes for the classes listed below. Students registering for these lasses will have comileted, or be registered in, a minimum o 2 fulicreaits at the $2000-$ evel.
3010A Metabolism I, Lect. 2 hrs., Lab. or Tutorials: $1-3$ hrs
W. C. Kimmins: instructor, J. Wilson.
The pathways of degradation and synthesis of molecules within the cell and the transformation of energy Prerequisite: Biology, 2010A or B.
Text: Lehniger, Biochemistry, 1970 .

I11B Metabolism III, Lect. 2 his.; Lab. or Tutorials: 1-3 hrs.: Li V. Vining; instructor, J. Wilson.

Metabolic pathways, information transfer, and control of etabolism within the cell.
Prerequisite: Biology 2010A or B.
fext:
Lehniger, Biochemistry, 1970
3021 A Techniques in the study of the cell elopoulos.

This course is designed to familiarize students with techniques available to elucidate function and form of cells and cel organelles. Cytochemistry, tissue culture, ultracentrifugation
fluorescent microscopy are a few of the areas covered. Two weeks are set aside to cover topics of special interest to embers of the class

3022A Microbial Uitrastructure, lectures 2 hr . lab. 3 hr .; K. B.

This course covers the ultrastructural features of microbes. Principles and practical aspects of techniques for analysing ultrastructure are considered in the first part of the course particular emphasis being given to electron microscopy. In
the second part the ultrastructure of macromolecules and their organization into more complex structures in viruses, bacteria, yeasts and protozoa is discussed.
Students are expected to have already an understanding of structure at the light microscope level.
(The above 2 classes, 3021A and 3022A are designed to classes, or they may register for onie of them and, as an option take part of the other class if it interests them. See the instructors for details. Note that Biology 4021B and 4022B may be taken as follow-up classes.)

3030B Molecular Genetics of Prokaryotes, Lect. 2 hrs.; Lab 3 hrs.: L. E. Haley

The replication, transmission and control. of genetic information in viruses and bacteria.
Prerequisite: Biology 2030 or B

3031B Molecular Genetics of Eukaryotes, Lect. 2 his.; Lab 3 hrs.; R. W. Lee.
The replications, organization, and regularion of general material in eukaryotes. Emphasis well be placed on counderstanding of the genetic processes underlying develop Preerequisite: Biology 2030A or B, Biology 2010A or B Prerequisite: Biology
Biology 2020 A or B .

3035A Population Genetics, E. Zouros: lectures 2 hrs tutorial 1 hr .; seminar 1 hr .; lab open.

Students are introduced to the theory of Population Genetics, which is then examined in the light of existing experimenta variation in natural populations as the raw material of vevolution. A detailed discussion of the dynamics of change in gene frequencies and an attempt to account for the observed pattern of genetic variation in natural populations. or permission of the instructor.
3050 B Development and Morphogenesis in Animals, Lect 2 hrs.; Lab. 3 hrs.; B. K. Hall.

This class assumes the material of Biology $2050 \mathrm{~A} / \mathrm{B}$ as background and studies the mechanisms underlying the animals. Topics of studies include: descriptive embryology of invertebrates and vertebrates; mammalian development and is hormonal control; histogenesis and morphogenesis of ssues and organs; regeneration of lost body parts; growth
he laboratory classes emphasize the experimental approa the lecture topics

3061 B Structure and Function of Ecosystem I, lect. 2 hr eminar 1 hr.; M. J. Harvey R. P. McBride, K. H. Mann, P. Lane; instructor; C. Bays.

Utilizing a systems approach to production, decomposition
espiration, and nutrient cycling in terrestrial and aquatic ecosystems, this course surveys both methods and results of
studies in a variety of ecosystems. Seminars will be devoted to studies in avariety of ecosystems. Seminars will be devoted to
a review of specific investigations reported in the literature a review of speciricizinu techiques and data manipulation. Prerequisites: Biology 2040A or B and 2060A or B, Math 100 or 150.
3064B Topics in Population Biology, seminar 2 hrs.; R. W. Doyle.

Controversial topics in the general areas of population
ecology, population genetics and evolutionary theory. Topics ecology, population genetics and evolutionary theory. Topics
will vary from tyear to year but generally will emphasize will vary from year to year but generaly will emphasize phenomena, and the genetics of adaptation to local environments. The research literature is the only text.
Seminars every week plus five essays.
Prerequisites: Biology 2040 A or $\mathrm{B}, 2060 \mathrm{~A}$ or B, Math 100 or
150. (a minimum B grade is required).

3063 Theoretical Ecology, lect. 2 hrs:; 1 ab. 3 hrs.; E. C. Pielou. (Given in alternate years. Not offered in 1975-76)
This class considers ecological problems whose solution entails mathematical reasoning. Discussion of resent reand animal ecology, the whole sequence of steps that an investigation follows: this starts with formulating a problem and deciding what observations would ead 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 sel oly to general ecological theory
who have done Mathematics 100 or 151 . Other mathematica topics will be explained as they arise; the time to be devoted to them will be adjusted to the needs of the class. For student Bailey's Statistical Methods in Biology is required reading. Biology 2060A or B.

## 3065A Ecological Sampling Techniques, Lecture 2 hrs.: lab.

 3 hrs.: E. C. Pielou.A practical course intended for those planning careers in ecology, theoretical or applied (orestry, entomology, conse
vation, widl life management, parks administration, range management, fisheries etc.), It aims to give students thorough grounding in techniques for estimating the number Prerequisites: Biology 2060A or B, Math. 106 or 206 or Prerequisites:
Psychol. 357.

3070A Animal Physiology I, Lect. 2 hrs., Discussion 1 hr , The class discusses the mechanisms which coordinate the activities of cells within multicelluar organisms and perm such organisms to maintain a stable internal environment in most successful mechanisms - those most widely distributed through the animal kingdom. The laboratories will be designed orilustrate these "principles of physiology" in a variety o used to study physiology.
Prerequisites: Biology 2000, 2020A/B. (a minimum C grade Prerequisites.
is required).

3071B Animal Physiology II, lect. 2 hrs.: Lab. 3 hrs.; R. K - M. Camero, Mstructor, B. Polloc
his class continues 3070A and admission requires comple ion of that class. Many of the topics discussed in 3070 A will be diversity of mechanisms used in differphasis will be on the imilar problems in the used in different animals to solve ged to follow their interests and develop their own experimental approaches.
Prerequisite: Biology 3070A.

## 073B Plant Physiology, W. Kimmins and staf

3111 B Bacteria, Viruses and Fungill, lect. 2 hrs.; lab. 3 hrs R.

Stady of their physiological and ecological characteristics Aamission to 3111 B requires the completion of 2100 A or B , or with the "microbial world"

A format of assigned readings, tutorials and laboratory esearch projects will be used to introduce the student to microbial pathogenicity, immonology, microbial genetics and microbial ecology.
Prerequisite: Biology 2100 A or B , or Biology 3110 A .
3212A Algology, lect. 2 hrs.; lab. 3 hrs., A. R. O. Chapman.
This class deals with algal organization at the cellular rganismic, population and community levels. A thematic approach is used and only passing reference is made to systematics.
Prerequisite:
. Grade B minimum in Biology 2000.
3213B Plant Development, lecture/discussion 3 hrs.; lab. 3
hrs.: G. S. Hicks
The class deals with the regulation of differentiation and morphogenesis in plants. Emphasis is placed on concepts derived from experiments with a wide variety of experimenta systems, sample topic areas: differential gene activation
induction, polarity, determination, totipotency, photo morphogenesis.
The laboratory sessions emphasize application of sterile Culture technique to developmental problems
Prerequisites:
Biology 2000 and 2050 A or B

3214 Plant Design, K. E. von Maltzahn
This class is primarily concerned with physiological anatomy
The structural design of plants is analysed in terms The structural design of plants is analysed in terms of different levels of organization. The class deals with the establishment of types of design on the basis of comparative studies seeking to establish homologies between the elements of design at various levels, including the level of
landscape and land-forms

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, speacies; second, to
go ingo some of the newer of the 'computer revolution's The latter is still in an experimental
stage here and will involve some study of numerical taxonom automated identification and key construction.
Prerequisite: Biology 2000.
Text: A Takhtajan, Flowering Plants. Their Origin and
Dispersal, M. S. Percival, Floral Biology.
3216B Adaptation and Speciation in Higher Plants, lect. hrs.; lab/seminar 2 hrs.; M. J. Harvey
This course deals with the discipline known as biosystematics or, alternatively, experimental taxonomy. The aporoach taken is the analytic one of considering particular examples and
trying to deduce which trying to deduce which peculiarities of their biology have
contributed to their relative success. In this way the contributed to their relative success. In this way the
mechanisms which have caused particular species pairs to diverge are studied. Examples considered are many and range from evening primroses and irises, through bananas and maize, down to the humble, but, complex, dandelion.
Prerequisite. Biology 2000 Texts: D. Briggs and S. M. Walteis, Plant Variation and
Evolution; G. L. Stebbins, Chromosomal Evolution in Higher Evolution; G. L. Stebbins, Chromosomal Evolution in Higher
Plants; Plants;
Referen
Rreeding text: W. Williams, Genetical Principles and Plant
3321 Invertebrates, lect. 2 hrs., lab: 3 hrs.: C. M. Boyd, J
Farley, K. H. Mann, E. L. Mills, R. K. O.Dor. An attempt will be made to understand how different groups of invertebrate animals live - what modifications have they assume a manner of life alien to their evolutionary predeces. sors:
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 characphysiological systems and morphological peculiarities will be emphasized
A laboratory session each week will give students an invertebrate animals based on observation of feeding, espiration, locomotion, etc.
Prerequisite:
Biology 2000

33228 Animal Parasitology, lect. 2 hrs.; lab. 3 hrs.; E. W. The class is intended to give students an understanding of parasitism, diversity and ubiquity.
Although the class gives a survey of parasites from parastic morotozoa to vertebrates, the emphasis is not on taxonomy and morphology. Instead, one or more representative species demonstrate the life cycle as well as the and used to relationships. Morophology and physiology are brought into the study of specific adaptations to the environment during free-living and parastic stages. Problems of the reproduction t parasitis are stressed. Different hypothPrerequisite: 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 he evolution of vertebrate animals from
ancestral line at least 500 million years ago

The structure of vertebrates and their sequential deposition of ossils in progressively more recent formation of the superticia rust of the earth form an unparalled and unequivoca expost through the long expanse of time of progressively mocomplex organisms. Those vertebrates which have survived he stresses imposed by the restless environment form series of stages or steps, each characterized by several general form of the body. Approximately three-quarters of the programme is given to an analysis, by procedures comparison and contrast, of these changes and the elevance in the synthesis of the evolutionary pathway

An appreciation of the classification, structure and evoluion of vertebrates is essential to considerations of the development with their surroundings and with each other.
The laboratory study of a broad array of vertebrates provides he 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 ad
contrast. The background which is required for this study is not particularly extensive but should incorporate the rudiments of animal form and function and aug this class is often considered to belong at the intermediate level, it can be mastered by any dil class in biology

3324 Entomology, lect. 2 hrs.: lab., 3 hrs.: D. P. Pielou
Entomology, the study of insects, is not only an important divisions of applied biology. divions of appleabiology.
This class is an introduction to the study of insects and it deals with:
(1)
2) The biassification and evolutionary diversity of insects. (3) Applied aspects - medical, agricultural and forest ent chemicicy; harmful and beneficial insects: the pros Prememical control: other methods of pest control.
Prerequisite: Biology 3321 (Invertebrates): may be taken concurrently with permission of instructor, which generally requires A - standing in Biology 2000.

3400 History of Science (same as History 310 and Physics 340), lect. 2 hrs.; tutorial 1 hr: J. Farley (Biology). R. Ravindra Physics).

This class is designed to accomodate students of the sciences and the arts. There are no formal prerequisites althoughall students musthaven a sithery or philosophy. The class will stress the period from the 16 th to the 20 th centuries, and will attempt to show how ideas of what constitutes an acceptable scientific on the social context of science and the interactions between on the social context of science and the interactions between may take this class as an elective only, not including it in the, 4 classes required for a Biology major. Hons
count it towards their Biology requirements

The following classes are primarily for honours and
graduate students. They are open to others with permission of the instructo

## 4010 Advanced Topics in Molecular Biolog <br> C. Vining

 and staff.
## 020 C Advanced Topics in Cell Biology,

## 021B Cytology Project; E. Angelopolous

A research project using one or more of the skills acquired in Al

## 2228 Microbial Ultrastructure Project; K. B. Easterbrook

A research project using one or more of the skills acquired in consultation with the instructor

## 030A Advanced Topics in Genetrics, Lee and sta

A general topic from the current literature in genetics will be Axamined in seminar format. The nature of the topic and the structor in charge of the class will vary from year to year Students will be
during the term.

## 4032B Cytogenetics,

## 4033A Microbial Genetics, C. Stuttard

This class is concerned with the study of hereaity in microorganisms, especially bacteria and their viruses, mohasis is placed on general aspects of geneli analys bacteria. Some understanding of basic biochemistry, espe
 chemistry is assumed.
Prerequisite: Biology 2030

The class consists of a survey of the current knowledge of the effects of ionizing radiation on biological materials on the three evels: physical, chemical and biological. In addition, methods of dosimetry, autoradiography, somatic and genetic effects, radiominmetic chemicals and biolasers are discussed.
4036C Human Genetics, E. Zouros, S. Singh, O. P. Kamra, P. Welch. Prerequisite: Biology 2030 A or B, Biology 2060 A or B. A statistics class is highly recommended.
4060 Advanced Topics in Ecology Seminar, seminar 2 hrs
Community structure, population dynamics, energy and
materials budgets topoics vary rom year to year). Fourth-year Prerequisite: Instructor's permission.
4064C Pleistocene Biogeography, lab. 3 hrs.; H. B. S.

Lecture, discussion, and laboratory experience in the reconstruction of environmental change during the Pleistocene epoch. Laboratory and field experience will pay region, including environmental changes caused by man Techniques of pollen analysis, plant and animal macrofossi study, dendrochronology, geochemical and isotopic dating methods will be explored. Field and laboratory work include class problem in an area in the Halifax region.
Prerequisites: At least two creditis in Biology. or Geology. This
course is to be taken in coniunction with Geog course is to be taken in conjunction with Geology 457 . Pleistocene Geology. Permission of the instructors. May be
counted as Biology or Geology half-credit.

4066B Microbial Ecology, lect. 2 hrs.; lab. 3 hrs.; R. P McBride.

A format of directed reading, essays and discussions will be used to introduce the following topics: micro-organism
populations; the functioning of micro-organism communities interactions between microbes and macro-organisms; and the use of micro-organisms to examine ecological theory. A land background permission of the suit the student's intere Prerequisites: Biology 2000 A or B ; Biology 2100 A or B , or by 3110A

4067B Introduction to Biological Oceanography, lect. 2
A survey of marine populations and their relationships with their physical environment and with each other. Permission of the instructor is required
A. Riley A. Miological Oceanography, lect.; 2 hrs.; G .
Physiology and ecology of marine organisms with particular seeasonce to community structure and population dynamics, weasonal and regional variations in populations, interrelations
with the physical and chemical environment. Prerequisite: Biology 3061B. Permission required.
4069B Ecological Diversity, lecture 2 hrs., discussion 1 hr. E. C. Pielou. A critical study of the divevsity of ecological richness of a community and of the relative abundances of the species.
Prerequisites: Math 206; Biol. 3063 or 3064 or 3065;
4113 Bacteriology, (1976-77); D. Mahoney, R. Brown, L. C.
Vining, R. P. McBride, R. Martin.
A class for advanced students in bacteriology. The class includes growth and structure of bacteria, a survey of many groups of bacteria and the methodology of their identification, Prerequisite: Biology 2100 A or B
permission of the instructor is required.
4114 Virology, A. B. Easterbrook A class for advanced students in virology - all types of
viruses will be considered - animal, insect, plant and
bacterial Prerequisite: Permission of instructor.
4115C Introduction to Immunology (1976-77).

4116A Mycology, R. Brown, D. Brewer R. P. McBride
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. Prerequisites: Biology 2100 or 3110 , Microbiology 302.
4117 C Advanced Topics in Immunology, L. Kind Prerequisite: Biology 41150

4118B Techniques in Immunology, L. Kind.
The following procedures will be carried out: immunization of animals and measurement of antibodies in sera by means of passive hemagglutination, precipitation and antigen binding
techniques; detection of antigens determination of cytotoxic effects of lymphocytes; production of $\mathrm{m} / \mathrm{f}$ by lymphocytes. Purification of antigens and/or antibodies by immunoadsorption.
Prerequisite: Permission of instructo
4214B Physiology of Marine Plants, lect. 2 hrs.; (1975-76) J ل S. Craigie.

A comparative study of the physiology and biochemistry of the various algal classes will be conducted. This will include proteins, fats, pigments and Prerequisites: Biology 2010 A or $\mathrm{B}, 3010 \mathrm{~A}$
4275B Topics in Algology, seminar 3 hrs.; lab. project; A. R Chapman.
Discussion of current research topics.
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. ${ }^{1}$ Reakdings and proiects will be chosen to the class. Reakdings and projects will be chosen to suit the individual studentsinterests, background, and future plans. Each prospective student must approach the instructor the end of the preceding academic year, and, if accepted, make a synoptic collection olinseots 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.; J. Mortenson.

The behaviour of animals is studied in the field and in the laboratiory. These observations and other presented material

401 Pharmacology: Influence of Chemical Agents on Living Organisms, lect.: Mon., Wed., Fri. 1:30; lab:: Wed.

This introductory class is designed to acquaint students with the actions of drugs on physiological and biochemical unctions of man and lower animals. The basic mechanisms 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 pariciparn ion of basic principles of pharmacology.

4403 Human Physiology, lect. 3 hrs.; lab. 3 hrs.; B. Issekutz.
A class dealing with the physio-chemical basis of the
Physiological processes in man. Permission of the instructor is required.
4405A Functions and Structures of the Nervous System, M. Yoon.

Introduction to basic neurophysiology and neuroanatomy Prerequisite: Permission of the instructor

4406B Neurophysiology laboratory, M. Yoon.
Introduction to research problems in neurosciences with electrophysiological methods.
electrophysiological methods.
4451A Organs of Sense; R. W. Dykes.
General principles of organization and physiology of selected sense organs. Includes guest speakers.
Pierequisite:
Permission of instructor.

4454A Membrane Transport Theory: I. W. Richardson.
A mathematical development of the physical principles A mathematical development of the physical principles
governing the movement of molecules across membranes, Prerequisite: Permission of instructor
4455A Biological Control Systems; H. K. Wolf.
Control is ubiquitous in biological systems, occurring at all levels from the subcelluar to the communal. This class will include the general mathematical techniques required for the analysis of such systems.

4456B Electrical Activity of the Heart; W. J. Elfler, B. A Horacek

The aim of this course is to establish the relationship between measured electrocardiographic body surface polentials and the underlying electrical phenomena of the heart

4459B Mechanics of Cardiac Muscle; A. Y. K. Wong.
Mathematical characterization of the mechanics and energetics of muscle. Permission of the instructor
4800 Special Topics.
4805A/4806B Special Projects, stafi
4900 Honours Research and Thesis.

## Canadian Studies Programme

## Who are eligible

Dalhousie students who are planning to do, or are at present
doing, major programmes in any of the following six epartments, are eligible.

The six departments are: Economics, English, History,
Political Science, French, and Sociology. Aim
The purpose of the programme is to allow such students to oncentrate 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 hrs. political Science classes in classes designated as Canadian in the list appended below. He would in addition take four classes outside his major field in anadian Economics, Canadian History, Canadian Literatu fermer English or French), or Canadian Sociology
n other words, the Canadian Studies Programme does not
attempt to establish a new maior field. It seeks to use any ond
one of six prasent departments in the Faculty of Arts and
Science as a base around Science as a base around which a student may effectively
cluster a number of classes in Canadian subjects.

## Classe

Year I
Sudents who are interested in such a programme should plan in their
following:
(1) Three classes from

Economics 100
Sociology 100
History 120 or a History 199 with Canadian content
English 100 (Sections $1,5,7,10,13,15,16,20$ )
Science 100
(2) A student who does not have a competent reading knowledge of French should take French 102 or French
106 in the tst or if necessary. 2nd year. Adequary of
reading knowledge can be checked by the French Department.
A fifth class in the first year has been left as open option, but
students might consider doing Geology 140 students might consider
useful environmental base.

Year II
Students should plan to take at least one clas' within their
major department from the list appended.
They should also plan to take two classes outside their major

## English 207 Economics Find

French 202
French 23
History 220
Political Science 202
Sociology 211
Sociology 212
Canadian Literatur
Canadian Economic History
Spoken and Written French
Spoken and
202 A
2028
Introduction to French Literatur

The Canadian Mosaic
Canadian Politics and Governmen Canadian Society
Canadian Minorities

## Year III

Students should take at least two classes within their major
department in Canadian studies and two classes outside of it,
from the following lis

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Economics 324
Mconomics 
Mistory 325
History 332
History 329
*olitical Science 344A
olitical Science 315
olitical Science 322
Olitical Science 334A
Political Science 334A
Sociology 320
Money and Banking
Civilization of France and French Carada
Caraduction to French-Can
The Nova Scotia Experience
Religion and Society in Canada
Intergovernmental Relations in Canad
The Policy Perecss in Canada
Politics in Nova Scotia since Confederation
Canadian External Relatio
LLadian Political Parties 
Urban Problems
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It should be possible for students to take a number of $2 n$
year classes in their 3 ard year and in
How to arrange it Students wishing to discuss a Canadian Studies Programme
or w wising to take it, should get in touch with any of the
following, within their respective departments:

Professor B. Lesser, Ec
Professor Allan Bevan, English Department
Professor Hans Runte, French Department
Professor S. D. Clark, Sont
Professor J. M. Clark, Sociology Department
Professor P. Pol itical Science Department
Professor P. B. Waite, History. Department

## Chemistry

Professors
W. E. Jones (Chairman of Department)
W. A. Aue
J. A. Coxon
K. E. Hayes
O. Knop
K. T. Leffek

Associate Professors
G. A. Dauphinee
T. P. Forrest
J. S. Grossert
D. L. Hooper
D. L. Hooper
L. Ramaley

Assistant Professors
G. D. Abrams
J. B. Faught
P. M. Froenlich
J. C. T. Kwak
T. W. Melynk
P. D. Pacey
J. A. Pincock
J. A. Pincock
R. Stephens
A. Terzis

Special Lecturer
M. L. Heit
Demonstrators
M. Ahmed
P. Renaul
D. Silvert

Research Associate
J. Holzbecher

Postdoctoral Fellows
R. Aigner
M. Cheung
M. Daniewski
M. Daniewsk
A. Held
A. Held
O. I. Liardon
A. Lumb
B. A. Rao
K. V. Subaram
T. Thomas
D. Tsvi
J. Wasson

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 program irrchemistry should be competent in mathematics as well as chemistry, since mathematics is the language of the honours B.Sc. is the minimum professional requirement for a chemist - the general B.Sc. with a major in chemistry has no professional standingly 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 students will proceed to further studies in chemistry, working toward the degree of M.Sc. or Ph.D. A postgraduate degree essential research or in university teaching.

The first class in chemistry is an introduction to the discipline. Non-science students who elect to take chemistry to fulfil requirements tor a degree wilf find that the subject provides
good insight into the scientific method, though once again it should be stressed that because chemistry is a physical science, the laboratory and class work stresses mathematic more than does that of alife science such as sionagy. Maists are required to take introductory chemistry and may be required to take second and third-year classes in the subjec as well. This group of students can include those taking courses in engineering, pre-medicicye, pre-dentistry, dudial
hygiene, nursing and pharmacy. Engineering students contemplating chemical engineering should consult the Department of Engineering for advice on desirable classes 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 $55 \%$, if they are, the student is bound to find advanced classes in chemistry At
At the second year level the student is exposed in the laboratory to the four areas of specialization into which chemistry deals with all the chemical elements except carbon, and the compounds containing carbon. Analytical chemistry is concerned with the determination of the composition of however minute. Physical chemistry is primarily devoted to the study of the nature of chemical reactions and is undoubtedly the most purely mathematical area of chemistry. Beyond the second year level, a student's studies in chemistry become student may also be introduced to biochemistry, or the chemistry of living organisms, as well as such specialties as structural chemistry, radiochemistry, electrochemistry and heoretical chemistry

Because advances in chemistry have been and continue to be published in many languages, those who look forward to reading knowledge of at least two foreign languages. Thes are usually chosen from among French, German and Russian The student is referred to the regulations of the Faculty of advanced degrees.

> Degree Programmes

## eneral B.Sc. in Chemistry

A candidate for this degree must satisfy all of the general equirements. He wilt take Chemistry so nt e first year. In the no more than eight full classes chosen from Chemistry 210 $230,240,300(\mathrm{~A}), 310,320,330(\mathrm{C}), 331(\mathrm{~B})$ and 340 (two of $300(\mathrm{~A}), 330(\mathrm{C})$ and 331 (B) constitute a full class). It is Chemistry 230. Mathematics 200 is a prerequisite to Chemistry $300($ A) , 330 (C) and 331 (B). Physics 110 should be included in the course.

## B.Sc. with Honours in Chemistry

This programme is intended to provide a good training in
chemistry while at the same time it makes provision for the chemistry while at the same time it makes provision for the
individual interests of students. All students are required to consult annually with the Chairman of the Department, and to

Year I will normally consist of:
Chemistry 110
Mathematics 100
A foreign language at 100 level
. One of Biology 1000, Geology 100 or Physics 110

## Years II, III and IV must include <br> \section*{(a) Chemistry 210,230 and 240}

b) Six full classes from Chemistry 300 and 400 levels.
Chemistry $300(A), 310,320,330$ (C), $331(\mathrm{~B})$ required classes.
Mathematics 200 a prerequisite for Chemistry $300(\mathrm{~A})$,
330 (C) and 331 (B). $30(C)$ and $331(B)$.
IfPhysics 110 casses. These must be chosen as follows: they must be taken in $Y$ reign language were not taken in Year (ii) Two classes beyond the 1100 -level must be taken in a minor subject. Minor subjects allowed for this degree are

It suggested that these five other classes be chosen according to the future plans of the student. For example:
inose planning future study in physical chemistry should take additional mathematics and physics classes; those planning uture study in organic chemistry should take one or more liology classes; those planning future study in geochemistry
should take one or more geology classes.
n all cases it is in the interests of the student to consult with the Chairman and other professors in the department. This may that March is the most suitable time for discussion of a future programme.

## Classes Offered

105 Chemistry, (for dental hygiene students), lect: 3 hrs.
This class is taken by dental hygiene students in their first year will not serve as a prerequisite to second-year chemistry lasses. Organic chemistry is discussed in the second half of not include further study of chemistry. The subjects discussed the first term include atomic structure, solution equilibria and simple inorganic chemistry. laboratory experiments are aspects of chemistry are not emphasized in this class.
110 General Chemistry, lect.: 3 hrs.; lab.; tutorial: 3 hrs.; W. A. Aue, A. Chattopadhyay, W. J. Chute, G. A. Dauphinee, J. B T. W. Melnyk, P. D. Pacey.

This is an introductory class in college chemistry with lectures and tutorials on a number of topics in physical and structural melladistry. Included are stoichiometry, acid-base and
oxidation-reduction reactions, gases, liquids and solids olutions, 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 such a theory is derived using standard mathematica, methods from basic physical principles. In tests and examinations the student is expected to demonstrate his knowledge of the basis of these theories and of their limitations problems.
It is assumed that students entering this class will have some knowledge of elementary chemistry, mathematics and
 numerical aspects. It is important that students be able to its exponents and logarithms, proportionality and variation and exponents and logarithms, proportitanality and variation
be able to solve quadratic and simultaneous equations.
210 Analytical and Inorganic Chemistry, lect.: 2 hrs.; lab.: 3 hrs.; R. Stephens and O. Knop.

The first term will be concerned with Chemical Equilibria. An itensive discussion of chemical equilibria (solubility, acid base, redox, metal complex) with and without the use
approximation will be given. aproximaion wibegive.
Correlation to qualtitative and quantitative,analytical chemisry, such as competing equilibria, titration of weak an
polyprotic acids, is attempted. The laboratory work will involve modern physical separation methods on exchange, thin-layer chromatography and quantitative analysis (precipitation
fitration). ration).
hill include term will concentrate on Inorganic Chemistry and will include a discussion of electronic structure of atoms and molecular orbital theory. These principles will then be applied
othe chemistry and structure of the compounds of the first and second row representative elements and the first transition series. Organometallic chemistry will also be
discussed. The preparation and alysis discussed. The preparation and analysis of inorganic compounds will be the laboratory assignments.
Prerequisites:'Chemistry 110 or equivalent; Mathematics 100 .
230 introductory Physical Chemistry, lect:: 2 hrs.; lab.: 3 rs.: W. E. Jones, C. H. Warren

This class is designed to give a theoretical and practical
background in the fundamentals of physical anemistry The background in the fundamentals of physical chemistry. The
lecture periods include discussions of the following topics: lecture periods include discussions of the following topics
properties of real gases, liquids and solutions atomic structure; molecular structure; thermodynamics; ther mochemistry; electrochemistry; chemical kinetics.
With the exception of topic (a), where background knowledge in the properties of the ideal gas is assumed, the discussions begin at an introductory level. A knowledge of simple calculus
will be assumed. ill be assumed

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; Mathematics 100 .

240 Introductory Organic Chemistry, three sections. lect: hrs.; ootional tutorial: 1 hr.; lab.. 3 hrs.; G. D. Abrams, T. P
Forrest, D. L. Hooper, T. B. Grindley, J. G. Grossert.

This class will provide a broad introduction to the chemistry o carbon compounds, including molecular shapes and bond

Chemistry.
Prerequisites: A good comprehension of the principles studies in Chemistry 110. In particular, the student is require 0 understand the relation between carbon and the other elements of the periodic table; valence; covalent and ionic onding; electronic orbitals; orbital hybridization and the atomic orbital hybridization electronegativity: the physical chemistry of solutions; chemical equilibria; velocities of eactions; oxidation-reduction; acids and bases. An examina on may be set on these topics at the beginning of the cademic year.
ect. 2 hrs incory Organic Chemistry with Biochemistry ect.: 2 hrs.; lab.: 3 hrs.; W. J. Chute.
his class is taken by nursing students. It will not serve as a prerequisite to third-year classes in chemistry. During the firs a basic infoduction to he chemistry of carbo he Biochemistry Department
$\mathbf{0 0}$ (A) Introductory Theoretical Chemistry, lect.: 2 hrs.: C H. Warren
his class provides an introduction to quantum mechanics and its application to spectroscopy and the electronic sucture of arembe first presented and applied to some simp physical systems. This is followed by a discussion of the otations and vibrations of molecules, the electronic structur of atoms, molecules and the chemical bond and the electronic rerequisites: Mathematics 100 and 200, Chemistry 210 or 30 or consent of instructor

10 Inorganic Chemistry, lect. 2 hrs. lab 3 hrs. J. B Faught and A. Terzis.
The aim of this class is to undertake a systematic study of the chemistry of he elements and heir ampounds. term will be devoted to the study of the transition elements. Appropriate use will be made of modern bonding concepts such as with a view to unifying and illuminating the discussion of chemical and physical properties of inorganic substances.
The laboratory will introduce the student to a variety of problems in inorganic synthesis and characterization. Expe of vacuum-line and high temperature techniques, work in controlled atmospheres (glove-box handling) and nonaquephysical methods and measurements such as optical hicroscopy, magnetic susceptibility, magnetic resonance differential thermal analysis and others.

320 Analytical Chemistry, lect:: 2 hrs.; lab.: 5 hrs., amaley
hemistry 320 deals with the techniques and methods used to determine the chemical composition of a material. The chemical and physical principles underlying the analytical
methods are examined in detail in order that methods of nalysis may be rationally selected and used, or modified it needed. Statistical treatment of data, chemical equilibrium, heory of titrations, electroch separation theory, and
the interaction of light and matter are topics covered in presenting volumetric, electroanalytic

The, laboratory work is primarily concerned with modern separation techniques and the final step in the analysi process, the quantitative determinalo. Examples of a aboratory. Essential to the class is the ability, both chemica and mathematical, to handle stoichiometric problems. A basic nowledge of chemical structure and soluion equibria ssumed

## 330(C) Chemical hermodynamics, lect.: 2 hrs .; lab:: 3 hrs

 K. E. Hayes.This class, while primarily intended for Chemistry Honours and major students should prove of interest to students in the field Biology, Biochemistry and Geolog

The class will proceed via a review of the laws hermodynamics as applied to ideal closed systems, to consider the problems of real gases and open systems
Extensive use is made of the chemical potential and the various Maxwell relationships. Specific topics to be covere nclude, free energy and equilibria, phase equilibria, activities and activity coefficients, solutions of electrolytes and the bye-Hucke thory, partial mo and the thermodynamics of ions.
he laboratory, where students must complete six or seven experiments through the year, is open at all times. The
laboratory work is designed to help the student gain confidence in results that he may obtain in any laboratory. Four of the experiments will be written up during the year as forma reports, following the format of Ine Canadian Jour
Chemistry.
Prerequisites: Chemistry 230 , Mathematics 100,200 .
331(B) Chemical Kinetics, lect.: 2 hrs.; lab.: 3 hrs.; every her week: K. E. Hayes, W. E. Jones, P. D. Pacey

This class deals with the rates and mechanisms of chemical thanges. photolysis and luminescence, and special techniques fo studying fast reactions. Examples will be drawn from reactions gas-solid interface and in liquid Polutions.
Prerequisites: Chemistry. 230 and Mathematics 200 or equivalent or consent of instructor.
40 Organic Chemistry, lect.: 2 hrs. fut.: 1 hr . lab.: 3 hrs. A. Pincock.

This is an intermediate class in organic chemistry. The main principles of organic chemistry and their application to principles of organic chemistry and their applic
problems of synthesis and structure determination.
The laboratory section of the class involves the determination of.structures of unknown substances by chemical testing and spectroscopic methods. Each student has individual prob emsolving these.

The first section of the lectures is devoted to an outine of the principles of organic reacions. The application of these
with the purpose of developing in the student a facility in designing schemes for the synthesis of organic compounds. Examples are used from a variety of fields in order to compounds.
Students taking the class are expected thave aknowleage of he nomenclature of organic compounds. They should also be familiar with the functional group classification of organic groups, and with the basic concepts of kinetics and hermodynamics as applied to chemical reactions.
$400(B)$ Theoretical Chemistry, lect:: 2 hrs.; C. H. Warren.
This class is a continuation of 300 (A). Molecular orbital theory and its applications will be examined in greater detail. Group theory will be introduce
molecular orbital theory
Prerequisite: Chemistry $300(\mathrm{~A})$.
410 Ad
O . Knop
All chemical elements and compounds can exist as crystalis solids, and most of them normally do. The arrangements of molecules in such solids, known as crystal onstituent elements. They can only be studied by method hat do not destroy or modify the crystal structure. The aim o is class is to acquaint the student with the methods mos equently employed for this purpose and with the principles ructural inorganic chemistry in general.
rerequisites: Chemistry 320, 330 (C)
valents) or consent of instructor. May be registered for on with prior consent of the Department.

20 Instruments in Analytical Chemistry, lect.: 2 hrs.; lab.: 3 hrs.; R. Stephens
20 is given as two half classes; $420(A)$ and $420(B)$, coverin espectively non-elemental and elemental techniques lal analysis.
420(A). Instrumental methods applicable to molecula species, such as samples of organic material, are discussed Techniques covered are the elemental analysis of organic mines, spectroscopic methods for functional group nd mass spectroscopy) and the application of colligative properties in the analysis of high purity samoles. Th operating principles of each instrument are described gether with the methods of sample preparation and the pplicability to both qualitative and quantitative analysis problems using the combined techniques is an integral part of the class.

## 30(A) Statistical Thermodynamics and Absolute Reac

 Rue Theory, lect.: 2 hrs.; K. E HayesIn the first half of this class the methods of statistica hermodynamics will be developed so as to enable calculatio he topics to be considered include, derivation and ignificance of the Boltzmann distribution law, the relation hermodynamic functions to the partition function, the apacity of gasses functions for ideal gases, the he apacity of gasses and solids, the equilibrium constant in of adsorption.
he second half of the class considers the failure of collision heory to predict the absolute rate of chemical reactions, an oceeds to use slarstical methoos to evaluate the Absolu particular intere Prerequisites: Chem. 330(C)

431(A) Electrolyte Systems, lect.: 2 hrs.; lab.: 3 hrs.; J. C. T wak; L. Ramaley
This class can be taken in the 3rd or 4th year of study, and provides a theoretical and practical introduction necessary for
the apolication of the physical chemistry of electrolyte opplication of the physical chemistry of electrolyte quilibrium and transport properties of solutions. especiall ectrolyte solutions, with applications, colloid chemistry and ectrokinetic phenomena as applied to e.g. electrophoresis and centrifugation, and a description of membrane transpo ance. Laboratory experiments emphasize the measureme of electrical potential differences in low and high impedance systems, micro-electrodes, redox-electrodes and selective on electrodes, as well as thermodynamic and transpor properiies of electrolyte solutions.

432(B) Atomic and Molecular Spectroscopy, lect: 2 his. s. W. E Jones, C H Warre

The class is designed to introduce the student to the heoretical and practical aspects of atomic and molecular spectroscopy. The major topics will include discussions o echniques of spectroscopy atomic spectra, diatomic
molecules, polyatomic molecules and electron and nuclear spin. The discussions of all topics will begin at an introductory level.

The laboratory has been designed to give the student knowlysis of of various spectroscopic instruments and the analysis of the resulting spectra
sion of instructor. Chemistry 110 and Chemistry 230 or. permis

440(A) Spectroscopy of Organic Molecules, lect. 2 hrs lab.: 3 hrs.; G. A. Dauphinee, T. P. Forrest, D. L. Hooper.
This class includes an introduction to the theory of mass spectroscopy and nuclear magnetic resonance spectros-
copy, however the focus of the class is the applicationof these copy, 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 com Prerequisi Chem. 340 or equivalent and permission of instructor.

441(B) Mechanism, Sterochemistry and Synthesis in Organic Chemistry, lect:: 2 hrs.: lab.: 3 hrs.: K. T. Leffek, J. S Grossert and, G. D. Abrams.
In this class, methods for determining the mechanisms of organic reactions are discussed from the viewpoint of the physical organic chemist, including such approaches as the effects. Stereochemistry is considered in terms of the concepts" of symmetry, and procedures for the determination of absolute configuration, including the use of asymmetric synthesis, are presented. Aspects of the strategy and tactics
employed in the multistes preparation of complex organic employed in the multistep preparation of complex organic
molecules are exemplified by consideration of representative major syntheses.
The laboratory will illustrate some of the advanced techniques used in modern. organic chemistry.
Prerequisites: Chemistry 340 and Chemistry 230 or equival ents, or permission of instructors.

## Graduate Studies

The department offers graduate classes leading to the degrees of M.Sc. and PR.D. Details relating to admission
scholarshios and fellowships. requirements to the degree classes of instruction etc classes of instruction, etc., ,

## Classics

Professors
A. H. Armstrong
J. A Doll
J. A. Doull
T. E. W. Segelberg

## Associate Professors <br> R. D. Crouse (Chairman) M. A. Usmiani <br> M. A. Usmiani J. P. Atherton

Assistant Professor
R. Friedrich

## Special Lecture W. J. Hankey

Classics is the study of our origins - how the Christian European tradition to which we belong a arose out of the ancient
civilizations of the Mediterranean area. The fundamental ideas civilizations of the Mediterranean area. The fundamental ideas and beliefs of Europeans and North Americans, by which we
are distinguised 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 ow

Classics is much more than the study of ancient language 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/anguages. While previous preparation in one or more ancient languages is desirable, it is nevertheesss quite
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 Christian concentrate on any 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
It is obvious that classics is worth studying for its own sake by students who wish to obtain a better understanding of the knowledge has always been regarded as pertinent to a career in politics and the higher levels of the civill service. For those who are thinking of the clergy classics is the most relevant

Classical studies also prepare students for a life of teaching and scholarship in several directions. Now that Canada is no onger a colony culturally; but responsible for its own culture,
we have great need of scholars and teachers who know 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,
ndian, Islamic, etc.), and there is a growing need for ndian, Islamic, etc.), and there is a growing need for
specialists in these fields. For the older history of niloso for and for the history of Christian belief cuntil, 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 leads also to ancient Near. Eastern Stuq
Babylonian, Egyptiañ, etc.) and to archeology.
Degree Programmes

## General B.A. and B.Sc.

Of classes offered by the department, Classics 101 and 202 Classics 354, and those Ancient History and Ancient and
Medieval Philosophy classes not having a prerequisite should be especially useful to students taking a general degree. All classes beyong the 100 level are available Department will me be programmes in classics, and the programmes according to their interests.

## Honours Programmes

The candidates may choose between three programmes: B.A. with Honours in Classics, B.A. with 'Honours in Classics
(Ancient History), or B. A. with Honours in (Ancient History), or B.A. with Honours in Classics (Ancient
Philosophy). In each case, it is highly desirable but no essential, that the student begin the study of at least one of the classical languages during the firstyear of study. In conformity
with University regulations the fitteen with University regulame are normally distributed classes of the Honours programme are normally distributed according to the
following schedules (Note that for purposes of meeting grouping requirements, Ancient History and Ancient and Medieval Philosophy classes may be counted either as Classics credi
respectively.
B.A. with Honours in Classics
(i) Nine classes beyond the 100 level in the major subject mustinclude advanced work in both Greek and Latin, at least beyond the classes in each. The course must include work Philosophy, one of which may be counted as the minor subject.
(ii) Two
Two classes in a minor subject: either Ancient History or Ancient Philosophy
(iii) Four classes
(iii) Four classes not in the maior field: Ancient History or
Ancient Phill Ancient Philosophy classes might be included here along with
other electives.
B.A. with Honours in Classics (Ancient Philosophy) (i) Nine classes beyond the 100 level in the major subject
must include besides the available classes in Ancient and Must include, besides the available classes in Ancient and classes at the 3000 level) and some work in Latin (at least to the tin 204) (ii) Two cla
Medieval).
(iii) Four ond (iii) Four classes not in the major field may include additional
classes in History or Philosophy, or other electives. .
B.A. with Honours in Classics (Ancient History) (i) Nine classes beyond the 100 level in the major subject
must be mainly 300 level in at least one of Greek and Latin and at teast elementary work in the other. If the field of study requires work in other ancient languages, such classes may be counted either as Classics credits or as electives.
ct: Philosophy (Ancient and (iii) Four classes not in the major field may include additional
classes in History or Philosophy for other hilosophy, or other electives.

Combined Honours

Classics may be taken as part of a combined honours programme of these programmes should consult with the chairmen of the respective departments.

$$
\begin{aligned}
& \text { Classes Offered } \\
& \text { Literature, History and Philosophy }
\end{aligned}
$$

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

Classics 101 Ancient History: An Introduction to the
Cultural History of the Ancient World, lect.: 2 hrs.; J.P. Atherton, W. J. Hankey and others.

The first term will be devoted to a study of the major pre-classical civilizations (Sumer, Egypt, etc.) in which attention will be paid the 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

Classics 202 Classical Art and Civilization, lect.: 3 hrs., M.A. Usmiani.

The classical Greco-Roman civilization as it was expressed in the visual arts will be the main theme of the class. Although frequent references will be made to ancient literature and
some basic reading of Greek and Roman literature in transiation will be required, the chief emphasis will be on how the basic classical ideas are reflected 'in the visual arts, especially sculpture, painting and architecture, and how
these parts tended to shape the course of the daily life of the these parts tended to shape the course
ancients. The lectures will be illustrated.

In addition to collateral reading, short papers on selected topics will be required. The course will be usefult to students interested in ancient civilization, ancient history and in particular to those studying ancient art: There is
language requirement. Open to first year students.
Classics 207 Ancient Drama in relation to Modern Drama lect.: 2 hrs.: R. Friedrich.

Greek Theatre (production, the Dionysian festival, the origins or drama in the Dionysian ritual etc.) and a number Gree plays by Aeschylus, Sophocles and Euripides will be studied
first: then Plato's critique of drama and Aristotle's defence of it in the Poetics, the first systematic theory of drama. This will be followed by a study of the influence of Greek drama and its influence on modern rama (and its theory) from the
Renaissance to Brecht's 'non-aristotelian' drama in the 20th century.

Ancient History and Religions
Classics 222 Greek History, lect.: 2 hrs., J. P. Atherton Not offered in 1975-76)

Tassics 223 Roman History: The Cultural History of the Roman Worid, lecture/seminar, 2 hrs.; J. P. Atherton

Classics 224/524 Christian Beginnings and the Early istory of the Church, seminar 2 hrs.: E. Segelberg

Classics 226/526 Roman Religion, seminar: 2 hrs.; E. Classics
Segelberg.
Classics 227/527 Near Eastern Religion;seminars: 2 hrs.; E. Segelberg.
Classics 230 History of Christian Doctrine, lect.: 2 hrs.; W
The class will consider the meaning of Christian doctrines in relation to their Jewish and Greek origins and their development in the classical word, wa and adernion also

Classics 252/552 Seminar on Problems of the Hellenistic eriod, seminar: 2 hrs.; E. Segelberg

Classics 253/553 Seminar on the Roman Empire and the Rise of Christian
offered 1975-76)

## Classical Philosophy

## Classics 336 Ancient Philosophy from its Beginning to the Sixth Century A.D. (same as Philosony 336 ) Ioct 2 hrs.; A

 H. ArmstronClassics 336 surveys the whole history of ancient Greek philosophical thought from its beginnings in lonia 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 cen
A.D. and its influence on developing Christian thought.
Classic 338 Medieval Philosophy, (same as Philosophy 338) lect 2 hrs . R. D. Crouse.

Classics 338 (Philosophy 338) studies the development of philosophy in the formative age of European civilization and examines classical and Christian antiquity was appropriated and reformed to constitute the ideology of mediaeval Christen dom.
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
Prosiogion and the first tew questions of Thomas Aquinas Summa Theologica. It will be the object of lectures to present the cointinuity of the historical development and to emphasize the broad implications of the philosophical doctrines
presented in the texts. In the latter part of the class, some attention will be given to late mediaeval Platonism and Mysticism, so that something can be shown of the beginning of Reformation and modern philosophical and religious thought
seminar: 460/560 Seminar on the Philosophy of Aristotle, seminar: 2 hrs.; J. A. Doull. (not offered in 1975-76)

The purpose of this seminar is to determine the original sense of Aristotlean philosophy through the close study of one or
more works. Some previous study of ancient philosophy and more works. Some previous study of ancient
the ability to read Greek or Latin are assumed

Classics 461/561 Seminar on the Philosophy of Plato, seminar: 2 hrs.; J. A. Doull. (not offered in 1975-76)
Classics 464/564 Ancient and Modern Dialectic, seminar: 2 hrs.; J. A. Doull. Dialectical method in Fichte, Schelling and in relation to Plato and Aristotie.
Classics $470 / 570$ Seminar
Church Fathers, R. D. Crouse.
郎, Philosophy of the
Classics 475/575 Medieval Interpreters of Aristotle, seminar: 2 hrs.: R. D. Crouse: Problems in the theology of
Aristotle (God, Creation, Providence) in the interpretations of Albertus Magnus, Thomas Aquinas, Siger of Bradant, and others.
Classics 481/581 Seminar on Neoplatonism, Seminar: 2 hrs.; A. H. Armstrong.
Topics from the history of Neoplatonism and its relation to the
theology of the Greek Church will be studied.
Classics 486/586 Departmental Seminar, Seminar, 2 hrs.; A.
H. Armstrong, J. P. Atherton, R. D. Crouse, and others. (no
offered in 1975-76)

The object of this seminar is to bring together honours and raduate students and faculty members to study a wide range of problems in the areas of history, politics, literature, seminar varies from year to year.

Classical Languages and Literature
Note: Greek 100 and 200 classes are language classes; the 00-level classes are seminar classes, for which a sound whedge is taken for granted. Of the list of 300 -level classe wo will
Greek 100 Introductory Greek, lect.: 4 hrs.: R. Friedrich
This is the beginners' class in the Greek language, and no revious knowledge is required. The aim of this class is to each the student to read a Greek text. After he has become -the study of grammar is introduced along with reading and anslation of Texts from original Greek literature.
xt: Stephen W. Paine, Beginning Greek
Greek 200 Intermediate Greek, lect.: 3 his.; R. Friedrich.
Greek 200 is a continuation of Greek 100. The aim of the class is develop the student's ability and to read and translat class there will be a systematic review of Greek grammar. This lill be followed by the reading of texts of Plato, Herodotus and

A study of Homer.
Prerequisite: Greek 200 .

Greek 301/501 A and B Greek Lyrical Poetry, seminar: hrs.; R. Friedrich, J.A. Doull.
Greek Iyric' poetry of the Archaic Age will be the subject of this against the background of the preceeding period of epic poetry.
In the first term elegiac, iambic and monodic lyric poets will b studied (Archilocthus, Solon, Tyrtaius, Alcaius, Sappho
Anacreon); the second term will be devoted to a study Anacre
Pindar
Prerea

Greek 302/502 A and B, Greek Drama: Tragedy, seminar: hrs.: (not offered in 1975-76).

Greek 303/503 A and B, Greek Drama: Comedy, seminar: 2 hrs.; R. Friedrich.
A study of Aristophanes and Menander
rerequisite: Greek 200.
Greek 304/504 A and B, Greek Philosophical Texts, seminar: 2 hrs. i J. Doull.
Prerequisite: Greek 200.

Greek 305/505 A and B, Greek Historians, seminar 2 hrs Prerquiste: Greek 200

Latin 100 Introductory Latin, lect.: 4 hrs.; A. Usmian
This class is for students who wish to begin the study of Latin in he University. The aim of the class is to enable the student read classical Latin by the end of the course with the help of ivilization is also the course a very basic survey of the Roman also given. The emphasis throughout is on dire eading with the grammar fed in as necessay.

Latin 200 A and B Latin Rhetorical Works,
Ticero class consists mostly of the reading of the works o Cicero, especially his speeches which show the range of his circumstances of Rome of his time. A brief survey of Roman literature and the role of Rhetorics in Roman life will be given. Prerequisite: Senior matriculation in Latin or Latin 100 .
Latin 204 A and B Latin Philosophical Texts, lect.: 2 hrs. A. Doull, R. D. Crouse.

The purpose of this class is to give students interested in ancient and medieval philosophy experience in reading
philosophical Latin. Various authors will be read from Cicero to Prerequisite: Latin 100

Latin 205 A and B Roman Historians, lect.: 2 hrs.i J. P Atherton. (not offered in 1975-76)
Latin 300A and B. The Roman Satire, 2 hrs: M Usmiani

This class can be taken in two sections as two half classes, the first half (A) consisting of the Satires of Horace and the second
as one full course as described here.
This advanced class is designed primarily for graduate arannement the class can also be taken by students from other departments even if they possess little or no knowledge of Latin.
translation

The class follows the development of $L$ atin satire from its rigins to Juvenal. The chief redresentatives of Latin satire that survived are Horace and Juvenal, and a wide selection of the works is read and studied thoroughly. Students are required which are informal and are combined with discussions roblems that arise from the texts. There are also occasiona seminars on special topics and problems in the Roman satire discretion of the individual studen
atin 301 A Study of Vergil, lect.: 2 hrs.; M.A. Usmiani
The purpose of this class is to study the development and mportance of Vergil's basic themes and ideas that are embodied in the Aeneid. In the first part of the class special hemes begin to appear, and their development is the ollowed through the relevant parts of the Georgics. The main part of the class is devoted to the reading and discussion of eman political religious and social ideas which have greatly influenced our own beliefs and institutions.
ectures are given and discussions and seminars are held on special topics as they arise in the course of study.
his class may be taken also by students who do not read Latin, by special arrangem
atin 302A and B. Roman Comedy, lect.: 2 hrs.; M. smiani. (not offered in 1975-76)

This class is normally given as one full course but it can be laken in two parts, the first (A) consisting of
his class consists of readings of selected plays of Plautus and Terence. As an introduction to readings, a brief survey of Greek comedy is given, and in a few lectures the genera line in seminat́ style, students reporting on their readings and mpressions of the individual plays.
The class may be taken also by students who do not read
Prerequisite: Latin 200.
Near Eastern Languages

The classes in Hebrew, Coptic, Syriac and Arabic, are available as electives at the discretion or the Department, only of the particular stuca Atlantic School of Theology.

Hebrew
101
101 El
Hardie.

202 Intermediate Hebrew, J. B. Hardie,
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.

## 402/502 Reading of Coptic Texts, E. Segelber

Partly Nag Hammadi Papyri, and partly Manichaean texts.

## Syriac 100 Int

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.
Arabic
Arents wishing to take a class in Arabic must consult with the Department before registering for the class.

## 100 Introductory Grammar and Reading of Texts.

## 200 Intermediate Arabic

## Graduate Studie

The department offers an M.A. Programme in classica literature, in ancient history and in ancient and mediev
philosophy and a Ph.D. programme in Hellenic and Hellenistic Studies. For details, see the Calendar of the Faculty Graduate Studies.

## Commerce

Professors
C. R. Brookbank
R.E. George
M. L. Kirby
C. W. SchandI
R. C. Shook
Associate Professors
J. D. Misick (Chairman
R. H. R. Glube
J. R. Hanrahan
J. . . Hanrahan
J. W. Matthews
E. W. Sott
E.W. Scott
J. Scheibelhut
R. G. Storey

## Assistant Professors C. R. Dipchand 俍 <br> C. J. McManus L. W. Mealiea <br> L. W. Meaitiea R. Muncaster R. Sand G. R Z Zinck <br> Part-time Special Lecturers A. Shaw R. L. Towler <br> R. L. Towl P Mason <br> P. Mason G. Duncan P. O'Neil

The Department of Commerce offers a curriculum of undergraduate and graduate studies designed to equip
students to serv the community in business, government and
thd sthe professions. Graduates in oood stand ing from all faculties
can apply to enter the graduate proaramme lead can apply to enter the rraduate programme, , eading to the
degree of Master of Business Administration. The undergraduate programme includes studies in the humanities and social sciences and in the functional areas of business
Recognition is given to the growing emphasis on quantitative Recognition is given to the growing emphasis on quantitative
and behavioural analysis. The Department is committed to providing students with
opportunity of obtaining a degree through part-time study
over a period of five years: The normal over a period of five years. The normal pattern of part-time
study will consist of the equitelent of three full classes each
year. Two of these will be taken in the September to May
term and year. Two of these will be
term and one in the summe

In all courses the main effort is directed towards drawing out
the principles which govern traditional and contemporary the princioles which govern tratititeonal a and contemporary
practice. The principles are related to current developments practice. The principles are related to current development
in business, government and society at large, and specia
id din business, government and society at large, and specia
disussion
authorities particings are arre. arranged in which recognized

The students may follow a general programme of study or
choose a measure of concentration in one of six special areas These are Accounting, Economics, Finance, Marketing, Or ganizational Behavior and Quantitative Methods.
All students entering the Commerce programme will be
required to satisfy the department as to their competency in required to satisfy the
the English Ianguage.

General Outiline of
Undergraduate Studies

## 1. Honours Programm

Four vears of stady are required comprising the equivalent of
twenty full classes; nine and one-half required, four and twenty full classes; nine and one-halif required, four and
one-half elective classes taken from the core areas, three
elective classes from outside the core areas, one-half elective classes taken from the core areas, three
elective classes from
chosen wiside the core areas, and three classes chosen without restriction. At least one of the requased
classes must be an honours seminar. The core areas are classes must be an honours seminar.
Commerce, Economics, and Mathematics.

The honours programme enables the student to study a
particular area of commerce in greater depth than is possible in the general programme. Certain practical advantages arise
from the possession of an honours degree. from the possession of an honours degree: These include th
possibility of a larger number of exemptions from pro possibility of a larger number of exemptions from pro
fessional courses of the accounting bodies in Canada, credi for part or all of the first year classes in the Master o
Business Administration programmes at Business. Administration programmes at some Canadian
universities, admission to graduate schools which require an honours degree as a prerequisite to admission and a more complete formal educational background for those who will
not attend graduate school.
In accordance with general faculty regulations, students in the honours programme are required to maintain a per
formance satisfactory to the department in each year of study. If this standary to the department in eat mot meantained, the student may be
reauired to transfer to a hequired to transfer to a general degree programme. The
honours programme, will, therefore, in the first three years,
satisfy the requirements ot the satisfy the reauirements of the general degree. Students in
the general degree programme may apoly for transfer into the the genera degree pre.

## II. General Programme

Three years of study are required comprising the equivalent
of fifteen full classes; eleven from core areas (eight and of fifteen full classes; leveven. from core areas leight and
one-half reauired wwith one-half required with two and one half electives), two from
-outside the core areas and two selected without restriction.
A. Degree Requirements (No special area concentration)

Yearl
ree required core area classes
Commerce 101
Conomics 100 or 11

Two classes selected from outside the core areas.
*Those planning further study in Mathematics should elect Mathematics 110 as Mathematics 111 A and 112 B will not
satisfy prerequisite requirements for higher level Mathematics
ctasses. satisfy
classes.
Year II
The equivalent of four and one-half eore area. required Classes:
Commerce 204
Commerce 207A/B
Commerce 200A/B
Commerce 213A/B
Commerce 213A/B
Commerce 216 B
Economics $220 \mathrm{~A} / \mathrm{B}$ or $221 \mathrm{~A} / \mathrm{B}$
One half core area elective
Year III
One required core area class:
Commerce 311
Two full classes or their equivalent selected from within the
core areas.
Two full classes selected without restriction from those offered within the Faculty of Arts and Science
For honours students the programme for year III as well as
for year iV must be determined in consultation with the
department and must be aporoved by the department Year IV (honours)
One required Hono
uired Honours seminar
wo classes selected from within the core area
One class chosen from outside the core areas.

One class selected without restriction from those offered
within the Faccult
No 100 level classes may be taken in the fourth year
Note: When selecting their electives, students are urged to
B. Special Area Concentration - Sample Programmes

Subject to general faculty regulations and the general outline
given above, a student -may devise his own programme of
given above, a student may devise his own programme of
study in consultation with faculty in the department. For the
general guidance of studutents, the deoartment has prepared
general guidance of students, the department has prepared
suggested programmes for those who wish to concentrate in a
specific area.

1. Accounting
Year I As for

Year II
Required core area classes.
Commerce 204
Commerce 207A/B
Commerce 208A/B
Commerce 209A/B
Commerce 215A
Commerce 216B
Economics 220A/B or 221A/B
Elective
Year III
Year III
Required core area classes
Commerce 213A/B
Commerce 213A/B
Three and one-half full class equivalent electives chose
Throm:

```
Commerce 214B
Commerce
Commerce 320
320
Commerce 451
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Year IV
The equivalent of three classes from one or more of the Allowing areas.
Accounting

| Finance |
| :--- |
| Economics |

Economics
Mathematics
The equivalent of one elective from outside the core areas.
The professional accounting bodies allow certain exemptions
respect of classes taken in the Department. These differ
Particulars can be obtained from the provincial offices of
The Institute of Chartered Accountants
The Association of Certifiied and General Accountants
he scoiety of Industrial Accountants

## 2. Economics

Year II and Year III as for those without special area
concentration except that certain electives are listed below.等 order to ensure that the prerequisite requirements of the 300 level and 400 level economics classes will be met, it will
be necessary for students to postpone one or more of the 200 be necessary for students to postpone one or more of the 200
level Commerce core classes to the third year. The Depart-
ment of Commerce should be consulted in regard to the classes to be postponed.
Concentration in Micro-Economics
Economics $220 \mathrm{~A} / \mathrm{B}$ or $221 \mathrm{~A} / \mathrm{B}$

| Economics 3220 B |
| :--- |
| Economics 325 |

Economics 325
Economics 328
One and one-half additional classes in Economics.
Concentration in Financial Management and Internationa
Trade . Economics 220A/B or 221A/B
Economics 324
Economics s 330A
Economics 423A
One and one-half additional classes in Economics.
Concentration in Development
Economics $220 \mathrm{~A} / \mathrm{B}$ or $221 \mathrm{~A} / \mathrm{B}^{*}$ Economics 220
Economics 230
E
Economics 230
Economics 329
Economics 334 B
Economics 432
Economics 432
One-half additional class in Economics.'
Concentration in General Economics
Economics $220 \mathrm{~A} / \mathrm{B}$ or $221 \mathrm{~A} / \mathrm{B}^{*}$
Four add itional classes in Economics.
*Whichever was not taken to satisfy core requirements,
Year IV
The equivalent of four full electives chosen in consultation
The equivalent of the
with the Department.
3. Finance
Year 1 As

Year II
Required core area classes as for those without a special area
concentration and one half class chosen from the list concentration and one half
suggested under Year III below.

Year III
Required core area clas
Commerce 311 .
Recommended electives
Commerce 301 or
Commerce $307, \mathrm{~B}$
Commerce 331A
Commerce 331A
Commerce 332B
Suggested electives to total of five full classes:
Commerce 214B
Cconmemics 220A/B or
Economics 221A/B
Economics 324
*Whichever was not taken to satisfy core requirements.
Year IV

The equivalent of three classes from one or more of the | Finance |
| :--- |

inance
conomics (Money and Banking, Price Theory)
The equivalent of one elective from outside the core areas.

## 4. Marketin <br> Year Requ

Required core area classe
Commèrce 101 .
Economics 100A \& B
Mathematics 111 A plus 112 B or 110
Commerce 208A
Core area elective
Commerce 218 B
Outside Elective
Psychology 100
Year II
Required core area classes
Commerce 204
Commerce 207A/ Commerce 213AAB
Commerce 215A
Core area electives
Commerce 313
Commerce 318B
Outside elective
Sociology 100
Year III

> ear in equired core area classes Commerce 209A/B Comomics 220A/B or $221 \mathrm{~A} / \mathrm{B}$ Commerce 311 .

Core area electives
Commerce $314 \mathrm{~A} / \mathrm{B}$
Commerce 319B
One-half additional core area elective.
One elective chosen without restriction.
Year IV
The equivalent of four full electives chosen in consultation with the Department.

## Year $\begin{aligned} & \text { Y } \\ & \text { Require }\end{aligned}$ <br> <br> Economics 100A \& B

 <br> <br> Required core area classesCommerce 101} <br> <br> Required core area classes
Commerce 101}

Outside electives
Sociology 100
Psychology 100
Year II As for those without a special area concentration
Required core area class
Core area electives
Commerce 322 A
Commerce 322
Commerce 324 B
One-halfclass core area elective.
Two electives chosen without restriction.
Year IV
Commerce 470 semina The equivalent of fou
with the Department.

The area of concentration may be eithe
or (b) Probability and Statistics
or (c) Operation
Research and Programming
Conce
Year
Requ
Required core area classe
Commerce 101
Mathematics 100 or 110
wo classes selected from outside the core areas.
Year II
Required core area classes
Commerce 204
Commerce 208A/B
Commerce 215A
Commerce 216B
Core area elective
Mathematics 240
Year III
Required core area classes
Commerce 213A
Core area electives
Commerce 309
Mathematics 335
Mathematics 340 or 225 and 230
The equivalent of one full elective chosen without restriction. Concentration in Probability and Statistic Year I
Coquired core area classes
Commerce 101
Commerce 111
Economics 110
Mathematics 10
Two classes chosen from outside the core areas.
Year II
Commerce 204 classes
Commerce 207A/B
Commerce 208A/B
Commerce 209A/B
Economics $220 \mathrm{~A} / \mathrm{B}$ or $221 \mathrm{~A} / \mathrm{B}$
Ore area electives
Mathematics 206
Mathematics 306
Year III
Year III
Required core area classes
Commerce 213A
Commerce 216 B
Core area electives
Commerce 309 B
Commerce 309 B
Mathematics 330
Mathematics 410
Concentration in Operations Research and Programming
Year II and Year III as for those without special area order to ensure th n order to ensure that the prerequisite requirements of the
will be necessary for students to postpone one or more of the 200 level Commerce core classes to the third year. The Department of Commerece should be consulted in regard to
the classes to be postponed.

Tore area electives The equivalent of four and one-half full classes chosen from: equivalent 09 B
Mathematics 203A
Mathematics 204A
Mathematics 225A/
Mathematics 230A/
Mathematics 230 A
Mathematict 316 A
Mathematics 330
Mathematics 330
Mathematics 410
Mathematics 430
Note: Not all the mathematics classes listed above will ecessarily be offered each yead

## Classes Offered

101 Introductory Accounting, lect.: 3 hrs.; workshop: 1 h Renumbered Commerce 210 for 1970-71 only
This class gives/an introduction to the principles used by
accountants in processing financial data and in communicating such data brocessing financial within and outata and in communi- the business, and
cand
atudies the interperatation and use of financial reports for studies the interpretation
decision-making purposes.
The first half of the term will emphasize principles and their application in what is generally known as financial
apcounting. In the second half of the term the focus will be accounting. In the secons half of the term the foc

There are no prerequisites for this class. The number of
students who can be accommodated in this class will be
limited. Any student who cannot be accommodated will take limited. Any student who
the class in his second year.
102 Renumbered Commerce 311 below

## 204 Statistics for Economics and Business, workshop:2 hrs.; R. E. George, C. Marfels <br> workshop:" 2 hrs.; R. E. Ged (Same as Economics 222).

Topics studied include the definition, functions and sources of statisticiss; the design and dexecution, of stationtical enquiries;
tatistict statistical tables; graphs and diagrams; measures of efntral
tendency, dispersion, skewness and kurtosis; curve-fitting; tendency, dispersion, skewness and kurtosis; curve-fitting,
probability (estimating mean and proportion in population
 proportions); quality control;
analysis; elementary correlation
Background knowledge that is essential for this class includes, algebra at appoxoximately Grade XI level: some experience of
contructing and interpreting graphs; the ability to think contructing and interpreting graphs; the ability to think
quanitatively, which is usually gained by the study of geometry and algebra at the high school and uni

Note: Each
as A or B.
206A/B Computer Applications to Business Problems, lect.
Computers are playing an increasing role both in business and Computers are playing and
in modern society. In order to familiarize the student with the concept of a computer, its advantages and disadvantages
and current apolications, this class takes a threefold and current
approach:

1. The computer will be introduced as a tool for solving numeric problems commonly encountered while university. Fortran will be taught in depth and sample
problems from such fields as statistics, finance, and market research will be assigned.
2. Large computer systems will be introd uced from the poin if view of a manager rather than from that of a programmer Computer Packages actually used for such applications
cost analysis, inventory control and accounts receivable will cost analysis, inventory contro and accounts receivable wion
be implemented, data bases created and simulated production runs made.
3. COBOL, the most commonly used business oriented language today, will be introduced. A survey of the e anguage
combined with introductory problems will be conducted. Prerequisites: There are no prereauisites to this class excep the ability to think coherently. It is recommended that this
lass be taken as early as possible because the use com take as early as possible because the use

A07A/B Introduction to Managerial Finance, lect.: 3 hrs.; C

This class gives an introduction to the problems faced by business managers in the acquisition and effective utilization of the firm's financial resources and presents analytical
on oncepts for evaluating tinancial decisions. This necessarily
nvolves consideration of how the firm can achieve successful interaction with its external enviroment and make an

Essential background knowledge: An understanding of conomic principles and the economic environment business operates, and sufficient knowledge of accounting
processes and principles to enable the student to use financial data intelligently. Prerequisites:
Commerce 101.
08A/B Marketing Management, lect. 3 hrs. R. H. R. Glube 1. Muncaster

This class is designed to give the student a basic understanding of the character and scope of marketing and its role echniques which a business must employ if it is to anticipate and satisfy consumer needs.
Emphasis is placed on the development of understanding and analytical ability in the following areas: the role of the
consumer; product-line development; channels of distriCase materials are used to tive the student insight into the Case materials are used to give the student insight into the
analytical tools used in problem analysis and decisionmaking.
No previous training in marketing is assumed. Students
wishing to concentrate in marketing should plan to take wishing to concentrate in marketing should plan to take There are no prereauisites for this class, although some

209A/B Production, lect.: 3 hrs.i. C. MCManus.
This half-class is designed to give the student an insight into
the applications of management science as a tool to aid in the the applicataons of management scienc
decision-making process in prod uction.

The topics which will be covered include: the background of
management science, principles of model build ding, the use of models for resource allocation, control of inventories, simulation, scheduling and control.

Prerequisites: Commerce 101, Economics 100, Mathematics 110 and Con

## 213A/B Legal Aspects of Business - Contracts, lect.: 3 hrs. R. S. Sandhu.

The meaning and sources of law, the machinery of justice:
torts, formation of contracts, capacity of contract: legality of torts, formation of contracts, capacity of contract: le,
object, mistake, misrepresentation; statute of frauds.
Privity of contracts; interpretation and discharge of con-
tracts; breach of contracts; agency.
214B Commercial Transactions, lect.: 3 hrs.; R. S. Sand hu.
Contract of sale, bailment, employment; negotiable instru-
ments, real
partnerships, corperty, tenant and landlord, mort togaes: partnerships, corporations, their nature and management
devices for securing credit; bankruptcy, mechanics lien limitation of actions.
Prerequisite: Commerce 213A/B.
215A Organizational Behavior, lect. 3 hrs.; C. R. Brookbank,
L. W. Mealiea, J. D. Misick, R. G. Storey
The purpose of this class is the development of insight into human behavior in organizations and capacity for objective
analysis of it. Research and text material drawn from the analysis of it. Research and text material drawn from the
fields of sociolog, anthropology and psychology are used as
aidd in the devel aids in the development of understanding and objectivity. As
well as dealing with substantive data from the behaviora well as dealing with substantive data from the behaviora
sciences, the class pays considerable attention to case
material material
The purpose of this class will be to survey both theory and
research pertaining to complex organizations with emphasis research pertaining to complex organizations with emphasis
on design, structure and administrative practices in connec
tion with, the envire tion with the environmental setting and how the interaction
of these variables relates to organizational performance. Concomitant with relates to organizational performance.
students will have exposure to theory and research students will have the opportunity to apply this knowledge
to case studies relevant to complex organizations. While the main emphasis is put upon the analysis of this saterial, time
will also be devoted to the formulation of general solutions will also be devoted to
and decisions for action.
Commerce students are required to take 215 A and 216 B as a
complete unit with 215 A taken prior to 216 B . Non complete unit with 215 A taken prior to 216 B .
Commerce students may take either class as a half class.

218B Marketing Management, lect.: 3 hrs.; I. Muncaster.
This class develops on the theory outlined in Commerce
$208 A 1 B$ with the goal of developing in the student the skill of soundly analysing and taking effective action in the
marketing situations which face the prectisin marketing situations which face the practising marketing
manager. Instruction will be based on the case method, class participation and role playing and thus will be limited to 40
students. Prerequisite: Commerce 208A/B.
Note: It may not be possible to offer all the classes listed
below in every year. Students should bear this in mind when elanning their proagramme for the following year.
301 Cost Administration, lect.: 2 hrs.; workshop: 1 hr.; G. E. Cost accounting is studied as an aid to management control and decision-making. The class examines the informational
needs of management and the means of accumulating and needs of management and the means of accumulating and
reporting the necessary information. Cost determination,
panning planning, control and budgoting (cash and capinal care
analyzed in relation to the internal needs of the management toa
Essential background knowledge: an understanding of
accounting processes and principles and the ability to work with accounting information.
Prerecuisites: Commerce 101 and Commerce 310 . The latte
may, with the aporoval may, with
currently.
302 Renumbered Commerce 215A and Commerce 216B
above.
305A Small Business Management, lect.; 3 hrs.; R. Glube.
This class uses written and oral cases to adapt and apply
business principles to specific current small-business situa business priciciples to specific current small-business situa-
tions. Students are expected to review and supplement thei tions. Students are expected to review and supplement their
knowledge of basic business functions, to find and analyze
pertinent materials in Knowedge of basic business functions, to tind and analyze
pertinent materials in libraries and from, other sources, and to
organize and integrate relevant materials and business priey organize and integrate relevant materials and business prin
ciples into workable recommendations for managing a variety of small businesses.
Precommendations for managing a variet Prerequisites:. Commerce 101, Commerce 207A/B
Commerce 208A/B or permission of the instructor. Commerce 306B - Survey of Business Processes and Retail
Management, lect.: 3 hrs.; R. H. R. Glube. This class is designed as a survey for non-commerce students
who wish to have an overview of the management problems who wish to have an overview of the management problems
facing the operator of a retail or service business. Although facing the operator of a retail or service business. Although
primarily designed for Pharmacy students, this course is open primarily designed for Pharmacy students, this course is open
to Arts and Science students who have had no previous
Commerce classes. Commerce 305 A is the course available Commerce classes. Commerce 305 A is the course available
for Commerce students who are interested in this topic.
Studd for Commerce students who are interested in this topic.
Students may offer for credit only one of Commerce 305A
and 306 B .
307 B Intermediate Finance, lect.: $2 \mathrm{hrs}$. E. W. Scott
A more intensive study of capital budgeting, cost of capital emphasis is placed on long term capital and the bargain for funds vital in financing the business enterrorise,
Prerequisites: Commerce $207 \mathrm{~A} / \mathrm{B}$, Commerc
Prerequisites: Commerce 207A/B, Commerce 312A or
Commerce 310 . The latter may be taken concurrently. 309B Intermediate Production, lect.: 2 hrs.; C. J. McManus. This course is a sequel to $209 \mathrm{~A} / \mathrm{B}$, which is a prerequisite,
and will cover tooics such as quality contron and will cover topics such as quality control, inventory
control, production scheduling, and methods planning in greater detail. Group and and individual mejholects will be under-
taken as part of the course.
310 Financial Accounting, lect.: 3 hrs.; workshop: 1 hr.; J,
Matthews.
Mathews.
This class is concerned with the concepts of external
reporting by business firms. The theory reporting by business firms. The theory and procedures
involved in the valuation of resources and obligations are
expled involved in the valuation of resources and obligations are
explored. The concepts of income determination are also
considered.
This class is the foundation for further study in the area of
financial accounting and it should be taken by those students contemplating an accounting career
Prerequisite:

311 Planning for Profit and Social Responsibility, lect.: 3
hrs.; G. Duncan.
The class examines the role business plays in our society; the economic, social, legal and political environment in which
firmm operate; the effect of these environmental constraints firms operate; the effect of these environmental constraints
and opportunities on business decisions; the way in which
business decisions are made and implemented; management business decisions are made and implemented; management
practices. practices.
Prerequisites: Commerce 101, Commerce 207A/B,
Commerce 208A/B, Commerce 215A, and Commerce 216B.

Students who have obtained credit for Commerce 102 312A Managerial Accounting, lect.: 3 hrs.; E. W. Scott Introductory cost analysis for control and decision-making. Budgeting. Selected problems in external financialial reportring
including consol idated statements, tax allocation, price tevel including consolidated statements, tax allocation,
changes and leases.
Prerequisistes: Commerce 101 , Commerce 207A/B.

Note: Students whose major area of concentration is
Accounting should take Commerce 301 and Commerce 310 Accounting should take Com
and should not take this class.
313A Consumer Behavior, lect.: 3 hrs.; J. Scheibelhut.
Consumer market structure and behavior and their impact upon the firm's competitive ooperations and actions.
Prerequisites: Commerce 008 A/B.
$314 \mathrm{~A} / \mathrm{B}$ Sales Management, lect.: 3 hrs.; J. Scheibelhut.
Organization of sales departments; sales planning and fore casting: quotas: territories; perf
and control of distribution costs.
Prerequisite: Commerce 208A/B.

315B Marketing - Promotion, I. Muncaster.
This class will develop on a base of consumer psychology and then treat advertising, sales management, re-seller stimulation
and other communication tools as part of an overal promotional mix. Problems are viewed through the eyes of
the marketing manager in both business and institutiona organizations and major emphasis is placed on understanding
the factors, both business and social, that affect his decision and mold communications strategy
Prerequisite: Commerce $208 \mathrm{~A} / \mathrm{B}$

318B Marketing Research, lect.: 3 hrs.; J. Scheibelhut.
The class will use the scientific method in solving marketing application of sampling methods, statistical design of experi ment, and analysis of data collected. A real-life research project will be required, its nature to be determined
considering student interest and background.
Prerequisites: Commerce. 208 A/B, Commerce 204 conPrerequisite
currently.
319B Product Management, lect.: 3 hrs.; I. Muncaster
The class will expose the student to the many faceted
problems of managing the product function in a variety of problems of managing the product function in a variety of
situations. The class will be based on use of projects involving actual companies and on the use of cases.
Prerequisite: Commerce 208 AB B.
actual companies and on the use
Preequisite: Commerce 208A/B.
320A Taxation, lect.: 3 hrs.; H. A. MacKinley.
An introduction to the taxation system in Canada, with
special reference to the provisions of the Income Tax Act and special reference to the provisions
their effect on business decisions.
Essential background knowledge and technical skill: know Essential baconground principles and the economic environmen in which a business operates and the ability to work with
accounting information. accounting information. 101 and Economics 100A and
Prerequisites: Commerce
100B 100B.
322A Interpersonal Dynamics, lect.: 2 hrs.; L. Mealiea
A more intensive study of selected topic areas which
emphasize the processes and possible problems associated with the dynamic interaction between individuals. Th
gained in Commerce 216 B and will employ such learning
echniques as sensitivity training, structured exercises in ech inpersonal relations, and Prerequisite: Commerce 216B or permission of instructor.
323B The Personnel Function, lect.: 2 hrs.; R. G. Storey.
This class provides a knowledge of the various, personnel
processes required in organizations which employ a subprocesses required in organizach organizations must deploy
stantial number of people. Suich Dersonnel on the basis of skills (task specialization) and be
concerned with stafting appraisal, training and development, compensation, collective bargaining, handling grievances,
health and safety, teadership and justice with respect to health and
employees.
function.
Knowledge of the processes is supplemented by the development of analytical skill in coping with various personnel
problems and in the integration of the processes with the many other functions required in the organization. This type of "system and process" analysis is built upon the skill and
nowledge acquired in the class on Organizational Behaviour. Cases $w$
ments.
Finally, the role of personnel management and the administration and anelysis.
tion and
Prerequisites:

324A/B Labor Relations, lect.: 2 hrs.; C. R. Brookbank
This class will expose the student to the history of organized labor in Canada: union, management and government policies
affecting the Canadian worker; and the process of collective Pargaining:
Prerequisites: Commerce 215 A and 216B, or permission of Prerequisites
professor.
331A Security Analysis, lect.: 2 hrs.; C. Dipchand.
The objective of this class is to introduce students to the theory and philosophies of investment. This class concen
trates on investment analysis suitable for the ind ividual, the estate or small group. The main focus is on marketable
securities, stocks, bonds, and investment trusts. Case material securites, sparily Canadian and covers such areas as growth stocks
is primater
 warrants. Reading assigmments and case-analysis will provide
the student wwith oportunities to handile investment analysis and portfolio management on a problem basis.
Prerequisites: Commerce $207 \mathrm{~A} / \mathrm{B}$, Commerce Prerequisites: Com
Economics 221A/B.
332B Canadian Capital Markets, lect.: 2 hrs.; C. Dipchand
Students are introduced to Canada's capital markets and the
flow of funds within these markets. Main sectors in the capital markets are identified and emphasis is placed on their historical development and function within the total struc
ture Other main areas of the class include term structure and ture. Other main areas of the class include term structure and
risk structure of interest rates, the risk-return relationship on financial assets and the efficiency of Canada's capita markets. The class will be conducted in terms of readin
assignments, case-analysis, evaluation of available research assigntents, casse-om discussion.
results and clasro
Prerequisites: Economics $221 \mathrm{~A} / \mathrm{B}$, Commerce 207 A/B. Th Prerequisites: Economics $221 \mathrm{~A} / \mathrm{B}$, Commerce $207 \mathrm{~A} / \mathrm{B}$,
latter may be waived with the consent of the instructor
450 Accounting Theory and Systems, (for honours students)
The class makes independent investigations in the philosoph
of accounting and auditing, based on recent literature.
Topics studied include information theory, role and function
of "theory". measurement theory, systems, accounting
ystems; the concent of control forms of control; theory auditing; investigation in the nature of '"evidence"'. curren
problems of accounting and auditing as they are dealt with in recent publications.
Prerequisite:
Commerce
310 .

451 Management Control Systems and Auditing, lect.: 3 hrs ,
C. W. Schandl C. W. Shanal.

This class explores the concepts of management contro standards and estabishment and review, together with th
procedures involved in the attest functio auditing). The role of the computer and statistical samplin he attest function are examined. The problems o sidered. This class is required for honours students in accounting and
it should be taken by those persons contempleting an
accounting career. Prerequisite: Commerce 310
452 Advanced Accounting, lect.: 3 hrs., J. Matthews.
The class considers the accounting and reporting theory of
business expansion and contraction. Partnerships and con business expansion and contraction. Partnerships and con business reorganizations and liquidations are also explored.
sign
This class is required for honours students in accounting and
it should be taken by those persons contemplating an accounting career.
Prerequisite: Commerce 310
460 Seminar in Finance
Special seminar restricted to honors students in Finance,
465 Seminar in Marketing
Provides an opportunity for advanced students in marketing to examine recent marketing developments and to stud intensively selected facets of marketing management. Re
stricted to honors students in Marketing.
470 Seminar in Organizational Behavior
Special seminar restricted to honors students in
Organizational Behavior.

## Comparative Literature

Teaching Staff
S.A.M. Burns (Philosoph
R Friedrich (Classics)
R. Friedrich (Classics)
R. Ilgner (German)
S. Jones (Spanish)
F.A. Kretschmer (French)
N. Maloff (Russian)
R.M. Martin (Engiloso
S. Mendel (English)
N.S. Poburko (English)
H.R. Runte (French)
R. Runte (French)
M.C. Sandhu (French)
G.F. Waller (English)
H.S. Whittier (English)

The Departments of Classics, English, French, German,
Philosophy, Russian, Spanish and Theatre, offer the Philosophy, Russian, Spanish and Theatre, offer the
following classes in Comparative Literature. These classes following classes in Comparative Literature. All ese cluase
may form part of an area of concentration. Al
given in English, and works read in English translation.

100 Introduction to Comparative Literature
This is an introduction to an understanding of man's approach to the eices of European literature, which may selecive masterpelces ere Chopean iterature, which may Moliere, Goethe and others.

Note:English 100 is acceptable as an equivalent to ComEnglish 100)

110 Modern German Literature in Translation, R. Ilgner
Class description to be found under German 110
203 Masterpieces of Western Literature, H. S. Whittier.
(Class description to be found under English 203)
204 The Eurpean Novel; S. Mendel.
(Not offered 1975/76; see English 204)
206 Survey of Russian Literature
(Class description, to be found under Russian 206)
207 Ancient Drama in Relation to Modern Dram
(Class description to be found under Classics 207)
210 Theories and Manifestations of Love in Medieval Europe
Not offered in 1974-75.
212 The Realistic Novel in 18th Century France and
Not offered in 1974-75.
214 Arthurian Romances, H.R. Runte
An historical; archaeological cultural and literary investiga tion of French, English and German Arthurian texts dealing with the mediaeval legend of King Artrur and the Knights o

15 Women in Litera Runte (Panel Leaders)

A panel of professors will present women as authors and the ole of the woman and her portrait in literature as a eflection of society in England and France with appropriate references to Italy and Germany. The develooment refere
woman's image will be studied chronologically with reference to contemporary themes and problems.
216 Literature, Art and Propaganda
(Tentative offering)
217 Faust: Lust, Love and Power - A secular Path to Salvation.
Tentative offering)
270 Philosophy in Literature, R.M. Martin (Class description to be found under Philosophy 270

## 300A Cervantes

Class description to be found under Spanish 300A
303 Russian Drama
(Class description to be found under Russian 303)
305 Twentieth Century Russian Literature, N. Maloff Not offered in 1975-76.)

306A Dostoevsky, N. Maloff
(Class description to be found under Russian 306A) 306B Tolstoy, N. Nevo
(Class description to be found under Russian 306B)

## Computer Science

J. H. Ahrens, Professor (N.S.T.C.)
G. Finke, Assistant Professor (N.S.T.C.)

Classes in Computer Science are offered by personnel of the Nova Scotia Technical College. These classes are accepted for credit by both N.S.T.C. and Dalhousie. The following may
be offered in $1975-76$ on the Dalhousie Campus.

## 240 Introduction to Computer Science, lect.: 3 hrs.

Comprehensive Fortran class with problems and applications History of computation, number systems, coding. Description of computer systems: general structure, central processor memory peripherals. Introduction to machine codes witt
exercises in assembler programming. Data storage and elementary sorting. Application programs. Introductions to high-level languages: Algol, COBOL, APL, simulation lan guages. Interactive programming in Basic. Applications in numerical analysis and optimization.
Prerequisite:
on the efficient use of digital computers.

## 35 Data Processing, lect.: 3 hrs.

Review of Forran. Basic concepts of data. Arrays, lists and strings. Storage allocation. Files management, updating searching, merging and sorting. Report generators. Cobo
programming with applications to payrolls, accounting sales analysis, business statistics and inventory control. Simulation of industrial processes. Management games.
Prerequiste:

340 Computer Science, lect:: 3 hrs
Algorithms. Basic concepts, single and multi-precision arrithmelic. Implementation of mathematical functions. Com generation and transformations.
Data structures. Lists, strings, arrays and trees. Storage media and allocation. Symbol tables. Up-dating and search-
ing. Core sorting algorithms and external sorting and merging.
Computer architecture. Operating systems. Batch processing, multi-programming and time-sharing.

Introduction to selected advanced topics: heuristic program-
ming, learning algorithms, pattern recognition and pictur processing. Elements of abstract languages and compilers Prerequisite: Mathematics 240 .

## Economics

Professors
R. E. George
R. E. George
J. F. Graham
J. G. Head
Z. A. Konczack
Z. A. Konczack
N. H. Morse-
A. M. Sinclair (Chairman)

## Associate Professors

R. L. Comeau
P. B. Huber
P. B. Huber
E. Klein
C. T. Marfels
C. T. Martels
C. Steinberg

## Assistant Professors <br> F. M. Bradfield G. A. B. Kartsaklis <br> G. A. B. Ka B. Lesser T. A. Pinfold <br> T. A. Pinfold U.L. G. Rao

Do you know what inflation means and why it is a problem?
Do you know why unemploymient should be a matter of Do you know why unemploymient should be a matter of
Do you know the price that Canada will pay for a clean environment?
environment? ally Adjusted Unemployment Rates .
Are you interested in studying problems in the economics of abour?
Are you interested in studying the economic system of Canada in contrast
Britain, or Argentina
Are you interested in studying the international monetary system and patterns of trade between countries? Are you system and patterns of trade between countries? Are you
interested in studying the economic problems of the emerging nations of Africa, Asia, and Latin America?
Or perhaps you are interested in studying problems of
regional developmént in Canada, or Canadian economic history, or problems of the Canadian urban scene.
All of this, and more, is economics.
Economics will provide you with a body of theory that equips you to deal with such questions and applied courses in economics permit you to study any of these questions in
detail. The offerings in Economics allow considerable detail. The offerings in Economics allow considerable
breadth and variety in order to accommodate a variety of brea.th and variety in order to accommodale a variety can major in Economics exclusively or that economics goes
hand in hand with work in sociology, political science, or hand in hand with work in sociology, political science, or
biology. Students who wish to gain a more intensive and broader knowledge of economics may want to take the Honours Programme
Students graduating in economics find many well-paid and interesting opportunities for employment in teaching, re search and administratite positions in universities, business
government and international organizations.

## General Degree Programmes

The Department offers undergraduate and graduate programmes in economics. Students should consult the timetable and the Department at the time of registration for changes in or additions to the classes listed here
conomics can be taken as the major subject in a genera 3.A. or B.Comm. degree programme, and it may also be
taken in coniunction with maior programmes in subjects such as mathematics, accounting, political science and history.
he necessary core courses for a major in Economics are conomics 220 (A or
Economics 222 or 322.

As a guide to the student who is majori Economics, the Allowing outline represents a course structure for a typica well-rounded programme.

\section*{Recom

## Recom <br> Year I

Economics 100,110 or 120
2. Mathematics 110 , or equivalent.
.
Year II
-7. Economics 220
8. One other class in Economics.
-10. Two classes chosen from fields other than Economics

Year III
1-13. Three classes in Economics

- Two classes at least one of which is not in Economics. Students considering economics as an area of concentration hould consult the Department about their programme.

Although students may offer fewer classes in economics than
the seven suggested this number is deemed necessary to the seven suggested, this number is deemed necessary to provide a basic knowledge of the ciscipline and shorded as the minimum for preparation for a graduate programme in economics.
Students must satisfy the overall requirements for the degree programme in which they are registered. (B.A., B.Com., b.Sc., etc.)

Concentrated Integrated Programme
The Department is now offering an alternative course
structure which may be of interest to students who wish to prepare themselves for a two-year M.A. programme or for
work as an economist. The Concentrated Integrated Progwork as an economist. The Concentrated Integrated Programme differs strom the normal course or study since sududents
will work on one class at a time, rather than the usual five, in their third year. The third year. consists solely of economics classes taken in sequence, whereas he seco consist primarily of classes in other subjects.

Students who are interested in applying to enter the programme in September, 1975, or who wish to know more about it, should contact the Department of Economics, before Aprii 30 , 1975. The programme is designed
maximum of 20 students and a minimum of 10 students.
African Studies Programme
The Department is cooperating with several other Departments in offering an African Studies Programme. Interested students should contact Professor Z. A. Konczacki.

## Other Programmes

The Department is prepared to assist students who may wish to devise their own programmes under the present cur riculum regulations. Interested students should consult the Undergraduate Co-ordinator

Honours Degree Prògramme
The necessary core courses for an Honours Degree- in
Economics are: Economics 100 or 110; Economics 220 (A or B); Economics 221 (A or B); Economics 320A; Economics course in Economic History; a course in the History of Economic Thought.
The following course structure is recommended:
Year I
2. Mathomics 100 or 110 .

3-5. Three classes in fiequivalent.
Year II
Economics 220 ( A or B ) and $221(\mathrm{~A}$ or B ) 7. Economics 322 .
8. Economics 232 or other economic history class,

## ear III and IV

11-16. Six economics classes including 327, 320A, 321 B . with the Department
The student's programme will be chosen in consultation with he Department and must have the approval of the

Honours students must pass a conprehensive examinatio the end of their fourth year, or write a series of shor

If the classes selected outside of economics in the third and ourth year, students must include at least two classes above

Students are advised that mathematics is required for conometrics and of additional mathematics is value of stressed.
In some instances, the Department may permit students to ake classes in other subjects in lieu of classes in economic and may permit minor variations in the required classes.
Students must be careful in arranging their courses to ensure hat they satisfy the overall requirements for the General B.A.

## ombined Honours

俍 departments. For combined honours programmes with discipline, students should consult the other department

Classes offered
100 Principles of Economics, lect. 2 hrs., tutorial 1 h vins sex

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

Sections 5 and 6 of Economics 100 differ in problems. problem oriented framework in which the analytical tools a developed by examination in each term of a question such as he multinational firm in Canada, urban economics, Canadian and economics of

110 Principles of Economics: A Mathematical Approach,
This is an introductory class for students with a background in mathematics. Similar to Economics 100, the class is designed to provide a general introduction to economic economic analysis can be applied to resolve economic problems. However, the approach taken to the material will e more rigorous. Mathematical tools will play an integral role in developing the theorems and proofs. A knowledge of
differential calculus would be helpful.

120 Principles of Economics: An Historical Approach ct 2 hrs., tutorial 1 hr., B. Less

This course will analyse a number of episodes from Canada's past as a means of illustrating and developing the principles f economic analysis.
pisodes such as the economic factors leading to Confedeation, the development of the Prairie wheat economy, the building of the CPR, the beginnings of U.S. investment in means of developing the basic analytical principles economics.
Note: Economics 120 is not open to Commerce student needing to satisty their Economics 100 requirements.)
220A/B Micro-Economic Theory I, lect.: 3 hrs.; (offered
Nicroeconomics deals with the economic behaviour ouseholds as purchasers of output and suppliers of input ervices, and of firms as producers of outputs and households and firms. This class covers material in this area which may be required for other classes in economics at the 00 to 400 level. Geometry' and a limited amount of igh-school algebra are employed.
In addition to standard topics such as consumer and roducer behaviour under various market structures, an conomies, and welfare economics is included. Although the ajor emphasis is on theoretical ideas, applications of these eas are considered, in order to illustrate the range and conomic issues.

221 A/B Macro-Economic Theory, lect.: 3 hrs.; (Offered both terms).
This class is intended to provide a sufficient treatment of 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 prices; and the theory of economic growth. Both "open" and
"closed" 'economies are considered. Major emphasis is placed on the development of the theoretical ideas.
Prerequisite: Principles of Economics

222 Economic Statistics I (same as Commerce 204), lect.: 3 hrs., workshop 2 hrs.; R. E. George.
Topics studied include the definition, functions and sources of statistics; the design and execution of statistical enquiries; statistical tables; graphs and diagrams; measures of centra
tendency, dispersion, skewness and kurtosis; curve-fitting probability (estimating mean and proportion in population
from samples, and testing hypotheses about means anid proportions); quality control; index numbers; time series analysis; elementary correlation
Background knowledge that is essential for this class includes: algebra at approximately Grade XI level: some experience of constructing and interpreting graphs; the ability to think quantitatively which is usually gained by the
study of geometry and algebra at the high school and university level: familiarity with national accounting concepts.

231 H Health Economics, lecture and seminar, 2 hrs.; M. G Brown.
This course examines the allocation of resources to and within the health care sector of an economy. Characteristic claimed to be unique to the health care sector are analysed
within an economic framework. Determinants of demand supply and utilization of health services are examined with particular reference to the organization and evolution of Canada's health care system.
This one-term survey course consists of a literature review lectures, and student seminar presentations on selected opics. To accommodate part-time students the class wi Prerequisites: Principles of economics; Economics 220A is desirable.

232 Canadian Economic History, lect.: 3 hrs.; (same as History 222); N. H. Morse
This survey class is a study of the economic development of Canada from the age of discovery to the present. Howeve as Canada from the beginning has tormed part of a large ystem, the approach taken relation to the larger system which can be broadly described and analyzed in terms of the elationships between the Old World and the New. The clas herefore covers areas development of Canada. The aim is to make the class a uni as much as possible by using themes of trade, commodity echnology, vested interest, institutions, and so forth, as means of developing the argument. As the class proceeds eneral subject matter deals with the, penetration of Europeans coming from across the Atlantic and. across study in the formation and breakup or change.in empires; the shitting balance of power between countries and regions, the ole of the Caribbean areas, the rise of the United States to a position of pre-eminence, and Canadian
changes and to internal problems as well. More theory is introduced towards the end of the class than is
discussing Canadian problems and policies, especialy in he twentieth century. However, no mic principlequis and some required, although a class in economic p
knowledge of history would be beneficial.
234 A 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 prepare him for further reading in this area of study

The topics considered include: methodology of African economic history; the significance of environmental differen-
tiation: some speculations on economic. prehistory; economic tiation; some speculations on economic. prehistory; economic
contacts between distinct ecological regions and different cultures; introduction and spread of agricultural crops; landholding systems; mining and meta-working; longdistance trade routes and trade centers, overseas
slavery and slave trade; Arab and European penetration and its economic impact.
The discussion concentrates primarily on tropical Africa and it is carried up to the times of the partition of the Continent by the European powers in the late nineteenth century.
No prerequisites are required, although Introductory Economics and some knowledge of history is desirable.
235B Economic History of Tropical Africa: Colonial Period, lect.: 2 hrs.; Z. A. Konczac
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 tion and eventual introduction of the "development and welfare" approach. More specifically, the topics discussed include: development of transport, mining; agriculture and trade; some aspects our force and the problems of migrant workers; colonial planning; socioeconomic impact of Euro pean colonization on Africans; African response to economic incentives z balance-sheat of colonialism.

No prerequisites are required, although introductory

## ${ }^{236 B}$ Recent Economic Developments in Sub-Sahara

This class centres on the last decade of development. Topics discussed include: impact of colonial heritage, presen structure of African economies, infrastructure, agriculture phasis on impact substitution, trade: overseas and intra African, foreign investment and aid programmes, economic planning, and the prospects for the future of developmen and co-operation be taken by the students who already have a credit in Economics 236A.
Prerequisites: Introductory Economics. Economics 234A rerequisites: Introduc

241A Comparative Economic Systems: National conomies, seminar. 2 hrs.; P. B. Hube
The object of this class is to sharpen the student's ability to
think about problems of economic organization and control, oimprove his skills in writing and speaking with respect to of institutional material on the structure and performance of a variety of economies. Readings on specific countries provide he basis for several short papers, but there is no written

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
reading should have included
The Making of Economic Society by R. L.
Prerequisiste: Introductory Economics.

## 242B Comparative Economic Systems: Economic Or-

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organizations and the ways in which economic behaviour of controlled. This provides the basis for consideration of the heory and practice of economic planning at micro-economic and macro-economic levels in various institutional contexts. Readings . include selections trom Dahl and Lindblom rerequisite. Introducroen, and Ward half class in Economics

250 Applied Development Economics, seminar: 2 hrs. and lutorials, R. I. McAllister.
he purpose of this class is to enable participants to review some main lessons from economic development theory and comparative experience, and to apply this background by
he class consists of several main strands, which often run -

1. Economic Development in theory and practice. A survey of some main development theories and their implications, drawing on the experiences of selected
regions - including the Atlantic Provinces.
2. Development Planning. Particular attention will be given to he Canadian social, political and economic context. Case sudies will be utilised from World Bank experience in countries at various levels of government, and from the private sector. Regional, urban and rural, as well as national
olanning, will be reviewed.
3. Policy effectiveness. How do policies really evolve? How do they translate into programs and projects? What is the process of formulation, implementation and evaluation really
like? What techniques are available to impore the like? What techniques are available to improve the cost
effectiveness of development planning e programme effectiveness of development planning e.g. programme
buidgets, cost-benefit analysis, critical-path scheduling, etc.
4. Application. The gist of development theory and compara4. Application. The gist of development theory and compara-
tive case study experience is utilised by working on current
problems. Project teams will review how agencies in the problems. Project teams will review how agencies in the
Atlantic region are planning and budgeting largely Atlantic region are planning and budgeting - largely
through extensive interviews. Teams will also tackle projects hrough extensive interviews. Teams will aiso tacke projects
that government agencies and private sector organizations are currently working on. This will provide class members
with experience in working at problems that often require an with experience in working at problems that often require an
inter-disciplinary approach, and will give them practice in harnessing information and advice from a range of sources

Class Membership
he class is provided for two main groups of people:Students interested in applying their background in economics and related subjects (e.g. political science,
commerce, sociology) in a working environment team that will include colleagues who already have some experience of development economics in practice.
Persons who are presently working in government agencies and business, who have an interest in reviewing how the might learn, from comparative development experience lessons of value to their present, or future, work situations. discipline. The work requirements are streamed to fi students' backgrounds
Resources. Experienced advisers from government and private agencies will add further perspective and guidanc by participating in some aspects of this class.
320A Micro-Economic Theory, lect:: 3 hrs.: G A B Kartsaklis.

This class is mainly concerned with the theory of the firm. The discussion centers around managerial motivation and the include the alternatives to profit maximization, breakeven charts, cost-plus pricing, and the pricing of factors of roduction. This is followed by a discussion of problems o market conduct under oligopoly: colusive behaviour, ad-
ministered prices, and basing-point prices are the main ssues in this part. The last part of the class covers problems of resource allocation and of welfare economics. This clas iir be of particular value for students intending to do
raduate work in Economics. A knowledge of calculus be useful.
Prerequisites: Mathematics 110 or equivalent and Economics

321B Macro-Economic Theory, lect. 3 hrs; G. A. B Kartsaklis.

This is a class for persons who wish to do relatively advanced work in economic theory, possibly with the thought of going
on to do graduate work in economich. 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 soder models). and trade cycle Prerequisite: Economics 221/B and Mathematics 110 (or equivalent)

322 Intermediate Statistics, lect.: 3 hrs.: U. L. G. Rao.
The student who is familiar with the basic statistical theory can appreciate econometric technique better than one who has had a formal training in statistics, which involves training
in computational aspects of statistical measures but which does not give the student any understanding of fundamental theory. The purpose of this class is to equip the student with applied form has become atical statistics. Statistics in its statistical techniques, suited to tackle economic problems, have become increasingly sophisticated. This class is that advanced techniques of econmemetrics can be it inderstood
by the student who has taken this class.

This class concentrates on the theory of Probabilify, building rom an axiomatic point of view, mathematical expectation
Multiple linear regression models will be discussed and a Multiple linear regression models will be discussed and a critique of various problems that arise consequent to
violations of the assumptions of the general linear model will be presented. This will prepare the student to undertake applied econometric, work; besides, it would provide a spring
rics.
The student is expected to have at least a one-year class in calculus (Mathematics 110 or equivalent) and preferably

324 Public Finance, lect:: 2 hrs.; tutorial 1 hr., J. G. Head
Economics 324 is concerned with the principles of public finance and their application. The first part of the class deals with the objectives of public policy and the reasons for market failure. This section provides the elements of a theory of pubic expenature wion of goverrment.
major economic functions

The second part of the class is concerned with the theory of
taxation in relation to the objectives of public policy. This taxation in relation to the objectives of public policy. This
section explores the possible role of a sample of important section in the design of a good tax system. The third section examines the role of public finance in relation to economic
 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
 and $221 \mathrm{~A} / \mathrm{B}$ are desirable.

325 Labour Economics, lect. and seminar: 3 hrs:;
Some nine million Canadians are directly dependent upon wages and salaries for a living, and their earnings constitute about $65 \%$ of the National Income. Over two million of these workers belong to trade unions the factors affecting wages and salaries, employment and unemployment, the conditions of labour, and the labour market is therefore important to an understanding economy as a whole.

The subject is introduced by reviewing: the emergence of the labour problem; the develop. and stracture of the labour market; the growth, structure and and the historical and legal foundations of labour relations. Most of the year is spent in
Most of the year is spent in: opening with a review of classical wage theory. (b) Examination of the theory and practice of collective bargaining, exploring also the interaction and relative
strengths of market (economic) forces, and institutional rengths of market (economic) torces, and institution
c) Study of labour's share of the national income and the relative efflect of unions on titiminants of employment in the
(d) Analysis of the determinal d) Analysis of the determinants of employment in the macro-economic sense, and
problems of unemployment.
We conclude with a review of public policy with respect to We conclude with a review of public policy with respect events to the theoretical framework.
he class structure is intended to be flexible; however, as a base it has two lectures and one seminar (in which student
eams of four each provide the materials) each week. Prerequisite: Introductory Economics and an interest in social science and its methods. Economics $220 \mathrm{~A} / \mathrm{B}$ and $221 \mathrm{~A} / \mathrm{B}$ a

## 326 Money and Banking, lect. 3 hrs.: R. L. Comeau

This class is concerned with the nature and operation of the inancial system, with particular reference to Canadian examples and experience. As suchtiut class is concerned processes whereby the social control of the supply of money and credit in the system is effected. The class is complete in iself, but is complemented by Economics 426B which effectiveness of monetary policy
27 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 tolunderstand economic phenomena". A brief survey of mediaeval and mercantist political economy and Marxian economics together with that of other socialists. The focus then shitst to the marginalists, neo-classicists, and the institutionalists. Problems of economic instability and depression, especially in this
century, require that some attention be given to Keynesian economics and its extensions. The time allotted to the study of European writers and schools and of various contemporary writers and current topics depends in part on the interests
of students. It is recognized that the tremendous expansion of the literature and the emergenoe of highly specialized fields in economics makes it necessary to select trom recent sources only a relatively small sample of writings which relate
this class to others which the student may be taking. The links can be forged, nevertheless, by means of a number of topics such as the following: the theory of value, the treatment of money, the theory of economic growth, the theory of
distribution, and the relationship between growth and distribution,
distribution.
Although this class is intended to supply a background for several other classes in economics, it is also true that other
classes serve as background for this one. It is considered classes serve as background or this one. It is considered
essential, however, that students in this class have taken a class in economic principles. A class in micro-economics
(price theory) and in macro-economics (income determina(price theory) and in macro-economics (income determina-
tion) would be helpful. The predentation, except for a few tion) would be helptul. The presentation, except for a few
specific points, is largely non-mathematical. Therefore, the specilic points, is argely non-mathematical. heo read and assimilate a certain body of literature rather quickly. Prerequisite: Economics 220A/B and 221A/B are recommed.

## 328 Industrial Or

Industrial Organization is the application of the models of price theory to economic reality. In a speciific industry, the 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 finc 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 in particular in 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 par includes a discussion about whether a reallocation of resources is necessary, and this involves looking at the basi
elements of public policies directed towards business. Prerequisite:: Economics $220 \mathrm{~A} / \mathrm{B}$ or equivalent micro economics course

329 Urban Economics, lect.: 3 hrs.; T. Pinfold.
Urban Economics is essentially the application of tools o is loosely defined so as to include small large cities. Topics-discussed include: the origin of cities factors affecting urban economic growth, the goals of an urban area, problems in intra-urban resource allocation areas, and urban planning. Flexibility in selecting clas content is considered important. Topics suggested by students are welcome. Students are expected to presen
papers on topics of their choice papers on topics of their choice.
Prerequisites: a sound background in both macro- and micro-economics Economics 220A/B and $221 \mathrm{~A} / \mathrm{B}$, or their equivalent would be a minimum. The class is designed as an application of
theoretical tools. No theory will be taught. Students will also find a knowledge of calculus useful, but not necessary. If a prospective student is unsure about the suitability of his

## 330A International and Interregional Exchange, lect.: 2

 hrs.; A. M. SinclairThis class considers the causes of international and interregional exchange of goods and services and analyzes 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 mplications 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
full-year classes in econy Economics and 220A/B, or two

331A Economic Development: An Environmental Approach, lect.: 2 hirs.: Z. A. Konczacki.

The approach taken in this class reflects an economist's view of the relationship between environmental questions and his
own discipline. Topics considered include theories of economic development in the light of a sciuntific view of man and nature, an introduction to the general systems analysis of licing levels, population theory and policy, environmental preservation, the relation between economic development and eco-systems in the less and the more developed parts of he world, and the implications of a steady state model. This class provides a general background for Economics 332 B .
Economics 331 A cannot be taken by the students who aready have a credit in Economics 4243.
Prerequisites: Principles of Economics. Economics $220 \mathrm{~A} / \mathrm{B}$,
$221 \mathrm{~A} / \mathrm{B}$ and 333 A are desirable.

332B Resource Economics, lect. 2 hrs.; N. H. Morse.
This class is concerned with an analysis of the physical and resource industries and of environmental phill Selected case studies of resource -management in Canada and elsewhere will be discussed.
Prerequisites: Introductory Economics. Economics 220A/B and $221 \mathrm{~A} / \mathrm{B}$ are desirable

333A Theories of Economic Development, lect.: 2 hrs.. Z. A. The purpose of this class is to provide a theoretical framework for the understanding of the process of economic with a view to an eventual apolication 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 economic development and their theories and models of seminars are devoted to the problem of the foundations of the theory of economic development, and a distinction between
the concepts of unilinear and multilinear evolution is discussed.
Prerequisite:
Prerequisite: Introductory Economics. A class in macro-
economics equivalent to Economics economics equivalent to Economics $221 \mathrm{~A} / \mathrm{B}$, and History of

334B Policy Issues in Economic Development, seminar 2 hrs.

This class is concerned with the application of economic theory to selected developmental problems. The role of capital formation in economic development is examined.
Forced saving by inflation, domestic taxation and forein are considered as alternative ways of increasing the rate of capital formation. The focus of the class then shifts to the prosources from such alternatives as investment of investible research, population control, and the reformation of institutions and values inimical to growth. This topic leads into a
discussion of investment criteria, programming models, and developmental strategies.
Prerequisiti: One half--year class in economic development,
or Economics 241 A and 242B; alternatively 20 A , or Economics 241 A and 242 B ; alternatively $220 \mathrm{~A} / \mathrm{B}$ and
$221 \mathrm{~A} / \mathrm{B}$.

3368 Regional Development, seminar 2 hrs.; tutorials; R. I McAllister.
This class enables students to examine the process, prospects and problems associated with regional develop-
ment in Canada in particular, and in the more industralise countries in general. The interdependence of economic, evolution of regional policies, and while this course will be oriented largely from a concern with the economic force underlying the process - these other factors will be taken elements: (a) the application of economic principes main context of regional development; (b) a comparative review of regional development experiences and policies of a numbe
of industrialized countries ; of industrialized countries; (c) Canadian regional develop-
ment experiences, with particular focus on the Atlantic ment experiences, with particular focus on the Atlantic
region; (d) regional field case study; each student wil examine the background the role of one pertinent project
such as D.E.V.C.O. in Cape Breton, the Newfoundland
centralization program, the Saint John multi-industry complex. The class will visit several such projects over the period (hot necessarily in economics), who already have a number of years work experience on problems associated with egional development. A limited number of other student vith a substantial background cience) will be admitted.

422 Econometrics, lect.: 3 hrs.; U. L. G. Rao
This class attempts to introduce econometric theory at a fairly dvanced level and is designed mainly for one who likes to work on theory or model building.

A review of the general linear model will be made. Violations of the assumptions crucial for least squares estimation bring discussed in detail: Stochastic regressions, generalized leas quares, Autocorrelation, Heteroskedasticity, distributed lags and dummy variables. All these"problems are single quation problems
simultaneous equation problems occupy an important place in econometric model-building. A critical analysis of the made.

Limited information methods and full information methods of stimation will be discussed
mods as alternatives to analytical techniques will be discussed.
This class requirés a high level of work and is open to graduate as well as undergraduate students. Minimum prerequisites for undergraduates withe andergraduate work in micro- and
statistics course and macro-economics.
$220 \mathrm{~A} / \mathrm{B}$ and $221 \mathrm{~A} / \mathrm{B}$.

423A International Economics of Den
This class applies international economic theory to problems of economic development policy. Topics discussed include the terms-of-trade, external balance, foreign aid, private through trade. Approximately one-half of the readings concerns foreign aid. Subtopics incluade the economic objectives of foreign aid in relation to national, political and
security objectives; the foundations of modern aid theories security objectives; the foundations of modern aid theories
and strategies in development theories; the macroeconomics o aid, including analysis of dual gap models, aid requirements, absorptive capacily, debt service, and loan crrms; the micro-econor for project assistant and aid strategies; and factors affecting the burden of aid upon the donor countries. Prerequisitea; one half-year class in ,either economic devequisment or international economics.

426 Monetary Policy, lect.: 3 hrs.; R. L. Comeau
This class assumes that students have a basic knowledge of monetary institutions and monetary theory and attempts to
develop out of this a critical analysis of the objects and effectiveness of monetary policy, with particular attention to the Canadian expen end instrumental role of monetary policy
and infroduces such problems as the question of rule The second part is concerned with the effectiveness of monetary policy and considers issues such as the structure of interest rates, the elasticity of spending to changes in作基, the avile discriminatory effects of monetary policy. The last part considers the adequacy of the tools of monetary policy, again particularly in e light of the Canadian money market experience. rerequisites: Economics $221 \mathrm{~A} / \mathrm{B}$. It is advantageous fo
conomics 431B International Payments, seminar: 2 hrs . B. Lesser

Selected topics in recent international monetary history are examined, the causes of and remedies for external inbalanc $n$ national economies are considered, and the reorganizatio of the international monetary system is discussed. Depend development finance and problems of instability and growth in the international economy may be discussed in detail.
A substantial proportion of class time is devoted to the Aiscussion of papers prepared
ive reading list is distributed
rerequisites: are strict preguites in the sense that they must be are strict prerequisites in the sense
completed before the student enrolls in the class.

In addition the ability to follow arguments covered in terms of high school mathematics is essential since part of the
exposition makes use of algebraic and mathematical exposition
techniques.
432 Regional Economics, seminar 2 hrs. F. M. Bradfield.
Regional economics applies economic theory to the problems created by the differential impact of economic change on the regions of a developed economy. The intent of this problems of regional development. The course develops an understanding of the basic problems, their interrelationships, and their correction or amelioration. When the basic and easier to analyze. The course will operate as if the class were a research unit assigned the task of preparing a rigorous development plan for a region of class choice (presumably interests of the class) The class will define the various areas or components of the plan and assign tasks to members of the class, either as individuals or teams. Class time will be spent analyzing areas, detining needs and directing
individuals working in those areas. Papers will be discussed while being worked and as seminar papers when completed. The professor will not lecture to the class but will, with the rest of the class, question ass and if necessary, serve as reteree.
Prerequisite: Economics $2201 / \mathrm{B}$ and $221 \mathrm{~A} / \mathrm{B}$. Students must have a knowledge of both macro- and price theory, especially the market mechanisms determining factor flows and the production relations
productivities and proportions.

## 433 B Intergovernmental Fiscal Relations, lect., and seminar 2 hrs. J. F. Graham

This class is concerned with the principles of intergovern-
mental fiscal adjustment and their application in a federal political system, particularly Canada, at both federalprovincial and provincial-municipal levels
313 and other related classes in political sciencence 313 and other related classes in political science are
recommended, though not required. Students may also be
admitted by permission of the instructor.

## 440 Applied Development Economics, seminar: 2 hrs. and

ais, A. I. MCAlister
For description see Economics 250
488 Philosophy, Politics, and Economics: Public Goods nd Political Choices, D. Braybrooke.
Same as Philosophy 448A and Political Science 4460 A
Dffered in 1975-76)
449B Philosophy, Politics, and Economics: Applied
Social Philosophy -The logic of Questions, Policy Analysis and lssue Processing, D. Braybrooke
Same as Philosophy $449 B$ and Political Science 446
Class description to be found under Philosophy 449B)
Class description to be found under Philosophy 449B)

## Graduate Studies

The Department offers a graduate programme leading to the M.A. adi Ph.D. degrees. Details of these programmes, of the Faculty of Graduate Studies. Senien in the Calendar may be admitted to some graduate classes at the discretion of the instructors concenred.

## Education

Professors
D. J. Dyke (Chairwoman
A. Barton

Chelsom
W. Hare
P. Keane
. T. Marriott (part-time
B. Roald
S. W. Semple
S. S. Sodhi

Assistant Professors
R. Gamberg
R. McBride
J. Manos
H. E. Poole
H. G. Schwarz (part-time)

## Lecturers

M. Bishop (part-time)
R. Johnston
A. Manicom (part-time)
G. Punke (part-time)

Special Lecturers
L. Dubinsky (part-t
Dubinsky (part-time)
L. Fisk (part-time)

## Demonstrators

R. Brewer
F. MacGilivivay
B. Stronach

## Adjunct Professo

B. Bright

Educational ideas are in ferment at the present time and serious voices can be heard taking very different positions on
such matters as student responsibility, discipline, specialization in High School, and teąching methods. At the same time new ideas (or in some cases, old ideas in new guises) challenge the student teacher, e.g. team teaching, microteaching, and continuous progress. Is a system of public
schooling defensible at all? To what extent is teaching neutrality possible or desirable?
Clearly to enter an education programme at such a time is not to enter a form of learning in which one can sensibly expect ready answers to such issues and problems. The Department in such problems, to call attention to therelevant literature, and to aim at the high level of intellectual inquiry. It is vital that the student challenge ideas which he wili encounter, and think out his or her own position on the issues. This is no more than to that they are concerned to develop understanding. Involvement caninot be summarised in terms of "listening and learning" but extends to reading, thinking, contributing,
rejecting, debating, experimenting, and so on. The general reutlook permeates the whole "programme, including academic courses and methods courses as well as the
periods of.field experience.

The Department occupies three buildings: the white house a 1460 Oxford Street, the small red 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 white hous Centre has faculty offices, student lounge, Learning Materials Unit, Elementary School Workshop area, Cardboard Carpe ry Workshop, Audio-Visual Unit, and an' Experimental Schoo he Centre places an emphasis on open space and the area.
Education students may participate in the experimental ducation students may participate in the experiment
chool programme. This programme is not limited school programme. This programme is not it may be used by professors and tudents from other departments in consultation with th Department of Education.
he Department offers:
A arded simultaneously the degrees of B.A. or B.SC. and are aw
2. A sequential course of one year which may be taken by students who have already completed a B.A., B.SC., o ir admission to the B.Ed. programme, and at the end of which Be
3. B.Ed. for Vocational Teachers,
4. Part-time study toward a BEd and
5. 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, and Philosophy be used for credit towards a B.A. or B.Sc. Some classes are cross-listed with other departments, e.g. French, German hilosophy, so that a student who is not enrolled in a B.Ed programme, may register for such ac

The instruction offered in the education classes in tie 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 being confined to the egular classes requiredy nation Year. A student wishing to enter the integrated course may apply to the department during the first or second year of his/her programme

Traditionally the programmes are aivided into Elementary and Secondary. The divisions are much less distinct now and this courses.
The department is also encouraging the development of experimental projects involving alternative courses to the projects are invited to indicate this on the Departmental Application form and tis possibities during their interview for admission.

## Certification of Teache

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 applicants moral character, age, health, training, and qualifications. Further information may be obtained from the Regaisitration, Nova Scotia Department of Education. A B.Ed. entitles the graduate to a Teacher's Certificate, Class 5 in Nova Scotia. Students from
other provinces should consult the appropriate provincial department of education for certification and licensing information.

> Degree Programmes
B.Ed. Elementary and Secondary
Sequential (One-year) Course

Entry Requirements
. B.A., B.SC., or B. Comm. by September 1975. Candidates with other bachelor degrees should enquire from the
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 Appicatito 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, 1975. 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 must be confirmed by the applicant.
Selection is based on:
graduates, must ensure that their transcripts are Dalhousie the Admissions Office.
2. References
3. Interview

Applicants from outside the Maritime Provinces need not Students are advised to consult the Programme Planning Guide which will be available on and after April 11975 fron

## B.Ed. (Elementary), Sequential Course

Candidates for the degree of B.Ed. (Elementary) must complete successfully the following academic classes: a areas (sociology, history, philosophy and educational made up of a combination of the four categories, depending on their interests: Education 4700 (a 12 unit or 2 credit course in Curriculum and Instruction): Education 4900 (Field complete B. Ed. programme.
B.Ed. (Secondary), Sequential Course
Candidates for the degree of B.Ed. (Secondary) must
. complete successully the following. academic classes: a
minimum of one-half creditit each of the education foundation areas (sociology, history, philosophy, and educational psychology) and the equivalent of three full credit courses on their interests; a full credit in a moth calegories, depens 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. Comm in the first degree might not easily lead to effective teaching They are advised to consult with the Coordinator of the B.E Programme when drawing up their programme for the first degree
Transfer of Credit
Decisions concerning transfer of credit will be made following onsideration of transcripts and students intended. areas
study. Enquiries should be directed to the Secretarv. B.E. Programme
students who wish to obtain the degree of B.Ed. with transter of previous credit must obtain the degree of B.A., B.SC.. Graduates of non-degree grantion To the B.Ed. programme note that the following guidelines will be used in transter of credit:
Graduates of an acceptable three-year programme will be -half classe

Graduates of an acceptable two-year programme will be raduales of an ace elable one-year pogramme will be equired to take an additional five classes
he actual selection of classes is to be made to suit the need each student and the student will be advised according when his/her.file is examined.
See also Regulations 1.5 and Admissions, Sec. 4 for further
details.

## B.Ed: Elementary and Secondary Integrated (four-year)

 oursethe integrated course, the classes in education are ntegrated with academic classes in the second, third, and fourth years, the first year being contined to the regula
classes required for the B.A. or B.SC. degree or Kings classes required for the B.A. or B.SC. degree or Kings
Foundation Year. Details of the distribution of Education classes for new students entering the programme are issued by the Department at the time applications are made
Students may also enter the integrated programme after the second year.
Enquiries, and application for admission to the Integrate Course, should be made to the Secretary, B. Ed. Programme eear at Dalhousie University

Students wishing to obtain a BEd (seconda) a B.Sc. with honours should consult the Department Education and the department or departments in which they wish to do their honours work not later than the beginning of
may be arranged. Five years from senior matriculation wil normally be sufficient to complete this course of study.

## B.Ed. (Elementary):Integrated Course

## Overall Requirements

The ten classes in arts and science taken in the second and subsequent years must meet the requirements set forth in Specifically
(A) The major (four to eight classes selected in accordance taught in Nova Scotian schools.
(B) Seven of the ten classes must be at the 200 level or above.
(C) On registration in his second year, the student must declare his major and have it approved by the departmen concerned
(D) At least one class in English beyond the 100 level must be taken.
(E) Electives may be chosen from the subjects listed in groups A, B, C, and D (Degree Programmes, section 2), or Art History Engineering, and Humanistic Studies in Science.

## B.Ed. (Secondary): Integrated Course

## Overall Requirements

The ten classes in arts and science chosen in the second and subsequent years must meet the requirements set forth in Specifically
(A) Seven of the ten classes in arts and science taken in the second and later years must be in two subjects beyond the 100 level; these should be related to subjects regularly taugh
in Nova Scotian schools. The seven classes must be chose in Nova Scotian schools. The seven classes must be chosen so that either five classes are taken in one subject and
the other, or four in one subject and three in the other.
(B) The remaining three arts and science classes taken in the second and subsequent years shall include at least one which is beyond the 100 level and shall be selected from subject previous those offered to satisfy the requirements in the group A, B. C. and D (Degree Programmes, section 2) or At
 Engineering, and Humanistic Studies in Science.
(C) On registration in his second year, the student must (C) On registration in his second year, the student must
declare his major and have it approved byt the department

## Degree for Vocational Teachers

## Entry Requirements

The applicant must:

1. Be employed as a teacher in the trades or in the industrial services and 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 trades or in the industrial, services and technical occupation fields. The
number of years will be that required by the Nova Scotia Department of Education for certitication as a teacher in the area of specialization.

## Application

Write to the Registrar, Dalhousie University, asking for 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 regulations in this section, will comp
accordance with the following rules:
Five of the fifteen credits must be in education selected as follows:
Three classes in education foundations with a minimum o 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) (c) Philosophy of Education (class numbers 4200 to 4290 (c) Educational Psychology (class numbers 4300 to 4390);
(dwo other education classes.
2. Ten credits in classes offered in the Faculty of Arts and Science, selected so as to satisty the following requiremens. and Science classes. 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. The Department of Education will ensure that the
candidate's performance as a teacher is satisfactory before candidate's performance as a teacher is

Section 5.1 of General Faculty Regulations covering the number of Summer School and Extension classes that may be accepted towards th
to candidates in the

## Part-time study toward B.E.

Students registered part-time at Dalhousie University are permitted to take courses in Education leading to a B.Ed degree. Individual programmes may be planned in consulta-
tion with the Department of Education, Dalhousie University.

> Classés Offered

The following list represents the $1975-76$ classes. Minor changes wh

Certain Education classes are offered in Summer School.
Details may be obtained from the Director of Summer School and Extension

Within several of the classes listed below, separate sections have been scheduled in order to accommodate the varied academic backgrounds, specitic interests and future needs of
B.Ed. students. The sections thus provide a range of choices within the broad subject area encompassed by the title of the
class. class.

## Educational Foundations

## 1. Sociology

4000 Sociology of Education
This class consists of two lecture hours per week. Mainly
theoretical, the accent is placed theoretical, the accent is placed on the rationale and
assumptions of educational systems, socialization in Canadian Society, and the positing of alternatives to traditional -
Offered as two half classes as well: 4001 A: first term (one-half
credit), 4002 : second term (one-half credit) 011 The second term (one-half credit).
4011 The Education Process and Sex Role Differentiation A critical examination of socialization both in schoornstata and the
wider society with special reference to the internalization sex roles. Biological and social factors will be investigated in an attempt to determine their importance in the definition of
sex roles.

Emphasis will be placed on various male and female roles -
actual and potential - in contemporary Canadian society and actual and potential - in contemporary Canadian society and
the range of methods operative in their inculcation the the range of methods operative in their inculcation through
various social institutions. Economic and political relationships between sexes will be analyzed.
This class is offered as an education elective and not as an

## do30 Education and Re-education in China

The course will look at the revolution in China since 1949 with special emphasis on the Cultural Revolution in terms of its educational compaigñs will be a major focal point in examining the objectives, content, process and degree of success of China's massive ideological remoulding. Time will be devoted in this examination to consideration of the the adult population.
With this as a background, a second major focal point will be he means through which the new ideology is inculcated into
the younger generation. The formal school system - it organization, methods of instruction, relationshio between teachers and students, etc., - will form the core of this part of
the course. In addition, however, pertinent formal and informal the course. In addition, however, pertinent formal and informal
out-of-school aspects of students' socialization which contribute to their ideological development will be analyzed.

## 2. History of Education

4141 The Historical Development of Education in the Canadian Social Context
Analysis of significant social issues in Canadian educationa
4152 The Historical Development of Education in the Anasis social Contex Significant social issues in anadian history.

## 3. Philosophy of Education

4201/Philosophy 218A Introduction to Philosophy of Education
analysis of certain crucial ideas in educational theory such as indoctrination, discussion, controversy, and
miseducation.

4212:Philosophy 2188 Curriculum Problems Phiosophicar investigation of important ideas in curriculum
theory such as needs, interests, creativity theory such as needs, interests, creativity, aims and

4231 Existentialism and Education
Introduction to readings in existentialism with a view to background in philosophy is not necessary as a prerequisite, however, students who are likely to be interested in this class will already have an interest in and be familiar with
contemporary literature, especially certain European writers. Attention is given to the questions of freedom, identity, alienation, anguish and committment. Existentialism stands within those areas of philosophy which deal directly with thinks of philosophy as a total insight into man's desperate anxious and forlorn existence.

## 4. Educational Psychology

4301 Introduction to Educational Psychology
This class is a general survey of basic psychological
principles as applied to the classroom situation. Emphasis will principles as appied to the classroom situation. Emphasis will
be placed on the psychology of teaching, motivation, learning cognitive development, and evaluation. The course is open to

4311 Psychology and Education of the "Exceptional his course will attempt to provide a broader understanding of he term "exceptional child" An attempt will be made to and sustain the exceptional behaviour. Psycho-diagnostic and remedial processes to help children with expresssive and/or receptive behaviour problems (speech, hearing vision, neurological and non-sensory impairments) will b
considered. Administrative use of standardized tests has generated artificial labels, and has led to recent court cases in North America will be discussed.

## 321 Learning in the Classroom

volving an examination of certain internal and externa onditions which influence the direction and efficiency of the ourse to classroom learning, the focus of enquiry will be undamental psychological processes and not specific
methodology in teaching.

4341 Developmental Psychology
An examination of the area of development including majo An examination of the area of development including majo
theoretical positions and relevant experimental data. Em.
phasis will be placed on incorporating material within phasis will be placed on incorporating material within a

## 4352 Myths in Special Education

meajule of his class will be to examine special education practices which attempt to help the "special child" "adjust" to lead to "suspicion confirming" and "pigtic approaches which will be considered: alternatives to special and remedial

4371 Human Relations
Emphasis will be placed on developing interpersonal relation skills to facilitate effective communication in the classsoom and among colleagues. Opportunity is provided also for the
to assist teachers in recognizing, accepting and meeting human relations needs in the classroom. Human development will be viewed from a communicational context. Selected
principles of development will be viewed in terms of how people communicate and the effect it has on their own and others' psychological development. This is a half credit course.

## 4381 Introduction to Counselling

This course is designed to introduce the student-teacher to the fundamental concepts and prilosophies of counselling. Major concerns will b

- 10 introduce teachers to the counselling point of view of present-day education
- to study the organization administration and operation of complete programme of guidance services in Nova Scotia
-to examine in depth at least one theory of counselling
- to provide an exploratory experience for those students


## Curriculum and Field Experience

## 1. Electives

4500 Media
A full-year course based upon the thinking of Marshall McLuhan, applying his ideas to education. A range of
twenty-five media is studied, including the spoken word the written word, advertising, radio, television, housing, clothing,
and weaponry. Students are invited to media of their choice and encouraged to use appropriate audio-visual equipment to present their findings.

## 4501A Media in Education

This class will concentrate on planning, producing, and using audio-visuals in teaching settings. This will be a workshop
design with emphasis on production of instructional materials, acquiring basic skills in operation of equipment, and a basic understanding
audio-visuals.
45128 Media in Education
This class will require completion of 4501 A as a pre-requisite
for admission. It will be more theoretical in nature and will take an in-depth look at media as a two-way communication vehicle. Some of the topics which will be dealt with include screen education programmes, multi-media teaching, com
munication theory, semiology, development of perceptua awareness, film, "McLuhanism", etc. Although more theoreti-
cal than 4501A " it will also demand active participation in cal than 4501A, it will also dema

4520 Applied Linguistics for Teachers of French Introduction to the principles of phonetics, phonemics morphology and syntax with a view to applying these
principles to the construction of materials for the teaching of French as a second language in the elementary or high schood
classroom. Emphasis is placed on the teaching of pronuncia tion and language structure and an awareness of language as an expression of culture.
This class is designed for students in Education and serves as a pre-requisite for Education 4840 (Methods of Teaching
French) Students may register to this class only with the French). Students may register for this class only with the

## 4560 Geography in Education

Geographers are concerned to provide accurate, orderly, and ter of the earth's surface. They believe that there are world ter of the earth's surface. hey believe that there are world
symmetries in the areal pattern, in spite of the impressive diversity of character which is maniftested on the surface of the earth; and thus in the uneven distribution of things over the
ace of the earth geographers seek to create meaning and face of the ean
significance.
The class will provide an introduction to the structure of the discipline, dealing specifically with ways in which man
perceives, responds to, modifies, and creates environment with regional patterns emerging from those varied responses; with interregional stresses created by the mosaic of regional patterns, and winhtechniques, such as space adjustment and
space intensification, by which man tries to resolve the stresses. The class will also consider contributions of certain scholars and national schools to geographicall thought and he significance of recurre. place and the use of space.

Course work will be intensive and closely integrated, consisting of laboratories, audio-tutorial sessions and work in he field, and with ample opportunity for individual and group participation in experiments, demonstrations, projects, and
workshops. Students will be encouraged to develop skills in cartography, quantification, audio-visual techniques and
model construction, and to capitalize on the wide variety of model construction, and to capitalize on the wide variety of
disciplinary backgrounds usually represented in the class. A discipinary backrounds usualy represented in the class. A
rural field trip in the fall term will involve absence from Halifax over two nights; an urban field study. will be conducted locally
from the campus in the spring term.

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.

4571 Curriculum Planning
This course will explore and analyze a variety of interpretations and meanings given to the concept curriculum as it relates to university and community resource persons and centres in workhop sessions in order to achieve a broad perspective of curriculum and teaching. The focus or nese workshops wil be of curriculum development, i.e., photography, media tutorial kits, music skills, construction of learning things, etc. First term open to all.

## 4582 Alternative Views of the Curriculum

Emphasis in this course will be placed on the analysis, design, and implementation of different curriculum - teaching strategies. Workshop sessions in the spring term will be
devoted to the design and production of curriculum materials and preparation for their subsequent implementation. Second term open (a) to those who have taken 4571; or (b) by
permission of the instructor.

## 2. Methods

4700 Curriculum and Instruction at the Elementary Level In this course an attempt will be made to combine and integrate the standard school subjects. Our purpose here will
be to develop and create learning experiences that will give be to develop and create learning experiences that will give
more realistic perspectives of the world for the child at the elementary level. To this end, study will focus upon the
and different instructional stretegies as they seem applicable to the primary aim of trying to integrate various subject
matters. In addition careful attention will be given to the study of the processes of expanding learning environments with learning centres, work areas, and open space planning.

## 750 Methods

High Schools
The aims of this class are to help teacher candidates overcome passive and conformist learning roles and to move
from activities with lesser to those with greater risk to familiarize teacher candidates, through active participation to asks associated with reading, discussing; writing and improvising, with a range of classroom activities and

Teacher candidates, without extensive backgrounds in areative drama are encouraged to consult with the instructor area is required of English teachers who wish to becor effective both in the use of techniques for heloing students to oster significant learne and in utilizing human interaction to

760 Methods of Teaching History in Junior and Senio
High Schools
Various aspects of curriculum development and competing teaching strategies will be explored. This exarnination is
intended to aid the student in dever itended to aid the student in developing a consistent
pproach to history and social studies education.
4770 Methods' of Teaching Geography in Junior and Senior High Schools
quisition the objectives of geographic study; the appreciations. The first half of the colopment of concepts and of the geography teacher as a facet of the teacher's work as geographer: it will be concerned with the collection and recording of data, the arrangement of data for instructiona purposes, and resources available for learning in geography. The second portion of the course places greater emphasis on
the pupili's learning within a curricular framework which deals with skills, concepts, and appreciaitions. Students will b involved in the preparation and use of curricular materials.
Students wishing to take this class without previously having taken an undergraduate class in geography will be required to
take Education 4560 , Geography in Education, as an elective.

## ing Mathematics in Junior and

 Senior High Schoolseducation and its development in nature of mathematical micro-teaching situations, micro-teaching situations, and contact with the work in local
classrooms, form the framework for the course

4840 Methods
High Schools Deals with objectives, methodology, techniques, materials
(including visual aids) (including visual aids), language laboratories, and testing.
Emphasis will be placed on the teaching of spoken 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 course. 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 posile concerned in the Department of French as soon as possible
regarding their eligibility. Prerequisites: (a) for four-year regaraing their eligibility. Prerequisites: (a) for four-year
integrated students: Education 4520 in conjunction with an
apporoved programme in the approved programme in the Department of French; (b) for
one-year sequential students: Please consult with the
instructor concerned. Students may register for this class only with the writel consent of the instructor High Schools Dearriculum design special one-year programme see the teaching German. For special one-year programme, see the Department of Germa
section.

860 Methods of Tea Senior High Schools
his class reviews the basic methods of economic analysis and of teaching economic concepts. The emphasis is on how to relate current economic matters to classroom studies Types of lessons, curriculum development, and the use o

## 4873C Further Educational Studies

Ludents may apply to instructors for permission to undertake either a specially designed readings course in a given ariea, o credit. This may only be done with prior consent in writing from the instructor to the Coordinator, B.Ed. programme. The ing the work of a student enrolled in this half credit elective course.
4880 Methods of Teaching Science in Junior and Senio High Schools
This course will look at the traditional science courses offered at both the junior and senior high level. Various methods of

4893C Additional Curriculum Projects
Students may apply to instructors for permission to undertake additional project work in the area of curriculum design with prior consent in writing from the This may be done Coordinator, B.Ed. Programme. The instructor(s) thus as sumes personal responsibility for supervising the work of a

## 3. Field Experience and Others

## 4900 Field Experience

It is the primary objective of the field experiences to provide stuatens with opportunities to analyze, compare, and

Students who intend to apply for a Nova Scotia Provincial
Teachers' Certificate should plan to log a minimum of hours of field experiences in a public school classroom.
All arrangements for field experiences are made through the
Field Development Office.

## 4910 C 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 spent in the schools at the end of the academic year. This block will be completed in time for Convocation.

## 4932 Measurement and Evaluation

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

4961 The Politics of the Educational Popocess he concept of "political culture" (i.e., the underlying are socialized in regard to political values, attitudes, beliefs cognitions, and perceptions) should serve as a major tool of analysis in focusing on questions like the following
(1) What are the broader social functions of schooling and )
(a) Career training

The inculcation of basic myths and understandings of the social system and hence its maintenance
c) The perpetuation of the
tolerance, reason, deference to legitimate authority
d) Creation of social critics.
priorities of present-day institutions to dermining the actual priortites of present-day institutions of higher learning and the
significance of those priorities vis-a-vis the needs of the political and economic systems in which they are operative.
2) What implicit political values surround institutional earning? An examination and search for the attitiudes towards nstitutional setting. Students are encouraged to gain an appreciation of the nature of their own learning experience by way of an analysis of the institutional socialization process. Such discussions should lead lagically to a consideration of alternatives (3) below.
(3) Alternatives to present schooling - an attempt to
appreciate the political significance of Ivan Illich's networks or deschooling society, Friere's pedagogy for the oppressed e.g., community and free schools) in creating other political e.g., community and ree sch
values, attitudes and beliefs.

4962 Educational Alternatives for Political Awareness he possibilities for achieving a critical political awareness or understanding within a variety of learning situations and educational structures will be tested and examined in this

The larger questions for consideration include the following

- What chance does critical political awareness have of arising out of existing educational institutions, and if it can, how so?
- What kind of political understanding might arise if children activity in the society generally?
To what extent can other institutions like churches, voluntary associations, alternative schools; families, and
political parties become effective agents of critical political political parties
consciousness?
Some knowledge of the political nature of contemporary educational lrocesses and structures is essential although
those students who have not taken Educatipn 4961 "The those students who have not taken Educatipn 4961 "The
Politics of the Educational Process", can be helped via a few Poititcs of the Educationa
special tutoring sessions.


## 4990 Statistics

The class covers topics in statistical influence and experimental design used in selected educational research. Some
 experience in statistics
Department of Education

## Engineering and Engineering-Physics

## Engineering and Engineering-Physitan

## Engineering

K. F. Marginson (Chairman)

## Associate Professor <br> D. M. Lewis

A. E. Creelman (N.S. Technical College)
L. T. Russell (N.S. Technical College)

## Assistant Professors

Engineering-Physic
Professors
H. W. King
H. W. King
A. Levin (Chairman)

## Assistant Professo

S. T. Nugent

The profession of engineering is today expanding its scope and changing its pattern of activity at an ever-increasing rate; it follows, therefore, that the course of training and education
for engineers is adding new classses and changing the
emphasis placed emphasis placed on older topics. More sophisticated
mathematics, computer application to the numerical solutions of very large problems, and the use of recent discoveries in science are now playyng major roles in engineering training
while conventional topics such as dratting and surveving call while conventional topics such as dratting and surveying cal
for less time and effort on the part of the student. Dalhousie's course of study in engineering closely follows this modern trend and, combined with the subsequent specialized training
at the Nova Scotia Technical College, prepares the serious at the Nova Scotia Technical College, prepares the seriou

In addition, those students who are keenly interested in the research and development functions in closer association Bachelor of Science with Honours in Engineering-Physics at Dalhousie.

## Architecture

years of whe plan to study architecture may take the first two Years of the course for the Uniform B.Sc. for Engineering. further examination to course, they will be admitted withoul School of Architecture.

## Engineering

The work of the Uniform B.SC. for Engineering covers three years and should follow quite closely the order indicated
below. At the end of his studies, the successful studen receives a General B.Sc. from Dalhousie and is qualified for admission to the junior year of the Nova Scotia- Technical
College Students planning college. other than the Nova Scotia Technical College should consult the department when they first register.

Degree Programme

## Uniform B.Sc. for Engineering

Year I
2. Mathematics 100
2. Chemistry 110
4. Elective (chosen to meet the B.SC. requirement (see

Year II
6-7. Physics 211 and 231
8. Mathematics 220 or 200
Engineering 001, An Introduction to Professional Engineering,
is a non-credit class, which should be taken by all students, is a non-credit class, which should be taken by all students,
The two electives must be chosen so as to satisty the The two electives must be chosen so as to satisfy the
University regulations for the General B. Sc. Some students will be permitted to enroll in Engineering 200 in their first year, substituting this class for one of the electives, which would
then be taken in the second year.

Year II
All students should consult the Department prior to registra-
tion for Year II to discuss their programme tion for Year II to discuss their programme
6. Physics 221.
7.
7. Mathematics 228
8. Science Elective
8. Science Elective

Students planning to specialize in mining or civil engineering
may take Engineering 2108 and Engineering 2111B in addition may take Engineering 210 B and Engineering 211 B in addition to the above classes. Mining or civil engineering students who
do not take these classes while at Dalhousie will have to elec classes in Surveying at N.S. Technical College: they will thus limit their choice of electives at N.S. Technical College.

## Year III

11. Mathematics 328
12-15. Engineering 230, $320,330 \mathrm{~A}, 330 \mathrm{~B}, 340 \mathrm{~A}, 340 \mathrm{~B}$

Students planning to specialize in mining engineering are Students plannirgg to specialize in civil engineering may take Geology. 100 . Civil engineering students who do not take
Geology 100 while at Dalhouisie will have to elect a class Geology at N.S. Technical College: they will thus limit choice of electives at N.S. Technical College.
Engineering-Physics
Engineering-Physics or Applied Physics is the study of
physics 'oriented towards its application to engineering physics 'oriented towards its application to engineering
problems. The area is interdisciplinary and the study is suitable for students whose interests involve experimenta work in the physical sciences or who contemplate researcho
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 deaaling with system design, information and control theory, materials science, instrumentation and measurement techniques. The course leads to the degree
with Honours in Engineering-Physics.
Completion of the course is excellent preparation for industria
research or graduate studies in applied.sciences.
Degree Programme
B.S. with Honours in Engineering-Physics
B.s. Wr

1. Phy
2. Physics 110
3. Chemistry 110
4. Elective (Arts)
5. Elective (A
6. Mathematics 220 or 200
7. Mathematics 200 -level cla
8. Mathematics 200 -level class
9. Elective (Science)

Year III
All students should consult the Department prior to registration for Year III to discuss their programme.
11.12. Physics 300, 315
13. Engineering 335
14. Engineering of Phy
14. Engineering of Physics 300 -level class
15. Mathematics 30
16. Elective (Arts)

Year IV
17. Physics 400
18. One other P
19. Engineering 400 sics 400 -level class
20. Engineering or Physics $400-$-level class
21. Mathematics 300 -level class
Classes Offered

## 001 An Introduction to Professional Engineering, lect.

 001 An Introduction to Profeshr.; K. F. Marginson and staff.
This class is intended to introduce the new engineering student to some of the broad aspects of the profession.

200 Graphic Science, lect.: 3 hrs. lab.: 3 hrs. K. F. Marginson.
This class gives extensive coverage to the third instrument of thought - the graphic or pictorial. The work begins with a very rapid coverage of essential drafting techniques, followed by a study of descriptive geometry with extensive applications
Concurrently, students work on conceptual design projects and their graphic presentation. Graphic solutions to the problems of vector algebra are covered parallel with the analytic work of other classes. The same methods are used in the study of graphic calculus, up to and including some of the
geometric implications of engineering formulae, the class is concluded with a fairly large design project done on a team basis by the students.

210A Surveying, lect.: 3 hrs. E. N. Patterson
This class is an introduction to the fundamentals of surveying Topics covered include the theory of land measurement,
precise leveling, transit, stadia and plane table surveys traverse computations, adjustments and plotting of results the determination or me curves.
Text:
(1973-74) Bouchard and Moffitt, Surveying.
211B Survey Field Camp, E. N. Patterson.
The survey field camp will normally be held immediately
following final examinations in the spring and will be of three following final examinations in the spring and will be of three equipment will be practiced by all students. Assigned
equation exercises will include the use of tapes, levels, transits and theodolites and map drawings. Traverse computations will be performed by hand as well as by digital computer methods.
Prerequisite: Text: Same as in Engineering 210A

220A Engineering Mechanics - Statics, lect.: 2 hrs.: Lab.: 3
hrs.: E. N. Patterson. hrs.; E. N. Patterson.

This class is an introduction to the study of engineering mechanics. Following a presentation of basic concepts, a
brief treatment of vector algebra will be given. The student will brief treatment of vector algebra will be given. The student will
then study the equivalence, resultant and equilibrium of force then study the equivalence, resultant and equilibrium of force
systems acting on a particle or on idealized rigid bodies such as trusses, frames and machines.
The class material will correspond closely to that described in the text.
Prerequisite:
Text: (1974-75) Meriam, Statics.
220B Kinematics, lect:: 2 hrs. lab.; 3 hrs.; F. K. Marginson.
Students taking this class should have taken a class in calculus and should be proficient at dealing with rates of change. A firm grasp of the vector concept is desirable.
The class will cover the motion of particles, lines and rigid bodies. Displacements, velocities, first and second degree

Applications of the theory will be made to the motion of various types of mechanism, and the use of the computer in kinematic analysis and synthesis will be considered.
Prerequisites: Physics
Text: Merriam Dynamics.
230 Introduction to Electrical Engineering, lect.: 3 hrs.; lab. 3 hrs.; A. Creelman.

The class is an introduction to electrical engineering,
However, it is also a terminal class in this subject for However, it is also a terminal class in this subject for certain engineering disciplines. Consequently, while the analysis of
linear circuits is dealt with in some detail, a considerable emphasis is placed upon practical devices and systems. The laboratory periods illustrate the use of electrical measuring of testing ectrodic and eludent lo. conventional method Prerequisite: Mathematics 100; Physics 110; (taken concurrenty).
Text:
Text: (1974-75) Del Toro, Electrical Engineering Fundamen-
tals.
240C Engineering Problems by Computer Methods,
This is a class which will prepare the student to write his own Forrtan IV digital computer programs for the solution of of actual engineering problems which each student will of actual engineering problems which each student wil
execute on the $C D C 6400$ computer. Results will be submitted to the instructor. Students will also have an opportunity to use some of the standard application programs which are
available such as $C O G O$ and FCAP Prerequisites: Registration in second-year engineering, or consent of instructor.
Text: $\quad$ (1974-75) Murrill \& Smith, Fortran IV Programming for Text: (1974-75) Murill \&
Engineers and Scientists.

320 Dynamics of Particles and Rigid Bodies, lect.: 2 hrs. occasional tutorial, D.M. Lewis
This class completes the study of engineering mechanics
begun in Engineering 220A and 220B. The first term will dea with kinematics and dynamics of single particles and in the
second term these fundamentals will be applied to rigid bodies. Prerequisites: $M$
Engineering 240 C
Test: (1974-75) Merriam Dynamics
330A Materials Science, lect.: 3 hrs.; lab.: 3 hrs.; H. W. King
The aim of this class is to give an understanding of the importance of structure in determining the useful properties of materials. The relevant properties are mechanical, thermal,
electrical and environmental. The approach will be to first describe the properties in engineering terms and then discuss the significance of structure. Elastic properties are shown to be influenced by the nature of the chemical bonds and the
plastic properties by the crystal structure and the presence of plastic properties by the crystal structure and the presence of
defects. This approach is continued in the study of fracture hardening mechanisms, fatigue, creep and viscoelastic behaviour, covering metals, plastics and composite materials, and is continued in the sections concerning thermal, electrical and chemical properties.

The laboratory consists of a series of demonstrations of the dependance of properties on structure or microstructure and indoest on an aspect of materials science applicable to the particular branch of engineering in which they intend to pecialize in the future.

Chemistry 230, Physics 221 or permission of nstructo Texts: Rosenthal and Asimov, Introduction
Materials, (Van Nostrand, Reinhold, 1971);
M. Lewis

This class is an introduction to the study of the stresses, strains, and deformation of a solid body which results when static forces are applied to the body. Topics discussed include: the definition and transtormation relation of stress and
straia; torsion of circular sections; stresses and deflection of beams; column action.
rerequisite: Engineering 220A; Engineering 330 A .
fext: (1974-75) Higdon, Ohlsen, Stiles, Weese, Mechanics
335 Electronics, lect.: 3 hrs.; A. Levin.
This class covers circuit analysis of linear and non linear systems, the physics and resulting properties of solid state
devices, the concepts of information and noise and devices, the concepts of information and noise and
transmission lines and filters. The following topics are treated: network reduction, the 4 terminal network and solutions by matrix methods, non linear systems, modulation, demodula-
tion and rectification; carrier transport in semi-conductors, properties of diodes and transistors; electromechanical analogues and analogue computation methods, feed-back and control systems, stability criteria, nature of information and no
filters.
Prerequisites: Physics 231, Mathematics 200 or 220 , which may be taken concurrently

340 A Classical Thermodynamics, lect: 3 hrs.; tutorial/lab.: 3 rs.; K. F. Marginson

This class covers. the theoretical portion of classica
ngineering thermodynamics. Calculus to the level of partial
differential equations is prerequisite. General topics are: firs law or open and closed systems, reversibility, enthalpy
second law, entropy, availability and efficiency, psychrome rics. Various real processes and thermodynamic devices wil be discussed. This work covers applications other than those Involving chemical reactions.
Prerequisites:
Mathematics
Prerequisites: Mathematics 100: Physics 100; Chemistry Text: (19744-75) Van Wylen, Thermodynamics

## 40 B An Introduction to Fluid Mechanics, lect. 3 hrs

 lab-tutorial 3 hrs.: E. N. PattersonFluid mechanics is the engineering science upon which suc secialties as aerodynamics, gas dynamics, rate processes,
ydraulic and marine engineering are based. It deals with the statics, kinematics, and dynamics of fluids.
As this is an introductory class, considerable time will be devoted to the study of fluid properties, fluid statics and the underying concepts, definitions and basic equations of fluid dynamics. Laboratory experiments will be carried out to
investigate some of these basic aspects.

Current registration in Engineering 320, or Nugent.
his is a physics and engineering-physics laboratory class in which students in groups of two work largely on theirs own
nitiative. The experimental work covers on, gamma and beta spectroscopy and absorption meas rements; proton spin quantitative measurements and nization experiments using a vacuum pumping and instrumentation system; properties of solid state semiconducors and devices, experiments on the spectral noise experiments with a Helium-Neon laser, holography, etc.
Experiments in other areas, such as acoustics, optics and fluid dynamics, are available if requested. A report upon a topict
be agreed with the instructor is required as part 0 t this class.

## 420A Signals, Spectra and Information Theory, lect: 3 hrs

 S. T. NugentTopics discussed include: discrete and continuous spectra discrete probability theory continuous and approximations discrete probability theory, continuous random variables
statistically independent random variables, probability nsity functions, density functions of sums, density function with discrete components, ergodic processes, auto correlation functions, networks with random inputs, a utocoorre-
lation input-output relationships, optimum systems and basic ation input-output
nformation theory.
fext: Carlson, Co

## 433B Materials Science, lect 3 hrs. H. W KING

The physical properties of engineering materials are discussed interms of their crystal structure and microstructure, using
the principles of modern physics as a basis. The properties the principles of modern physics as a basis. The properties
are first formulated systematically in tensor notation and shown to possess an intrinsic symmetry which must be related to the crystal symmetry of the material. Many useful properties such as electron transport and plastic deformation, are show The nature of such defects, and the methods available for their
creation, control or elimination, are considered in relation to the optimization of these properties. This approach is further
extended ina discussion of the effects of microstructure properties of polycrystalline and polyohase materials
Prepequisite: Permission of instructor.
Texts: Hutchinson \& Baird, Physics of Engineering Solids Wiey, 1968). Reference: Nye, Physical Properties of Crystals
(Oxtord Univ. Press, 1969).

## 435A Electronic Techniques for Energy Conversion, lect.

 3 hrs.; A. Levin.This course discusses the properties, efficiency and uses of energy conversion systems based on electronic techniques. Topics discussed include: thermojunction generators and
refrigerators, solar generators, thermionic generators, fuel cells and related devices.
Reference: Levine, Selected Papers on New Techniques in Energy Conversion.
440 B Optical Electronics, lectl: 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 Ooptical Electronics.

480B Optimal Control, lect. 3 hirs.; S. T. Nugent.
Topics discussed include: statistical design of linear systems
state representation of systems, calculus of variations, the state representation of systems, calculus of variations, the maximum principle and dynamic programming.
Text: $M c$ Causland, Introduction to Optimal Control.

## English

Professor Emeritus
Professors
A.R. Bevan
J. GGray (Chairman)
J. Fraser
J. Fraser
M.G. Parks
M.G. Parks
M.M. Ross
S.E. Sprott

Associate Professors
S.A. Cowan
R. MacG. Daws
A.J. Hartley
A.J. Hartley
J.T. Low
S. Mendel
R.J. Smith
H.S. Whittier

Assistant Professors
R.S. Hatter
R.S. Hafter
A. Kennedy
M.A. Klug
${ }^{\text {H.E. Morgan }}$
C.J. Myers
N.S. Poburko
N.S. Poburko
R.L. Raymond
H.D. Sproule
G. F. Waller

## Part Time Instructor

E. Horlock
E. Sutherland

Post Doctoral Fellows
R. M. Huebert
S.V. Pradhan

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 but ranges far beyond their shores tog include the study o
writing in Canada, the United States, parts of the English. Writitn 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 1960 s and 70 s. The many forms that the Written word may take - poetry, fiction, drama, essay,
history wore read, not only for an understanding of the
literary evolution that brings them to be what they are, but literary evolution that brings them to be what they are, but
also tor an understand ing of that which is temporary and that
which is more enduring in the 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 writiten
word. Since the word is the principal link between the individual heart and mind and the rest of the between the individual heart and mind and the rest of the world, such
studies naturally touch upon philosophy, politics, religion studies naturally touch upon philosophy, politics, religion
and the fine arts as well. At the same time, the student is
himmelf required to think, and to use language with clarity,
judgement and
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, , ot gain some under-
stand ing of the process by which great writing is achieved and
indeed to inspire the student to his own best expression.
In the first year, English 100 is required by all students who
wish to take further English classes. There are some twenty
differe 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 supolement which includes the aifs and read English 100 supplement which includes the aims and reading
lists of each section. Only under very extraordinary circum-
stances is exemption from Engli ish 100 granted.

Classes numbered from 200 to 228 are especially suited for students who are concentrating in English, studying it as a
complement to their main area; or taking an elective and complement to their main area, or taking an elective, and
classes beyond 250 are designed as studies of special ized areas classes beyond 25 are designed as studies of specialized areas
for Honours students. Honours classes are open to General students with the permission of the Chairman and the

Faculty Advisors
As soon as possible in the academic year, each student who intends to concentrate on English is given a Faculty Adviso
who will aid in the arrangement of a programme to so who wil aid in the arrangement of a programme to suit
individual interests. All students in the study of the English language and literature should notity the Department of this
interest in order that this Advisor may be assigned.

## Degree Programmes

## The General B.A. in English

Students should consult with their Faculty Advisors about
their choice of classes. The Department expects Genera students to form coorerent programmes of four to eigh
classes in English above English 100 . Students should note that
(1) of the classes bey ond English 100 required to constitute a programme in English for the general B.A. degree, not more
than three should be drawn from any one of the following three groups of classes
(a) $203,214,218,22$
(a) $203,214,218,224$
(1) $2005,206,208,215,216$
(c) 209, 210, 212, 213, 217
(2) classes numbered from 201 to 228 (excepting 201, 206 207. 218 ) are not accepted as preparation for Graduate
Studies in English. Students who may desire to change to an Honours Programme or continue in Grad uate 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. wo-year M.A. course on completion of a General B.A
degree, but oniy it the student has completed four or five Honours rather than General classes for his concentratio
has attained at least a second-division average in them.

The B.A. with Honours in English (Maior Programme) The Honours course in English offers a systematic) study of
the subject which acquaints the student with the majo the subject which acquaints the student with the major
writers and trends from mediaeval times to our century. .t is
therefore of therefore of particular relevance to the student who
interested in detailed study of English as a basis of a liberal
education to the prosective high education, to the prospective high-school teacher of English to the student intending to proceed to the eqraduate study of
English and to complete in one year the requirements for the English and to
M. A. degree.
Students intending to enter the Honour course in Year 1 plan their course and be formally enrolled. In the subsequen years, Honours students are encouraged to seek advice of the

The Honours course consists of tine classes (in addition to English 250A and 250B) beyond English 100 . At least one Section A. English 252 (recommended for third year) Section C. English 251; English 351 352
25


The student may choose his three remaining classes from

Section G. English 201, 206, 207, 218, 45
English 250A (Bibliography) and English 250B (Practical are required of all Honours students and are to be taken in
the first year of the Honours course. (See page 56 for details.)

The Honours student must meet the requirements for the the subjects listed under either Group A or Group B in the "o the subjects listed under either Group A or
"Degrees and Courses" section of the Calendar

## A. with Combined Honours

There are several Combined Honours programmes:
English and French
English and German
English and History
Enol ish and Philosith
English and Philosiophy
English and Spanish
English and Theatre
Students interested in any of these combinations should consult with the Departments concerned. If a student wishes to combine English and a subuject other than those mentioned
above, he should see the Chairman of the Department.

A Joint Honours programme, involving cooperation between the Departments of English at Mount Saint Vincent and programme are advised to consult the Chairman of the

## Classes Offered

00 Introduction to Literature, lect.: 3 hrs.; Members of the
ince English 100 consists of sections taught by many different instructors, statements about its objectives and of English 100 have these two broad objectives in common a) to involve the student in the serious study of literature crucial part of education
b) to involve him in the discipline of words so that he will be
more critical and responsive reader and a more exact and maginative writer. The subject matter varies from section to section. Detailed
syllabi of all sections are available.e Pactice in writing is
carried on throughout the year in fortnightly essaya.
Each section attends three lectures per week. In addition, the groups and personal interviews with students.

## 201 The English Language

This class is not prerequisite to, but is useful as an
ntroduction to, English 253 and 351 (Old and Middle English).

## 203 Mast <br> Literature, lect.: 3 hrs.;

 opportunity to do intendensive reading of selected major works from Western literature. The selections vary from year to year. The intensive reading is designed to broaden thestudent's outtook on literature and also to increase his
fanility with amiliarity with works that are not only stimulating in themselves but also comprise th
of English and other literatures.
Generally, works will be taken up in chronological order. A theme, form and artistic perspectives in the various work of lecture and discussions generally consist of a combination of lecture and discussion. Voluntary tutorials are held
week for open discussion in add ition to class meetings.
204 The European Novel, lect.: 2 hrs.: S. Mendel
This class is devoted to an intensive study of about a dozen The method of approach and the character of tests years examinations are such as to render it necessary for the student to attend most of the lectures. A considerabl
amount of attention is paid to the philosophical ideas whic amount of attention is paid to the phild
bulk large in many of the novels studied.

## 205 Victorian Literature

206 American Literature of the Nineteenth Century, lect.: hrs., s. Cowan.
This class is an introduction to the American Literature hrough representative works by major writers from 1800 to
1900. Some of the writers studied Eoe, Emerson, Melville, Whitman, Dickinson, and Twain,
Each term the student will write one paper of moderate Each term the student will write one paper of moderate
length which he may have an opportunity to read to the class initiate discussion, and two in-class papers or exercises. There is an examination in the Spring.
207 Canadian Literature, lect.: 2 hrs.; M. Parks, H. Sprou This class is a survey of English-Canadian literature with emphasis on poetry and fiction from the 1920's to the ture, though not essential, is very useful to the student of Canadian literature. A few representative writers of the How, Golddsmith, Isabella Crawford, Carman, Roberts Lampman, D. C. Scott (poetry)) are studied briefly in the urst ter ${ }^{-m}$, and essay topics are set on nineteenth-century
writing. Twentieth-century novels and poetry are studied the last month of the first term and throughout the second
term. The following authors will be included: Leacock. Grove, MacLenning, Callaghan, will be ine included: Leacock Grove, MacLennan, Callaghan, Davies, Raddall, Buckier!
Laurence, Watson (prosel) Pratt, A. M. M. Smith, F. R. Scort,
Klein, Birney, Layton (poetry). (Section 1 - Dr. Parks.) This course is planned along lines to show the growth and
patterns of development in Canadian writing from the patterns of development in Canadian writing from the
pre-Confederation period to the perest tay , sing as much variety as possible in the choice of literary forms and samples
for study Authors will ind for study. Authors will include prose writers noted below
(others may be added) and the principal poets for each of the (others may be added) and the principal poets for each of the
literary periods into which the Klinck and Watfers Canadian

Anthology is arranged, with major emphasis on Roberts,
Carman Lampman, D. C. Scott. Pratt, Smith, F. R. Scott Page, Avison, and Wadd ington. While there will not be a fina
formal, three-hour formal, three-hour examination, the final grade of a student
will be averaged from three one-hour tests distributed throughout the session and two term papers of substantial lates agreed on in class and must be presented in conformity dates agreed on in class and must be presented in conformity
with the rules set forth in either R. Wiles, Scholarly Reporting in the Humanities, or the PMLA Stylesheet.
(Section 2-Professor Sproule.)
208 The English Novel to 1900, lect.: 2 hrs.; D. P. Varma
The class is designed primarily to acquaint students with the
chief land marks of eighteenth and nineteenth century fiction chief landmarks of eighteenth and nineteenth-century fiction
and to present a survey of the origins and develoopment of the Eng lo present. asurvey of the origins and development of the
Envolves a thorough investigation of the antecedents and formative influences of fiction and a clo ce
examination of some of the chief works of eightenth examination of some of the chief works of eighteenth and
nineteenth -century novelists. The list of novels is available
from from the Departmen

209 Twentieth-Century Fiction, lect.: 2 hrs.; A. R. Bevan, A
N. Raspa, H. Whittier.
English 209 is intended as an introduction to the main
thematic and technical trends in the modern English and English 209 is intended as an introduction to the main
thematic and technical trends in the modern English and
American novel. The lectures focus on representative novels American novel. The lectures focus on representative novels
of some of the major figures of the first half-century and on of some of the major figures of the first
significant novels of the past two decades.
This section of English 209 will focus on representative
American and Canadian novels of the American and Canadian novels of the past fifty vears. Novels
will be chosen from the works of American novelists such as
wit Fitzgerald, Hemingway, Faurks of Amer, Berican novelists, Mowch as
and Ellison and from Callers. Kesey. and Ellison and from Canadian novelists such ans Buckere,
Ross, Laurence, MacLennan, Watson, Richler, and Davis.
210 Modern Poetry in English, lect. : 2 hrs.; S. E. Sprott.
(This may be offered in $1974 / 75$ as an alternative to English
228.)
A study of the creation and development of modern poetry
in English is based on the seminal poets Yeats, Pound, and in Engl ish is based on the seminal poets Yeats, Pound, an
Eliot, with some attention to Auden, Dylan Thomas, W.
Williams, Stevens, and others, including Canadians.
212 British Literature of the Twentieth Century, lect.: 2 hrs
N. S. Poburko.
This class is an approach to the reading of twentieth century British poetry, prose and drama. Central themes of this
period are viewed through a study of the works of selected
authors. The writers
 S. Eliot, James Joyce, G. B. Shaw, Graha
Auden, Samuel Beckett and Doris Lessing.

213 American Literature of the Twentieth Century.
214 Shakespeare, lect.: 2 hrs.: G. Harvey, C. Myers, N. S.
Poburko.
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.; ; H. P
Sucksmith
A class which will focus on the poetry of Wordsworth,
Coleridge, Byron, Shelly, and Keats. At the outset some attention will be directed to the pre-Romantic poets and to
the intellectual background of the Romantic poets and to the
intellectual background of the Romantic movement

## 216 The Gothic Novel, lect.: 2 hrs.; D. P. Varma

This class will survey the origins and development of The
Tale of Terror and Supernatural during the later half of the eighteenth century and its various manifestations and in
filuences in succeeding fiction. Not fluences in succeeding fiction. Not only the chief landmarks
of gothic fiction will be charted, but the students will also
explore explore the various chambers of horror-literature. There wi
be no final examination, but students will work on assigned be no final examination, but students will work on assigned
tests and particicite in discussions. End of the term papers
will determine final grades. 217 African Literature/African Studies, lect.:: 2 hrs.; R. J. English 217 is a class on African literature written in English
Novels, plays, and poems will be discussed. The bulk of the 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 reflect the attitudes of various African cu
racism, colonialism, and African national ism.
218 Mediaeval Literature, lect.: 2 hrs.; H. E. Morgan
This broad survey concentrates upon a study of heroic and romantic attitudes and ideals in some med iaeval masterpieces,
including Beowulf, The Song of Roland, Njalsssoga, Tristram,
and the and the seapa of King Arthur Later use of this medianeval
anter, as in Tolkien's Lord of the Rings, is also investigated.

## 220 English Drama

224 Renaissance Poetry

226 Traged
227 Comedy and Satire, lect.: 2 hrs. J. Gray The comedian and the satirist are interested in both the
laughable and the deloloable antics and eccentricities of
human nature. This class will contern itself with their points human nature. This class will concern itself with their points
of view, as expressed in such varied forms as stage comedy graphic satire, the comic novel, and the humorous essay. It
will also consider theories of comedy and laughter in their will also consider theories of comedy and laughter in their
application to literary types, including situational, romantic
satiric sentiment satiric, sentimental. and domestic comedy, as well as
rollicking farce, slapstick, "sick" comedy and the absurd. rollick ing farce, slapstick, "sick" comedy and the absurd
Wherever possible, lectures and class discussions will be Wherever possible, lectures and class discussions will be
suppomenter by play readings, films and other illustrative
materials materials:
Prerequisite: English 100 and an adaptable sense of humour. 228 Short Poems in English, lect.: 2 hrs.: S. E. Sprott (This may be offered in 1974-75 as an alternative to English
210.$)$ Forms and themes in the short poem are studied by means of
critical reading of poems written in English. Topics may critical reading of poems written in English. Topics may
include the following: the self in the short poem; other persons; public events, Iove; nature; the city; the machine
wit: myth; trad Witi, myth; traditional forms; free verse; the hokku; Iyric as
song; spoken poetry; poetry in print: concrete poetry; and
poossibly other topics to suit the class: song; spoken poetry; poetry in print:
possibly other topics to suit the class.
Recommended Preliminary Reading:

C. . Wheeler, The Design of Poetry., New York: Norton, | C. B . |
| :--- |
| 1966. |

Classes for the Honours Degree
(Tentative List)
250A Bibliography, lect.: 1 hr.; (first term only), R. L.

This class is a departmental (i.e., non-university and non-
credit) technical class for honours and graduate students it 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, microle upon himself in his own research. The
unlikely to stumble class also includes instruction in the technical aspects of
writing papers (llanning research methods footnotes biblio writing papers (planning, research methods, footnotes, biblio
graphies), and some discussion of the history of printing graphies, and some discussion of the history, of printing
insofar as it. relates to the establishment of texts, particularly
older ones 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 250B Practical Criticism, lect.: 1 hr. (second term
only): R. L. Raymond.
This is a non-credit class designed to give the student practic (supplementary to that of his regular classes) in the evalua
tion and understanding of the purpose and significance of literature, largely poetry. The class includes some discussion is upon the practice of criticism on both well-known and obscure or unpublished
251 Sixteenth-Century Non-Dramatic Literature, lect.: 2 hrs ,
G. Waller.
The class will study the literature of the English Renaissance, concentrating on Sidney', Spenser, and Shakespeare's poetry Some attention will be given to the cultural context including the court, music, and art, and to influential
continental writers like Castiglione and Machiavelli. Classes will be conducted by a mixture of lecture and discussions,
and there will be frequent use made of slide and other and there will be
illustrative material.
252. Shakespeare and the Drama of His Time, lect. 2 hrs. S.

About fifteen plays by' Shakespeare, some by choice of the About fifteen plays by Shakespeare, some by choice of the
class, are read in the context of representative lays by his
cearlier and later contemporaries, especially Marlowe and earlier and later contemporaries, especially Marlowe and
Jonson. Students should consult the instructor for a list of plays and suggested preliminary reading.
253 Old English, lect.: 3 hrs.; R. MacG. Dawson
An introduction is given to the Old English language
$(700-1100$ A.D.), followed by a study of some of the prose
 and minor poems, and, in the second term, of Beowulf
Students will also be introduced to some aspects of Old English art and archaeology. Some knowledge of a classical o-
modern European Ianguage (preferably German) is desirable though not essential, and an understanding of traditional though not essential and terminolog will be helpful. This class is not recommended, except in unusual circumstances,
who are not thoroughly fluent in modern English.
254 Restoration and Eighteenth-Century Literature, lect.: 2 hrs., J. Gray, M. S. Sprout
In this class the emphasis will be placed upon three great
satirical authors (Dryden, Pope, and Swift), updn a study of Restoration comedy and traged, and upon major works of Samuel Johnson. Since the literature of the period is related
exceptionally closely to the men and manners of the ag some time will be spent in class on the contemporary climat of opinion that is revealed in the works of a number of
writers representative of literary, political, social, and philo writers representative of literary, political, social, and phil
sophical points of view: Hobbes, Halifax, Pepys, Rochester
-

351 Middle Enolish, lect • 2 hrs. H. E. Morgan

This class offers an introduction to Middle English language and literature through study of Chaucer's poetry and of Through his readings, the student should gain some historical
sense of the language, of the social milieu and especially of 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 Chaucer and the Fifteenth Century (Oxford. History of
English Literature, vol. I1, 1) W. F. Bolton ed.). The Middle Ages (Siterere pok.): J. B. Morrail., The Medievel Imprint
(Penguin): M. Keen, History of Medieval Europe (Penguin). 352 Seventeenth-Century Non-Dramatic Literature, lect.: 2 hrs.; S. Cowan
This class is a study of representative works of Bacon, Donne,
Jonson, Browne, Burton, Herrick, Herbert, Crashaw, Jonson, Browne, Burton, Herrick, Herbert, Crashaw,
Vaughan, and Milton. The aim of the class is, through a study of representative writers, to provide the student with an istics of poetry and prose of the period. Classes ar conducted by a combination of lecture and discussion
Students present brief reports to the class Students prese for discussion. A paper of moderate length is
starting points for written each term. There are examinations at Christmas and
in the Spring

354 Victorian Novel, lect.: 2 hrs.; G. Harvey
This class is designed to give the student the opportunity of
studving the novels of the period from Scott and Austen to Hardy.
356 Literature of the Romantic Period, lect.: 2 hrs.; A. J.
Hartley,

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0
$$

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 the period.

## 452 Nineteenth-Century Thought.

453 Twentieth-Century English Literature, lect.: 2 hrs.,
Fraser
This seminar is for honours students and for M:A. students in their make-up year. The procedure with a variety of texts and problems in a meaningfu
sequence and let then argue about them. Each member of
the seminar the seminar writes two papers to serve as starting points fo
the class discussions. There are no examinations but regula the class discussions. There are no examinations, but regula
attendance is expected, in the interests of effective debate The following prose works will be discussed: Joyce,
Portrait of the Artist as a Young Man (Penguin); Conrad, Th Secret Agent (Penguin); Woolf, To the Lighthouse (Penguin) Orvell, A Collection of Essays (Anchor); Beckett, Endgame
Pinter. The Birthday Party, Cary) The Horse's Mouth (Penguin): Durrell, Justine, Storey, This Sporting Life (Penguin). Interspersed with these, selections from the
following poets will be discussed. P Pund, Eliot, Yeats following poets will be discussed: Pound, Eliot, Yeats,
Hopkins, Auden, Dylan Thomas, Hardy Graves, Gunn Hughes, and one or two younger ones. The editions ind icated

454 Literary Criticism, lect.: 2 hrs.: R. Hafter
This class is intended for senior honours students. It involves
the history theory, and practice of literary criticism from the history, theory, and
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 fietion: Dreiser's Sister
Carrie, Fitzgerald's Great Gatsby, Hemingway's The Sun also Rises, Faulknar's Light in August, Ellison's Invisible Man
Beren Bellow's Adventures of Auyie March, and Maier's $A$ merica
Dream. The classroom work will involve lecture and dis Dream. The classroom work will involve lecture and dis
cussion. Each member of the class will write one paper in th
fall and spring term fall and spring term on a topicic of his own choice. A fina
examination on the year's reading will be set

457 Vistorian Litent
A study of the major Victorian poets and prose writers lothe A 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, APnold and Browning and the prose of Carlyle,
Ruskin, Newman, Arnold and Pater.

## As the Calendar goos

Academic Calendar goes to press before all plans for the nex Academic year are completed, there may be sigifican
changes in the classes listed above. Students should consult
the Registrar's office for revised class and text lists. Graduate Studies
The Department
of M.A. and Ph.D. Details relating to admission to sche degrearshins of M.A. and Ph.D. Details relating to admission, scholarships
and fellowhhips, requirements for the degrea classes of and feclowshios, requirements for the degrea, classes of
instruction
of Graduate Studies.

## French

Professors
H.F. Aikens
P. Chavy Lawler (Chairman

## Assistant

J.W, Brown
T.P. Carter
B.E. Gesner
W.T. Gordon
R. Kocourek
H. R. Runte
H.R. Runte
M. Sandhu
C.J. Simon

Lecturers
J. P. Gaillard de Semainville
R. Ginsberg
K. Waterson
R. Runte

Lecturer (part-time)
H. E. Bednarski
People choose to study French for a variety of reasons desire to gain understanding of one of the world's richest cultures, interest in the language for its own sake, preparation
for certain careers (teaching, translating, etc.), or serving the cause of Canadian unity. The e Department offers an excellent opportunity for pursuing such study to those whose interest
is strong enough to make them willing to devote a good deal of their time and energy to it
In general, students are expected to acquire a good know-
ledge of spoken as well as written French. As students' skill grows, French is used more and more in classes. The accent aimed, at it "international"; that is, recognized as standard
both in France and in French Canada. Much use is made of both in France and in French Canada. Much use is made of
the language laboratory in the acquisition of oral skills. The object of our language instruction is to provide, through the
odicious use of modern methods, a solid basic training that jucicious use of modern methods, a solid basic training that
will enable students who spend a few months consolidating their knowledge in a French-speaking community to develelop
tfluency rapidly and with precision. Students in our major fluency rapidy and with precision. Students in our major
honours programme are normally expected to spend at least one summer in a place where French is the language of
communication.

Some students wish or are required only to gain a reading
knowledge of French. Provision is also made for their needs. If your tastes and abilities lie in the direction of French bachelor's degree with Honours in. French, or with Honours in French and another subject combined. Those who wish to do so, or to take French as an area of concentration, in a
General Bachelor's degree course, are encouraged to discuss the matter at any time (but the earlier the better) with a member of the Department. An Honours degree
required for or facilitates access to graduate studies.

## French Degree Programmes

## General Bachelor's Degre

With French as the main area of concentration, the course
may be arranged in two ways:
First Year
Either (A) 102 or 134
First Year
Either (A) 102 or 134
Or (B) $102(202$ combined.

Second Year - programme A has been followed in the First Yearl, 202 or 204 and one or more of $230,231,232$.
Or (B) (If programme B has been followed in the First Year), or (B) (If programme B has been follow
wo or more of $230,231,232$ and 304 .
Note 202 is the normal continuation of 102, while 204竍 Third Year
o to five of $230,231,232,304,310,312,321,322,330$ Note The following courses may not be counted toward degree in French: 100, 106, 206.
achelor of Arts with Honours in Frenc
decision regarding admissibility to Honours is not usually
made until the end of the student's second year in the Department. Details of the Honours program in French in the
Third and Fourth Years are to be arranged by consultation with the Department. Honours students may like to opt at this point for either a language or a literature bias to the he 200 level if the grade awarded (minimum grade $\mathrm{B}-$ ) is the 200 level it
sufficiently high
tudents in the Honours programme with French as main subject are normally required before graduation to:
a) Either: write an Honours essay under the supervision of programm
and
(b) spend at least one summer in a French speaking
community to consolidate their knowledge of the language.
achel possibe) may be arranged by consultation las early a a combined Honours course should consider, however that the number of classes taken in either subject might be without at least an extra year's work

Notes
(1) Combinations of classes other than those set forth above should not be chosen to fulfil degree requirements without (2) A suder mat
(2) A student may, with the permission of the Department of prior knowledge of the language. Such a student, however lexcept as he may be granted transfer credits in the usual wher students in the same course.
(3) A student admitted to a French course at an advanced take a French class at a lower level for credit except with the express permission of the Department.
(4) No more than two classes in French may be taken for E
(5) Enquiries concerning prescribed texts should be made at
he end of the preceding academic year

## French Classes Offered

Section).

102 Spoken and Written French (Part 1), lect.: 3 hrs.:
language lab: $3-5$ hrs per
This is an intensive course designed for students who wish to
achieve proficiency in spoken and written French, either for achieve proficiency in spoken and written French, either for
general general purposes or as a preparation for further study in
French language and literature. There will be an emphasis on oreach proficiency. Mont students witl have stud emphed French in
high school but may have had limited experience in the high school but may have had limited experience in the
spoken language. Students who have not previously studied spoken language. Students who have not previously studied
the language are admissible. Class sections (limited to fifteen
students) meet three times weekly. These lecture periods are students) meet three times weeel'. These lectured periods are
directly related to individual practice in the language directly related to individual practice in the language
laboratory. Students may choose when they wish to work in
the language laboratory There sion the anguage laboratory. There ise wo limit to to we spent to work in these
sessions althoug a ming session a although a minimum of from two to five hours per
week is considered normal. Students interested in this course week is considered normal. Students interested in this course
should complete a special form available from the Admissions Offic

NOTE: French 102, while a full credit course, forms the first half of an integrated two-year programme, the more ad-
vanced portion being French 202. French 102 and French 202 may be taken in the same year (for two full credits).

106 Proficiency in Reading, lect.: 3 hrs .
For students wishing to acquire or improve skills in compre-
hending written French, without extensive training in the hencing written French, with out extensive training in the
soken language or in the active use of the written language.
Althen Although designed primarily for undergraduates, this class
can also accommodate and meet the needs of graduate can also accommodate and meet the needs of graduate
students required to show evidence of a basic reading
knowledge of French.

134 Written and Spoken French, lect.: 3 hrs. per we
This course is designed for students who wish to achieve
proficiency in spoken and written French. It differs proficiency in spoken and written French. It differs from
French 102 in that there is more emphasis on the acquisition French 102 in that there is more emphasis on the acauisition
of skill in composition and an introduction to literature. Classes are held three times weekly. There is io no language
aboratory practice in connection with this cousse laboratory practice in connection with this course. Using a
basic text (Reflex French), the student memorizes key
sentences sentences useful in conversations and illustrating correct
usage. A Arasp of these basics should lead to simple
conversation and written exercises. By the end of the first usage. A grasp of these basics should lead to simple
conversation and written exercises. By the end of the first
term, the student should have advanced to dialogue, play conversation and written exercises. By the end of the first
term, the student should have advanced to dialogue, play
scripts and free composition. scripts and free composition. The primary text is then
supplemented with two simple novels to build vocabulary, supplemented with two simple novels to byild vocabulary,
reinforce the student's knowedge of underlying structure
and serve as a basis for conversation in class. Toward the end and serve as a basis for conversation in class. Toward the end
of the second term students are expected to be capable of of the second term students are expected to be capable of
writing paragraphs or short essays of a critical nature.
Students will be assessed Students will be assessed on their written exerciises, partici
tion in class and an oral test at the end of each term.
202A Spoken and Written French, (Part II), lect.: 3 hrs.; language lab.. $2-4$ hrs. per week.
Continues and completes the basic work begun in French
102. Lab hours are freely chosen as in French 102 . Prerequisite: French 102 or equivalent.
Note: French 102 and 202 may be taken in the same year
see note following French 102 .
2028 Spoken and Written French, (Part III), lect.: 3 hrs.; language lab.: as required.
Sections will be devoted to the study of a variety of subjects
in French. The purpose of this hall class is to putto is French. The purpose of this half class is to put to practical
use the basic material just covered in French 102 and 202 A
by investigating a a subject (or some aspect of a subect) by investigating a subject (lor some aspect of a subject) in
French, while at the same time building vocabulary and diversifying the structures at the student's disposal for
comprehension and self-expression
balance will be sought between the skills of oral comprehension, speaking, reading and writing. The various options
offered will depend on a number of factors (students' and instructors' preferences, availability of material, etc. ) and will be announced in the course of the first term.
Prerequisite: French 202 A or equivalent.

204 Composition, lect.: 3 hrs. per week.
Training towards accuracy in reading and writing French. Exercises in translation from French to English and from
English to French; grammar, vocabulary building, free com position.

## 206 Proficiency in Reading, lect.: 3 hrs

For students wishing to increase their skills in the reading comprehension of contemporary French texts. The selections
studied are mainly original matter-of-fact tassages, published
in the seventies and sixties. in the seventies and sixties.
Prerequisiste: French 106 or departmental approval.
Suitable for students having reached the appropriate linguis-
tic level, including those who have taken French 106 , 230 Introduction to French Literature, lect.: 3 hrs. per week. Study of "le conte" in French and French-Canadian litera-
ture from the 18th to the 20th century 231 Introduction to French Literature, lect.: 3 hrs
French and French-Canadian theatre in the 20th century.
232 Introduction to French Literature, lect.: 3 hrs. per week. Theme to be announced.
304 Composition, 3 hrs, per week.
Continues the language work of 204 at a higher level.
310 Literary Appreciation, lect.: 3 hrs. per week.
Practical exercises in literary appreciation, "explication de
texte". The texts selected will range from the 17 th century texte. The texts selected will range from the 7 th century
to the present day Passages from earlier authors may be used in modernized versions.
312 Civilization of France and French Canada, lect.: 3 hrs An attempt to understand and to suggest fruitful ways of
tudying, from an English-speaking North American point studying, from an English-speaking No
view, what is essential in "being French
No specific prerequisite, but a good basic knowledge of spoken and
Eng lish.
321 General Phonetics, lect.: 3 hrs.
Study of the sounds of language, especially those of English
and other languageses of particclarar interest to these sounds are perceived and produced; how they may be classified; how they may be taught; practice in the use o
phonetic script; introduction to phonemics. Not a class phoneticia script; introduction to phonemics. Not a class in
remedial pronunciation. Language lab work may be required
for some for some exercises.
Prerequisite: Good
Prerequisite: Good knowledge of spoken English and
familiarity: with the spoken form of at least one other anguage.

322 General Linguistics, lect.: 3 hrs.
The topics discussed include the nature of human language breanches and appolications of language stuman, inctuading
various approaches to foreign language teaching; relation
between sound and meaning and problems of translation: between sound and meaning and problems of translation;
elationship between speech and writing; linguistic diversity. bilingualism, and standard language: linguistic change, related
language families, and major world languages. Emphasis will language families, and major world languages. Emphasis will
be placed on the non-historical aspects of language structure words, sentences, sounds).

325 Applied Linguistics for Teachers of French, lect.: 2 hrs

This class is intended for students in Education. Enrollment requires the written consent of the instructor. See description


326 Methods of Teaching French, lect.: 2 hrs. Same as Education 4840.
This class is intended for students in Education. Enrollment equires the written consent of the instructor. See description

330 French Literature of the 17 th and 18 th centuries, lect
3 hrs . per week. 331 French Literature of the 19th century, lect.: 3 hrs. per

340 Introduction of French-Canadian Literature, lect.: 3 hrs. per week.
350A Introduction to Medieval French Literature, lect.: 3
hrs. per week
3508 Introduction to-16th Century French Literature, lect. 3 hrs. per week.
404 Composition, lect.: 3 hrs, per week
Continues the work of 304 at a higher level
Prerequisite: French 304
420 History of The French Language, lect.: 3 hr
423 Evolution of Linguistics, lect.: 3 hrs.
The development of language study from early times to the
present day. Special attention will be paid to the linguistic present day. Special attention
ideas of the twentieth century.
$430 \mathrm{~A} / \mathrm{B}$ Medieval French Literature, lect.: 3 hrs. per week.
431A/B Sixteenth Century French Literature, lect.: 3 hrs.
$432 \mathrm{~A} / \mathrm{B}$ Literature of the 17 th Century, lect.: 3 hrs. per
$433 \mathrm{~A} / \mathrm{B}$ Literature of the 18 th Century, lect.: 3 hrs. per
$434 \mathrm{~A} / \mathrm{B}$ Literature of the 19th Century, lect.: 3 hrs. per
435A/B Literature of the 20th Century, lect.: 3 hrs. per

## Geology

Professors
H. B. S. Cooke (Carnegie Professor)
M. J. Keen
M. J. Keen
G. C. Milligan

## Associate Professors J. M. Ade-Hall <br> J. M. Ade-Hal F. Aumento F. Medioli

F. Medioli
P. E. Schenk

Assistant Professors
D. B. Clarke
G. K. Muecke
D. J. W. Piper
D. . W. Piper
P. H. Reynolds
M. Zentilli

Visiting Lecturer
J. Jones
J. Jones
B. D. Loncarevic

Research Associates (Primary appointments elsewhere)
L. H. King
B. R. Pelletier

Post Doctoral Fellows
J. Dostal
P. Ryall

Did you know that Eastern Canada was covered by sheets of
ice a few thousand years ago? Do you worry that this ice will ice a few thousand years ago? Do you worry that this ice will
return? Can you imagine the economic impact on Nova Scotia if oil is discovered in commercial quantities off fhore?
Or the even greater impact if uranium if found within Or the even greater impat if uranium if found within one of
the poorer countries of the world. Did you know that the Atlantic Ocean may have been barely big enough to bathe in
three hunded three hundred million years ago? And at that time the
equator passed through Nova Scotia, with the day then only twenty hours long? Geology deals, with problems such as these. It is the study of the earth and planets - their present
nature and their development in time.

Geology can be pursued by people with many varied
interests. Volcanoes are spectacular but are only the surface expression of rock melfied within the outer parts of the earth. Earthquakes cause great loss of life - can their occurrence be
predicted? Earthquakes and nuclear explosions have told us much of what we know nobut the inside of the earth.
Evolution Evolution which has led to Man is shown by animal and plant
remains now found in rocks as fossils. What atmosphere did these beasts breathe? How salty was the sea at the time they lived? How was the salt at Pugwash formed? Or Cape
Breton's coal?

Old beaches, former shore-lines, are, found now far above
present sea-level around Hudson Bay and Newfoundiand. Can a geologist describe conditions at the surface of the earth at any time in the past? Or the temperature inside the earth at these same 'times? Or even now? How do mountains form?
Perhaps the Himalayas rose when India and Russia collided. Perhaps the Rocky Mountains are the crumpled leading edge
of our continent sailing, as it were, across the Pacific Ocean. of our continent sailing, as it were, across the Paci ific Ocean.
Our means of subssistence, food, raw-materias, and energy
required for a growning ponulan required for a arowing opoulation must be obtained from the
outermost rim of the earth. It is one task of the geologist to outermost $r$ rim of the
find these resources.
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
jeology as an geology as an aid to other disciplines; for example, a mining
engineer; or a physicist. interested in spectrometry; or a chemist interested in $X$-ray diffraction spectrometry, or a chemist interested in crystallography; or a
biologist interested in protozoas. Students may be interested
in a geo in a geology degree before they. take a professional qualifica-
tion such as law or business administration tion such as law or business administration. Those whose
prime interest is the humanities or social sciences will find prime interest is the humanities or social sciences will find
that the introductory class in geology stimulates their
awareness of their surro awareness of their surround ings, and their appreciation of the

Careers open to geologists are many and varied. The largest
number of job opportunities is provided by industr number of job opportunities is provided by industry,
primarily in the search for the production of raw materials
such as meta such as metals, petroleum and water. Geologists competent in mathematics,' or indeed, mathematicians with some back-
ground in geology, might be involved in processing and analysing data using digital computeras; those interested in
going to sea might work with the Federal Government's going to sea might work with the Federal Goverment's
marine institutions. The federal and provincial government employ geologists. in their geological surveys and Departsupplying geoologists to agencies such as UNESCO to work in
surn under-developed countries. A graduate with a geology degree
and a reasonable backround in other sciences would find
teaching in hiah school and a reasonable background in
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 hoolving the earth, such as geology or geophysics, should
note that it is sensible to try to have the following subjecits in Grasiadx

Grade XII mathematics, plus two of Chemistry, Physics and
Biology. (The third should have been taken in Grade XI if
possible). Biology.
possible).
Note that these are not prerequisites, but we do strongly in his or her high school preparation in the first year at Dalhousie. Note too that at present Grade XII Geology is not
counted as equivalent to a Geology 100 level class in Geology at Dalhousie.

## Degree Programme

The tables on the pages that follow are only a guide, and are combination is welcome to consult with Geology staf members, and in particular the Chairman, and ask for advice. A wide range of choices is possible. A student who intends to take a degree in Geology, or is even considering doing so
should consult the Chairman as soon as possible. First yea should consult the Chiirman as soon as possible. First year
students should make every effort to seek such advice prior
to registration for the first tie All students mioring in to registration for the first time. All students majoring in
geology must consult with the Chairman of the Department geology must consult with the Chairma
prior to registration for the second year.
Student's who intend to make their careers in Geology intend to pursue gradiate studies, should consider taking an int
honours prospamme graduate stud in poss, should conside, take an introductory
class in Geology in the first year.
Field work on Saturdays is an integral part of some Geology
classes. All students who expect to graduate with honours in Geology
in or after 1975 are required to include Geology 201, 202 in or after 1975 are required
and 301 in their programmes.

## Table 1: Programme for General Students majoring in Geology

| Year I | Geoloogy 100 <br>  <br> Chemistry <br>  <br>  <br>  <br> Math 100 or Physics 110 <br> Two classes chosen from two non-science groups.: |
| :--- | :--- |



$$
\begin{aligned}
& \text { Iwo classes } \\
& \text { One elective. }
\end{aligned}
$$

Year III Geology 301 and two other 300 -level classes in Geology.
One elective and one class in Biology, Chemistry, Physics
(By
and Physics. If possible two vear the student shoula have completed at leasses should be included in the flass in each of: Mathematics, Chemistry (Note that, in addition to the Geology classes, as suggested here, at least one other 200 -level class must be included in the Note:
(1) If
Drerequisitene class in Biology is taken, Biology 3321 is relevant to Geology students and may be taken by them with no prerequisites.
(2) I two 200 level Physics classes can be taken, Physics 221 and 230 are sensible choices.
(3) Chemistry 210 is a sensible second class in Chemistry.
(4) Mathematics $200,220,228$ are all sensible second classes in Mathematics - but note any restrictions there may be on 220 or 228 as prerequisites, if further classes in Mathematics are planned.
(5) Although the general requirements do not demand a class in Mathematics or a foreign language, students should note
(a) that any one planning a scientific career may be severely handicapped if he has not taken at least one class in


|  | Economic Geology | Geophysics | 111 Geochemistry | IV Petrology | v Stratigraphy |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Year I | Geology 100 <br> Mathematics 100 <br> Two classes chosen from Languages, Humanities or Social Sciences |  |  |  |  |
|  | Chem. 100 | Physics 110 | Chem. 110 | Chem: 110 | Biology 101 |
| Year II | Geology 201 <br> Geology 202 <br> Engineering 210 and <br> 211 <br> Math 200 or <br> 220 or 228 <br> Physics 110 <br> Elective | Geology 201 <br> Geology 202 <br> Physics 230 <br> Math 200, 220 <br> or 228 <br> Chem. 110 | Geology 201 <br> Geology 202 <br> Chem. 210 or 230 <br> Physics 110 or <br> Math 200 or <br> 206 or <br> Elective | Geology 201 <br> Geology 202 <br> Chem. 210 or 230 <br> Elective | Geology 201 Biology 2000, or 2040A and 2060B Chem. 110 or Math 200 or 206 or 227 or 228 <br> Elective |
| Year III | $\begin{aligned} & \text { Geology } 301 \\ & \text { Geolog } 302 \\ & \text { Geology } 303 \\ & \text { Geology } 304 \\ & \text { Chem. } 210 \text { or } \\ & 230 \end{aligned}$ | Geology 301 <br> Geology 306 <br> Physics 221 <br> Geology elef- <br> tive <br> Elective | Geology 301 <br> Geology 302 or 303 <br> Geology 304 or 308 <br> Chem. 210 or 230 <br> Elective | Geology 301 Chem. 210 or 230 Two of Geology 408 or 460 or 304 Elective | Geology 301 Geology 302 Geology 305 Biology 3321 or 3323 or 3063 Elective |
| Year IV | Geology 306 <br> Geology 404 <br> Geology 403 or 453 <br> Geology elective Math, Phys. or Chem. elective | Geology 303 <br> Geology 405 Geology 304, 404,445 , or 460 <br> Geology elective <br> Math, elective | Geology 454 <br> Geology 407 or 408 Geology 460 or 404 Geology elective Physics, Biology or Math, elective | Two of Geology 407 , or 454 or 408 <br> Two Geology electives Elective | Geology 303 or 304 <br> Geology 455 or 401 or 456 <br> Two Geology electives Biology, Phy. Chem., or Math. elective |


| Year I | $\begin{aligned} & \text { I } \\ & \text { with Physics } \end{aligned}$ | 11 with Chemistry | III with Biology |
| :---: | :---: | :---: | :---: |
|  | Geology 100 <br> Mathematics 100 <br> Two classes chosen from Languages, Humanities or Social Sciences |  |  |
|  | Physics 110 | Chemistry 110 | Biology 1000* |
| Year II | Geology 201 Geology 202 |  |  |
|  | Elective <br> Physics 211 and 231 <br> Mathematics 200,220 , or 228 | Elective <br> Chemistry 210 <br> Mathematics 200, 220 or 228 | Elective Biology $2000^{5}$ <br> A class in Chemistry, Physics or Mathematics |
| Year III | Geology 301 Elective | $\text { Geology } 305$ <br> Elective |  |
|  | Elective <br> Physics 315 or 335 Geology elective | Chemistry 230 Chemistry 320 Geology elective | Biology 3321 Biology 3323 Geology elective |
| Year IV | Geology 303 <br> Geology 306 <br> Geology elective <br> Physics 320, 416 or 445 <br> Mathematics 200,220 or 228 | Geology 401 <br> Geology 454 <br> Geology elective . <br> Physics or Biology elective <br> Chemistry 410 | Geology 401, 456 or 457 Geology 302 Geology elective Biology elective Physics 221 or Mathematics 200 220 or 228 |

Note:
(1) Astudent who intends to concentrate on geophysics might consider auditing Geology 452 in his fourth year
(2) All students are encouraged to attend one or more non-credit computer programming classes. (2) All students are encouraged to attend one or more non-credit computer proggamming llasses.
(3) A student who intends to concentrate on paleontology should consider obtaining Geology 305 and 456 in his third and
fourth years respectively,
14) Honours studenits have to satisfy Faculty regulations concerning a comprehensive examination. In recent years this has
been met by students writing an honours thesis in their fourth year. They should consult a staff. member well in advance, no later than the third year.
in the case of students
In the case of students doing Combined Hors (a) Write a comprehensive examination (after 20 classes).
(b) Write an honours thesis (after 20 classes), as an Hono
 (5) *Students with Grade XII Biology should
1000 , with appropriate changes in other years.

## Classes Offered

## Classes in Other Departments

Students doing the maior part of their work in geology
should be aware of relevant classes in other departments.
 e help
Biology
3321 Inve
3321 Invertebrates 1
303 Theoretical Ecology
30618 Structure and Fưnctions of Ecosystems I
3062 A Structure and Function
3062A Structure and Functions of Ecosystems I
4064C Pleistocene

## Chemistry

510 X-ray Crystallography
512 Crystal Chemistry

## Mathematics

20 Appliee
Aly
227 Applied Mathematics
227 Numerical Methods and Fortran Programming 228 Applied Mathematics of rengineers I
328 Applied Mathematics for Engineers II
Oceanography
$200,51 \mathrm{~A}, 512 \mathrm{~A}, 513 \mathrm{~B}, 514 \mathrm{~B}$ Introductory Classes.
$522,523,524,525,531$ Advanced Classes.

But topics such as these are only a part of a study of the earth. How are landscapes formed? Or where would you seek
oil? Or why does a compass point north? Does the earth's magnetic field reverse? What happens to living organisms
when it does? What did Nova Scotia look like five hundred nillion years ago?
100 Introduction to Geology, lect.: 3 hrs.; lab.: 3 hrs.; J. M. degree in geology, another Science or in engineering.
We see both the basic nature of the earth we live on and its history throughout 5000 million years of geological time.
The science of geology is experiencing a revolution in its basic ideas and students are shown how the research of the last ten years has given us a wholly new and complete picture
of the crust of the earth, with volcanoes, earthquakes and the

Laboratory work is conducted partly in the field.
Text: Earth, F. Press and R.Siever
101 Introduction to Geology, lect.: 3 hrs.; lab.: 3 hrs.;
This is an introductory class for students in Arts and Science. is intended as a science elective for students from discipl ines other than science. It emphasizes the concepts and major ideas which concern the development and present state history upon the human environment. There are demonstration periods and field trips. A text will be prescribed, and reference made to books and reference material in the library at appropriate times.

140 Introduction to Geology, lect. and demonstration and Aumento
This is an evening class intended, like 101, for those interested in the earth, but do not plan a career in professions
involving geology. Examples from Canadian geology are stressed in this class. There are no science or Math.
Prerequisites for this class. Under normal circumstances a Prerequisites for this class. Under normal circumstaces a
student cannot go from this into Geology 201 or 202,

## Tw̄o Hundred Level Classes

The two-hundred level classes fall into two categories.
Geology 201 and 202 are for majors and honours students in which an attempt is made to provide a student with tools needed in 300 and higher evel classes, at the same time are integrated through extensive field work in the geology of Nova Scotia. Samples and data coliected on the Saturday ield trips will be used for subsequent laboratory investiga-
tions. One tutorial per week, alternating between 201 and 202, will be an essential part of this program. Students who do not intend to major in Geology may take Note that the normal prerequisite for Geology 201 and 202 is
Geol Geology 100 . Under exceptional circumstances Geology 101
and 140 may be acceptable. Students majoring in Geology and 140 may be acceptable. Sturents maioring in Geology
ate are strongly advised to select their other classes in Second
Year in accordance with the prerequisites for $300-$-level
Geology classes Geology classes.
Geology $240,241 \mathrm{~A}$ and 241 B are classes for students who do
ot intend to major in Geology, but are simply interested in ine earth. The only prerequisite for entrance to any of then
one of the 100 level Geology classes. They may not be taken for credit as Geology llasses by any major or honours
student in Geology. The equivalent 300 level class 341 A may be taken for credit by majors students but not by honou students. Geology 342 B may
honours and majors students.

201 Mineralogy and Petrology leet.: 3 hrs.; lab.: 3 hrs.; , D.B. Clarke.
This class is for students majoring in Geology and is to be Geology 201 covers sych Geology 202 . optical mineralogy, petrology and some geochemistry, geo field trios in the first term taken in conjunction with field work in Geology 202.

## 202 Introduction to Stratigraphy, Paleontology, Structural Geoology, lect.: 3 hrs.; lab.: 3 hrs.; P.E. Schenk, G.C. Milligan Medioli.

In combination with Geology 201, this class aims to
introduce the student to greater depth and intensity in his study of geology. Geology 202 concentrates on the practical application of field techniques and tools as well as laboratory procedures that a geologist uses to interpret rock. The
geoological evolution of Nova Scotia is used as a case history to illustrate these principles, techniques, and tools. Field trips
are the basis for the class and will follow the rock cycle to build a geoologic section of the province. Observations and samples are processed during indoor labs in both 201 and simple structual interpretations, paleontological dating and paleeecology, and stratigraphic observations and principles
used in deciphering the geological history of an area. used in deciohering the geological history of an area,
Application of plate-tectonics to Nova Scotia serves as an Application of plate-tectonics to Nova Soctia
example of the evolution of large crustal blocks.
240 Marine Geology and Geophysiscs, lect., lab. and dis-
cussion: 3 hrs.; one evening per week, D.J.W. Piper. 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 range of marine geological work, and its relevance to other
fields of science, as well as engineering, economics and politics. The class may not be taken by students majoring in
geology; it is suitable for students who have geology as their eology; it is suitable for students who have geology as thein
minor; and those who would simply like a second class in meol ogy lincluding high school teachers, or interested pro-
gel
geol
essional sat government insititutions) fessionals at government insititutions.
Prerequisite: any first level class in geology.
241A Environmental Geology, lect., lab. and discussion: 3
G., one evening per wek Geology lies behind many of the environmental problems
facing man today. In this class we consider topiccs such as facing man today. In this class we consider topics such as
energy and mineral resources, geological hazards such as earthquakes and landslides, the relevance of. geology in the
fields of pollution and waste disposal, and the role that fields of pollution and waste disposal, and the role that
geology has to play in planning urban areas, especially in geology has
Nova Scotia.
Geology majors and honours students wishing to take an environmental geology class should register in 34

2428 Geomorphology, lect., lab. and discussion: one evening H.B.S. Cooke.

The surface features of the earth are undergoing constant modification, and their present form is the result of a variety
of erosional and depositional processes, including the action
of ice, rivers, the wind and the sea. In this class, we will
examine the development of the landforms of Canada, the importance of the last ice age, and the erosional processes
still taking place today. We will examine the apoearance of importance of the ast ice age, and the erosional processes
still taking pace today. We will examine the apeoarance of
these landforms in conventional, aerial, and satellite photothese landforms in
graphs, and in maps.
Geology majors and honours students wishing to take a class
in geomorphology should register in 3428 . in geomorphology should register in 342 B .
Prerequisite: any first level class in geology.

## Three hundred level classes

301 Igneous and Metamorphic Petrology, lect.: 3 hrs.; lab.: 3 .
hrs.: D.B. Clarke/G.K. Muecke.
The mineralogy and texture of rocks are the products of their
environment and mode of formation; thus macroscopic and environment and mode of formation; thus macroscopic and microscopic investigations of these rocks provide cl
conditions prevailing at the time of their formation.
Igneous rocks will be discussed under such topics as
mineralogical and chemical classification; methods of de mineralogical and chemical classification, methods of de-
icting chemical data. mechanisms and environment of magma production, various
and comagmatic provinces.
Metamorphic rocks will be considered as the products of
hermal and dynamic processes thermal and dynamic processes operation on preexisting
ocks. Stability relations of minerals under varying emperature-pressure conditions and concept of metamornhi facies will be stressed.
Prerequisites: Geolog

201 and 202, Chemistry 110.
302 Stratigraphy and Sedimentology, lect.: 3 hrs.; lab.: 3
The purpose of this course is to enable geologists to recreate conditions at the surface of the earth for any area at any selected time in the earth's history. To do so requires knowledge of processes operating today both at the earth's
surface and below, as well as an appreciation of the surface and below, as well as an aporecimensional complexities of rock masses.
The first term involves means of interpretation and dis-
cussions of tectono-environmental cussions of tectono-environmental models of the main field trip where detailed columnar sections are made and then interpreted as to both vertical and lateral variation.
The second term is concerned with stratigraphic
The second term is concerned with stratigraphic paleontology
and both the vertical and lateral physical and time relations within three-dimensional rock masses. Laboratory assignments involve statistical and stratigraphic map problems aided by the computer. Some familiarity with the compute s decided asset in this term.
his class is suitable not
sedimentary rocks, but especially for those in other areas of
specializing in
shat earth science, general course B.Sc., or emphatically earth cience teachers.

303 Structural Geology, lect.: 3 hrs.; lab.: 3 hrs.; G.c. Milligan.

This class is intended as an introduction to the behaviour of rocks during deformation. The emphasis is upon the geo metrical aspects of the rock structures and their interpreta
tion but there is also consideration, in an elementary way, o he mechanics of rock deformation. The laboratory work is essentially a brief course in descriptive geometry. This trains
the studdent to visualize the three-dimensional geometry of he student to visualize the three-dimensional geometry of
ock structures and teaches the techniques for the solution of many problems of a graphic and geometrical character encountered in cartography and other geological work
especially in mining.

Texts: There is no prescribed text for the class. Introduction to the Structure of the Earth by Sivencer, will be found
useful, and students are also referred to other texts and to
the geoological journals. The class requires a considerable useful, and students are also refered to other texts and to
the geological journals. The class requires a considerable
amount of reading mount of reading.

304 Introduction to Mineral Deposits, lect.: 3 hrs.; lab.: 3
This class is an introduction to the principles and processes both igneous, sedimentary, and metamoronic, that governt he
formation, nature, and dibution of meallic mineral
fenosits and some industrial rocks and minerals. Economical deposits and some industrial rocks and minerals. Economical
Iy significant mining districts in Canada and elsewhere are ly significant mining districts in Canada and elsewhere are
discussed to inlustrate partricular classes of ore edeposits, thei
geoologic envirironments and the methods used in their in geelogic env
vestigation. A. text will be recommended, but a considerable volume of Prerequisites: Geology, 201, 202. Geology 301, 303 may be
aken simultaneously. Exceptions are made to meet specific programmes, but the student should consult the instructo nd obtain permission
305 Systematic Palaeontology, lect.: 3 hrs.; lab.: F. Mediol
H.B.S. Cooke.
This class comprises a systematic survey of the major phyla
f fossil organisms. The emphasis will be on mornhol taxonomy of invertebrate phyla, but a short survey of the main lines of evolution of vertabrates will be included. The purpose of this class is primbers enable the student However, it is intended also that he should learn how to
tackle invertebrate fossil. material so as to classify it accurateackle invertebrate fossilif material so as to classify it accurate Prerenuiste: Geology 201 and 202 or Biology 2000 or
Biology 3321 . Note this class is suitable for Biology student Biology 3321. Note this class is s s.
without previous geology classes.
306B/556B Plate Tectonics, lect.: 3 hrs.; lab.: 3 hrs.; J.M. Ade-Hal.
The study of the ocean floors by geologists, and geophysicists
over the last 15 years has lead to a revolution in understanding of the way in which the earth's crist is made he continents are now known to be is ands of light materia which are carried on enormous crustal lates. These plates are
changing in torm all the time, being added to at the
mid-ocean ridges and being lost at the deep trenches. The mid-ocean ridges and being lost at the deep trenches. The
past and present coll ision of plates tas given rise to the fold
mountain ranges of the earth. The Coast Ranges Al Himalayas represent active plate coll ision and older ranges,
such as the Appalachians, represent the fossilized effects of sor as the Appalachi
former plate collisions.
This class will describe the rapid development of ideas abou he oceanic geolog leading to the current state of the plat
tectonic model of the earth's crust. Contributing evidenc trom many areas of geology and geeophysics will be brough
together in a current synthesis. This means that the student together in a current synthesis. This means that the studen
will be introduced to eathauake seismology, the nature of the earth's magnetism, the radioactive dating, of lavas and to the
results of the recent drilling into the ocean floor from the results of the recent drilling into the ocean floor from th
"IGmar Challenger". We shall also be looking at the geolog of fascinating areas such as the volcanic Mid Altlantic Ridge
the Gulf of California and the San Andreas Fault and the West Coast. of South And the San Andreas Fault and the
the Gutce. These are all areas where
crustal plate interaction is going on today crustal plate interaction is going on today.

The class will be taught so that current concepts, results and
problems will be fully discussed. Maths and physics will be kept at the 200 level.
Texts: LePichon, et al. Plate Tectonics.
Prerequiste: for Geology majors: Geology 201 and 202.
Physics 100 or 110, Math 100; or Math 100 and two 200
evel Physics classes. Note this class is suitablé for physics
306A Introduction to Exploration Geophysics, lect.: 3 hrs.; lab.: 3 hrss.; J.M. Ade-Hall
lo
Canada has major mineral resources in the Canadian Shield,
and the sedimentary basins of Alberta, the Arctic and the physics has margins contan oin oil and gast gas. Exploration geoonysics has led in part or in whole to the discovery of many
of these. For example, aeromagnetic surveys are used to
del ineate potentially mineral bearing volcanic rocks delineate potentially mineral bearing volcanic rocks on the.
shield, and seismic reflection studies in the sedimentary basins are used to map structures in which hydro-carbons are trapped. This class is designed to explain the principles of the
main techniques used by exploration geophysicists, the seismic, electrical, electromagnetic, magnetic and gravity
methods. Students will be able to try out some of the

This class is suitable for physics students without previous geology classes.

307 Special Topic in Geology, conducted by individual faculty.
The class will permit a student to pursue his interests in any
selected field of geoology and geoonysics to a degree not selected field of geology and geophysics to a degree not
generally found in other classes offered. The student will work closely with his tutor, preparing papers for discussion
with him, and may even undertake some investigation and with him, and may even undertake some investi
prepare the results in the form of a research paper.
Note that students should consider carefully before
registering for this class whether their needs cannot be met registering for this class whether their needs cannot be met
by other classes, and no student may register without permission from the Chairman or appropriate undergraduate

341A Environmental Geology, lect., lab. and discussion:
hrs.; one evening per week, D.J.W. Piper and M. Zentilli.
This is taught as Geology 241A, but with additional reading
and exercises; it is suitable as a Geology credit for majors and and exercises; it is
honours students.

342B Geomorphology, lect., lab, and-discussion: 3 hrs.; one This is taught as Geology 242B, but with additional read ing
and exercisss, it tis suitable as a Geology credit for majors and onours students

Four Hundred Level Classes
Note
Classes
lasses labelled "al ternate years" may nevertheless be given
401/501 Sedimentology and Sedimentary Petrology, lect.: 2
hrs. ilab.: 2 hrs. D. J.W. Piper.
This class follows naturally from 302 . Students who have not
taken 302 will be expected to make up the background
aken 302 will be expected to make up the background
memselves. The class will concentrate on the processe of sedimentation, and the interpretation of these processes in ancient sediments by comparison with modern analogues.
The main emphasis is on marine clastic sediments Basic The main emphasis is on marine clastic sediments. Basic
analytical techniques are taught in the lab, with students analytical techniques ane taught in the lab, with students
working on their own material in a small project of their
choice There is some field work thine. There is some field work.
reerequisites: Geology 302 com. rerequisites: Geology 302 completed
uurrently, or permission of instructor

Mill Advan. (Offered Structural Geology, hours to be arranged. G.C. This class will consider the life-history of a mountain range as atheme upon which to base discussion of tectonic processes.
It is proposed to use the western Cordillera and the Alps as It is propos.
examples.
The class is conducted as a colloquium and participants will be required to read extensively in the relevant journals.

404/554 Ore Deposits, Advanced Class, hours to be arranged his course is designed for graduate and senior undergraduate students interested in mineral exploration, mining geology metallic ores. Ore deposits are analyzed from the point of view of their regional and detailed geological setting; the provinces are emphasized in light of plate tectonics and classical geotectonic theories. The class is taught in colloquium in which each student in turn leads the discussio
or a 3-hour session. Considerable flexibility is possible to or a 3 -hour session. Considerable flexibility is possible to
meet the special interests or requirements of the individuals
in the class. in the clas

The text material is drawn predominantly from the technical reading is required. rearea
Prerequisites: Geology, 301, 302, 303, 304, Chem. 210 or
407/510 Advanced Igneous and Metamorphic Petrogenesis, ect.: 3 hrs.i. lab.: 3 hrs., D.B. Clarke, G.K. Muecke. (Offered
in $1975-76$ and alternate years).

A wide range of igneous rocks will be discussed from a petrogenetic standiooint. The petrogenetic problem for each
ock type will be defined and then its origin considered in the ight of recent information trom the frields of geochemistry.
isotep studies and phase equil ibrium stud ies. sotopic studies and phase equil ibrium studies.
Metamorphic rocks will be discussed as products of physico-
chemical processes in open and closed systems. Experimental Iy determined phase relations of metamorphic minerals will be criticallly examined and correlated to noturual assemblages. The development of metamorphic belts will be studied in
relation to the evolution of the continental crust and plate


408/511 Advanced. Mineralogy and Crystalography, lect.: 3
hrs.; lab.: 3 hrs.; F. Aumento, D.B. Clarke, G.K. Muecke. hrs.: lab.: 3 hrs.; F. Aumento, D.B. Cla.
(Offered in 1974:-75 and alternate years.)

Advanced work in crystallography and crystal chemistry
preceeds a systematic examination of the chemistry, struc
 ther modern analytical techniques in the identification of and structure: Gelogy 201 and 202.
Prerequisites: Geo

455/545 Physics of the Earth, lect.: 3 hrs.; R.D. Hyndman
This is a class in solidearth geophysics and as such complements. 306 A which deals almost exclusively with
crustal geology and geophysics. Topics discussed include: the figure of the earth and gravity, seismology and the intermal tructure of the earth, the geomagnetic field, paleomagnetism
the prehistory of the geomagnetic field, heat flow and the earth's thermal history, electrical conduction in the earth,

Taught concurrently with Physics 445 . See also Geology
$306 \mathrm{~A}, \mathrm{~B}, 462 / 562$; Oceanography 511 A . Prerequisite:
Department. Texts: Gariand and Saunders, Introduction to Geophysics; Mantle, Core, and Crust.
452/502 Earth Science Seminar, one afternoon per week:
R.D. Hyndman, J.M. Ade-Hall, P.H. Reynolds, M.J. Keen and others.
This is non-credit seminar class given concurrently with Physics 545 and Oceanography 645 . All geophysich gradty with
studuate

533/503 Hydrogeology, hours to be arranged; J. Jones and
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 exploration, development,
related environmental issues.
The class work includes the principles of groundwater flow,
aquifer hydraul ics, water chemistry hiydrologic systems ie, aquiter hydraulics, water chemistry, hydrologic systems, i.e.
ground-water-surface water interactions, and digitai modell ing. Problems reagaring the groundwater flow system including such ard items as solifial waste disl sosal, liscussed,
ind use
relationshios and cont gas, fertilizers, pesticides, herbicides, and other pollution sources. The disruption. of the natural groundwater flow
system due to construction works will also be examined. system due to construction works will also be examined.
Problems.literature reviews and assigments on special topics
are an integral part of the class. Reference texts and are an integral part of the class. Reference texts and pertinent
periodicals for reading will be announced
454/504 Geochemistry, lect.: 3 hrs.; lab.: 3 hrs.; G.K.
he abundances of the elements and their distribution in the solar system, the lithosphere, the hydrosphere and the
atmosphere will be investigated in the light of chemical processes. The emphasis of the class will be on demonstrating
how principles of crystal chemistry, thermodynameics, solution chemistry etc., can be applied to the solution of geological problems. Discussions on such selected topics as
exploration geochemistry, environmental geochemistry and unar geochemistry will be included if time permits. Students Will be encouraged to pursue some aspects of the class at
depth and to present the results of their investigation in the form of two term papers.

The laboratory will consist of an introduction to methods of ock and mineral analyssis and will include an exposure to
classical, spectrophotometric, flame photometric, atomic classical,
absorptio
nalysis. nallysis.
perequis
rerequisites: Geology 201 and 301; or aod back Chemistry. Students wishing to take this class should have a good back ground in either geology or chemistry and should
consult the instructor before registration. Note that this class may, be taken by students with a good background in

55/505 Carbonates and Sedimentary Microscopy Lect. and seminars to be arranged; P.E. Schenk. (Offered in 1975-76 and alternate years)

The primary field of this course is carbonate rock-recen carbonate environments and ancient analogues, and car sources: (1) Schenk's collections of the Recent from most of the best-studied areas, as the Bahamas, Florida, Persian Gulf, Shark Bay, Cuba, Great Reef, and Paleozoic field trips; (2)
sudent's own collections from the Middle Carboniferous of

Nova Scotia. After field observations, laboratory work insoluble residue analysis, and thin sections, involves demonstrations, surveys, and seminars.
A secondary concern is the microscopy of thin sections c from siliclastic sedimentary rock. We will concentrate on
microscopic reading of provenance transport/deosition microscopic reading of provenance, transport, deposition field studies in interpreting rock. The prime objective of the tudy of a thin-section is the reading of rock history exts: Bathurst, Carbonate Sediments and Diagenesis Pettijohn, etc. Sands and Sandstones.

456/506 Introduction to Micropalaeontology, hours to be arranged; F. Medio

The class offers a general systematic study of the major
groups of microfossils, mainly foraminiters, ostracoda and groups of microfossils, mainly foraminifers, ostracoda and for those who do not plan to go further with the subject, and o provide the necessary basic knowledge of principles and concepts for those who may wish to continue in stratigraphy,
historical geology and micropalaeontology

Particular emphasis will be put on recent microf echniques for sampling and studying them. Each student will be asked to present a seminar during the year.

457/507 Principles of Pleistocene Geology, H.B.S. Cooke
(Offered in $1975-76$ and alternate years.).
A seminar class designed to expose the student to the specia Pobiems inverater than articular study of Pleistocen stratigraphy. The matters covered include: the origin, distriie cans: glacial stratioraphy: sea livel fluctuations: acea ice caps; glacial stratioraphy; sea level fluctuations; ocean
floor deopsits; limatic changes evidenced in non-glaciated
regions; theories of ice ages.

A special half-credit laboratory programme complimentary to his seminar is offered in the Department of Biology as
Biology 4064 C . Pleistocene Biogeography, All students taking Geoology $457 / 507$ are urged most strongly to take the additional half credit class Biology 4064c. It will be counted where convenient for the student, as a geology credit
Geology 464 C . For details see entry under Biology 4064 C . Students who are admitted to the class are expected to possess sufficient background to be able to pepare com
petent seminar talks. which are an essential part of th
proaramme Althought this programme. Althought this will normally mean a good background in geology, students with advanced standing i
biology will be admitted. Reading forms a substantial part
the class as there is no single text available.

460A/560A Principles of I sotope Geochemistry, lect. $3 \mathrm{hrs}$.
lab.: 3 hrs.; G. K. Muecke. (Offered in $1975-76$ and alternate
years). years).

The study of naturally occurring iso topes, both radioactive
and stable, forms a maior and ever expanding field and stabie, forms a major and ever expanding field of
geoochemistry. This class introduces the student to the
f tundemental fundamental concepts of nuclear chemistry such as types of
nuclear disintegration, nuclide systematics, nuclear reactions, nuclear disintegration, nuclide systematics, nuclear reactions,
etc. The role of isotope fractionation in geological processes
will be discussed with reference to stable isotopes Particular will be discussed with reference to stable isotopes. Particular
attention will be paid to the isotope geochemistry attention will be paid to the isotope geochemistry of
hydrogen, carbon, sulfur and oxygen. Prerequisites: A good background in Geology or Physics, or
Chemistry and permission of instructor.

460B/560B Geochronology, lect.: 3 hrs.; lab.: 3 hrs., P.H.
The absolute dating of pre-historic events, be they. the haping of tools by ancien man onstal orem encountered most geological and geophysical studies. The emphasis in this class will be on methods of age dating based on the methods will be discussed briefly. The role of radioactive isotopes and their daughters as tracers in geological processes will a lso be stressed.
rerequisitess: Geo
prerequisitess: Geology 460A, or equivalent, plus a good
backronoun in goology, or physics, or chemistry, and permission of instructor.
$61 / 561$ Marine Geology and Geophysics, hours to be arranged: M.J. Keen, D.J.W. Piper, R.D. Hyndman./
We are concerned in this class with some modern concepts
and techniques in marine geology and geophysics. We will in the course of the year take a few topics and consider them in the course of the year take a few topics and consider them in
some detail. A study of one of the inlets of the Atlantic coast some detail. A study of one of the inlets of the Atlantic coast,
of Nova scotia will be an integral part of the course,
occupying a few days in the fall term, to be arranged at the ccupying a few was ans and instructors. convenience of the class and instructors. B or permission of
Prerequisites: Geology 302 or $30 \mathrm{~A}, \mathrm{~B}$. nstructor.

## 62/562 Time S Ans 3 . 3 hrs

This will be a mathematically oriented class designed for graduate students.
This will be a mathematically oriented class designed for enior undergraduates and for graduate students. Substantial Topics: Convolution of time series; Fourier and Laplace ransforms: correlation and covariance; power spectral esimates; spectral windows; physical applications.
structor.
Text: Kanasewich, Time Sequence Analysis in Geophysics. The University of Alberta Press 1973

## Geology Seminar

Papers are presented by guest speakers, members of the staff and seni
attend.

Field Classes

## Spring Class in Field Geology <br> In co-operation with Mount Allison, St. Francis Xavier, and St. Mary's universities, a field course S. Aarr's universities, a itield courrese of approxamately two weeks duration is conducted at Crystal Cliffs, N.S. This class is held immediately following the conclusion of soring is held immediately following the conclusion of spring examinations. It is compulsory for students specializing in 俍 examinations. It is compulsory for students specializing in geology after their third year. A fee of about $\$ 0$, for full board is payable with the second instalment of university

 boardfees.

## German

## Professors F. Gaede

Associate Professors

## Assistant Professors

A. Roulston
H. G. Schwarz

Lecturers
Gpecial Lecturer
Special Lectu
Colin Starnes
German studies are the investigation of German culture and its place in the formation of the modern world. By concentrating the Germanies, the Department, far from following an idle interest in the past
Many Canadian students take German to become fluent in one of the more useful languages. German is generally under-
stood in Central and Eastern Europe. German is alsy needed in many fields of study, such as Classics, History, Music

The $h$ menediately present to us in the many ways Germanies is Karl Marx, Nietzsche, and Freud have moved men and nations to change the course of the modern world. Revolutionary Psychoanalysis on contemporary conceptions of human freedom have led to the divisions of the modern world. As we try to overcome the divisive forces so prominent in the
contemporary world we have to understand their relative truth We are thus led to an inquiry into the very nature of the Modern Age. The Reformation gave the first expression to its principle: the freedom of man in and through faith. The Enlightenment of
the 18 th century developed this principle, utit the 18 th century developed this principle, but it ended with the one man's freedom with the freedom of all other men. The German Idealists struggled with these oppositions, and they
offered a resolution that appears in the music of Bach and offered a resolution that appears in the music of Bach and
Beethoven, in the writings of Goethe and the Romanticists. and in the philosophy of Kant and Hegel. These men of the 18 th and early 19 th centuries developed in the Arts, in literature, and in speculative thought a profound uniderstand-
ing of the Modern Age. The course of history since the Revolutions of the 18the. century is the history of this freedom, both in the Old and New World, in the East and in the West. Revolutionary Marxism and Existentialism, in its religious and
secular form, take hold of a particular aspect of freedom By secular form, take hold of a particular aspect of freedom. By
concentrating on the Age of the Reformation, the intellectua conflicts of the Enlightenment, and the literary and philosocophical achievements of the Idealists, German studies aim contribute to a profound understanding of our world.

## Degree Programme

General B.A. in German
sudents concentrating on German should take a minimum of .
B.A. with Honours in German
lodents considering an honours

Combined Honour
is possible for students to take an honours degree combining German with French, Russian, Spanish, English or 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 se 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 (German 300)
c) teaching methods (German 351)

German Language Studies
Introductory Classes Offered
00 German for Beginners, lect: 3 hrs.; G. Josenhans, A Roulston, H. G. Schwarz

German 100 is a seminar class for beginners, and no previous grammar is required It easunable is background of Englis high school with a final mark of $75 \%$ or better. While the texts may be similar to those used in high schools, the University class offers more facilities for learning, such as language and magazines and papers in German for study More independent work is demanded of the student than is ustomary in high schools.

The class is taught mainly in German, emphasizes the spoken anguage, and provides the student with the knowledge of asic grammar
Intensive language laboratory work and attendance at smal Text: SchulziGriesbach. Deutsche Sprachlehre für Auslän der, Grundstufe in einem Band los, Grundstufe in einem Ban Glossary: Deutsch-English. Deutsche Sprachlehre für Au
slander, Grundstufe in einem Band. Huber Verlag, München The class or its equivalent is a prerequisite for all classes on
the 200 level. the 200 level.

105 German Reading Course for Beginners, lect.: 3 hrs.
A. Roulston.
This class is designed for students who wish to have a good reading knowledge of the German language. A successful completion of the class should enable the student to read
German newspapers and texts in the humanities and social German newspapers and texts in the humanities and social
sciences. This class may also be chosen as a prerequisite for German 201. To proceed to German 200 a student must have a high second class mark or the permission of the Department.

All students are required to attend a tutorial 1 hour per week to promote reading fluency

Text: Jannach, German for Reading Knowledge, American papers.
150 Intensified German, lect. 5 hrs. lab. 2 hrs.; v. Maltzahn. This class combines the objectives of both German 100 and 200: no previous knowleage of German is required. German and 200 ; it is thus designed for those students who wish to take German for their first-year elective. Students who wish. to acquire firm command of a foreign language may concentrate advanced language or literary classes will be provided in their first year with the entrance requirements for classes beyond the 200 level.
The final objectives of the class are the same as those of German 200: oral and writing fluency on the

Students will first become familiar with the basic patterns of spoken and written German and will learn to use, them through repellion
Students will acquire a vocabulary of about 600 words. In the second stage, instruction will concentrate on systematic grammatical studies, translation and writing skills, while
speaking competence will be developed throughout the speaking
whole year

Students will spend an average of two hours a week in the language laboratory to support grammatical stuares and to develop aural comprional one hour a week will be Text: Schulz/Griesbach: Deutsche Sprachlehre für Aus/änder, Max Hueber Verlag, München

Intermediate Classes Offered
Intermediate classes are based on German 100, high schoo German or an equivalent bsic

At the outset of these classes, the student should have a vocabulary of approximately 600 words and the ability to
understand simple questions in German, to write a composition of about 80 words and to summarize or retell a simple story. The student should also have a basic and pronouns
grammar including declension of nouns and prent conjugations of verbs, active and passive voice, use o preposition, deciensions of adjectives, syntax - main
clauses, dependent clauses, questions, imperatives, direc speech. The knowledge required can be found in books o German 100 or Grade X, XI, XII German, and in German basi work lists.

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.
The main aim of this class is to develop in the student a certain degree of speaking fluency as well as writing skills through th degree of speaking fiuency al wewledge and vocabulary. The class is based on German 100 , high school German o
equivalent basic knowledge. Since considerable stress is placed in this class on oral training, study of grammar will be limited to one hour weekly, given in English; the rest of the time is devoted to oral German.

Language Laboratory work is required. Small conversation classes once a week as an aid to speaking fluency are compulsory.

This class will continue to employ learning techniques with which students are familiar from their high school instructio and which are designed to teach stucents how to use cal patterns. Students will find that the type of work they have been accustomed to perform in class wil now have to be don in the languagelabor to the well class is
abilities.
he class work includes the reading of simple and moderately difficult modern German iterature and a complete review of Prerequisite: German 100 or equivalent.
rerequistie: German 100 or equivalent.
Texts: Schulz/Griesbach: Deutsche Sprachlehre für .Au
slädder, Griesbach: Deutsch für Fortgeschrittene.
201 Scientific German, lect.: 3 hrs.; A. Roulston
This is primarily a reading and translation class designed to enable science students to read scientrifical language. The grammar text used in the class emphasizes those aspects of grammar that must be known to accompish this. Class work tions found in the reading selections, vocabulary building and sight translations. Reading material is assigned from many sources in the major scientitic fields. Students are encouraged discuss in class Once a student has sufficient knowledge of grammar and the basic vocabularly of scientific texts, he should have little difficulty in acquiring the special terminology of his own particular ferd, acility and speed A reading sight, with reasonable facility and speed. A reading
knowledge of German is a prerequisite for many Ph.D. degrees.
Prerequisite: German 100 or equivalent.
Text: Eichner and Hein, Reading German for Scientists,
-obicoon

202 Exercises in Translation and Composition, lect.: 2 English texts from various periods and of different types will be translated into German
These translations will lead to the discussion of specific difficulties of grammar and construction. Students must prepare translations or compositions for each class. Dicta-
tions are given once a week. The class will be conducted tions are given on
Prerequisite; German 100 or equivalent.
Advanced Classes Offered
Advanced classes are based on German 200 or an equivalent knowledge
300 German Composition, 3 hrs.; R. Ilgner.
The aim of the class is to develop in students the abiifty to express themselves freely and correctly in different styles (e.g. personal andoficial letters, reports, descriptions) within
the vocabulary the vocabulary on puresitural and scientific life. Students will be required to do translations and exercises in syntax, and to write essays o various topics.

The class will also study the various uses of synonyms, idioms different meanings of similar words, words within changin contexts, and vocabulary within selected
Prerequisite: German 200 or equivalent

## 350 German Philology and Linguistics, lect.: 2 hrs.; H. G

The aim of the class is to familiarize the student with the German language in its historic development as well as its resent-day structures. The fields of phonology, morphology as an introduction to the methods of modern linguistics

Students are expected to work independently or in groups on set projects
Prerequisite

German 200 or equivalent.

## Theory \& Practice of Language Instruction, lect.:

 hrs.; H. G. Schwarz.This class is given in conjunction with the Department Euccation and will introduce the future teacher of German into

## Study of German Literatur

Prerequisite: German 200 or equivalent.
German 220 introduction to German Literature lect.: 2 hrs.
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

310 Baroque Age lect: 2 hrs.; F. Gaede.
The class studies German literature between the 16 th and 18th centuries as a direct reflection of the important religious,
social and scientific develooments in Germany after the social and scientific developments in Germany after the War. Poetics, poetry, drama, añd prose, their orions in Humanism and the Renaissance and their functions for the following literature will be discussed. An introduction will be mysticism and mannerism which determine and charactery, the European literature of the Baroque Age. The discussion will concentrate on the works of Brant (Ship of Fools) Grimmelshausen (picaresque novel), Gryphius (martyrdrama, sonnet) Flemming (Petrachism) and Angelus Silesius
(mystic epigram). The study of these texts will give the (mystic epigram). The study of these texts
students a thorough inderstanding of the epoch.
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 18 th century. The Germans, politically divided, participated in of artistic creation and philosophical reflection German.men of letters attempted to understand the tendencies of the age and sought to reconcile the revolutionary spirit with the

320 Goethe and Romanticism lect.: 2 hrs.; D. Steffen

325 Modern German Literature lect.: 2 hrs.; F. Gaede
405 A/B German Special Topic Course lect: 2 hrs
This course is designed to present subjects which are no regularly offered by, the Department. This may include literary works of the past, contemporary literature, and topics whic have connections with other fields of study
(Students who register for a specific program of study will
consult their advisor).

## Study of German Culture

Aesthetics, Philosophy, Religion

230 From Nietzsche to Hitter - A Study of Modern Evil lect.
2 hrs. Hankey, Starnes Steften Beginning with an examination of both the Notion of Evil and the Principles of the Modern World, the course aims to investigate the peculiar form of Evil in the modern world
through a study of the Third Reich. In the second term in study of Nietzsche and Existentialism, Freud and Psychoanalysis, and Pooper and Positivism, we investigate of the problem and inquire into the

410 Aesthetic Theories, seminar, 2 hrs.; F. Gaede

## 415 Modern Theories of Art and Literature seminar 2

 F. Gaede.420 Seminar on Hegel's Phenomenology of Spirit, 2 hrs .:
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 sem., 2 hrs.: D. Steften

## Graduate Studies

he department offers a graduate programme leading to 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 knowledges and underlegal, religious, semantic and comparative cultura! aspects of is given to adi iustment conception to senility. Considideration 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 instriat

## History

Professors
P. Burroughs
P. E. Flint
P. Fraser
H. S. Granter
R. M. Haines
G. R. MacLean
P. B. Waite
J. B. Webster

Associate Professors
C. B. Fergusso
J. Fingard P. Pillay (Chairman
M. Reckord
L. D. Stokes

## Assistant Professors

Assistant
J. E. Crowley
J. F. Godifey
J.F. Godirey
G. S. Kealey
J.T. O'Brien
N. G. O. Pereir
D. A. Suther
G. D. Taylor
G. D. Taylo
S. Van Kirk

History as a Subject for Study at University
A sense of history is a primitive need felt by individuals and by arrived where he is, so human groups, races, classes, states and nations need a sense of their own past as part of their legends, when peooles embroider what has come to them legends, when to create a comfortable set of beliefs about theif own previous exploits and origins. There are still those who wish to use history in this way, as a means to soothe doub
demonstrate the essential rightness of their own beliefs.

The academic study of history, however, is concerned to discover as much as posiber in ite haman behaviour in changes throue time It is unique subject, scientific in the way it uses evidence, but still an art because the reconstruction of the past requires fective rhetoric for the

The contemporary world is one of intensive specialization, in beyond the capacity of any individual to command These developments have reinforced the role of history as the foundation of a person's education, because history can neve draw frontiers around itself to exclude any branch of human
knowledge althoug individual historians will want to select knowledge, although cially 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 stuad enticing university history classes have 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 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 subiect to constant revision by scholars. Arguments, 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 himsel
At all levels of study in history, students are guided through ectures 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 oublished in paperback form.
Degree Programmes
set out below. There are severall levels of study, 100 -level classes are primarily for first-year students; $200-$ evel classes treat broad geographical areas over specified periods; and 300/400-level classes provide opporunity for specialized study and advanced work for the The Department appoints advisors to counsel students. Before registration students should consult with departmental secure departmental approval for admission to the particular classes they wish to take.

## 1. General Degree Programmes

Students who wish to major in history choose a 100 -level class and at least five or six and no more than eight upper-level classes, of which two of three should be at the 300 -level.

Students who wish to build up a greater specialization in history than the minimum requirements may do so by taking economic history from the Economics Departiment and in contemporary history from classes offered in Political Science. The Biology and Physics Departments also offer a class in the under the heading of the Calendar

## 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, esired, on the

North American: A concentration of classes in the history of Colonial North A

African: Classes in Atrican 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 Common-

General: A wide selection or classes from North American
All programmes include related studies in language iterature, philosophy, economics and political science.

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\text { Classes Offered at the } 100 \text { Leve }
$$

100 This Century Has Ten Decades, lect.: 2 hrs. plus Where have we been for the last 100 years and how did we get here? To resolve these questions, this class offers the possibility of experiencing the events, ideas and colour of the ap sessions. This is history for people who think they hate history
102 European History and Civilization.
120 History of Canada, lect.: 3 hrs.; P. B. Waite.
This class will cover the development of Canada from central core of social and political history but will range across economic history as well as Canadian literature. This is history or people who like Canad

199 P
hrs.

This class is for first-yer sut introduce the student to the problems of historical study cluding the nature of historical evidence, how problems are nalyzed, what is meant by such concepts as "causes" and results", and especially yow the student can learn to think for in carefully organized written work. No lectures take place instead, each student registers for a section dealing with the ype of history which interests him. The sections are limited to iteen 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 roblems in a field of special interest to the student. This

Some of the sections that may be offered: 1750-1820, J. E. Crowley.
99/6 Blacks and Whites Thought, R. M. Haines,

199/8 British Imperialism and Nigerian Nationalism, 1800-1970, J. B. Webster.
199/9 Canada, $1835-1935$ : Gentlemen versus Rebels, D. A. Sutherland.
99/10 America and the Cold War, 1940-1970, G. D. Tayior 199/13 (new section): From Artisan to Worker: Topics in 99/14 (new section): Sistory. G. S. Kealye. Anti-Soviet" Writings. Namizdat and Tamizdat: Recen 199/15 (new section): U.S. Urban History. J T O'Brien

Classes Offered at the 200 Level
History $100,102,120,199$ provide appropriate preparation for保-
European History

## Medieval Europe, lecture/discussion/tutorial sessions, 2 hrs.; R. M. Haines

Whin a broader framework the class will give particula attention to the Age of Charlemagne, The Twelth-Century Renaissance and the concept of decline in the context of the Ler

Early Modern Europe, tutorial: 2 hrs.; J. E. Crowley
This class involves a survey of European history, approximately from 1500 to 1800 . Among the topics treated are the
Reformation and the Counter-Reformation, economic and cultural expansion overseas, the consolidation of nationa states and their attendant rebellions, the intellectual history o olitical and scientific development, and the changes and

205 Modern Europe, J. F. Godrrey, N. G. O. Pereira, L. D. Stokes

This class discusses selected topics in European history between the French Revolution and the end of World War II. Among these are France during the revolutionary and
Napoleonic era; the Industrial Revolution in Britain and on the continent; Marxism and the revolutions of 1848; Darwin, Freud and modern science; the First World War; the Soviet Union under Lenin and Stalin; and Fascism and Nazism between the wars. For each topic, there will be one week of general and
second week of specialized readings, followed by a week devoted to student projects. There will also be several guest lecturers during the year. Attendance and active participation
in alls sessions are required. One section of the course will be in all'sessions are required. One section of the course will b he evening
British and British Imperial History
210 The History of England, lect.: 2 hrs. plus tutorial sections, S. Granter, P. Fraser.

The main features of English history, from Anglo-Saxon times io the twentieth century, are given selective treatment and pu
in historical focus. The emphasis is on the develont society and culture which, though similar to Western .
213 British Empire and Commonwealth, lecture/discussion 2 hrs.: M. Reckord. 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. A section of this class may be given in the evening.

## North American Histor

 220 The Canadian Mosaic: Themes in Canadian History,informal lecture/discussion: 2 hrs.; G. S. Kealey, D. A. Sutherland, S. Van Kirk.
History 220 explores major themes and problems in Canadian
history from the seventern history from the seventeenth to the twentieth centuries The
treatment of events will be topical and concerned with the Fremen Colonial, the British Colonial and concerned with the
With Within these periods British Colonial, and National Periods.
groups and the groups and the colonial, regional, and etthnic characterersitics
of Canadian history. The class is designed to provide the
undergraduate with an understanding of the Canadian experience and provide a framework in preparation for more
advanced study. A section of this class will be given in the evening.
Prerequisite: A history class at the 100 -leve
222 Canadian Economic History, lect.: 3 hrs.; ; for details see
330 American History, lect.: 2 hrs.: J. T. O'Brien, G. D. Taylor
The focus of this course is on the emergence of an American society and economy and the impact of these developments
on political ideas and institutions. Within this framework certain basic themes and issues will be examined, such as: how did regional differences in social and economic arrangements affect the way in which people viewed one hation? How closely did ideas about American social equality and economic opportunity reflect the realities of the emerging society? How did the rise of an industrial and urban nation alter shaped in small towns, city neighborhoods and rural communities? The course will emphasize basic changes and endencies in American history.

## 240 History of Tropical Africa in the Nineteenth and Twentieth Centuries, J. E. Flint, J. B. Webster

In lectures and tutorials students will be enabled to grasp and absorb some of the major themes of African pre-colonial African states and societies such as the Yoruba empire, Ashanti and Danomey in West Africa, and African states like cultural contact and its effects will be prominent in considering Muslim revolutions in West Arrica, and Arab penetration in East Africa, as well as the impact of Christian missionaries in European colonial rule: the patrition of Africa, the establishment of differing types of European rule, and African responses by resistance and nationalism which culminated in he emergence class will be given in the evening.

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\text { Classes Offered at the } 300 \text { Level }
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300 -level classes in history are intended for third-year students who have completed work at the 100 and 200 levels. In general these classes are concentrated in area and time and allow students to pursue interest developed in 200-level 300 -level classes, details of which will be available at registration.

300 Mediaeval Civilization, discussion/tutorial: 2 hrs.; R. M. Haines.
History 200 provides the appropriate backdround for this class. Each year a number of topics is chosen, wide enough to be used as central themes in the context of which mediaeval civilization can be studied, for instance, monasticism, will be studied in depth, with the help of original documents (in translation) where these are available, and using periodica 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 generai books should be read before starting the class. Suggestions of this kind, with a will be avaiable well in advance.

302 The Mediaeval Church, discussion/tutorial: 2 hrs.: R. M Haines

Pereira.
This course examines Russia from the reign of Alexander hrough Stalin and slightly beyond, with an emphasis upon intellectual and political history.

## 06 Modern France from the R'evolution of 1848 to

 Collapse of 1940, seminar: 2 hrs .; J. F. Godfrey."All my life I have thought of France in a certain way. This is inspired by seniment as much as by reason... nstincivel complete success or for exemplary misfortunes. If, in spite of this, mediocrity shows in her acts and deeds, it strikes me as an absurd anomaly, to be imputed to the fauts of frenchmen, also assures me that France is not really herself unless in the front rank; that only vast enterprises are capable of counterbalancing the ferments of dispersal whicc are inherent in her people; that our country, as it is, surrounded by the
others, as they are, must aim high and hold itself straight, on pain of mortal danger. In short, to my mind, France cannot be France without greatness". (Charles de Gaulle, War Memoirs 1940-42)

Stokes.
History 205 provides the appropriate background for the class which examines selected topics in 19th and 20th century
German history. These include German nationalism and German history. These include German nationalism and parties and civili-military relations. Extensive reading in primary and secondary sources is required and each student will prepare a research paper during the secon
reading knowledge of German is not necessary.

310 History of Science, lect.: 2 hrs.: tutorial: 1 hr . J. Farley, R. Ravindra
(Same as Biology 3400 and Physics 340 . Class description to be found under Biology 3400 .).

English History
14 England under the Tudors and Stuarts, discussion/tutorial with occasional lectures: 2 hrs.; H.S.

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.

316 England in the Nineenth Century to 1867 , discussio
Granter.

## Humanistic Studies in Science

The Nineteenth century was England's century, the Victorian Age, the time of England's greatness. The class is devoted
orimarily to the study of the making of Victorian England examining the impact of new machinery and new ideas on an ider agricultural aristocratic society

317 Late Victorian and Edwardian England, seminar, 2 hrs.;
The class will examine selected aspects of political, social and intellectual history, such as the transtormation of the Liberal party under pressures from Socialist groups, the Labour movement and the varied forces of Imperialism; the ideals and policies of special movements associated with temperance,
social reform, imperial federation, tariff reform, women's suffrage, national service and defence; and the methods of political organization (whether of central or iocal government),

North American History
323 Western Canada: The "Last, Best West", seminar, 2 hrs.; S. Van Kirk
325 Canada Within the Empire, 1760-1896, discussion/tutorial: 2 hrs.; P. Burroughs. (Not offered

History 213 or History 220 provide the appropriate background for this class, which examines the political, commercial, and cultural relations of Canada with Britain from the
conquest to the eve of nationhoodd the changing attitudes of Canadians and Englishmen to the developing empire: and the interplay of imperial policies and colonial conditions.
326 The Response to Industrialism in Canada, 1850-1935, seminar, 2 hrs.; G. S. Kealey.

A'background in Canadian history is highly recommended but exceptions will be made with the instructor's permission. This $1850-1935$ with a special focus on industrialization. Although nvolving excursions into economic history the course will be primarily concerned not with the process of industrialization working class response but attention will also be paid to agrarian and middle class responses. Consideration will also be given to the regional nature of these developments. primary sources.
327 The Nova Scotian Experience, tutorial: 2 hrs.; D. A Sutherland.

Either History 120 or History 220 provides an appropriate ackground, and admission is restricted to third and fourth cotian society from the settlement era to the 20th century Emphasis will be placed on analysis of the internal and metropolitan pressures which together moulded the character of the provincial community. Students are encouraged to use
ocal archival sources in the preparation of their research local ar
papers.
328 The Age of MacDonald and Laurier, seminars with some lectures, 2 hrs.; P. B. Waite

This class will deal with the growth and expansion of British Noith America from 1840 through the Confederation period to
1914. There will be emphasis on social and political history,
but students can expect substantial excursions into Canadia economic history and Canadian literature. History 120 or 220 and fourth year students. A reading. knowledge of French is

29 Canadian Social History, seminar: 2 hrs.: J. Fingard (Not offered 1975-76).
History 220 provides the appropriate background for this elements in the population in the 19th and early 20th centuries. The topics include: British and American influences, immigraion, settlement, and class structure; moral and social reform movements, manifestations of nativism; cases of privilege and write research papers, which may be based on Nova Scotian sources.

## 334 The Anglo-American World: 1600-1815, J. E. Crowley

This class considers the interaction of British and North American colonial experiences. during the exploratory and
commerical ventures of the Elizabethans, the develonent permanent colonies, the consolidation 'of mercantile and imperial organization, the American Revolution, and the establishment of national economic and governmenta
institutions. The general problem studied is that of cultura diffusion and interaction. Focusing on patterns of growth and change in political, economic, social and religious institutions the class integrates the American colonial experience with
British expansion elsewhere overseas and with Bitish expansion elsewhere overseas and with political and
cultural conflict at home. The major themes of the class are the interplay of British and American politics, the role of ideas as guides to action and limits of perception, the transplantation and modification of British institutions, and the effect of the new world on the old
336 Slavery, The Old South and Reconstruction in
America, J. O'Brien 337 Colonized and Colonizers: Studies of Emergen Nations in the Caribbean, seminar: 2 hrs . M. Reckord.

This class will examine the impact of imperialism on the Caribbean: analyze the characteristics of Spanish, French and British colonial societies and the nature of the recurrent
struggles for independence struggles for independence.

339 The United States in the Twentieth Century: The Arohecture of Complexity, tutorial: 2 hrs.; G. D. Taylor. This class investigates the response of American political and economic institutions to the problems of industrialization and
urbanization. Study focuses on patterns of organization: the growth of public and private corporate forms of bureaucracy: the emergence of new interest groups; and the impact of these
developments on the traditional American political and social structure. The class will emphasize discussion and individuaa research by the student within this general framework.

344 History from Oral Tradition: The Interlacustrine
Region in Africa, $900-1680$, seminar Region in Africa, $900-1680$, seminar, 2 hrs.; J. B. Webster
One of the most fascinating aspects of early African history is myth and symbolism are analyzed to reconstruct the African past. This course will deal with the interlacustrine region of

Sy intensive mixing and fusion of three major linguistic groups, Sudanic, Bantu and Nilotes. It will consider theories about how clans, the conditions and philosophies of state foundation, and the use of totem groups in tracing migrations.
345 History of South Africa, lecture/tutorial, 3 hrs.; P. D. Pillay.
History 213 provides an appropriate background for this studies with themes from Canadian history. The class concentrates on the period since the British acquisition of Cape colony, and examines the development of relationships groups, and between the white population and other races. The main topics considered are the rise and fall of the Zuiu nation, the opening up of the interior, the imperial factor and. its effects on Cape and Transvaal politics of the late nineteenth development of apartheid
348 Partition of Africa, seminar, 2 hrs.i. J. E. Flint.

$$
\text { Classes Offered at the } 400 \text { Level }
$$

Both History 460 and History 499 are required of fourth-year istory honours students; first-year M.A. students may also
00 Palaeography, discussion/tutorial: 2 hrs.; R. M. Haine
This class is intended to provide an introduction to the study and use of mediaeval records, mainly those from English archives, as well as practical instruction in their transcription.
The. records studied will be almost exclusively in some knowledge of the language is required at the outset.

460 History in Theory and Practice, discussion/tutorial: 2 hrs.: P. Fraser
The topics covered will be adaptable to the needs and preferences of students, but in general terms the class will consist of studies in historiography, schools of. history, the
diversity of historical topics such as art history or the history of science, and the debate about the theory of the discipline of history.
499 Honours Essay, Staf
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 substantial essay on a topic to be chosen in consultation with
the Undergraduate Committee. The essay will be related to one of their 300 or 400 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. Graduate Studies.
ttention follores offered in sever departments. All of these classes are concerred with the
humanistic aspects of scientific thought and its development. History of the Sciences
Biology $3400 /$ Physics $340 /$ History 310 , The History of Physics 120, Science and Heresy, W. Silvert.
Biology 4404, History of Biology, J. Farley, K. von Malzahn Physics 402B, Speical topics in the History and Philoso phy of cience; R. Ravindra:
Psychology 358 . History of Psychology: JW. Clark.
hilsophy of Sclenc

Philosophy 305, Epistemology, A. Rosenberg.
Philosophy 465 Philosophy of Science; A. Rosenberg Religion 251, Religion and Science; R. Ravindra

Sociology of Science
Sociology 325, Sociology of Science and Ideas, D.H. Elliot Details of the above' classes will be found under the Details of the above classes
appropriate departmental listings.

## Linguistics

The departments of French, German and Spanish each offer lasses in linguistics, details

Professors
J. Ahrens
E. Blum
M. Edelstei
M. Edelstein
A. J. Tingley

Killam Research Professor

## Associate Professors

H. Brunner
D. S. Chehil
R. P. Gupta
E. Heighto
E. L. Heighton
S. N. Sarwal
W. R. S. Sutherland (Chairman)
S. Swaminathan
J. Thiebaux
A. C. Thompson

## Assistant Professors

J. C. Clements
K. A. Dunn
K. A. Dunn
C. A. Field
J. F. Goodfellow
L.A. Grünenfelde
C. S. Hartzman
R. D. Holmes
L. L. Keener
L. L. Keener
E. B. Mercer
D. O'Donovan
R. Paré
F: J. Ser
F. J. Servedio
W. R. Smith
P. N. Stewart
K. K. Tan
K. Viiayan

Senior Killam Research Fellow
H. Radjav

\section*{| Research |
| :--- |
| $J . B a s t i a n ~$ |}

1. Brown
S. Fesmire

## Post-Doctoral Fellows <br> J. Borwein D. Granot <br> Granot

## Degree Programme

Students who plan to major in Mathematics should arrange a programme in consultation with a member of the Department A major programme will include 200, 203-204 or 213 (or above. The courses 102, 106-107, 110, 111-112, 220, 228, and 328 may not normally be included

The Department offers coures of interest to inajors in the
following areas of Mathematics: Calculus and Differentia folowing areas of Mathematic
Equations: $200,300,311,312$
Analysis: $250,302,304,350$.
Algemetry, Logic, Theory of
Probability and Statistics: 206, 306. 310. 316

## Numerical Analysis: $225,227,320$. Operations Research: $230,330,331$

Those students who wish to arrange interdisciplinary programmes (with such fields as Computer Science, Physics Chemistry, Biology, Psychology and Econom
discuss their interests with the Department.

## Honours in Mathematics

Students who wish to take honours in mathematics may not be able to complete their courses in the usual four years if they do not have senior matriculation mathematics, unless they take a or following their first year at the University. Such students should consult the chairman of the department when accepted. Other students interested in an honours degree
should consult the chairman of the department before the end shour their first year if possible, but in any case during the second year.
The following programme will normally be followed by students who. plan to take Honours in mathematics Adjustments wh
may be made.

Year II
Mathematics 250 (or 200), will normally be taken. Math 203 and 204 may be taken in Year I by well-qualified students with the consent of the instructor, in which case another Class may be selected in Yearill

## Year III and Year IV

Math 350 (or 300) and Math 303 and five additional classes at classes, normally at least three will be selected from groups and II below with at least one from each group. Other classes may be selec department
$205^{\circ}$
302 and 304
$305^{*}$

| $305^{*}$ |
| :--- |
| $307^{*}$ |

306 and 317
310 and 316
$305^{*}$
$307^{*}$
401
310 and 316
311 and
320
320 and 33
402
e: These classes are usaully offered only in alternate
Honours Comprehensive Examination
The Honours Comprehensive examination will be a verba presentation of a suitable topic requiring comprehensive
knowledge. The topic is to be selected in January of the graduating year for presentation in March

## Combined Honours

Students interested in taking honours in mathematics and 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

All students please note the following:

The listed prerequisites indicate the mathematical back round expected of students entering any class but may b waived with the consent of the instructor
In any one academic year, the mathematics department offers only a selection of the classes described here. The student
should consult the $1975-76$ university timetable or the should consult the 1975-76 university timetable or the 1975-76.

## 01 Fundamentals of Mathematics, lect.: 3 h

This class may be offered in place of senior matriculation athematics as a prerequisite for first year classes at the University. Normally, junior matriculation mathematics as aught in Grade Xi in Nova Scotia is expected as a background cope with the work of this class. The text has been chosento nclude analytic geometry and elementary trigonometry for hose given on to the calculus, but the evolution of the number system, functions and matrices are studied along with othe $p$ their knowledge of the fundamentals of mathematics fo other reasons.
00 Differential and Integral Calculus, lect. 3 hrs (Half-course)
Prerequisite:
Frerequisite: Familiarity with plane analytic geometry Grals and elementary trigonometry. A student comple elsewhere should be ready for calculus:

101 Differential and Integral Calculus, lect. 3 his. (Half-course)
Prerequisite: Math 100

These two classes are designed to introduce the basic ideas nd methods of the calculus and together constitute a sol hemistry, Biology, Economics, etc.) as well as for fuither study in Mathematics
These two half-classes will usually be offered in both terms.
Mathematics 100 is a self-contained introduction to differentia and integral calculus. The topics discussed include: review polynomials, trigonometric, exponential and logarithmic unctions, product, quotient and chain rules, applications differentiation, antiderivatives and definite integrals, integra-

Mathematics 101 continues the study of calculus with topics incluaing: techniques of integration, higher derivalive tests maxima and applications.
Two sections of this class are primarily for engineering with an introduction to the use of a computer. Together with the egular lectures there will be a weekly tutorial which students will be expected to attend.
No more than one credit will be given for Math 100-101, 110,
102 Mathematics for Liberal Arts Students, lect.: 3 hrs.
The course is intended for students at the university 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 and entertaining aspects of
mathematics for a student who has completed senior mathematics for a student who has completed serioe
matriculation in high school and who wishes to see more of mathematics.
Topics will include truth tables, an introduction to logic, properties of infinite sets versus properties of finite sets, graph theorems, the five color theorem and four color problem, a study of the integers and the Fundamental Theorem of and some Calculus.

Historical facts and cultural significance will be stressed continually.
This class will be offered only if there is sufficient enrollment. The course cannot be used as a prerequisite for other Mathematics courses.
Prerequiste:
Senior High School Mathematics.

106 Introductory Statistics for Non-Mathematicians, lect. 3 hrs. (Half-course)
Through extensive use of illustrative real-life examples, the student is introduced to the basic concepts of statistics: data reduction, estimation, and hypothesis testing. These examemphasis of the course will be on statistical concepts, rathe than mathematical manipulations. The course is open to students of any year.
The principal aim of the course will be to enable students to identify and formulate the statistical aspects of real-life problems and to become familiar with the statistica vocabulary most commonly used in scientific journals. The
student requiring a more extensive exposure to the statistical methods of scientific experimentation are encouraged to follow this course with Math 107.
Topics will include descriptive statistics, elementary probabil and distributions, estimation, hyootheses testing and regression.
Prerequisite:

## 27 Statistical Techniqu

 lect: 3 hrs. (Half-course).his course extends the introduction of statistics provided by in the experimental sciences. Topics will include regression and correlation analysis, analysis of variance, and curve ting techniques. The presentait or hese topics wil incluct consideration of the statistical aspects of experimential design

The objectives of this course are: ) to explain the hese techniques can be applied
) to illustrate the nature and methods of the necessary computations

10 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 managemen. The material covered in the However certain topics (such as Taylor's series, volumes of revolution) included in Mathematics 101 are not covered in Mathematics 110. In their place Mathematics 110 includes an | introduction to matrix algebra, maximization of functions of two |
| :--- |
| variables and | variables and Lagrange multipliers.

This class is intended as a survey class for students who are not going to take further work in mathematics. Students who
are going to take other mathematics classes should take Mathematics 100/101 rather than Mathematics 110 as Mathematics 100/101 uses a more rigorous mathematica approach. Throughou hie class, applications of mathematica es to economic and management problems will be Prerequisite: High school mathematics.
111 Finite Mathematics for Commerce, lect:: 3 hrs.
This half course is designed to give the student an introduction to finite mathematics with an emphasis on applications in
commerce. This course and Math 112 together satisty the mathematics requirement in the Commerce department. Students planning to take more advanced courses in mathematics may wish to take Math 100/101 and should

Topics include: probability theory, linear algebra, linear finance.
Prerequisites: High school mathematics
112 Introductory Calculus for Non-Mathematicians, lect.: 3 hrs., (Half-course)
This course is designed primarily to fit the specifications of the
departments of Commerce and Pharmacy (with different departments of Commerce and Pharmacy (with different computational techniques are stressed. These techniques are extensively applied to those functions which occur most often in commerce and pharmacy; namely, power functions, exponential functions and logarithmic functions. Topics
studied include limits and continuity, the derivative, the studied include limits and continuity, the derivative, the
definite integral and applications of these to pertinent examples. In addition, commerce students will study functions
of several variables while pharmacy students will study of several variables while pharmacy students will study
elementary differential equations.
Prerequisite: High school mathematic

## 151 Differential and Integral Calculus for Honours

This class, to be formed in the second turn, is designed for
students who, after a one-term exposure to Mathematics students who, atter a one-term exposure to Mathematics 100, introduction to Analysis.
Syllabus: The real line R (as a complete ordered Archimedean fiela); basic topology for R; the concept of mappings, in
particular those of $R$ into itself. Sequences, convergence and criteria for convergence. Limits and continuity of functions. Properties of continuous functions (like attainment of inter-
mediate values, attainment of lub, etc.) Uniform continuty Differentiation, Rolle's Therorem, Mean-value Theorem, Taylor's Formula, Taylor's Series. Theorems on uniformly convergent series of functions. Integration, definition and
properties of Riemann integrals, evaluation. Fundamental

Theorme; some techniques of integration; improper integrals. Prerequisite. Good stanaing in Math 100 (December mark)

200 Intermediate Calculus, lect: : 3 hrs
It is assumed that students taking this class have already acquired some knowledge of Calculus. Conceptual aspects
will be treated, while stress is laid on manipulative techniques which lend themselves readily to applications in physics and
engineering. engineering
Topics include: real number systems, continuous functions and their fundamental properties, partial derivatives and applications, convergence and divergence of infinite series,
power series, double intergral functional power series, double intergral, functional determinants,
geometry of Euclidean vector spaces with emphasis on three dimensions, elementary differential equations.
Prerequisiste: Mathematics 100
Credit will not be given for more than one of Math $200,220,228$
202 Basic Concepts of Mathematics, lect.: 3 hrs
Basic concepts from set theory and logic form the basis of the course. From set theory - partitions, partial and linear order relations, equivalence relations, functions, and the number systems (constructed using decimal rationals). Fundamental
algebraic structures are defined and apolied in the developalgebraic structures are defined and applied in the develop-
ment of the real numbers. From mathematical logic symbolic logic (special attention to tautologies), propositional and predicate calculus as far as Henkin's Completeness Theorem.
Prerequisite:
Prerequisite: Math 100 and 101
203 Matrix Theory, lect.: 3 hrs. (Half-course)
Topics will include the following: solutions of systems of linear equations, matrices and matrix algebra, equivalence, Pank,
inversion, determinants, and applications of matrix techniques to other branches of mathematics as well as to social algebra will be given with applications to matrix algebra.
Math 204 is an appropriate sequel for this course.
Prerequisite: High school math.
Not more than one credit will be given for Math 203, 204 and
204 Linear Algebra; lect.: 3 hrs. (Half-course)
Topics will include the following: Vector spaces, bases,
dimension, linear transformations, representation of linear transformations by matrices. transformations by matrices.
Prerequisites: $\quad$ Math 203.
Not more than one credit will be given for Math 203, 204 and 213.

## 205 Projective Geometry, lect.: 3 hr

We begin with a brief discussion of the role of the "postulates" Euclid, and goometry, especially the Parallel Postulate of Euclid, and go on to some elementary theorems of
Non-Euclidean Geometry. Some of the basic properties common to the Euclidean and Non-Euclidean geometries are describeted. We introduce axioms for geometry which describe these properties and the axioms are shown to be
consistent and independent by giving finite models or finite
geometries. The axioms are those for Projective Geometry
Projective geometry is then studied in detail with topics including duality. Desarque's Theorem, the harmonic relation algebraic models for the projective plane, cross ratios
Pappus's Theorem, the Fundamental Theorem of Projective Geometry, conics. Introduction of Coordinates in a projective plane, discussion of Klein's Erlanger Program
This course is intended for anyone with an interest in Mathematics and geometry, especially for those who enjo engaging in deductive reasoning

The following topics will be included: Probability theory, expectation, sampling and sampling distributions, estimation criteria and methods. Testing of hypotheses, non-parametric estimation, regression analysis, and correlation

## 213 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 Topics include: the material of 203 and 204, canonical forms including the Rational Form and Jordan Form, inner product on finite dimensional vector spaces, linear programming and urther topics in pure and applied linear algebra. This course provides an excellent background for further stuay 305.330 and 350

Prerequisite: Math 101 or 151
Not more than one credit will be given for Math 203, 204 and 213.

220 Applied Mathematics, lect.: 3 hrs.
This class is designed with the needs of science students in mind. It includes the topics: Functions of several variables, vector analysis, line and surface integrals, integral theorem
differential equations, series, complex analytic functions.

Students who complete Math 200 are admitted to classes where Math 200 is the normal prerequistie. Creart will not be iven formore hanh 100 and 220,228 and 250

25 Introductory Numerical Methods and Fortran Prog amming lect.: 3 hrs.: (Half-course).

This class provides an introduction to the use of desk calculators and to the Fortran computer language, which is wide use throug Particular emphasis is placed on numerical techniques appropriate to linear algebra

227 Numerical Methods, lect.: 3 hrs. (Half-course)
This class provides an elementary introduction to some of the
numerical methods used in almost all fields of the sciences. The numerical techniques studied include those for the solution of polynomial equations, the approximation and
interpolation of functions, some methods for numerical integration and differentiation and differential equations These techniques are applied to a variety of problems chosen
trom the physical and social sciences A knowledge of Fortran programming to the level of Math 225 is assumed. Prerequisite: Mathematics 101 and 225 (or equivalent).
Credit will not be given for more than one of Math 227 and 230

## 228 Applied Mathematics for Engineers I, lect.: 3 hrs

This class, which is a sequel to Math 100 and 101 for engineers, covers topics which include: vector algebra and analysis in three dimensional space; functions of severa
variables; multiple integration; complex variables; infinite series.
Prerequis
Prerequisite: Math 101. Credit will not be given for more than one of Math 200, 220. 228 and 250

230 Introduction to Operations Research lect.. 3 his (Half-course)

This class provides an elementary introduction to some of the numerical methods which are being applied to problems in business, economics and the sciences. These methods
generally determine a best, or optimal, solution to a model o the original problem. Using digital computers it become the original problem. Using digital computers it io consider some of the actual applications of these
feasile methods.
The mathematical methods studied include optimization techniques from the calculus, solution of polynomial equa tions, the simplex method for linear programming and the special versions of the assignment and transportatio processes as in inventory and queueing problems. These echniques are applied to a variety of problems chosen from business, government and the sciences,
rerequisite: Math 101 and 225 (or equivalent). Credit wil
not be given for more than one of Math 227 and 230 .
235 Foundations of Mathematical Astronomy, lect.: 3 hrs.
This class is designed to give the students the mathematica background for a good understanding of the structure of the niverse and a solid foundation for possible further study. stellar astronomy. The history of the development of stronomical thought from ancient times to the present will be onsidered in connection with the presented material
The class starts with geometrical considerations about the sphere, spherical coordinates and some concepts of spherical trigonometry. Then the topics celestial sphere diurnal motion, equatorial coordinates, mean time, parallax motions, are treated.
The mathematical treatment is of an elementary nature dents will require knowledge of trigonometric functions, simple differentiation and polar coordinates.
This class will be offered only if there is sufficient enrollment. erequistie: Mathematics 100 and 101, Which, with the

## 250 Intermediate Analysis, lect.: 3 hrs.

Mathematics 250 is a parallel class to Mathematics 200 and is designed for students who intend to study mathematies as
major part of their undergraduate programme
The course is mainly concerned with functions from n -dimensional space into $m$-dimensional space (i.e. functions
of several variables) with particular reterence when n and m are equal to 1,2 or 3 . The question of diferentil Fortion and integration of such functions is discussed in detail. For this some knowledge of linear algebra is essential. concurrent registration in Math 213 (or 203 and 204). Credit will not be given for more than one of Math 200, 220, 228 and

300 Advanced Calculus, lect.: 3 hrs.
Functions of several variables, continuity, differentiation mplicit differentian techniques. Taylor's expansionbians (their geometric meaning). Implicit function theorem extreme values; multiple integration (especially transforma-
tion of double and triple integrals), line and surface integrals. Green's and Stokes' theorems; series of functions; uniform convergence; Fourier. Series (sine and cosine series; convergence theorems). Applications: boundary value probhonour in mathematics, or do graduate work in mathematics, should take Math 350, not Math 300.

Set theory and Foundations of Analysis, lect • 3 hrs (Half-course)
This course converns the basic "objects" of mathematics and he proper way of dealing with "infinity". It is essential for a clear understanding of most modern aspects of mathematics. countable and uncountable sets cardinal numbers sets, Well-ordering, Ordinal numbers, Axiom of choice and its equivalents, and axiomatics in set theor

Sequels to this course: Math 304, 33

## 303 Abstract Algebra, lect.: 3 hrs

In this first course in abstract algebra the following topics will be treated: groups, subgroups, factor groups, homomorph sms, rings, ideals, euclidean domains, polynomial rings, and
fields.
his course is a good sequel to Math 204 or 213 and leads to Prerequisite: Math 204 or 213.

304 Metric spaces and elementary topology. lect.: 3 hrs
(Half-course) (Half-course).

The topics discussed in this class will include: Metric Spaces xamples. Bounded, totally bounded, compact, and compeete sets in metric spaces. Lipschitz and contraction sets, bases. Continuity, compactness, connectedness.

305 Differential Geometry and Tensor Analysis, lect.: 3 hrs.
The material presented in this course will consist of two parts he first part will discuss the theory of curves and surfaces include: theory of curves, surfaces, first and second
undamental 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. opics treated will include: Foundations of tensor calculus,
differentiable manifolds: foundations of Riemannian eometry absolute differentiation and connex Prerequisites: Mathematics 200, and 213 (or 203 and 204).

306 Probability, lect: 3 hrs. (Half-course).
This class is intended to assist the student to acquire as horough an understanding of basic concepts in probability as ilustrate the great variety of practical applications of probability to science and industry.

The topics covered will inqlude: Fundamentals and axioms, combinatorial probability, conditional probability and independence, binomial, Poisson, normal, exponential distribulions, generating functions, laws of large numbers and central -
Math 317 is a natural sequel for this course
Prerequisite: Calculus to at least the level of Mathematics
07 Theory of Numbers, lect.: 3 hrs
Congruences and residues; elementary properties of congruences; linear congruerices; theorems of Fermat, Euler and Wilson; Chinese remainder theorem; quadratic residues; law of quadratic recipocity; Legendre, Jacobi and Kronecker
symbols. Arithmetic functions; algebraic fields: algebraic numbers and integers; uniqueness of factorization, definition and elementary properties of ideals; ideal classes and class number.
Properties of binomial and $Q$-Binomial coefficient
310 Mathematical Statistics, lect: 3 hrs. (Half-course)
In this class, a number of techniques for determining and provide the student with a theoretical basis for doing practical provide the studen
work in statistics.

Topics will include: Distributions of random variables, sampling distributions, interval and point estimation, sufficie statistics, maximum likelihood, statistical hypotheses, regres on and correlation.
nterested students should consider Math 316 as a sequel for Prerequisite: Math 206

311 Differential Equations, lect.: 3 hrs. (Half-course)
One of the aims of this course is to give the student the ability to nalyze and solve a number of different types of different quations
Wherever possible, applications are drawn from the fields of hysics, chemistry, biology, and other areas. The course is tended mainly for mathematics students interested in
pplications and for science students who wish to be able to olve problems arising in their major area of interest any student interested in applied mathematics. Areas treated mials Sturm-Liouvill problems, the classical partial differen tial equations, and some applications to physics, chemistry and engineering

16 Data Analysis, lect.: 3 hrs., (Half-course)
This course provides the students with experience in solving aral statistical problems. The course is organized so tha the instructor, to scientists and others requiring assistance with data analysis. The problems facing a statistical consultan隹 problem can be handled using standard techniques and, ot, iii) develop a new technique.

Students will be encouraged to develop novel approaches to e consultee's problem. In so far as it is possible, a stude will be able to follow up those consulting problems whic iterest him most. Consullaion conach wh on occasio be replaced by survey lectures prepared by students on participation in consulting, the student survey lecture, and an xamination relating directly to the highlights of the consulta
rerequisite: One full course in Statistics comparable to Math 206. In addition it is advisable that students have Math 10, Mathematical Statistic
317 Stochastic Processes, lect.: 3 hrs. (Half-course)
This course will develop the ideas of stochastic processes with an emphasis on practical applications. The ability om a physical context into the language of a probability model will be stressed.
opics will include: Markov chains with their limiting behavior enewal processes, branching processes, Poisson process, irth and death processes, steady-state behavior of continu ous time, Markov processes, stationary time series
Prerequisite. Math 306
320 Introduction to Numerical Analysis. lect.: 3 hrs
One aim of this class is to derive efficient methods for the numerical solution of problems from various branches of
mathematics. The other, more important aim is to provide an understanding of these methods by using rigorous mathemal cal analysis: under what conditions does a particula why does it fail to yield the desired results.
The class will cover the following topics: Iterative solution of nonliner algebraic equations (and systems of such equaons), direct and iterative methods for systems of linea algebraic equations, iterative methods for eigen-value problems of matrices, linear approximation of functions proximation, approximation by spline functions), mumerica differentiation and integration, linear difference equations, init-difference methods for ordinary differential equalio Prerequisite: Mathematics 200 (or 250)

328 Applied Mathematics for Engineers II, lect.: 3 hrs
The following topics will be discussed:
First term:
(a) Linear algebra: matrix theory, systems of linear algebraic equations (theory and numerical methods for solution), eigen-value problems for matrices. first-order equations, applications.
(c) Numerical soletion of ordinary differential equations: one-step methods for a single equation and for systems o
first-order equations, discussion of stability properties (abso fute stability. A-stability) of these methods, examples of multistep methods for first-order equations.
Second term:
(a) Fourer series and integrals orthogonal functions
(b) Linear partial differential equations of order two; Mode probiems from mathematical physics (wave equation, hea (c) Elementary probability and statistics.

Students offering Mathematics 328 will not be given creait for Mathematics 300 .
tin hin 28 or 330 Linear and Integer Programming, lect.: 3 hrs

Linear programming at it simplest, consists of a procedure for finding the optimal allocation of scarce resources. It is perhaps the most widely used technique in Operation Research and has boent and even to proving theorems in in usiness, g.
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 several solution methods will be compared by using computerized packages on certain applied problems. Finally he cutting-plane method will be developed for the all-integ problem.

331 Discrete (Hall-course)

This class extends the variety of optimization models of Math 330. Initially the study of integer LP problems is continued with the assignment and transportation models. This eads into the 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 decision production scheduling and multi-period planning models.

332 Applied Group Theory, lect.: 3 hrs., (Half-course)
This interdisciplinary half course is intended for third yea undergraduate and first year graduate students majoring
will include: Fundamentals, normal subgroups, homomorph isms, representations, character, oothogonality, symmetry
groups in crystallography, symmetry groups of the Hamiltonian operator and its representation. Applications to quantum mechanics.
Prerequisite:

Math 213 (or 204).
This course can be coupled with Mathं 302 or Math 311.

## 350 Introductory Real Analysis, lect.: 3 hrs.

Rea analysis is that branch of mathenfatics that has grown out
of the study of the reial number system and its properties. A. of the study of the real number system and its properties. A arge portion of this course will be devoted to a rigorous
development of the classical theory of functions of a real variable. The course will also include many of the important orems trom integral calculus.
Class Outline: Development of the real number system and its properties. Sets, metric spaces and the topology of metric
spaces, particularly Euclidean space Compactne spaces, particularly Euclidean space. Compactness) Sequences and continuity. The Riemann-Stieltijes integral. Infinite
series and power series. Sequences of funictions and uniform. series and power series. Sequences of functions and uniform
convergence. The Stone-Weierstrass theorem. Functions of several variables. The inverse function theorem and the implicit function theorem. Line. and surface integrals.
Differential forms and the theorems of Stokes and Gauss. An introduction to the theory of complex variables. Gauss. An

Students who intend to do honours or graduate work in mathematics, are advised to take this class, not Math 300 Prerequisite: Math 250 (or 200), Math 213 (or 204).
401 Measure Theory and Integration, lect.: 3 hrs .
The fundamental position of the Lebesgue integral in modern mathematics makes this course a requirement for serious students of the subject. Topics include measure, outer ation, product measures, and the Riesz representation heorem.

402 Theory of Functions of a Complex Variable, lect:: 2 hrs .
Topics include: topology of the complex plane, integration, maximum modulus theorem, conformal mapping powe series, analytic continuation, Riemann surfaces, Laurent series, theory of residues, meromorphic functions, norma amilies, Riemann mapping theorem, harmonic functions.
rerequisite: Mathematics 300 (or 350 )

## 403 Advanced Abstract Algebra, lect 3 hrs .

This second course in Abstract Algebra deals with the structure of groups, rings and modules in terms of products, defined and its properties are studied. The language is universal algebra and category theory is introduced Properties of polynomial rings leading up to Galois Theory are eveloped further as time permits.
Prerequisite: Math 303

## 405 Introduction to Algebraic Geometry, lect.: 2 hrs

Introduction to the basic concepts of algebraic geometry, starting from the classical point of view to the way in which
algebraic geometry is done today. Many concrete examples will be studies. Some topics are: irreducible algebraic sets,
he Zariski topology, affine varieties, pre-varieties, dimension spec, affine scheres, pre-schemes
Prerequisite: Math 303 .

## 406 Statistical Inference, lect: 2 hrs

Sampling statistics are generally used to obtain information oncerning the known group character of the 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 calculate the risk of error in those inferences. Several tests of hypothesis will also be derived regarding these inferences. Treatment will be of a mathematical nature. Students will be able to apply statistics competently in such fields as the social
sciences, biological sciences and medical sciences. Atter this class, every branch of statistics will be open for further study.
The topics covered will include the following: point estimation, consistent, sufficient, efficient and unbiad parameter method of maximum likelihood, method of least square method of moments, method of minimum $X^{2}$ minimum variance unbiased estimation, interval estimation, minimax
and Baye's estimation, Neyman-Pearson's lemma composite hypotheses, goodness of fit tests, likelihood ratio tests, critical Pegion, locally most powerful tests, non-parametric tests.

410 Decision Theory and Theory of Games, lect: 3 hrs
n the last few years, statistics have been formulated as the science of decision-making under uncertainty. Decision statistical procedure should be evaluated by its consequnees in various circumstances. This model for decision heory is a special case of game theory. A game is and governing the behaviour of certain groups.
The central ideas and results of game theory and related ecision problems, Bayes and minimax solution of decisio problems, construction of Bayes decision rules; sequential ecision estimation rules, empirical decision rules and testing as aspects of decision theory, rectangular games, games in
extensive forms, games with infinitely many strategies continuous games, separable and cooperative games, zero sum and non zero sum $n$ person games.
Prerequisite: Mathematics 306 or 310 .

412 Ordinary Differential Equations, lect: 3 hrs.
Ordinary differential equations in the real and complex domains. Successive Approximation Ascoli-Arzela meorem constant and periodic coeficients. Analysis of singular points Poincare Bendixson theory, perturbation theory, Sturm physical, biological and economic problems.
Prerequisite: Consent of the instructor

## 413 Ring Theory, lect; 2 hrs

Structure of associative rings including Grothendieck's decomposition Jacobson's theorems. Gildie's. Primary

Artin-Wedderburn theorem.
414 Introduction to Functional Analysis, lect: 2 hrs., (Half-course).
An introduction to the basic principles of functional analysis Acluding the following topics: infinite dimensional vector 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.

415 Functional Analysis, lect: 2 hrs., (Half-course)
Topological vector spaces, locally convex spaces, normabiltiy, function spaces, strict convexity, uniform convexity,
eflexive spaces support functionals, geometry of convex sets, and other topics.

416 Operator Theory, lect.: 2.hrs., (Hall-course)
An introduction to the theory and applications of continuous linear operators on Hilbert spaces, culminating with the adioint, symmetric, self-adioiont, unitary, and normal operators; polar decomposition; differential and integral operators; $\mathrm{C}^{*}$ algebras Gelfand Theorem; spectral theoren

417 Introduction to General Topology, lect.: 2 hrs., (Half-course)
Topological spaces, examples. Classification in terms of cardinality of bases, separation, etc. Product. spaces, Tychonoff Spaces. Metrization

418 Introduction to Algebraic Topology, lect.: 2 hrs. (Hall-course).
Homotopy type and the Fundamental Group, geometry of simplicial complexes. Homology theory of complexes, chain complexes, homology groups for complexes, subdivision,
induced homomorphisms, applications. Axioms for algebraic topology. Singular homology, the singular complex. Propertopology. Singular hes
ties of cell complexes
Pre

## 421 Introduction to Partial Differential Equations, lect.: 3

Classification, study and solution of differential equations o applied mathematics. Hilbert space, separation of variables
and Sturm-Liouville theory. Green's functions, eigenfunction expansions and generalized solutions. Fourier and Laplace transformer. Applications to some problems in physics chemistry and engineering.
Prerequisites: Math 213 (or 204) and 312.

430 Optimal Control Theory and Applications, lect.: 3 hrs. (Half-course)

This class retraces the historical path in the search for optimal
solutions using methods from differential calculus. Initially the

Calculus of variations will be studied and the sufficiency onditions emphasized. A constructive solution of the Eule qutimal control will be developed using techniques of nathematical programming: This approach will be applied to variety of problems such as economic growh theor, will also be presented.

## 431 Nonlinear Programming lect : 2 hrs, (Hall-course)

This class presents a complete treatment of the mathematical theory which underies the general problem of optimization o Examples and exercises of an Operations Research nature are used to illustrate the theory. The material studied in this course is a basic prerequisite for understanaing and ontributing to recent deveopments in matematical pro ramming.
Prerequisite:

Math 300.
452 Biophysics - Biomathematics Seminar. 1 hr./week throughout the academic year (Half-course)

The role, the science, and the art of the physical and mathematical characterization of bioiogical phenomena form the basis of this inter-discipiniry seminar.
tions on research topics, will serve as catalysts for open discussions involving students and faculty. Unifying principles will be stressed in a practical manner by showing, for example, that the techniques used to sluay the solution esults in problems as diverse as periodic catatonic schizophrenia and population dynamics
Prerequisite: Consent of instructor.

## Mediaeval Studies

## Mediaeval Studies

The period commonly called the Middle Ages (approximately
A.D. $400-1500$ ) offers Western culture as a whole. Indeed, any ant attemptry to study a
part of this period in inolation leads the part of this period in isolation leads, to a conviction that such
an investigation can never be satisfying and that the walls
between disciolinas between disciplines must be broken down and the the walleraure
seen in relation to the philosophy, the philosophy in relation seen in relation to the philosophy, the philosophy in relation
to the history, and the histor in relation to the languages.
No matter what the vernacular tongue of any geographical No matter what the vernacular tongue of any geographical
area, there was one common language throughout Europe area, there was one common language throughout Europ
and one church, and the study of these leads invevitably to
consideration of paleography, art, architecture and music.

The field is a very large one and could become a fascinating and rewarding area for a cerrain type of student - the one
who likes to immerse himself in his work and who feels that 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

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. Mrouse, J. Doull; E. Segelberg (Classics); R. Dawson, H. H. Fricke (German); R. Haines (Msistory); J. Aitch ison (Political
Science). A student who is interested ; Scerce. 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 Administra-
tive Committee for the the the tive 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 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 te represented. The minor fields mat mat
be varied to suit the taste of the student: he may wish to be varied to suit the taste of the student: he mav wish to
continue into later periods in his favourite discipline or he may wish to acquire another .language to tolp him or his
work. No class in the minor field may be from the work. No class in the minor field may be from the Mediaeval widelily scattered: one or more of them major field may be
perequisites which 100 -level orerequisites which mav be necessary for later mediaeval
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: addational inglasses: Posssibly English 251 and 252. Four additional Classes: possibly
Philosohy in Literature (Phil. 270). History of Ensland
(Hist. 210), Gerran for Beginers' (German 100), and (Hist. 210), German for Beginners (German 100), and
Intermediate German (German 200).

Literary: non-English. Major: Med. Stud. 211, 212, 221, 222 ,
204, 30, $303,261,402$. Minor: 2 additional classes, possibly
204, 301, 303, 261, 402. Minor: 2 additional classes. poossibly
i French or Germa. Four aditiona Classes. possibly Latin
100 Philosoph 100, plus another Latin and another
Philosophy.
Historical. Major: Med. Stud. 301, 302, 303, 304, 311, 401,
414, 202, 261. Minor: History 210, and 314, Four 2dd , 14, 202, 261. Minor: History 210, and 314. Four additional lasses. French.
Philosophical. Major: Med. Stud. 401, 402, 403, 414, 301 ,
302, 204, 217, 261. Minor: possibly two classes in the arlie 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 be formed are given below. Some of them are on an ad hoc
basis, depending on the needs of students in any given year The numbering of the classes reflects subjecect and department,

## Med. Studies

201 History of the English Language (Eng. 201)
202 Old English (Eng. 253)
203 Tales from Chaucer \& Malory (Eng. 218)
204 Middle English (Eng. 351)
211 Intro. to French Lang., and Lit. of the Middle Ages
(French 430)
212 Intro. to Provencal \& Lit. of the Middle Ages
221 Middle High German I
222 Middle High German
261 Intro. to Mediaeval Latin
262 Intro. to Mediaeval Greek
01 Mediaeval Life \& Thought (Hist. 199/5)
302. Mediaeval Europe (Hist. 200)s,
;303 Mediaeval Civilization (Hist. 300)
304 Roman History (Classics 223
311 Palaeography (His. 501)
401 Mediaeval Philosophy (Classics 340 )
02 Latin Philosophical Texts (Latin 204)
403 Seminar on the Church Fathers (Classics 467
404 History of the Interpretation of Aristotle (Classics 466 )
14 Mediaeval Political Philosophy (Poli. Sci. 207
$t$ is possible that in the future some of the following may be added to
present.

Intro. to Med. Spanish Lang. \& Lit.
Old English Archaeology
Old Icelandic
Byzantine and Latin Liturgiology

## Microbiolog

Classes given by the Department of Microbiology are fully described in the offerings of the Department of Biology since
the departments cooperate in providing courses in this

302 General Microbiology (Equivalent to Biology 3110A +
311 B )
3112B Microbial Ultrastructure
4113 Bacteriology
4114 Virology

## Microbiology

professor
K. R. Rozee, Head
K. B. Easterbrook
K. B. Easterbrook
C. E. vanRooyen

## Associate Professor

J. A. Embil
L. Kind
L. S. Kind
S. H. S. Lee

## Assistant Professo

D. E. Mahony
R. S. Martin
E. S. McFariane
B. Stoltz
C. Stuttard

The program in Microbiology is designed to provide the
student with an understanding of microorganisms - their student with an understanding of microorganisms - their to the biosphere. The field of Microbiology considers the 10 the biosphere. The field of Microbiology considers
activity.of such diverse organisms. as bacteria, viruses, fungi: and algae, and the program offered by the Department attempts to give a basic training which may serve as preparation for graduate or professional work in microbiology
related to Medicine, Dentistry, the Health Professions, the Food Industry, Agriculture and Environmental Management.
The Department of Microbiology is located in the Sir Charles the Faculties of Medicine, Health Professions, Arts and Science and Graduate Studies. Its members take part in leaching in all faculties and the research done by the tacuty Microbiology.

## Degree Programmes

The Department offers classes leading to the general B.SC. degree of Microbiology and the Departments of Microbiology and Biology offer a combined Honours B.Sc. programme. A student intending to study Microbiology as his major subject is
asked to consult the Department early in his course, so that a programme can be arranged to include courses given in alternate years. Students studying for a B.SC. degree with honours in Microbiology must satisty general requirements
hicrobiology: Three-year programme orguded study Yearl:
Prerequis
$75 \%$ in grade 12 Biology or Biology 1000
2 credits from
Biology 2010 A/B to 2060 A/b
Microbiology $2100 \mathrm{~A} / \mathrm{B}$ (compulsory)
2 credits from:
Chemistry 110
Physics 110
or other science by agreement
1 elective
Year II
Biochemistry 302 or Biology 3010 A and Biology 3011B Chemistry 241

Physics 110
Yearill.
4 credits from the following (with agreement of the Department)
Microbiology 4033A, $4113,4114,4115 \mathrm{C}, 4118 \mathrm{~A}, 3112 \mathrm{~B}$ Biology 4010, 3322B, 4116 A
Math 106
1 elective
Classes Offered
Microbiology 2100A/B: Introductory Microbiology Structure and Diversity of Microorganisms, 2 hour lectur and tutorial; 3 hour lab.: E. S. McFarlane

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 regula microorganisms, their structure, growth and genetic regula-
tion, as well as their involvement in other fields such as tion, as well as their involvem
medicine, industry and ecology.

Microbiology 302: General Microbiology, 2 hour lecture; 3 hour lab; S. H. S. Lee:

The topiss to be studied have been selected to provide a broad grounding in the subject and include: structure
cultivation, nutrition, metabolism, reproduction and genetics, and systematic classification of bacteria; antibiotics, im munological aspects of microbiology; an outine of mycolog and parasitic protozoa, classificalan, morphology and complement lecture material and to provide experience in the isolation, identification, cultivation and control of microor ganisms.
Microbiology 3112A: Microbial Ultrastructure, 2 hour lecture; 3 hour lab.; K. B. Easterbrook.
This course covers the ultrastructural features of microbes Principles and practical aspects of techniques for analysing ultrastructure and considered in the first part of the course; particular emphasis being given to electron microscopy. In the second part the ultrastructure of macromolecules and the yeasts and protozoa is discussed.
Students are expected to have already an understanding of structure at the light microscope level

Microbiology 4033A: Microbial Genetics, 2 hour lecture and lab.; C. Stuttard.
This course is concerned with the study of heredity in microorganisms especially bacteria and their viruses. Th occurrence and expression of mutations in prokaryote general aspects of genetic analysis in microorganisms on general aspects of genetic analysis in microorganisms
and on special methods used for particular bacteria. Restricted gene transfer and the genetics of plasmids such a
Drug Resistance Factors are included.

Some familiarity with Mendelian genetics and an elementary nowledge of conjugation, transcuuction and franstormation acteria is assumed. Some understanding of basic esis and nucleic acid chemistry is also required.

Prerequisites: Biology $2030 \mathrm{~A} / \mathrm{B}$; Microbiology 302/Biol.
3110 \& 3111 B .
Microbiology $\mathbf{4 1 1 3 \text { (1976-77): }}$ : Bacteriology 2 hour lecture; 3
hour lab.: D. E. Mahony.
A class for advanced students in bacteriology:- The course includes grown and structure of bacteria, a survey of many groups of bacteria and the methodology of their identification, as well as certain specialized topic
Prerequisite: $\quad$ Microbiology 302.
Microbiology 4114 (1975-76): Virology 2 hour lectures; 3
A class for advanced students in virology - All types of viruses will be considered - animal, insect, plant and bacterial. Structure, replication, natural history and class Prerequisite: Permission of the instructor is require
Microbiology 4115C (1976-77): Introduction to Immunology, 2 hour lecture; L. S. Kind.

This series of lectures will deal with structure, synthesis, regulation of production, detection and measurement of
antibodies. Also to be discussed are topics in the fields of antibodies. Also to be discussed are topics in the fields of
transplantation, tolerance, hypersensitivity, tumor immunology, complement and the genetics of the immune response.

## Microbiology 4118A (1976-77): Laboratory Techniques in

 Immunology, 3 hour lab.; L. S. Kind.The following procedures will be carried out: immunization of
animals and measurement of antibodies in animals and measurement of antibodies in sera by means of
passive hemagglutination, precipitation and antigen binding lechniques: detection of antigens by immunofluorescence; determination of cytotoxic effects of lymphocytes; production of $\mathrm{m} / \mathrm{f}$ by lymphocytes. Purification of antigens and/or

Microbiology 4117C (1975-76): Advanced Topics in mmunology, 1 hour seminar, L. S. Kind.

The course will be based on an analysis of articles from current journals. The presentation of data to small group of students Prerequisite: Microbiology 4115 C .

## Music

Teaching Staff
Peter Fletcher (Chairman)
Ray D. Byham (Piano \& Literature
Skye Carman (Violin)
Dennis M. Farrell (History and Composition)
Gary Karr String Bass)
D. Harmon Lewis (Harpsichord)
H. Philip May (Voice)

Ken Patti (Violin)
Glen Smith (Theory and Composition)
J. Stephen Tittle (Theory and Composition)

William Tritt (Piano)
William Valleau (Cello)
Carol van Feggelen (Guitar and Lute)
Ronald Willoughby (Viola)
Ronald Willoughby (Viola)
David Wilson (History and Music Education)
Halifax is the home of the Atlantic Symphony Orchestra as well as being one of the centres of musical activity in Canada. It is
therefore possible to supplement the full time teaching staft therefore possible to supplement the full time teaching staff
with experienced instructors covering every orchestral instrument. The Music Department's well-equipped offices, lecture studios, teaching studios, rehearsal and practice
rooms are situated in the Dalhousie Arts Centre. Included in this Centre is the Rebecca Cohn Auditorium, the major concert hall in the Atlantic Provinces, and there are regular orchestral concerts by the Atlantic Symphony, performances
by internationally famous artists sponsored by Dalhousie University, and many other chamber, contemporary, choral and operatic performances. Regular Sunday afternoon concerts are free to the public and studen
for most other concerts at reduced prices.

Objectives
here is a great difference between loving music and electing o embark upon full time musical training: the difiference
between a profitable relaxation open to all and a singular concentration on specialized skills, open only to those with talent and specific pre-university training. The resources of the Music Department are geared towards providing a thorough
musical training for those wishing to specialize in music, but they are equally available to the many non-specialist students who wish to increase their musical awareness and involvement.

In the specialist field, the Department offers training as teachers or performers or both. Practical and general
musicianship are prerequisites of both the performer and the musicianship are prerequisites of both the performer and the
teacher. Schools have a need of performing musicians to pass on their skills to the young, and performing musicians have a need to understand the practice of educational institutions, which are shaping the attitudes of their future audiences. The of high performing abiity who, as a result of that ability, feel an inner compulsion to follow a career which involves specialized practical music making of one sort or another

If teachers or performers are to excite others with music, they must themselves have been constantly excited, by music. This excitement is usually borm out of an increasing insight and ability for solo and ensemble performance and by a continuing
discovery of music, new and old. It must be the first obligation of a University Music Department to incite ever improving performance standards and a curiosity and wonder about music through ensemble playing, creaivity, informed in of iry living musical scene.
The Nature of Concentrated Music Study
Western music has developed into a most complex language.

Music is conceived aurally and written down in notation in order to be translated into sound. Before musical notation can be translated into sound, three demanding skills are required: a thorough knowledge of musical theory, the ability to hear
complex scores aurally and the practical facility needed for performing. No profitable study of music in depth can be undertaken until these skills have been acquired. If these basic skills are to be acquired in the first two years, so that
study in depth, greater practical facility and the teaching and study in depth, greater practical facility and the teacining two
education studies can be programmed for the remaing years, time will not allow for any prolonged study of other subjects. However, in pursuing the degree courses outlined
music students will inevitably be brought into contact with many other relevant fields of study.

## Admission to Music Major Courses

Students who wish to enroll in a degree programme in the Department of Music must satisfy the requirements fo additional requirements in the Department of Music. Candidates will be required to demonstrate proficiency as instrumental or vocal pefformers, and and theory of music.

Under the discretionary powers of the Admissions Offrice students who do not meet the normal requiremens of ine Faculty of Arts \& Science may be considered for admis

When making application for aadission to the Universtit music applicants shourd request
tion form for the Department of Music.

Degree Programmes
The B. Mus. Ed-is a four year course which covers a Nova Scotia Teacher's Certificate (Class 5), provides continuous
instrumental or vocal instruction with ensemble opportunities, basic theoretical and aural skills, opportunity to study and research into a variety of musical styles and periods and the teaching observation, skills and practice required for
teacher's certification. Students are required to take five full credit classes in each of the four years. The relationship of the various facets of study are set out in the diagram. Students will not automatically be placed in the first - year general
musicianship classes on arrival, but at a level appropriate to their ability. Students able to bypass these classes will be able to take a larger number of project classes. Students wishing to take a further Arts Elective may consult the Department about the possibility of substituting this for one of

## Music

he B.A. (Honours) is a specialist four year course with a majo concentration in music. In their first year, students will be
required to take the classes in Applied Skills and General Muscianship at the appropriate level. In the following three years, students may not normally take less than ten of Practical Musicianship will be compulsory in each year and Project classes may not be taken until the 200 level General Musicianship classes have been satisfactorily completed
The B.A. (General) is a three year course which may only be taken with a major concentration in music if the coordinated music programme is taken in the second and third years. The the following two years, students are required to take four classes from Practical and General Musicianship programme up to and including, 300 level.

Classes: Theory (120), and Music History (230) count as formal classes
and in detail.

Students with a B.A. from another institution wishing to spend one year qualifying for TC5 will be required to take classes Applied Skills (400), Teaching Observation (250), Teaching Skills (350) Teaching Practice (450), and Educational
Psychology (Ed. $4301 \& 4312$ ) Summer Schools
The first Summer School period will be available for Practical
and General musicianship classes and for Practice Teaching and General musicianship classes and for Practice Teaching use this period for concentrated applied study
Service Classes
These will be directed specifically at non-music maiors and will provide an introduction to an examination of the social and ackground to the various topics listed

Classes offered for Music Majors A. Practical M
Applied Skills.
C) Clarinet

Massoon
Trombone and Tuba
Percus
Piano
Organ
Harpsichor
Harpsichord
V)
Guitar and Lute
In general, all students will receive at least one hour per week ndividual instruction from an experienced professiona performer of their major instrument. In addition, at the
discretion of the Department, students may raceive hour per week of instruction on a second instrument or in composition groups. The programming of lessons will be lexible so that, where appropriate, students may spend up to evels of applied study indicate the year of study in the department and are not intended as an assessment of tandard. Students automatically move up a level each year year. Term gradings are base on progress as well whole year. erm gradings are based on progress as well as on
actual pertorming standard. At the discretion of the epartment, students may opt for Composition as a second applied skill in their third or fourth years. Students with ull credit classes on their major applied instrument in their third and fourth years, and exceptionally, in the second year.
Students will be encouraged to do as much ensemble playing as possible and chamber groups will be scheduled accorarding on tudents will also be encouraged to perform in recitals.
Regular ensembles include the Orchestra, Band, Chorale and cheduled according to needs and circumstances.

## Applied Studies

101
This class supports the performing skills and is intended to provide a greater understanding and insight to the playing.
Studies will include a survey of the literature of western music and a consideration of interpretation indifferent musical 201
A surv
A survey of the evolution and history of the main instrument families in relation to the music they were expected to play and Prerequisites 101 or permission of the instructor.

## 310, 410: Composition

Particular works from any period of history will be analysed to
serve as a springboard for serve as a springboard for original composition by the
students. Student's work will be evaluated in small group discussions and in individual sessions with the instructor. Students wilh be encouraged to include in their work compositions for performance by students and compositions in a contemporary
classroom situation.

## General Musicianship

## 20: Theory

he study of musical styles will be used as a key to a basic understanding of the techniques of melody, hyythm, harmony and formal structure in Western Music.

## 130: Aural Perception

basic class of ear cleaning, designed to increase the clarity and sensitivity of aural responses to music. Group improvisa-
ions and compositions in the experimental music studio will and
be used as a basis for developing aural awareness of pitch. hythm, harmony, sonority and texture.

## 220: Theory and Analysis

more advanced study of musical styles, providing the basic skills for musical annalysis and criticism.

## 230: Music History

An advanced history class covering stylistic periods from the Middle Ages to the present day.
Prerequisites: Music 120 and

## 337: The Contemporary Scene

his course will attempt to foster an understanding of the main rends in 20th century "serious" music; with particula wenty-five years "new" musical practices of the past evelop perspective regarding the various syntheses and cross-cultural influences in contemporary music, the course will include some consideration of the history and present etc. Included will be opportunities for performance " musics etc. Included will be opportunities for performance, composi-
tion, individual experimentation, and group activities involving improvisation, tape and electronic techniques, etc.
Non-majors may register only with specific permission of the instructor.
340, 341, 342, 343: Project
The study of music history has expanded vastly in the past few ness of medieval and renaissance music. The acceleration of
change in our society has turned the study of contemporary music into a confusion of diverse and opposing trends of critical values. It has also made relevant and important the study of traditional music of Oriental, societies and primitive music of the Third Word. he convito century has been mupplemented to the extent that it is no longer profitable to attempt a study of the whole history of music. "Music" has e whole history of music. Music has preferably, diverse

The purpose of the projects class is to enable groups of studdents to study in some depth periods, styles or aspects of music of their own ctody to teveloply and intelligen of their previous study and to develop lively and inteligent
attitudes toward research. The role of the instructor responsible for each project will be to guide the students towards appropriate source malerial, records and books, to specialisms relevant to the project and to correlate the activities, researches and practical presentations of the students. Within each project group, students will work o different aspects of the subject, singly, or in spinter groups,
and then pool and correlate their various researches and activities to provide an exhaustive coverage of the subject. In this way, students will be able to work on aspects of the projec to which they are best suited or when they most nee performances, arranging, original and pastiche composition study and collection of documentary and background material, compilation of tapes and slide sequences, presentashort thesis a combined presentation of the subject to the res of the Department, etc.
Each project is intended to last a term, so that participation in two projects will constitute a full credit class. Project subjects and groups will be discussed with the students concerned and settled each Spring for the forthcoming year

The open nature of the projects courses makes possible the programming of subjects in accordance with the needs of the students. These could vary from studies of particular forms and periods to ctur study of band instruments, string teaching techniques orchestration; etc
Prerequisites: Music 200, 220 \& 230.

## Electives and Professional

## 50: Related Art

A general class that will survey specific periods in Western lass will examine music, painting architecture and theatre and the ways in which art and artists have acted and reacted 10 their cultural environments. Parallels will be drawn with ontemporary cullure and an exart the course of the Prerequisites: None. Also available to non-majors.

## 250: Teaching Observation

bservation of selected classroom and studio situations, in the objectives. Visits to schools may also include some single. solated teaching experiences.

## 350: Teaching Skills

This class will consider specific areas of expertise that may be required of a teacher in a school situation. Many of these areas may have been covered in other classes; this class is
designed to relate these areas specifically to work in schools. Subjects will include choral band and orchestral training and conducting techniques, song material and presentation, teaching of theory and appreciation and creative music activities.

450: Teaching Practice Prerequisites: Music $300,340,350$, Education 406 A \& B

## 451: Teaching Practice Skills

Discussion of specific methods to be used in teaching practice, with emphas evaluation of practice teaching.

## Courses for Non-Music Majo

## 105 and 205: Applied Skills

Students who already have an;advanced technique on a musical instrument may apply to the Department for a cred class consisting of instructionin be subiect to availability of specialist tutors and a succesful audition.

## 206: Voice Production and Interpretation

This course is designed for students who have a serious This course is designed for students who have a seriou
interest in singing and for whom it is not possible to provid individual instruction. The course will deal with basic techniques of breathing, vocal productions, vocal flexibility
diction etc., and consider interpretations of various styles of vocal music. Students in the course will be expected to take part in the Dalhousie Chorale

## 207: Guitar and Lute

This course is designed for students who have a seriou interest in guitar and/or lute playing and for whom it is no possible to provide individual instruction. Tents and with the
with the basic techniques of the instruments history of fretted instruments through an examination of a wide variety of related instruments in the instructor's collection. I
will also deal with repertoire, interpretation, tablature and song accompaniment.
Prerequisite:

## 208 Piano Class

his class is desioned for students who have already received some years of piano instruction, are seriously interested in continuing this study and for whom it is not possible to provice individual instruction. The class will deal with basic technica repertoire and interpretation
repertoire and interpretation.
Prerequisite: Personal interview with instructo

## 150: Related Arts

ee Courses for Music Majors
135 Understanding Music
increasing the musical understand g and enjoyment of the enthusiastic music listene esigned for the musical layman the class will introduce lements of theory to dear wormance styles and practices.
will also relate to music currently being performed in Halifax Prerequisite:- None
Also available as an audit course for University and Community.

## 136 Illegitimate Music

This class will cover a study of styles of popular music
originally associated with a "young" "archict ground" culture and is aimed at those who know very little about the music they habitually listen to. It will attempt to interpret this music, to draw comparisons with other "pop" art forms, and to set the phenomenom of modern pop music against its natural sociological background. It may also show
that this music in fact uses traditionally legitimate means for a traditionally legitimate end. The course will meet for at least wo weekly, midday sessions. Other activities will be arranged Prerrequisites: None.

## 225 Pop Music; Theory and Practice

his class is intended for those who already know how to play music, have at least a basic knowledge of music reading and have a serious interest in further developing their skills. This may include guitarists, bass players, keyboard players,
drummers, etc. The specific course content will be designed according to the needs of those who enroll but will definitely include concentration in "theory" (music reading and writing skills, harmony, etc.). Beyond that, the course could go into arranging, song-writing, and whatever else seems adpprop-
riate. A maior part of the work will be involvement in actually playing and singing the creatings of the class.

## 136: Experimental Music

his class will use the percussion instruments and electronic esources of the sound studio to provide experience of group improvization and composition in a contemporary medium. Students will use percussion instruments to explore basic
musical structures and will learn the use of synthesizers special recording techniques and tape mixing and editing. Detailed musical knowledge will be of less use in this course han imagination, an interest in contemporary culture and an interest in electronics
auiste. Personal interview with instructor.

## 337: The Contemporary Scene

See Courses for Music Majors
235 A/B History of Musical Styles
This class is for students who have had considerable ayman in that it will not deal with technical analysis. It wills however, cover in greater depth than Music 135 the literature, style, forms and social background of the periods or musical
topics under discussion. The topics to be covered in each half class will vary from year to year, to enable students to cover a wide range of musical periods and styles. Prerequisites: Music 135,136 or personal interview with instructor.

Music
Bachelor of Music Education: each circle represents a full credit class. from tractical and general musicianship classes as described.


## Oceanography

Oceanography is a broad, inter-disciplinary science which
includes studies of tides and currents, the chemistry of sea Water, plants and animats that live ints, the chemistry of sea
waea, and ocean
bottom sediments and underlying crust bottom sediments and underlying crustal structuras. Career oceanographers are presently employed in Canada in a few
univeristies and in various federal laboratories that are
engaged in engaged in both basic research ed and lapoboratories that oroms which meet a national need, such as fisheries investigations, explora-
ion for ofstore mineral resources, and studies of ice in
navigabe navigable waters.

A good background in basic science is a necessary pre-
requisite, followed by specialization in oceanography at the eequisite, followed by specialization in oceanography at the offering M,Sc. and Ph.D. programmes in this subject. However, properly prepared undergraduates are permitted to take one or more of the classes as electives. There are introductory
classes which survey the entire field and advanced classes. in each of the major specialties - physical and chemical
oceanography, marine biology, and marine geology and oceanography, marine biology, and marine geology and
geoopy ysics. Further details about this programme are given in he Calendar of the Faculty of Graduate Studies.
In addition, one undergraduate class is offered.
185 R Introduction to Oceanography, lect.: 3 hrs., R.O.
This class will attempt to survey the field of Oceanography in eneral and to show how the oceans, which account for more environmental force. In addition, consideration 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" oceanographers do. It is, not a good "background to science"
course, since little feeling will be otained techniques which would otherwise be acquired in a laboraory ctass. Most of the material which will be covered will be
descriptive rather than basic, inasmuch as it is imossible in descriptive rather than basic, inasmuch as it is impossibbe in
the time allowed and the material covered to also teach the basic required sciences.
rerequisite: Restricted students.

## Philosophy

## Professors

A. H. Armstrong (Dept. of Classics)
J. A. Doull (Dept, of Classics)
F. H. Page R. P. Puccetti (Chairman)
R. D. Crouse (Dept. of Classics)
A. MacLenna
R. H. Vingoe

## Assistant Professors

S. A. M. Burns
R. M. Campbell
W. F. Hare (Dept. of Education)
R. M. Martin
A. Rosenberg
S. Sherwin

Ulike some subjects, philosophy is not taught in high school he new student can therefore sately assume that introductory class, Philosophy 100. Philosophy has concerned itself in the past with a number of traditional questions. For example, and men in any sense tree, or are they merely conditioned and men souls which might conceivably survive death, or is ndividual life merely an emergent quality of matter doomed

Then there are questions about the nature of knowledge. Are there some truths which can be proven ow be true without Does science require certain principles, like causality; which are more than inductive generalizations from experience? Then there is philosophical theology. Can any reasonable problems of an ethical kind. For example, is there an absolute morality or are all ethical standards relative to the society in which they are practised? Related to these questions are certain existentiaist questions as to the meanimatic purpose human existence?

The students may already reaize that no tinal dogm answer can be given to the above questions. Nor need they be classes of philosophy to proceed by class discussion. As a result of continually discussing the above questions, and many others like them the students wir acquire a certain whatever subject they may decide to specialize in.

> he Arrangement of the Classes

Students who are interested in taking a beginning class in philosophy may take their Philosophy 100, or any Class numbered in the 200 s . These classes have no prerequisite background in philosophy. This fact makes it possible fo students, including students in the first year of their university study, to begin work in philosophy in different ways, chosen to suit their pele classes should note that for these classes one
take 300 -level or more of Philosophy 100 or Philosophy 200, 201, 202 (the classes in logic) are prerequises.

Of the classes open to beginners, Philosophy 100 gives a comprehensive introduction to philosophy: Several of the main branches of philosophy are represented. In the topics give a good deal of practice, oral as well as written, in basic philosophical skills of analysis and argumentation. Some attention is given to important philosophicao 100 is not class in the history of philosophy: Philosophy 230 is and students primarily interested in history and the history of ideas may find this class the most inviting way to begin philosophy ne classes in logic, 2 , defined branch of philosophy; however, skill in this branch is an indispensable advantage in all advanced work philosophy - as indispensable as, say, the calculus is in as introductions to philosophy, but also as direct entry route into the central concerns of the subject. The other 200-leve classes are both specialized and less central. However, पs ents. religion, treated in two classes on the mhilosophy of religion, Philosophy 220 and 225; and questions, very much like some of those raised by religion, bout the meaning of life and (on the Continental tradition of philosophy knownas "existentialism") and Philosophy 270 (on these questions and related ethical questions as they figurelly reat iterature of he harpose of education, treated in Philosophy 218.

## Degree Programmes

Students a. in Philosophy to take at least one of Philosopny 200, 201, 202,305, and at least one of Philosophy 230,310 degree in philosophy should arrange their course in consultation with Professor I. A. MacLennan

## B.A. With Honours in Philosophy

Students intending to specialize in Philosophy should take the honours course. It is the normal preparation for graduate study in philosophy. The honours course generally consists of ten Classes in philosophy, two classes in a minor subject least two subjects other than philosophy. The ten philosophy classes in an honours course must include: Philosophy 200 (or 201 or 202), 230, 305, 310, 320 and one 400 -level class. Philosophy 100 may be included in the ten classes of the
honours course, ifit was taken at the beginning of the course. In addition, students taking honours in philosiophy must satisfy the regulations for the first year of study for the General B.A.
and also the overall requirements for the General B.A. and also the overall requirements for the General B.A.
Students intending to take honours in philosophy should arrange their course in consultation with Professor 1. A. MacLennan
Combined Honours
There are several combined honours programmes
Philosophy and Economics
Philosophy and Psychology
Philosophhy and Socciologogy
other combinations that can be arranged
Students interested in taking any of these combined honours prudents interested consult with Professorl. A. MacLennan.

## 100 An Introduction to Philosophy, 3 discussion meetings

 weekly, S. A. M. Burns, W. F. HaRosenberg, S. Sherwin, R. H. Vingoe.
Students in this class will pursue in some detail four topics chosen from four of the chief branches of philosophy, and
treated so as to illustrate basic principles of philosophica treated so as to illustrate basic principles of philosophical
analysis, as well as some of the major historical contribution to philosophy. The four topics, taken up in an order varying with different sections, are:
(1) a study of Plato's Republic;
(2) ethics and political obligation
(3) the mind-body problem;

The professors.assigned to the class will specialize on one or another of these topics; and every section will be taught, in turn, by four different professors, as the section changes from
one topic to another. Plato, Anselm, Aquinas, Descartes, and one topic to another. Plato, Anselm, Aquinas, Descartes,
Hume are among the historical authors to be studied

The Department of Philosophy has assigned an extraordinarily large proportion of faculty time to this class so that it can be
carried on wholly in small sections limited each th even so, the number of sections, and hence the total enrolment in the class, must be limited. Only students who value the chance of continuous discussion in a small group
highly enough to commit themselves to continuous attenhighly enough to commit themselve
dance should enrol in Philosophy 100 .

## 101 Philosophy and Life, lect. and discussion; 2 hrs.; R. M.

This is a general introductory class in philosophy in which students study a variety of contemporary issues, such as: Do we, coliectively or individually, have the right to commit
suicide? Do animals have rights? Have the natural sciences demonstrated, as virtually certain, that all truth is relative? Is a psychologist or anyone else in a better position than you are, because of his experience, education, or
training, to say how you ought to live? Is rationality ever avice? Is there any validity to the argument that since everyone acts for his own satisfaction, we all always act selfishly no matter
what our political what our political or religious outlook? Can aperson ever leave
his body? Do religious worship and prayer have more or less his body? Do religious worship and prayer have more or less
justification in this century? Can anything sensible be said about what the meaning of life is?
Like Philosophy 100 there are no prerequisites for this class. The main difference is that here no classical texts are read and he basic philosophical problems are stated in contemporary lets.
200 Symbolic Logic, lect.: 3 hrs.; I. A. MacLennan.
Whenever we draw conclusions from premises in such fields as mathematics, physics, engineering or economics (not to system, which it is the aim of this course to develop. By taking course in logic the student should have a better understanding of how we may derive the correct conclusions ing the scature of inference is to create a simple artitical
ind language, in which the derivation of one formula from another is analogous to playing a game with penci and paper. The aim its most useful properties. Although symbolic logic in this course will be sufficiently related to arguments in a natural language, the emphasis will be on the systems themselves.

Because many students find this kind of study to be quite new in their academic career, great care will be taken in presenting the material, and in addition there will be five assignments,
which, when done, should lead to subject. No previous acquaintance with symbolic logic is presupposed
The student should realize that the relation of classical
two-valued logic to classical mathematics is explored in two-valued logic to classical mathematics is explored in Philosophy 406.
Text: $M a c L e n n a n, ~ I . ~ A ., ~ S y m b o l i c ~ L o g i c . ~$

201 Logical Forms of Argument, lect. with discussion: 3 hrs.
R. M. Campbell.
This class teaches the application of symbolic logic to arguments expressed in natural language, as in philosophy,
science, ethics, law and politics. Its principal aim is to develop the students capacity to analyze the logical structure of such the students capacity to analyzz the logical structure of Such
arguments so that they can better assess their validity. Unlike Philosophy 202 , this class deals extensively with formal symbolic logic will not be studied for its own sake, or for its relevance to the foundations of mathematics. No previous .
202 Basic Principles of Reasoning, discussion: 3 hrs . P. K. Shotch.
This is a class in applied practical logic. Symbolic logic techniques will be avoided as far, as possible; instead, in good or bad real arguments, definitions, explanations, etc. The aim is the development of techniques to produce clear and valid reasoning; and to distinguish this from its opposite.

## 215 Philosophy and Psychoanalysis, lect. with discussion

 hrs.; R. M. CampbelThis class will examine some of the philosophic problems that are of special interest to contemporary psych of mind and that The problems may be grouped, somewhat arbitrarily, into questions about the meaning and possibility of (1) free, rational choice; (2) self-identity and tolerance; (3) mental
health. This class is designed to te an introduction hilosophy and presupposes philosophy and presupposes
philosophy or psychoanalysis.
216 Philosophical Issues of Feminism, lect. with discus sion: 2 hrs.; S. Sherwin

In this course we shall be investigating the major arguments
relating to feminism, evaluating their claims. Because there reating to so many different views on whet claims. Because there he many claims put forward under its rubric are true each person will be encouraged to try to choose amongst the conficting claims to determine herrhis own attitude towards general values. In pursuit of this goal, we shall spend time examining in detail the key concepts at issue, including Studinism, sexism, rights, happiness, equality, and freedom. Students will be required to read a great deal of feminist
terature as well as some work in ethics and social and political philosophy
217 Existentialism, lect.: 2 hrs.: I. A. MacLennan.
The aim of this class is to study the works of four major
philosophers in the existentialist tradition. The first term and
part of the second will be developed to the works of
俍 kierkegaard and Nietzsche. The remaining time will then be Heidegger.
18 Philosophy of Education 2 hrs.: W. F. Hare. Same as Education 402 Section 3.
(a) In the first term an attempt is made to analyse some of the crucial concepts in educational theory. What is teaching, and Certain slogans in educational theory, e.g. "We teach children not subjects", and "There's no teaching without learning" are carefully examined. How is education distinct frorn teaching, and is it possible to identiy ored educational? Is there any conceptual connection between the idea of teaching and that conceptual
of authority?
These are the kinds of issues discussed though the specific direction depends a good deal on the class.
(b) In the second term the class focuses on philosophica issues concerning curriculum. For example: It is
meaningtul/useful to base a curriculum in schools on needs and/or interests? What is involved in the claim that a curriculum should be relevant? Are there any educationa arguments in favour of a broad curriculum? How are we to attempt is made to demonstrate the importance of. analysis of the fundamental concepts involved in such issues.
220 Philosophy of Religion, lect: : 2 hrs.; F. H. Page.
An introduction to the philosophy of religion. Since there are many religions, is it possible to identify anything that is
essentially religious? What sort of evidence would provid good results for the belief in a divine being? Is the concept o God a coherent one? Is the notion of divine activity, fo example in creation ana miracles, inier ic it possible to have knowedge of a divine being? the mental state of the experience? Are faith and reason alternatives or correlatives? is the existence of evil and suffering compatible with the perfect? Does rationality demand that traditional views of the divine be modified, or abandoned? What religious alternative are there? In considering questions like these the student w encounter many of the issues around which philosophica the views of a variety of philosophers, past and present. Hence the class also. provides one form of introduction to philosophical study as such

Readings from an anthology by W. P. Alston and paperback
by W. C. Smith, Ninian Smart, John Hick and Nelson Pike.

230 General history of Philosophy, lect.: and seminar: hrs.; R. H. Vingo
The purpose of this class is to help students discover those philosophic traditions which have played a part in mouldin western civilisation and still persist in the contemporary world Since the field of study is large, an attempt will be made to
concentrate upon some of the greatest and most influential o western philosophers. Since a general history is apt to degenerate into vague and inaccurate generalisations
evaluating some parts of a given philosopher's writings. Texts: B. Russell, History of Western Philosophy, (Allen and
Unwin, Ltd., London, 1961); R. G. Allen (Ed:) Greek Unwin, Ltd. London, 1961); R. G. Allen (Ed.) Greek
Philosopy: Thales to Aristote, Free Press, N.Y., 1966; R. H Popkin (Ed.) The Philosophy of the 16 th and 17th Centuries,
Free Press, N.Y. 1966; L. W. White (Ed.) 18th Century Free Press, N.Y., 1966; .Y., 1966; D. J. O'Connor (ed.), A, Critical History of Western Philosophy, Collier-Macmillan Canada Ltd., Toronto, 1964).

## 235 Greek Philosophy from Th discussion: 2 hrs. S. A. M. Burns.

The beginning of Western philosophy is studied in the Presocratic fragments, and major works of Plato and Aristotle.

## 240 Justice, Law and Morality, 2 hrs.; D. Braybrook

The main aim of the class is to seek a clarification of the concept of justice and of the relations among justice, law, and morters as they are presented in the works of such thinkers as Plato, Aristotle, Aquinas, Hobbes, Locke, Hume, Bentham, Mill, Tawney, Rawls, and Marx. Among the questions to be
touched on will be the psychological genesis and nature of the notion of justice; the rationale of political institutions and of the laws which they uphold; the place of equality in an adequately
formulated notion of justice; the use of the concept of justice in ormulated notion of justice: the use of the concept of justice in
criticisms of existing institutions and their rationale. There is no prerequisite for the class.
270 Philosophy in Literature, lect. with discussion: 2 hrs.; R. M. Martin, S. A. M. Burns.

This is an introduction to some issues in philosophy through the reading of some inportant tierary works. Much todern sometimes, in fact, the reader cannot fully appreciate such works unless he has an understanding of the philosophical issues and traditions invoived. The ciass is designes tor two about and discuss some of the more important philosophical influences on modern literature; and those interested in philosophy who would ilke to investiga, the Regular two hour weekly meeting there will be optional discussion meetings at various times to be announced during the year. Readings will include short works by Dostoyevski, Melvilie, Katka, Beckett Sartre, C
Beauvio Note: This class is cross-listed as Com

280 Ethics and Medicine, lect. with discussion: 2 hrs.; s Sherwin
Modern medicine generates many serious medical dilemmas which, by their very nature, cannot be settled on the basis of medical facts and theories alone. Ethical decision-making in dimension precluding conclusions based entirely on medica facts.
In this course, we shall consider the moral problems of health care in the light of ethical investigations by philosophers
Amongst the problems being discussed will be abortion euthanasia, informed consent, confidentiality, paternalism and coercion, and the allocation of scarce resources.

305 Epistemology, lect. with discussion: 2 hrs.; P. K. Schotch.
An introduction to issues in the theory of knowledge, especially those which cast light on the conceptual aspects of treated are: the philosophical analysis of the concept of knowledge: perception and its relation to knowledge (and especially the claims of empiricism); the logical problem of and physical language. Questions to be raised include Is knowledge to be found exclusively in perceptual experience? Are any non-deductive inferences justified and more particularly what ground is there to believe the claims of
science if the evidence for these claims is always formally incomplete? What evidential relation obtains between claims about person's behavior and claims about their beliefs, emotions, and other mental states. Readings will consist
mainly of the work of contemporary authors. Prerequisite: Philosophy 100 or 200 or 201 or 202 and
consent of the consent of the Department
310 Ethics, lect. with discussion: 2 hrs.; R. M. Campbell.
A systematic discussion of traditional topics in moral philosophy: the nature of pleasure and happiness, psychologon moral beliet and argument, tutilitarianism moralive, Hume on moral beliel and argument, utilitarianism, moral rules, and some contemporary problems, such as pacifism and the morality of induced abortion.

15 Problems of Self, seminar: 2 hrs.; S. A. M. Burns and R. Campbell

A study of issues that are both moral and psychological oncerning persons. Discussion
topic of self-deceit and self-love.
Prerequisite: Philosonhy 100 . or classes or instructors' permission.

19 Descartes and the Modern Search for Indubitable Knowledge, seminar: 2 hrs.; R. H. Vingoe.
his seminar will highlight one extremely influential line of hought: philosophers have often sought indubitable knowposition marks a radical break with ancient and mediaeval hought and because this break made epistemology the main preoccupation of modern philosophy. The first half of the class will consequently be devoted to Descartes. The second half
will range beyond Descartes (e.g., Hume, Moore, and Ryle) to consider alternative sources of indubitable knowledge, e. .g., sensory experience, self-awareness, logic, and common sense. Students will be expected to present short papers
Texts: R. M. Eaton (ed.), Descaltes, Selections, (Charles
Scribner's Sons. Deres. Scribner's Sons, 1969). J. R. Weinberg and K. E. Yandell, heory of Knowledge, (Holt, Rinehart and Winston, 1971). J. R Weinberg and K. E. Yandell (eds.) Metaphysics (Holt
Rinehart and Winston, 1971).

## 320 The Philosophy of Hume and Kant. seminar: 2 hrs.; A Rosenberg.

A close study of Hume's Treatise of Human Nature, Book 1 and Kant's Critique of Pure Reasons, disclosing paralle he class will also consider the accounts of some works.
ary commentators and the relevance of these two classics to present philosophical concerns.

336 Ancient Philosophy from its beginnings to the sixth century A.D. (same as classics 336), lect.: 2 hrs .; A. H.

Philosophy 336 (Classics 336) surveys the whole history of ancient Greek philosophical thought from its beginnings in
lonia 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 Aristotl studied in their historical emphasis is laid on the Greek philosorichy context: and much emphasis is said on the Greek philosophy of the first centurit
A.D. and its influence on developing Christian thought.
338 History of Mediaeval Philosophy, lect.: 2 hrs.; R. D.
Crouse
A study is made of the development of philosophy in the ormative age of European civilization, with attention given to elated political, institutional, literary and theological con-
cerns. The authors studied most closely will be Boethius Anselm of Canterbury, Thomas Aquinas, some thirteenthcentury Augustinians and Averroists, Ockham, and one or
more of the Late Mediaeval Mystics. The class will be conducted partly as a seminar, partly as a course of lectures. Prerequisite: Philosophy 100 or 200 or 201 or 202.
346 Problems of Mind, seminar: 2 hrs.; R. P. Puccett
These problems of mind will be explored: (1) How are a person's corresponding mental and physical states related?
Is the concept of a person, and particularly of his mental and is the concept of a person, and particularly of his mental and Or, by descriptions of changes in certain parts of his nervous system? Or does the concept of a person require reference to third entity, over and above his mental and physical states? 2) What kinds of entities might possibly count as persons
other than human persons? Could machines do so Could organic artifacts? Could non-material entities? How are we to make decisions about the application of mental and persona concepts to non-human entities? (3) What effects upon
traditional problems of the mind/body relation are indicated by recent neurophysiological developments, such as brain bisection in humans and investigation of animal intelligence? Prerequisite: Philosophy 100 or, 200 or 201 or 202.
Texts: Self-Knowledge and Self-ldentity Texts: Self-Knowledge and Self-ldentity, by Sydne
Shoemaker; recent articles on the problem of persona identity, Mentality and Machines, by Keith Gunderson
Psychological Explanation, by J. Fodor.
hrs.; W. F. Hare and Responsibility, lect. and discussion: 2 rs.; W. F. Hare
The purpose of this class is to examine philosophically issues law and significant in many disciplines, such as psychology law and education. For example, what is meant by saying tha a person has a responsibility to do something: and what is a
person requesting when he asks to person requesting when he asks to be given more
responsibility? If there is a difference here, is it to be explained in terms of the freedom the agent has in acting? But perhaps the possibility is undermined by arguments which purport to show that a person has no freedom to choose his actions? And
then in what sense can a person be held responsible for his then in what sense can a person be held responsible for his
actions?

Readings will include recent articles by such authors as

Pennock, Frankena and Hart, Social Philosophy, by Joel Feińberg.
Prerequisite: Philosophy 100 or 201 or 202.

355A/555A Marxist Theory and Its Upshot in the World Today, Seminar: 2 hrs.; D. Braybrooke. (Notoffered 1975-76) 1975-76).
Social objectives inherited from earlier socialist thinkers especially Saint-Simon, inspired Karl Marx's life work and thought. General philosophical ideas imparted by Hege inclination. The analytic apparatus developed by classica inclination. The analytic apparaus develyperd economists of the British school, especially Ricardo, gave the thought its cutting edge as a critique of standing socia arrangements. The class wil spend some time identifying the classical Marxist analysis of capitalism and various attempts, which have not come to an end, to accommodate to developments which Marx appears not to have anticipate in some important respects.

355B/555B Marxism as an Alternative Approach in
Contemporary Social Science, seminar: 2 hrs.; D. Brayb rooke. (not offered 1975-76)

This class will discuss the implications for the study of politics of contemporary Marxist economics (by Western writers like Baran and Sweezy, Mandel, and Sherman); the critique of the Frankfurt School; and Jean-Paul Sartre's use of Marxism as a methodology for social science. Prerequisite: 355 A or equival Braybrooke. (not offered 1975-76)
65A Philosophy of Science, lect. with discussion: 2 hrs, A Rosenberg.
An examination of concepts crucial to the expression of scientific theories, as well as a consideration of the
interpretation of controversial physical and social theories Topics change from year to year. In any given year problem reated may incluade causality and soie ity law, he naure status of space and time, behaviourism and simulation in experimental psychology, the interpretation of quantum mechanics, the nature of microeconomic theory. See the instructor for details about the class in any given year.
Prerequisite: Philosoohy 100 or 200 or 201 or 202 or 305 , or relevant science courses, or permission of the instructor. 365B Topics in Philosophy of social, behavioural,
biological and natural sciences, lect. with discussion: 2 hrs.; A. Rosennerg.
Prerequisite:

Prerequisite: Philosophy 100 or 200 or 201 or 202 or 305 , or
elevant science courses, or permission of th
385 Metaphysics, (lect. and seminar: 2 hrs.; S. A. M. Burns. (not offered 1975-76).

This class will study some primary philosophical questions about the nature of substance and changes, space and time, cause and effect, and (self--)identity

390 The Philosophy of J. P. Sartre, seminar: 2 hrs.; I. A. MacLennan

The class will consist of an intensive study of Sartre's Being and Nothingness. However, in the second term Sartre's philosophy will be related
philosophy of M. Heidegger.
Prerequisiste: Philosophy 217 or 270 .

Philosophy 406, Logics and Languages; P. K. Schotch (Offered instead of Philosophy 404 in 1975/76).

This course is intended as a formal counterpart to a course in the Philosophy of Language. During the last 15 years a
number of technical breakthroughs have lead to an approach numberral language in which logic, linguistics and to some extent other mathematical disciplines can be utilized jointly The course will consider such topics as: deep structure and its dependence, and the analysis of ambiguity. The general philosophical context of discussion will be the question of the relation between language and the world
Prerequisites:
Prerequisites: necessary. However since the course will be logically self-contained previous experience in logic is not essential and an acqualiance wine basic concepts of struct

4460A/5460A Seminar in Philosophy, Politics, an Economics: Public Gooos and Polical choices, semina Sci. $448 \mathrm{~A} / 548 \mathrm{~A}$.)
4461B/546B Seminar in Philosophy, Politics, an Economics: Applied Social Philosophy - The Logic o nar: 2 hrs., spring term; D. Braybrooke.

This class will consider the logicarcharacter of policies, taking them to be best defined as social rules and the logica character of issues, regarded as disjunctive questions in which various rules figure as alternative policies. It will then move on to consider various criteria for resolving such
questions - criteria in which philosophical concerns with values join up with topical concerns about social indicators Finally, it will study various aspects of institutional arrangebear upon them. Readings will include von Wright, Norm an Action, Beinap on the logic of questions; Bauer, Socia

50A Philosophy of Language, seminar: 2 hrs.; R. M. Martin.
The elements of languages have meaning, but what is the meaning of 'meaning'? Various theories of meaning will be
examined. Related issues of philosophical importance wil also be discussed (e.g. the analytic/synthetic distinction synonymy).
Prerequisite.
rerequisite: Philosophy 100 or a logic class, and at least permission of the instructo

## Physics

Professors
M. G. Calkin
E. W. Gupt
C. K. Hoyt
M. H. Jericho
M. J. Ken (O
M. J. Keen (Oceanography and Geology
G. F. O. Langstroth

Associate Professor
D. J. W. Geldart
R. D. Hyndman (Oceanography)
D. B. I. Kiang
D. B. . Kian
W. Leiper
R. H. . March (Chairman)
R. Ravindra

Assistant Professor
B. L. Blackford
J. G. Cordes
D. F. Goble
B. E. Paton
P. H. Reynolds
A. M. Simpson

## I. Stroink

## Postdoctoral Fellow

C. Blaauw
W. A. Roger

We are surrounded by complex objects. A transistor radio is a typical example; their size and complexity varies enormously and technology which has produced them of basic science

We are also surrounded by simple and subtle phenomena not made by man. A rainbow, or the waves on the shore may cause us to look and, perhaps, cause us to wonder.

The science called 'physics' is for those who wonder. The eachers of physics will strive to impart not only basic
nowledge. In addition, and often at the same time students will be helped to develop the skills required to connect eeming unrelated events or observations, and via this eomection to come to an understanding of a physica

A physical concept is a powerful weapon for those who wish to ouviry, whether this inquiry coscerns a rystematic scientific diagnosis. For example, only a few concents are required to understand classical mechanics - the study of force and motion

Materia objects are found to behave predictably: they can be sound, also obey laws and a knowledge of these laws will help us to understand the behaviour of an optic or acoustic system or, more important, to predict the behaviour of an untried system
ectricity and magnetism form an important part elementary physics. In several classes the nature of electric phenomena includes such distant cousins as a toy electric

In the study of these and related subjects, deductive skills are encouraged and practiced; these skills can then be used to
study more subtle physics, or carried over to any discipline which may be the goal of a student.

## First Year Classes

 There are three first year classes. They give a generalintroduction to the subject and cover to a varied extent the more modern aspects of physics - relativity, properties of
nuclear radiations and quantum mechanics.
hysics 100 is a survey class requiring no previous preparation in physics and offered primarily for students in

Physics 110 is intended for student intending to make a study engineering or a physical science. Previous background in ror
For second and subsequent years, an important part of the establishes a connection first is the laboratory work which mathematical ideas of the lectures and the world of physical eality In the third and fourth years the student is encouraged 0 follow his own interests as much as possible, both by designing and carrying out experiments of his own choosing mongst the electives available.
Degree Programmes

## General Degree/Major in Physics

tudents intending to major in physics should include Physic 10 and Mathematics 100 in their first year programme Physics 100 and 245 may not be included in a 'Major' and at not count as the only 300 -level class.
Students wishing to take a general degree in Physics might be courses at the 200-level (P221, P222A and 223B, P230 and 250 ) between them cover essentially all of the major topics in physics. This package includes: a general introduction to hysics, introductory quantum mechanics, relativity and atomic physics.
Students interested in both physics and biology may wish to examine the section on 'Combined Honours'. The first three years of the 'Biophysics' combined honours programme constitute a three-year B.Sc. (General Degree) programme which has been put together by both departments. Again, it
should be noted that alternatives are available for specific classes in this programme of study.
B.Sc. Major in Physics (example only, other possibilities
exist):

Year I, 110 (Math 100), science, arts, elective
Year II, 221, 230 (Math 200 or 220), science elective.
Year III, one or two of 222A and 223B, 250; one or two of 300 ,
$315,320,335$, elective(s) $315,320,335$, elective(s).
B.Sc. with Honours in Physics
are encouraged, to discuss their programme with staff
members of the department and to consult with the Chairma
ear 1
Chemistry 110.
2. Mathematics 100
4. Arts or Science elective
5. Arts elective.

Year II
Yearience elective.
7-8. Two mathematics' classes
9-10. Physics 211 and 231 .
var II
11. Arts or Science elective
12. Class in Mathematics.

13-15. Physics 300 and two other physics classes.
Yeariv
16. Arts, science or mathematics elective

17-20. Four physics classes at the 400 level one which will

Combined Honours
Physicists study, and try to understand, the fundamental laws of nature. Because of this, physicists find themselves
becoming increasingly involved with other sciences where attempts are being made to understand the phenomena as well as to describe them. For example, geoologists have mapped the magnetic field of the Ean and are now working with physicists, trying to explain the underlying mechanisms.
Biologists and physicists are collaborating on studies of Biologists and physicists are coliaborating on on a variety o
diffusion through celluar membranes, as well as other topics.
It is important, therefore, to have scientists with training in more than one subject.
All manner of combined honours physics programmes can be All menerated. Two cases where details of such programmes generated. Two cases where details of such programmes have been worked $\begin{aligned} & \text { and } \\ & \text { with } \\ & \text { BIOGY. Details of a possible 'Geophysics }\end{aligned}$ programme are included in the Geology section of the Calendar. A possible programme for students wishing odo do
'Biophysics' combined honours programme is outlined below.

## -ained Honours Physics and Biology

## Cear 1

Biology 2010A, 2030
Math 100
Language or Social Science

## Year II

Physics 221, 230
Biology 2000
Biology 220
Math 220
Year III
(one of) Physics 315
320, 335
Biology 2020A
$2040 B$
2040 ${ }^{2010} 3$ B $3012 \mathrm{~A}, 3013 \mathrm{~B}$

## One other Biology or

 ElectiveHalf-class in Biolog Half-class in Biolog
Physics 470 B hysics 340/Biology

Students contemplating these, or any other combined tudents contemplating inese, ond further details from the onours programme may any case consult the Department are the a and sho of their second year of study.

100 General Physics, ( 3 sections), lect: 3 hrs.; problem This is a survey class requiring no previous preparation in physics, and offered primarily for students in ants, prea prerequisite to advanced classes in physics.
The class surveys physics from its beginnings to the presen hyics are: Newtonian mechanics (motion, force, mass, momentum, energy); electrómagnetism (charge electric and magnetic forces and fields); relativity (space
time, mass, energy); quantum theory (elementary particles toms)
he major topics are dealt with mainly in historical sequence a large extent the ideas in later topics are built on the ideas mentioned are not at all isolated from each other, but are rather closely inter-related
hroughout the class, mathematics is used as a language for xpressing the basic ideas of physics and also for deductive
easoning from these basic ideas. The mathematics used not in advance of high school algebra and trigonometry, but high school mathematics. It must be stressed that mathematiigh formulae are not used simply for "plugging in" numbers ather, the emiphasis is placed on a thorough understanding he meaning and range of applicability of the formulae.

Alarge part of the class consists of developing understanding of physical principles through specific problems. For this reason, there is a 3 hour session each week during whic the lecturer and graduate students. The problems are linked closely to the lecture material, and sometimes extend the subject matter of the lectures. The problem sessions are conducted informally and students are free to discuss the
problems with each other as they work. There are no laboratory experiments in this class.'
Text: J. B. Marion, Physics and the Physical Universe, Wiley

110 General Physics, lect.: 3 hrs. ( 2 sections); tutorial: 2 hrs 110 General Physics, lec
E. W. Guptill, R. H. March
This class introduces the student to the elementary physical laws of our universe and the way in which these laws are used
to forecast such natural events as the flight of a projectile, the relativistic variation of mass, the flow of electrical current in a circuit, etc. Newton's laws, for example, are stated and then
one proceeds by asking "What do these laws say about the one proceeds by asking What do train time has elapsed?" Intuitive reasoning or educated guessing is eliminated. Reasoning of this kind requires more sophisticated mathematics than one normally uses in high school and consequently a
considerable fraction of the first tew weeks of lectures is used introducing such topics as vector algebra, differential calculus and integral calculus.

Throughout the year students will have an opportunity to assess their progress by the results of fortnightly quizzes
which are given during afternoon tutorials. These replace the conventional laboratory work and give the student ample time to discuss his problem with the tutor. Most of the
room demonstrations. Students beginning. this class should be familiar with
trigonometry, the solution of quadratic equations; binomial expansions and should now be prepared to start vector
algebra and differential calculus. Previous work in physics is not essential.
Text: Weidner and Sells, Elementary Classical Physics, Vols.
1 and 2, Allyn and Bacon, 1973 .
211 Mechanics lect.: 3 hrs.; lab.: 3 hrs.; A. M. Simpson.
and
231 Electricity, lect.: 3 hrs.; lab.: 3 hrs.; M. H. Jericho.
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 laboratorr, i. e. work done in the laboratory periods is included in the grade for both classes.
Prerequisites are also common: Physics 110 and Mathematics 100. (Statistics have shown that a student with less than a " B "
grade in Physics 110 can be expected to have difficulty with 211 and 231 ).

It is assumed that students are familiar with elementary mechanics and the concepts of work, energy and momentum as developed in Physics 1110 ; and with the application of
simple integral and differential simple integral and differential calculus to the solution of

## 211 Mechanics

The class is divided into 2 parts: mechanics and wave motion. The first part deals with basic vector mathematics and its 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 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 introductionto
the second part, wave motion. examples are taken from many branches of physics mechanics, electromagnetism, quantum theory. Fourie Text: Berkeley packets and pulse will be included. McGraw-Hill, 1965; Berkeley Physics Course, Vol M Whaves and Oscillations, McGraw-Hill, 1965.

## 231 Electricity.

The material discussed in this class froms part of the Berkeley Physics Course. The class begins by studying electrostatics distributions of static charges, and the concepts of electric
field and electric field and electric potential as physical quantities. Next, the
motion of charge in conducting materials sis disussed 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 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 aparatus and 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 he nature of electric charge, electric field, magnetic field, and Text: . Berkeley Physics Course. Vol. 2 Electricity and Text. Berkeley Physics Course
Magnetism, McGraw-Hill, 1965.
221 Waves and Modern Physics, lect.: 3 hrs.: lab.: 3 hrs.: C
This class is intended mainly for those who do not plan to take onours physics but who. wish to learn more about 20th

Waves are studied first, since their properties and the terminology used in connection with them have an important elationship to much of modern physics. Wave equations are shown how all the various wave properties can be derived and used.
The central role played by light in forcing a revision of 19 th century ideas is brought out. The resulting relativity and quantum theories are applied first to simple idealized
situations, and then to more realistic ones in discussions situations, and then to more realistic ones in discussions of the hydrogen atom, the structure of atoms and molecules. The
necessity of using the newer theories will be aparent necessity
existence of phenomena which cannot be explained by the older ones.
Finally, the world of sub-atomic particles will be explored to show how the experimental facts are still compeling physicists to revise their conception of nature.
Prerequisite: Physics 110 . Mathematics Prerequisite: Physics 111 . Mathematics 100 . Students are
expected to be familiar with calculus. functions, simple harmonic motion, and the simpler aspectial special relativity.
Text: H.
Text: H. D. Young, Fundamentals of Optics and Modern
Physics, McGraw-Hill, 1968.

## 222A Radiation and Environmental Physics, lect: 2 hrs

 :W. LeipeThis is a physics class which does not involve the use of calculus. The properties of atomic and nuclear radiations are
explained and the uses of these radiations are discussed. As an example, one of the laboratory periods is devoted to a visit
to the Nuclear. Medicine to the Nuclear.Medicine Department of a local hospital, where
$x$-ray machines and radioactive saurces treatment of patients.
The lectures also cover the instruments used to detect and monititir radiations (geiger counters, cloud chambers, etc.);
pollution monitoring: radio-isotopes in agriculture, rockdating monitck radiations (geiger counters, cloud chambers, ett.);
pollution monitoring; radio-sisotopes in agriculture, rockdating
and radio,chemical analysis. and radio, chemical analysis.
in the laboratory periods the students become familiar with equipment such as sodium iodide gamma-ray counters
(which measure the energies of gamma rays passing through them), geiger counters and radio-active sources. Prerequisites: Any first year physics class. Other students Books: Hurst and Turner, Elemeniary Radiation Physics,

223B, lect.: 2 hrs. per week plus demonstrations, visits, films as arranged
Based on the background obtained in P222A, the lectures cover the various kinds of devices used to accelerate nuclear
particles to high energies - the 'atom smashers'. The increasing use of such gigantic and expensive machines in health physics is discussed. The major radiation hazards to construction, properties and effects are explained.
Prerequisites:
Book: TBA
230 Mechanics, Electricity and Magnetism, lect.: 3 hrs.; C. G. White.

This class is 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 reasonare unable to take that class. Students may take third year physics classes if they have taken this class, and Physics 221. The mechanics, with an introduction to relativistic mechanics, and the essence of classical electricity and magnetism. Substan tial emphasis will be placed upon the important ideas which arise from hese fielas
relevance.
relevance.
Prerequisite
Text: to be: Physics 110 , Mathematics 100

## 231 Electricity

See description with Physics 211.
245 Planetary Science and Astronomy, lect.: 3 hrs.; P. H. Reynolds, R. H. March.

This course is aimed at developing an understanding of our physical environment, both on the scale of the solar system maior findings of geophysics and oceanography to study the marth as a planet. We shall discuss the contributions made by the space program - for example, the Apollo flights to the and origin of our solar system will be considered as will the interactions of its component parts (for example, Earth-Moon and Solar-planetary interactions).
The second part of the course will consider stars - their origin, constitution and evolution with time, the structure and age of our Galaxy and the universe of galaxies; pulsars quasars and other recent interesting developments inolicgical
and radio astronomy; and finally, various cosmological models.
Prerequisite: one first-year science course.
Text: Wyatt and Kaler, Principles of Astronomy, Allyn and
250 Astronomy, lect.: 3 hrs.; P. H. Reynold
This is a basic course designed primarily for students who may wish to pursue more advanced studies in astronomy or in astrophysics.

1. The Solar System: the Earth, Moon, meteorites and planets: planetary motions and celestial coordinate systems the origin and age of the system.
II. The Stars: their distances and motions; the motion of the Sun; magnitudes, luminosites, colours and stellar spectra binary star systems; clusters of stars; interstellar gas and dus stellar evolution.
II. The Galaxies: structural features and dynamics of our Galaxy; particular features of the exterior galaxies V. 'Gee-Whiz' Astronomy: pulsars (neutron stars); black
holes; quasi-stellar objects (quasars); an introduction to cosmology.
Prerequisite: Physics 110 or Physics 100 Text: Smith and Jacobs, Introductory Astronomy and Text: Smith and Jacobs,

300 Experimental, Physics, lab.: 6 hrs.; lect.: 1 hr.; B. E. Paton.
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 experimentadiont As
number of experiments is small (four to six), students should achieve a real understanding of a few physical phenomena.
Topics for experimental study cover a wide range of fields such as atomic physics, mathematical physics, solid state physics and. electronics. A measurement, of one of the undamental constants a study.
Prerequis
Prerequisite: The class is designed for honours students
and has Physics 231 as a prerequisite: For physics students and has Physics 231 as a prerequisite: For physics students,
two other physics classes must be taken concurrenty. two other physics classes
Exceptions have been made.
315 Modern Physics, lect.; 3 hrs.; D. Kian
This is an introductory class in quantum physics. The first term deals mainly with basic quantum mechanics. In the second term, selected topics in atomic physics, low temperature Whenever possible, attention is drawn to the current trends in physics research.
prerequisite: Mathematics 200 or its equivalent.
Text: Tipler, Moundations of Modern Physics," Worth 1975-76. Supplementary readings: Selected articles from Scientific American and American Journal of Physics.
320 Thermodynamics, lect.: 3 hrs.; D. J. W. Geldart.
This class studies the basic principles oif statistical mechanics and the relation that they have to thermodynamics together
with the application of these principles to the study of ideal gases and certain physical systems.
gases and certain physical systems.
Prerequisite: Some knowledge of derivatives:
Mathematics 200 , which may be taken concurrently with the Class. Reif, Principles of Statistical and Thermal Physics, McGraw-Hill, 1965 .
335 Electronics, lect.: 3 hrs.; A. Levin.
The class covers advanced circuit analysis of linear and non-linear systems, the physics and resulting properties o solid state devices, the concepts of information and noise and transmission lines and filters.
Topics treated: network reduction, the 4 terminal network and solutions by matrix methods, non-linear systems modulation, de-modulation and rectitifation, carrier transpor in semi-conductors, properties of diodes and transistors
electro-mechanical analogs and analog computation electro-mechanical analogs and analog computation athods, feedback and cort distributed constant lines and filters.

Prerequisite: Physics 230 or Physics 231, Mathematics 220
or 228 to be taken concurrently. or 228 to be taken concurrently

340 History of Science, lect.: 2 hrs .; tutorial: 1 hr r; R. Ravindra (Physics), J. Farley (Biology). (Same as Biology 3400 and

History 340 . Class description to | H400). |
| :--- |

400 Advanced Physics Laboratory, lab.: 6 hrs.; A. Levin, S. T. Nugent.

This is a physics and engineering-physics laboratory class in which students in groups of two work largely on their own
nitiative. The experimental work covers tion, gamma and beta spectroscopy and absorption meas urements, proton spin quantitative measurements and Planck's constant determination; thermionic emission and nstrumentation system; properties of solid state semiconduc tors and devices; experiments on the spectral noise distribution of transistors and the use of analysis systems; 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. rerequisite: Fourth-year standing in physics

## 028 Special Topics in the History and Philosophy

 cience, seminar: 3 hrs.; R. RavindraAdvanced Classical Mechanics and Electro
det
the first term the class will study Lagrangian and oldstein Chapters 1 , covering, for example, the material in Hamiton's principle, the two body central torce protion, amilton's equation of motion, transformations, the Hamiton acobi equation
In the second term the class will study electrodynamics, covering topics such as electro-magnetic waves, radiation, from antennas and from moving charges, energy loss of charged particles passing through matter, plasma physics
semi-classical theory of radiation Texts: Goldstein. Classical Me
Jackson, Classical Electrodynamics, Wiley
411B Special Relativity, lect.: 3 hrs.: M. G. Calkin.
Topics discussed include: experimental basis of the Lorentz
transformation relativistic kinematics: transformation relativistic kinematics: space-time; introduc electrodynamics.
Prerequisite: Physics 219 , 231 and 315 or the permission Prerequisite:
the instructor
Text: TBA.
415 Quantum Mechanics, lect.: 2 hrs.; W. J. Archibald
Topics discussed include: concepts and formulation of barrier, angular momentum and the central force problem perturbation methods, scattering theory.
Prerequisite: Physics 315 . Students should be familiar with necessary to discuss the Schroding with the mathematics Text: TBA.

416A Mathematical Methods of Physics, lect.: 3 hrs
opics discussed include: ordinary differential equation partial differential equations. rerequisite: Registration
sent.
Texts:
Texts: Arfken Mat in exts: Arfken, Mathematical Methods for Physicists (2nd (2nd ed.).
23A Introduction to Solid State Physics, tet: 3 hrs. W. Leiper.
his class introduces the basic concepts of solid state physic which are related to the periodic nature of the crystalline phonons and lattice vibrations, the free electron theory metals, and energy bands.
erequisite: Physics 315. Registration requires prior de partmental consent.
Text: Kittel, Introd
hapters $1-9$ Wiley.
433B Materials Science, lect.: 3 hrs. H. W. King
study of real mates the principles of solid state physics to the intrinsic symmetry which Physical properties are shown to have crystal structure of the material thereby defining the of the of coetficients necessary to completely describe the property. The concept of thermodynamic equilibrium, governed by
diffusion in the solid state diffusion in the solid state, is discussed as the basis for a
description of the microstructure of 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 electroris, it is shown influenced by micro-structural effects such as solid solution alloying, crystal defects, grain boundaries, textures and plastic detormation.
Prerequisite:
permission from the instructor Rrably Physics 423A. and permassion rom the
Text: Hutchinson and Baird Pegistration requires prio Wiey 1968.
Reference: Nye Reference: Nye,
Univ. Press, 1969 .

## 435 A Electronic Techniques for Energy Conversion, eet:

This course discusses the properties, efficiency and uses of energy conversion systems based on electronic techniques
Topics discussed include: thermoiunction generators refrigerators, solar generators, thermionic generators, fuel
cells and related devices cells and related devices
Reference: Levine, Selected Papers on New Techniques in
Energy Conversion.

## 40B Optical Electronics, lect.: 3 hrs.; S. T. Nugent.

Topics discussed include: electromagnetic theory, the interaction of rays and optical beams, optical resonators, oscillations, some specificic laser systems second of lase generation, parametric oscillation, electro-optic modulation and optical detectors.

444A Optics, lect.: 3 hrs.; C. K. Hoy
Topics include a detailed study of the radiation from accelerated charges, the statistical properties of the fields rom assemblies of radiators, interference, diffraction, with polication 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 the topics in physical optics.
Prerequisite: Physsics 230, or Physics 231, or Physics 221 and Mathematics 220 . The students should be famiilar with exponential functions. Registration requires prior departmenal consent.
Text: Stone, Radiation and Optics, McGraw-Hill, 1963.
444 B Optics, lect. 3 hrs.: C. K. Hoyt.
This class is a continuation of Physics 444A and deals with coherence, polarization, scattering by matter, the elec-
tromagnetic properties of matter, including crystals, reflectromagnetic properties of matter, incluaing crystals, reflec-
tion, refraction and double retraction. fion, refraction and double retraction.
Prerequisite: Physics 444 A . Registration requires prior departmental consent.
departmental consent.
Text: Stone, Radiation and Optics, MCGraw-Hill, 1963 and
assigned readings on related topics.
445 Physics of the Earth, lect.: 3 hrs.; P. H. Reynolds, R. M. Hyndman and J. M. Ade-Hall.

This is a class in solid-earth geophysics. Topics discussed
include: the figure of the Earth and gravity, seismology and the include: the figure of the Earth and gravity, seismology and the paleomagnetism - the' prehistory of the geomagnetic field, heat flow and the Earth's thermal history, electrical conduction in the Earth, radioactive processes and in the age of the Earth,
global geophysics-continental drift and sea-floor spreading.

Taught concurrently with Geology 445
Prerequisite: Registration requires the prior consent of the Text: Stacey, Physics of the Earth, Wiley, 1969; Garland, Introduction to Geophysics, Mantle, Core, and Crust, Saunders, 1971

462B Time Sequence. Analysis in Geophysics, lect.: 3 hrs. P. H. Reynolds.

This course will be designed for senior undergraduate and graduate students. Substantial background in Mathematics graduate studen
will be required.
Topics include: Convolution of a time series, fast Fourier and Laplace transforms, correlation and covariance, powe
and spectral estimates, decon

Taught concurrently with Geology 462B.
Prerequisite: Interested students should consult with the . instructor.

Time Sequence Analysis in Geophysics, University of Alberta Press, 1973.

Physics 470 B Topics in Biophysics, lect.: 3 hrs.; M. Jericho.
The purpose of the course is to introduce students with a background in physics to the field of Molecular Biophysics opics that wir be coverehapes of molecules, $X$-ray analysis of molecular structures, intramolecular and intermolecula orces, physical properties of membranes as well as question elated to thermodynamic properties of living organisms.

A background in biology will be helpful but is not essential. The main reference books for the course are: Molecular
Biophysics, by P. B. Setlow and E. C. Pollard, and Molecules Biophysics, by P. B. Setlow and
and Life, by M. V. Volkenstein.
 Prerequisite: A class in basic thermodynamics (such as
Physics 320), some background preparation in Moderr Physics and Quantum Mechanics, and the permission of the structor.

## raduate Studies

he Department of Physics provides course of study leading research undertaken at Dalhousie include: solid state esearch undertaken at Dahousie include: solide stat geophysics, low energy nuclear physics, low heoretical physics, and oceanography. Further details are iven in the Calendar of the Faculty of Graduate Studies.

## Political Science

## Professors J Aitchison <br> J. H. Aitchison J. M. Beck <br> D. Braybrook <br> K. A. Heard, Chairman M. K. McGwire

## Associate Professors

## P. C. Aucoin

A. P. Pross (Director,Public Administration Programmes)
D. W. Stairs (Director, Centre for Foreign Policy Studies)

\section*{Assistant Professors <br> R. Boardma

R. L. Dlal

lal <br> W. R. Mathie <br> D. J. Munton
D. H. Poel <br> D. H. Poel <br> T. M. Shaw
S. L. Sutherland <br> Special Lecturers <br> K. Antoft
R. K. Daley <br> c. J. Gardne}

## Foreign Policy Research Fellows

M. F. Haven
W. J. McGrath
S. K. Nyamekye

## Research Associates

B. Cuthbertson
D. A. Lawrence
J. 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 may people regard as the 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 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 he 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 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 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 als
with an almost endless variety of questions of a simila solt

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 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 usetulness of various possible remedies (where
emedies 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 he question of "Who Geome a raw and brutal game in which settled only by the most violent and When, How" is sometimes 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 thei
function to examine the workings of the internation community as a whole - to distinguish, for example, the causes of war from the conditions of peace, and to evaluate he effectiveness of alternative means of securing the questions they are led. to examine the princiiles of nuclea 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, ye
iter-related, phenomena

It will be obvious that the emphasis in these various politica
science pursuits is on the study of politics as actually cience pursuits is on the study of politics as actuall 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, atter all, simply self-evident tha men should have the same voting power as educated men, or hat 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 Issues of this sort have been debated by reflegtive men fo
thousands of years, and none of them has found atter carefiu examination that the answers come easily. To consider th very difficult problems raised by theses sorts of questions is the
principal task of political philosophy It is a task which lies at principal task of political philosophy. It is a task which lies a
the core not merely of political studies, but of political life itself.

Students who are interested in these various fielas of inquiry represented in the class offerings and programmes of them 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 whatever advice and assistance they can be happy to offe of any student's personal programme of studies.

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Degree Programmes
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Students concentrating in Political. Science may take a one-year, two-year, or honours programme. The specific
courses to be taken in each individual programme are chosen in consultation with a faculty advisor from the Department, in accordance with the general requirements listed below. Undergraduate programmes may consist of specialization in one sub-field of Political Science or a general selection of general selection of courses from a number of sub-fields. These sub-fields are noted below.

Requirements A one-yearprogra will than 4 classes in Political Science in addition to a 100 -level class.

First-Year Level
These classes must be drawn from at least two of the four susted.
A one-year programme will normally consist of second-year level classes but may include one or more above that level.

NOTE: The requirement of a first-year level Class for a one-year programme may be waived, especially for third-year

A two-year programme will consist of a first-year level class Political Science.

Classes at the
two sub-fields.
In the 2nd year of a two-year programme as many classes as possible should be at the third-year level. At least one of the ard
An honours programme will normally consist of a first-year level class and not less th
classes in Political Science.

It will include.
(i) at least two classes in two sub-fields at the second-yea level,
(ii) at least four classes above the second-year level, two o which may be taken as fifth-year level courses,
(iii) and an honours essay

The honours essay will be worth 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 pertinent literature and such other data or analytical materials as may be appropriate. The credit number for the honours essay in 4600 (formerly 499 )
D. Interdepartment programmes will be worked-out with the individual student and his advisor in consultation with the

Combined Honours
There are several combined honours programmes
Political Science and Philosophy
Political Science and History
Political Science and Sociology
Students interested in taking any of these combined honours programmes should con

## Graduate Studies <br> 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 Programmes leading to the Faculty of Graduate Studies. Programmes leading to the

Public Administration are avso available through the Undergraduate Programme in Public Administration he Certificate in Public Administration requires the comple tion of six classes which may be taken from the Director of the
Further information may be obtained from Programmes in Públic Administration, Department of Politica Science.

## Undergraduate Programme in African Studies

The Department offers courses which may contribute towards a B.A. degree in African studies. Further details of this section above and from the co-ordinator of the programme in Aection astudies.

## Undergraduate Advisory System

he advisory system in the Department of Political Science is intended to assist the student in designing a specific
programme in accordance with his own interests and the requirements of the Department.
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 by the instructor of that class), or (b) registered for a normally by in in Political Science. Upon entering the programme a student may indicate a choice of advisor. Normally
the advisor will be a taculty 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 Deparments Undergraduate student's apparent interests and the present advisory load of the members of the Department.
The advisory relationship may be ended by the student or the advisor at any time and for any reason. One faculty member may continue to advise the same student through-out 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 rs not, however, a tutor event, before the time for class changes has ended) the student must contact the advisor to discuss his/her choice of classes for that year

> Class Offered

The classes and their descriptions printed below were
prepared for publication early in October 1974. It in inevitable prepared for publication early in October 1974. It is inevitable to the beginning of the $1975-76$ academic year. The department hopes to prepare an up-to-date listing of its
classes in the spring or early summer of 1975. Students, classes in the spring or early summer of 1975. Students particularly those entering their second ortmird year, shourd
consult this supplement or the department before preregistering.
The classes are arranged in five divisions and to each class a new four-digit number has been assigned. The first digit on the number oftes the year

## - Introductory <br> Comparative Go and Public Administration <br> 4. Political Theory and Metho and Politics

International Politics and Foreign Policy
No student may take more than one first-year level class but some second-year level classes require no pre-requisite. One to a first-year level class

Fourth-year level classes and most of those at the third-year evel may also be taken by graduate students. Graduate
students will, and fourth-year honours students may, use the 5000 number, in registering for these classes. Instructors vary in the degree (if any) to which they differentiate formal equirements for those who do. In general, it is expected that
hey will produce written and oral work of a quality that reflects heir longer academic experience.
The prerequisites listed with each class are intended to show he sort of preparation the instructor anticipates. Admission to he instructor who retains the right to judge the suitability of ach prospective student's qualifications for the successfu
The new number for the honours essay is 4600

## 1. Introductory

## 1100 (formerly 100):

Section 1, Democratic Government and Politics, lect.: 3
-
The core of this section of Political Science 100 will be a oomparative study of the institutions, processes and problems mainiy. but not exclusively, to the political systems of Grea Britain, Canada and the United States but with greater emphasis on Canada than will be the case in other sections of
Political Science 100 .

The emphasis on Canada is for those who, at least initially, do not intend to take further classes in Political Science, and who
wish to become more knowledgeable Wish
democracy of Canada.and its problems. The scone of the sections, however, will be sufficiently broad to provide a
foundation for those who wish to proceed to higher level classes in Political Science.

Section 2, Democratic Government and Politics, lect: 3
The class is designed not only for the student who desires to continue in political science, but also for the student who wi take no other classes in political science. During a short introductory section such questions as the following will be
posed: Can there be a genuine science approaches may be adopted in a study of politica phenomena? This will be followed by an examination of the operative ideals of liberal democracy, fascism and comprerequisite for the successful working of liberal democracy The basic part of the class will be a comparative study of the governmental institutions of Great Britain, the United States to acquaint the student with some of the basic problems in the working of modern liberal democracy.

Section 3, Introduction to Political Science, lect. and
Politics is about power and influence. This class will introduce various aspects of politics in Canada, the United States, and to to moverel Union. It can be taken by students who nore advanced work by those interested in pursuing the study of politics furthe
During the year we will explore three major fields of political science: comparative politics, political philosophy, and
international relations. The student will be introduced to these neilds through a series of topics each of which will be
fill
iel guest speakers, simulation exercises, and other methods.

The topics chosen vary from year to year but in -1975-76 will cover: (1) the study of Utopias, among them Plato's
Republic, and of different political ideals such vatism, liberalism, and socialism; (2) the media and politics. and the problem of how we arrive at our judgements abou Hitter's Germany, and its more contemporary forms ( causes of war and peace in the modern world, apprached 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 structures of government in these thre countries: ( 7 ) problems of global development and some aspects of the relations between industrialized states such as World; and (8) the power of the individual to the Thir political decisions, approached by looking at some problems of Halifax' city politics
The aim, in brief, is to provide the student with a useful and hether r. not he intends which to analyse political questions whether or. not he intends to carry the academic study of
political science any further. political science any further.

One basic textbook covers most of the material needed to do a variety of assignments, among them papers, research opics, and collaborative proiects.

1101 (new) Introduction to International Politics and Intended for students who are especially interested in the play of politics at the international level, the materia discussed in this class is divided into four main parts. The irrst, tor background purposes, will be devoted to a genera
survey of international relations in the modern world with emphasis on the period since 1945. Among the topics to be considered are "he founding of the United Nations, the evolution of the "cold war", the emergence of the so-called 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 io discussions of international affairs. These will include, for example, the concepts of "power" and "power politics", the analytical tools.
The third part will be directed more immediately to the

What is "foreign policy"? Who makes it? How do they operate? What influences - domestic and foreign - do they
ake into account? And what instruments and strategems do hey deploy in the pursuit of their objectives?

In the final part the emphasis will shift away from the erspective of national actors and their foreign policy and will ocus 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 genéral survey for Politics as well as a broad introduction for those who intend to take additional higher level classes. It will also be of interest students who plan to take no other classes in political cience.

102 (new) Introduction to the Observation of Politics, lab. R. L. Dia
Politics has been described as the activity resulting from conflict among persons and groups holding different values and government as the making of decisions binding on the
conflicting parties despite their conflict. Similarly, Eastonian conticting parties despute the the articulation of interests and the authoritative allocation of values by governing bodies. The political philosopher may ask whether such authoritative equity.

Can political life really be understood in any of these terms? Do these concepts have any utility? Do they bring the political Scientist closer to reality? seck to test the value of a limited catalogue of political science concepts by bringing them to bear directly on the living" poilical process al three levels. government, and provincial government. Students will observe, on $a^{a}$ regular schedule, the functioning of various community and interest groups. the City Council of Halifax, assignment to consist of a series of reports, will be to catalogue the observations made throughout the year and to express and inter
described above.

Students are warned that the time requirements and timetable for the class are unlikely to fit the normal university class schedule and may interfere win personal obligations Halifax City Council normally meets on alternate Wednesday
afternoons and alternate Thursday evenings and the Provincial Legislature, when in session, sits in the afternoon and evening. While some flexibiility will be built into each student's observation schedule (which wil be worked out individuall with the instructondent signs up for the class.
mind before a stude

## 2. Canadian Politics and Pubiic Administration <br> 2200 (formerly 202) The Canadian Political System, lect and seminar: 2-3 hrs. P. C. Aucoin S. . Sutherland

There will be two sections of this class. They will have the
Among the major topics which may be considered are Canada as a federal political community; Canada as an
ndependent nátionstate; representative government, political authority and political freedom; and, the structure an processes of pariamentary government. While considerable municipal political arenas will be included in our examinations and discussions. The class will not be concerned xclusively with government but ...n encompass al socesses such as political parties, pressure groups, the rocesses such as poifitical parties, pressure grations,
his class is open to students who have completed an htroductory political sci

304/5204 (formerly 315/515) The Politics, Governmen Constitution of Colitics, Gover
his class is open to those students who have demonstrated competence in Canadian politics and government by 202 or its equivalent and in exceptional circumstances hose students who have obtained high standing in Poilica Science 100
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 and especially environmental institutional and personal factors to these problems will be examined in detail by posing such questions as: Can participatory democracy be oracticable concept in Canaacian federal pollcs. How valid and Horowitz? Ought Canada to be viewed as a consocia ional democray? Is the party leadership convention a useili adjunct of Canadian liberal democracy or a bad America branch to meet the demands 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-bugg 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 ourt 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

3208/5208 (new) Canadian Provincial Politics, lect. and semima. Bir. D. H. Poel
The general subiect matter of this class will be a cross analysis of the socio-economic, political and policy raits of the Canadian provinces.
For further information consult the instructor.

3212/5212 (formerly 316/516) The Politics and Government of Nova Scotia, seminar. 2 hrs. J. M. Bec

3216/5216A (formerly 334A/534A) Local and Regiona Government and Adm istan,
This class will deal with the origins, development, and present legal and discal positions of various forms of local
and regional government in canada. Special attention will be and regional government in Canada. Special a.ttention will be
paid to three problem areas; the territorial extent of local
government, policy formulation in a fractionalized politic
system, and the unique dimensions of urban government
It is open to graduate and senior undergraduate students. Participants must have completed Political Science 2200 or an equivalent class in the Canadian political system.

## tions in Canada, seminar: 2 hrs. D. M. Camernm

This class will consider a number of topics concerning the territorial division of political power and the relations tha include the nature of Canadian Federalism, federal-provincia fiscal relations, selected functional areas of intergovernmental relations, inte
municipal relations.

Undergraduates will be admitted only with the permission of Pre instructor
Grerequisite: P.S. 2200, or another class in Canadian
Government.
$3224 \mathrm{~B} / 5224 \mathrm{~B}$ (formerly $330 \mathrm{~B} / 530 \mathrm{~B}$ ) Canadian Political
Parties, Partes, Iecl. and discussion: 3 hrs. J. M. Beck
The Canadian party system will be viewed as an integral part of the entire political system and, among other things, the various factors, economic, geographical, regional have religious, constitutional and social, determined the character of Canadian parties and the party system? How valid are the
findings of Michels, Ostrogorski, findings of Michels, Ostrogorski, Duverger, and R. TT
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 Macpheison and Pinard in explaining the rise of third parties in Canada? Does Cairns overemphasize 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 Are Portier have outlived their usefultect that the old-line political
parther a resort to some
other means other means of interest articulation likely to make the existing party system redundant?

3228A/5228A (formerly 375A/575A) The State and the
Economy in Canada, seminar: 2 hrs. The staft
The aim of this class is to explore the interaction between governments and economic organizations, especially include the nature of government regulatory policies and problems related to multinational corporations. Others centre upon the role of government as a stimulus to economic activity, especially in the developmental and technological
fields. Finally, discussion will include som and mpact of ideologies, democratic socialism for instance, upon businesses and the economy as a whole. The mplications of these topics for Canadian society will be of prime concern.

3240A/5240A (formerly 314A/514A) The Policy Proces Canada, seminar: 2 hrs. A. P. Pross.

This will be a study of the fashion in which policies-are Various modelspod in the Canadian political system Various models of the policy-making process will be
discussed and their applicability to the Canadian setting will
be considered. The functions of process will be examined but with particular attention in the paid to the role of administrative structures. Prerequisites:
the instructor.

## $3243 B / 5243 B$ (formerly 332A/532A) Health Care Policy in

 Canada, seminar: 2 hrs. P. C. AucoinThe purpose of this class is to examine the policies of Canadian governments for the delivery of health care
Existing politicies and programmes will be studied in terms the roles of the health professions and governmental structures in their formulation and administration. Special
attention will be given to the process of relations in this policy field and the increasing politicization of health care delivery.
Prerequisites: Political Science 2200 ro 3250 or equivalen
classes in Canadian Government
3244A/5244A (formerly 338B/538B) Environmental Policy in Canada, lect. and discussion: 2-3 hrs. R. K. Daley
This class will examine the policy process as it. relates to issues raised by the "crisis of the environment". Special
attention will be directed to the evolution of socio-cultural attention will be directed to the evolution of socio-cultural
values (e.g., the recent growth in the importance of values (e.g., the recent growth in the importance of
wilderness areas) and their impact on the policy process as a dynamic interaction, media, political parties, pressure groups (including spontaneous protest groups), socialization processes and administrative organizations.
3245B/5245B (formerly $373 \mathrm{~B} / 573 \mathrm{~B}$ ) Urban Policy in
Canada, seminar: 2 hrs. D. M. Cameron the pise
The purpose of this class will be twofold: to examine the pal) toward cities, and to examine the impact of urbanization upon other policy areas (transportation, economic development, etc.). Questions of the roles of different levels of
government, as well as the substance of urban policy will considered extensively. The adequacy of municipalities as urban governments will also be examined.
Prerequisites: P.S. 2200. or equivalent class in Canadian
government and public policy. government and public policy.
3250 (formerly 3111 Introduction to Public Administration, ect. \& discussion: 3 hrs., S. L. Suthertland

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 governments-at the 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

3254B/5254B (new) Canadian Public Administration seminar: 2 hrs. The staff.

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 relation-
ship to the pbblitical executive will be studied in detail. Prerequisites: Political Science 2200 or 3250 or another clas

32588/52588 (formerly 3128/5128) Provincial Govern3258B/5258B (formerly 312B/512B) Provincial

This class will consider the organization of government at the provincial level in Canada. Special atention will be given to ose faatures of provincia govished administration at this evel from that of the federal government. Several rece eorganizations, incluaing he proposal for Nova Scotia, w ee examined in detail.
erequisites: P.S. 2200, 3250 or another class in Canadian
$3262 \mathrm{~B} / 5262 \mathrm{~B}$ (formerly 319A/519A) The Budgetary Pro ess seminar 2 hrs. D. M Cameron.

This class is designed for students specializing in Canadian government and public administration. While the content of he seminars will remain flexible enough to accommodate the upon two areas: the development of the budgetary process Canada, and the models and techniques for analysis
and/or reform of budgetary processes in general.

Canada, seminar: 2 hrs., A. P. Press
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 - 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. 3240A or permission by the instructor

## 3. Comparative Government and Politics

2305 (formerly 203) European Comparative Politics, lect. and discussion: 2 hrs. R. Boardman.
Since Europe includes more than 30 countries varying in size sive survey of the politics of all of them will not be attempted in this class. The emphasis in the first term will be on the three major western countries - France, West Germany and
Britain. In the second term we will turn to the government and politics of the Soviet Union and selected East European States. The political life of other countries such as Sweden and other Scandinavian countries and Italy and other Mediterranean countres 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 poll cal science but who are attracted

2310 (formerly 208) Comparative Government and Poli tics of the Far East, lect. and discussion: 3 hrs. R. L. Dial. (Not offered in 1975-76)
2315A (formerly 217A) Politics in Africa South of the Sahara, lect. and discussion: 2 hrs. K. A. Heard.

As part of the department's offerings in comparative policical systems, this class constitutes (a) a different area for the study of politics which may be compared, e.g., with European or Asian politics, and (b) a basis for comparison o problems of the new African states - e.g., problems of nation-building and of social and economic change - and the various strategies, both ideological and institutional, tha have been adopted in response to these problems, including
strategies of political participation on the one hand and strategies of poititical particip
This class is intended for students in African studies as well路 student with a general interest in Africa.

## 2320 (formerly 235) Political Behaviour at the Micro-

 it Level, lect and discussion: 2 hrs. D. H. Poel.This most general concern of this class is with the question of how human beings perceive, relate to, and participate in povious aspects of micro-politics, as are areas of political socialization, personality and political culture
2325 (formerly 205) The Theory and Practice of Govern (Iormery 20 ) The Theory and Pracrice of Gover ment in the
he purpose of this class is to consider the government of the United States not only for its own sake as the government of a modern democratic governments. With a view to accountin for the provisions of the original Constitution, the politica
culture and experience of the American colonists before, during and immediately after the Revolution, will be examined first. The subsequent experience of the people of the United States will then be traced in an attempt to explain and practices and in the provisions of their Constitution to yield the American political system as it exists today when the rivalry of parties and interest groups seem to signify grea departures trom ne inten the significance of the crises of the Nixon Presidency and the near-impeachment of Mr. Nixon will be thoroughly examined.

## $3330 / 5330$ (formerly 310/510) Comparative Government

 seminar: 2-3 hrs. The staffDespite the diversity of political ideologies, constitutional forms and levels of economic development, national govclass is concerned with ways of classifying "political systems" and comparing their behaviout 3335B/5335B
For description consult the department's 1975 supplement.
$3340 \mathrm{~A} / 5340 \mathrm{~A}$ (formerly $324 \mathrm{~A} / 524 \mathrm{~A}$ ) Problems of Development: The Politic
Not offered in 1975-7
3345B/5345B (formerly 318B/518B) South Africa: The Dynamics of Political
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 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 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 2315A or 35444
$3350 / 5350$ (new) Politics and Government in the USSR, seminar: 2 hrs. The staff
For description consult the department's 1975 supplement
3355A/5355A (formerly 326A/526A) Sinology: The Study of Chinese Politics 1840-1950, seminar: 2 hrs. R. L. Dial.
of Chinese Politics 1950-1975, seminar: 2 hrs. R. L. Dial
An attempt will be made in this class to define the existing paradigm in the study of Chinese politics and to exate the causes and areas of changing thought about the subject. Each week the class will discuss a particular social science approach, its effects on the larger paradigm, and its utilities will cover the application of the following models to the Chinese case: communication theory, rural marketing systems, Maoist mobilization theory, organization and bureauc-
ratic concepts, management concents radical theory, the concepts of political culture, urban sociology, and totalitarianism.
Among the students to whom the class will be of interest are Among the students to whom the class will be of interest are Chinestrating on international relations with a special interes in Chinese foreign policy

## 4. Political Theory and Methodology

2400 (formerly 201) Justice, Law and Morality, seminar: 2 hrs.; W. R. Mathie or D. Braybrooke.
The main aim of the class is to seek a clarification of the concept of justice and of the relations among justice, law, hese matters as they are presented in the works of hinkers as Plato, Aristote, Aquinas, Hobbes, Locke, Hume questions to be touched on will be the psychr.. Among the and nature of the notion of justice; the rationale of political
institutions and of the institutions and of the laws which they uphold; the place of equality in an adequately formulated notion of justice: the us
of the concept of justice in criticisms of existing institution and their rationale. There is no prerequieiste for the class.
The class will serve to prepare students for further study in
political .philosophy but it will be suitable also for students political. philosophy but it will be suitable also for students
who will not be taking any further classes in political science.
There is no prerequisite.

2405 (formerly 207) Political Philosophy from the Stoics to the End of the Fifteenth Century, lect and discussion hrs. J. H. Aitchison.
(Not offered in 1975-76)

3410/5410 (formerly 345/545) Man, Society, and Politics the Concept of Community, seminar: 3 hrs. W. R. Mathie
Ancient and modern political philosophy differ radically in the problems that each treats as central to political science and assess the justice of various claims to rule in the city and to consider the nature of various forms of community that concerned to account for and justify the obbigation is individuals to political authority, to establish how governmen can be based on consent, and to determine the proper elation between "state" and "society". In this class we will explore
science especially inasmuch as it can be understood in erms of a changed conception of the political community, or more generally of the political dimension of human existence. icomachean Ethics, Hobbes's Leviathan and De Cive Locke's Second Treatise, Montesquieu's Spirit of the Laws, Rousseau's Social Contract, Marx's "On the Jewish Prob
em", and Tonnies's Community and Society.
$3420 / 5420$ (formerly 342/542) The Political Thought of the绪. hrs. J. H. Aitchison. The first two thinkers to be studied in this class are
Machiavelli and More. The class will then examine the
political writings engendered by the Pro political writings engendered by the Protestant Reformation writers on the continent and in Scotland, especially those by uther, Calvin, Castellion (the toleration controversy), the adversaries of the French wars of religion, Les Politiques, in the 16 th and post-reformation political thought in England emphasis on the thought of Hooker, the Levellers, Hobbes Locke, and Harrington. If there is time 17 th century
continental writers such as Althusius, Grotius Spinoza Pufendorf will be taken up. Priority will be given to Spinoza.

There is no prerequisite but students will find it useful to have taken a previous class in political philosophy or philosophy
100 or 310 .
$3430 \mathrm{C} / 5430 \mathrm{C}$ (formerly $341 \mathrm{C} / 541 \mathrm{C}$ ) The Political Philosophy of Plato, seminar: 2 hrs. W. R. Mathie.
(Not offered in $1975-76$ )

3440A/5440A (rrmerly 3 SSA/S55A) Maxist Theory and Its Up
Braybr
(Not of
Braybrooke.
(Not offered in 1975-76)
$3441 \mathrm{~B} / 5441 \mathrm{~B}$ (formerly $355 \mathrm{~B} / 555 \mathrm{~B}$ ) Marxism as an Alternative Approach in Contemporary Social Science, seminar: 2 hrs. D. Braybrooke.
(Not offered in 1975-76)

3450A/5450A (new) Theories of Federalism, seminar: 2
hrs. W. R. Mathie. hrs. W. R. Mathie
and nature of federalism and the close connection between
he size and nature of political communities. We will look at the discussion of these issues, implicit and explicit, in
Aristotle's Politics,' Montesquieu's Spirit of the Laws, Rousseau's Social Contract, The Federalist Papers, and The Tremblay Report as

Students of political theory. Canadian government, and
4460A/5460A (formerly 448A/548A) Seminar in Philosophy, Politics, and Economics: Public Goods and Political Choices,

The economists' conception of "public goods" is one promising source for empirical political theory, as the works
of maneur Olson (The Logic of Collective Action) and Norman Frolich et al (Political Leadership and Collective Goods) Frolich et al. (Political Leadership and Collective Goods), public goods also has important implications for normative political theory (political philosophy) and these implications will be followed up, both in the discussion of the books jus mentioned and in the coursermal theories of rational choice (to which philosophers have as economists and political scientists
Prerequisites: Students taking the class should ideally hav
had previous classes in all three subjects; but it will suffice for them to have worked to à 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 202 ) and one in ethics (310); students taking the class for a
202 credit in Political Science should have had at least one 300 -level class in Political Science ( 315 A and 355 B are
recommende): student taking the class for credit in recommended); students taking the class for credit in that subject.
$4461 \mathrm{~B} / 5461 \mathrm{~B}$ (formerly 449B/549B) Seminar in (itics, and Economics: Applied Social Philosophy - The Logic of Questions, Policy Analysis, and lssue-Processing, seminar: 2 hrs .; D. Braybrooke.
This class will consider the logical character of policies, taking them to be best defined as social rules and the logical character of issues, regarded as disjunctive questions in which various rules figure as alternative policies. It will then move on to consider varrous criteria for resolving such
questions - criteria in which philosophical concerns with values join up with topical concerns about social indicators Finally, it will study various aspects of institutional arrange ments for defining issues and bringing social indicators to
bear upon them. Readings will include von Wright Norm and Action, Belnap on the logic of questions; Bauer, Social Indicators, and Lindblom, The Intelligence of Democracy (Same as Philosophy 449B/549B and Economic

3470B/5470B Futurology and Politics, semintar, 2 hrs.; . Munton.
The need for knowledge about the future is probably a more pressing problem than ever before in human history
Futurology represents a serious intellectual attempt to redirect our attention from a solely past and-presen tientation to one which also considers "things to come"

In this seminar, we will survey a variety of sources, subjects, and techniques of future's studies. The sources would
nclude not only such recognized futurologists as Herman Kahn and John McHale, but also some popular writers as
Alvin Toffler (Future Shock), novelists like George Oell (1984) and (Future Shock), novelists like George Orwell (2001).

The seminar will look at a variety of subjects that have attracted forecasters. These may include such topics as: international politics, municipal organization in Nova Scotia, politics of race in South Atrica, innovations in educational echnology, changes in human values, Canada-U.S. relatures and employment.
Finally the, seminar will briefly survey a number of different forecasting techniques, including alternative futures and
scenario-writing, Delphi, historical trends and analogies, and simulation.
This class is open to anyone who is interested in seriously studying the future, although permission of the instructor is required for a prospective student. While the emphasis in the course will be on political development, other concerns will
necessarily be discussed. The specific topics studied will depend on the interest of the class.

3490A/5490A (formerly 351A/551A) The Scientific Method in Social Science Research, seminar: 2 hrs., S. L. Sutherland

The philosophy of science is concerned with problems of concept formation and definition, the process of giving concepts significance by linking them into laws and heories,
anci the nature of causality. Certain methodological problems arise in the social sciences where quantification is difficult and where concepts are often poorly defined and make
reference to unobservable states of individuals.

3495/5495 (formerly 352/552) Introduction to Research A knowledge of the promises and pitfalls of social science A know is as important today to the average citizen as it is to
research is the administrator of researcher. This seminar is intended to be a broad, non-technical introduction to the assumptions, political science. The five major stages common to all such research - theory, research design, data-collection (surveys, simulation, aggregate date, etc.) measurement, and analysis - are explored using substantive readings from
various subfields of the discipline.

The major assignment in the course will be a research projec of the student's own choice and design. It is not expected computer programming, but it is hoped that all are or can of disciplined discovery

## 5. International Politics and Foreign Policy

2500 (formerly 223) World Politics, lect.: 2 hrs., T. M. Shaw
In analysing the development and future of internationa
politics this class will consider both theories of international politics this class will consider both theories of internationa 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 underdevelopment, balance of powe
and arms races, regional conflict and cooperation, and the impact of international law and organizations. Although the will concentrate on contemporary problems such as interna ional stratification,, ecological theory, and integration and overeign

## 505 (formerly 228) Comparative Foreign Policy, lect and

 scussion: 2-3 hrs. The staff.The contemporary politics of a number of countries African states - will be analysed in a comparative way with possible emphasis on the Canadian case. Discussion of particular state's foreign policy will be the responsibility of a member of the department having a specialist's knowledge
of that country. Study of these countries will be organized around a common framework: for each, we will emphasize such factors as the role of political parties and interes groups in the formulation of foreign policy, geographic
ocation, history and economic growth, the demands by other governments in alliance systems, the parts played by ideology and military capabiility, governmental bureauc racies,
makers

Students intending to concentrate either in internationa in Covernment will find this class of pecial interest.

2510/(new) Canadian External Relations, lect. and discus
(If this class is not offered in 1975-76, the content of Politica Science 2505 will be amended to give greater emphasis to


This class is designed as a general survey of Canadian foreign and defence policies and of the processes by which
these policies are made. The first part will be concerned with the "policy machine" and will deal with such concerned with growth and development of the Departments of Externa Affairs and National Defence, the evolution of the Canadian foreign service, the current structure of the foreign policy bureaucracy and such political institutions and agents as the Cabinet, Parliament, the various provincial governments. political parties, and pressure groups. The second part wil some preliminary material on Canadian external relations before World War II, including the drive for independence in the conduct of foreign relations, the class will consider in some detail the course of Canada's role in world affairs since
1945. Throughout, an attempt will be made to identity of the persistent pressures and constraints which Canadian policy makers are forced to take into account as they espond to the demands of their constituents and to the changing conditions of international politics.

Students intending to concentrate in International Politics or in Canadian politics generally will be among those to whom his class will be of interest.

## 3520/5520 (formerly 320/520) Conceptual Development the Study of International Politics, lect. and discussion:

This class will survey theoretical approaches to the study of
both foreign policy and the international system. It will be
concerned primarily with abstract models, conceptua rameworks, and theories, that advance our understanding of
international politics. It will not deal extensively with ethodological techniques employed by various school ratner its focus will be on the utilities and limitations of
conceptual approach not on the problems of its methodo except when these are directly related to its findings and propositions. The class will be taught mainly by members of
the Centre for Foreign Policy Studies and introduction different approaches will be civen Syines and introductions to able about a particular school. Atthough the presentations will be largely abstract in nature, the discussion of each approach may include empirical as well as logical questions
The class is designed to encourage a "confrontation" between the diverse approaches introduced by the group instructors and the empirical or logical concerns of students.
Some of the approaches to be considered are: decision making, perception theory, linkage politics, realism, systems analysis, game theory, events analysis, crisis theory, field theory, balance of power theory, integration theory, economic and Marxist approaches, international law, pery
research, world order, and the impact of subnationalism
$3530 / 5530$ (formerly $321 / 521$ ) The United Nations in World Politics, seminar: 2 hrs., R. Boardman and M. K.

Since 1945 there has been a continuous evolution in the structure, functions, power and influence of the United
Nations. strong bias towards international stability and the status quo it has emerged in recent years as an engine of social change.

This class will trace the evolution of the United Nations from its early concentration on problems of collective security, colonialism, to its present role as a formacy and antiand aspirations of the Less Developed Countries. It will review the shift of power within the UN and the relevance of
this-shift to the "real" world outside Unalys the United Nations influence, and consider whether there have been significant trends in this area. The class will begin with a historical and theoretical survey of the development on view to making an assessment of the contribution of the United Nations to international peace and security since 1945. It will then turn to the following issues, which have involved the United Nations: colonialism, trade, aid and
development, the law of the sea food and popation and resources, and the environment. In each case it will consider the roles played by the UN as an organization and
by its individual members. by its individual members.
$35358 / 5535 \mathrm{~B}$ (formerly $324 / 524 \mathrm{~B}$ ) Problems of Development: New States in a Stratified International System, seminar: 2 hrs., T. M. Shaw. (Not offered in 1975-76) African States, lect. and seminar: 2 hrs Foreign Policies of African States, lect. and seminar: 2 hrs., T. M. Shaw.
The foreign policies of several African states will be reviewe problems and ideological responses and an examination of he four levels of international interaction in Africa: its development of an African continental system, paterns the egional conflict and cooperation, and the making of foreig policy in African states. Since new states have produced
ovel discontinuities in the international system we will be oncerned with the diplomatic, developmental, and ethodological implications of African participation. A large art of our time will be taken up with case studies of African Egypt and Libya, lisory Coast and Senegal, Malawi and ambia, and Uganda and Kenya; and of regional organiz ons in Africa such as the East African Community, the itente, and OCAM

Sudents contentrating in International Politics or in African Poitics will find that this class fits into their programmes
5544A/5544A (new) Conflict and Cooper
Africa, lect. and seminar: 2 hrs. T. M. Shaw
For its empirical and theoretical significance Southern Afric s a good choice for a case study of regional politics. After a
eview 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. Uur primary locus wis theme we will take up such topics as the Rand currency and customs area, infrastructural development, labour migration, the role of multinational corporations military confrontation, the hegemony of South Africa, and
race conflict. We will also analyse the foreign policies a ace contilict. We Will also analyse the foreign policies of mpact of the UN and.OAU systems on political change in the Seion Se also 3345B/5345B.

3570/5570 (formerly 322/522) Canadian Foreign Policy, seminar: 2 hrs., D. W. Stairs and D. J. Munton.
This seminar focuses on the recent history and contemporary problems of Canadian foreign policy. The first part of the
class analyses maior develooments and situations in Canada's post war relations. These historical developments iclude the thamtablishment 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 The second part of the class, takes a more andy. Using he 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, Parinatc.).
acies, leaders' personalities, etc.).

Finally, some policy prescriptive questions will be consi-
dered. Is nonalignment appropriate or possible? What should dered: Is nonalig American economic iomintion? Should Canada become a major "foreign aid power"? And so on

3572/5572 (formerly 322/522) The Foreign Policy of the United States, semin
For description consult the department's 1975 supplement.
3573/5573 (new) The Foreign Policy of the USSR, seminar 2 hrs. The staf

For description consult the department's 1975 supplemen

## 574B/5574B (formerly $365 \mathrm{~B} / 56$

This class will foct on various aspects of Chinese foreion ffairs, including Chinese motivational factors, decisiona processes, diplomatic institutions, and relations with various ountries and regions. Our approach however will not be and case these will be contentious issues (e.g., China does/does not make practice of fomenting international revolution?; Chines foreign trade is politically OR economically motivated? Policy
decisions reflect Mao's authority OR factional bargaining? The readings will be composed in the form of debates and in class we shall discuss the conflicting perspectives and conclusions reached by the authors. In addition to introduct ternational behavior, the aim of the class is to expose the crucial relationships between personal values (beliefs) onceptual choices (analytical tools) and knowledge (in rpretations)

## minar: 3 hrs.: M. K. MccGwire

raditionally the world ocean has been used for the projection of state power, for the conveyance of goods and eople, and as a source of food. Although there were nlimited and self-renewing resource, and maritime activity argely 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 thas also generated rising standards of living and exploding populations which combine to increase the pressure natural resources and the dangers trom polution. 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 tully alive to the sea potential and all are concerned to get their "fair" sharta, ions on the Law of the Sea, the argument is about who geis what and who has to forego activities and access. Formery unrestricted access and exploitation were seen as natural rights.
diis class will consider the major issues involved, the framework, and the political process of the ong legal ramework, and the political process of the on-going negotiations. Preference waicurricular experience; students
mature students with extra-curn
from other relevant disciplines will be welcomed.

## 3595/5595 (formerly 366/566) Strategies of War and

 Peace, seminar: 2 hrs., M. K. MccGwire and D. J. Munton.War between societies, bringing misery and destruction in its wake, is one of mankind's oldest scourges. But peace can
bring its own .kind of misery if the absence of conflict preserves an oppressive status quo. War and peace are thus among the most important and complex questions acing achieve peace and how to prevent or win wars are intimately related.
This seminar will therefore be concerned with the problems which underlie both peace and war. It will assess various
heories about the causes of inter- and intra-societal

## Psychology

Professors
W. K. Caird
W. K. Caird
J. C. Fentress (Chairman)
G. V. Goddard
W. K. Honig
W. K. Honig
P. H. R. James
J. A. McNutty (Acting Chairman) S. Nakaima
R. S. Rodger

## zaak Walton Killam Research Professor

 M. Yoon
## Associate

P. J. Dunhan
B. Earhard
V. Lotordo
D. . Mitchell

BR. Moore
R. L. Rudolph
M. Yoon

Assistant Professor
E. O. Boyanowsky
M. Cynader
R. Klein
F. J. Mortenson

## Research Associates and Postdoctoral fellow

R. Adamec
R. Blanchard
R. Blanchar
A. Riley

Men see and hear, get hungry and fall asleep, and for an instant remember in great detaii 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 games solve problems and go mad, arink far more than they the same way; if we knew the reasons why they did so we would have gone a long way towards understanding ourselves.
Psychology is an experimental science, and almost all the work which is done in the subject is done in the laboratory; it purpose is to discover the conditions which control the
activities of animals and men to measure these conditions and activities of animals and men 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 rather than imitative men, better suited to subject for inventive rather than imitative men, better suited
those who want to find out for themselves than to those who those who want to tind out for themselves nan to,
want to be told what to believe. Although it has been the major achievement of psychology in the past two ort1. -ee decades to discover the remarkable precision with which the behaviourn environments, - and as a student you will be expected to master the technology which has made these discoveries possible - this achievem for certain that there are at least two the challenge. We know for certain tertebrates, but we do not
memory systems in the brains of ver know how these systems are linked together; we know (contrary to common sense) that things look larger the turnteon away they seem to be , rut on and closer than it does in the sky; on the horizon looks larger and closer than it does in the
there is reason to believe that at least some of the mental
diseases are not diseases at all, but forms of behaviour whic are learned like habits - yet we do not understand why some people lear
scot-free.
Te laboratory facilities of the department are amongst the best in Canada, and students who are willing to learn the necessary technical skills, and whose initiative is tempered necessa a sense of compassion for other creatures, will be given the opportunity to use these facilities to the full.
Degree Programmes

General B.A., or B.Sc. in Psychology
Students enrolled in the general (i.e., three year) degree programme must take at least four and no more than eight
classes beyond the introductory level in their areas of classes bentration. Required and recommended classes fo students who intend to major in psychology are listed below
together with one additional class which is open to students in their final year. Students who intend to major in psychology may consult with Dr. Marcia Earhard for further information. Year 1
Year I
Psychology 100.
Year II
sychology 200/Two of 201B, 202A and 203A are recom-

Year III One of Psychology 304, 305, 307, or 313 is required./One of Psychology 308
300 is optional.

## B.A. or B.Sc. with Honours in Psychology (Major

## Programme).

In the major honours programme students must take the nine psychology classes beyond Introductory Psychology that are pisted below. All students who intend to take an honours
degree in psychology should consult with Dr. Marcia Earhard. Year I
Psychology 100
Year II
Psychology 200;
Class in psycholog
Year III
Psychology 305, Psychology 307; at least one other 300-or Psychology 300 , 40 el class in psychology, If Psychology 304 was not
taken in Year II it must be taken in Year III.

Yeariv 455. Psycholog 470 one other class in Psychology
psychology.
Combined Honours
It is possible for students to take an honours degree combining psychology with a related arts or science subjeces
In such a combined honours programme the student mus take eleven classes beyond the 100 -level in his two areas o specialization, with not more than seven classes in either area The student in the combined honours programme will normally write a thesis (or the equivalent th the areat that elects as
major and in which he takes the majority of his classes. The following programme is based on the assumption that th student is taking the maximum number of classes in

Year II
Psycho
sychology 200; Psychology 357; at least one other 300-leve
Year II
sychology 304; one of Psychology 305, 307, 308, 309, 312
Year IV
sychology 465; Psychology 470
Other Programmes
A variety of other programmes are available in co-operation meet the needs of students whose specifici interests may arreas other than those covered by the major and honour programmes offered by the department. Interested student

## Junior Research Assistantships

A number of Junior Research Assistantships will be available during both the academic term and the summer vacation, to Details of these assistantships, and of the stipends anttached to them may be obtained from Dr. B. Earhard.
Classes Offered

100 Introduction to Psychology, lect.: 3 hrs.; tutorials demonstrations, films and labs may be arranged as required Experimental sections also offered which substitute individual and extended reading assignments.

Many people confuse psychology with either common sense or psychoanalysis, and most of them believe that human behaviour is unpredictable in principle, or so complex that we
can have no hope of understanding it The leter can have no hope of understanding it. The lectures and
demonstrations which are given in this class should disabuse you of these ideas, and at the same time achieve something more constructive and useful; they will provide you with an ment, his past experience and his heredity control the envirknof his brain and the choices and decisions which he makes.
The class will be taught in a number of sections. Each section on understanding instructors who will deal with topics basic oyear and may vary somewhat in the different sections of the class, but the four described below are representative of the
kinds of topics which will be covered

## The evolution and development of behaviour

 The idea that the behaviour of animals is controlled by dead. So is the contending idea that man's behaviour is solely determined by his environment. We now have a clear animals depends uenNuch the same way as the area of a room depends upon both s length and its width. Our intelligence, for example, is genetic endowment and the envirironments in which we exis from conception to death.

Like that of all other species, the genetic endowment of man species, man has progressivicly modified his Unlike othe Thus we are creatures both of biological evolution and of our cultural heritage. A proper understanding of the nature of our teristics must take into account inence, and other charac cultural history, and the often subtle interactions between

## 2. Learning and motivation

What one learns obviously varies from one circumstances to another. Whether one learns depends upon a much more restricted set of conditions, and it is now possible to describe
these in considerable detail and with great accuracy. This part of the class will many of then understanding of how two fundamental forms of learning have
been isolated been isolated and studied, as well as provide you with a learning. We will also study the motivational conditions of physiological drives, the emotional states, the acquired needs - that determine whether and when an individual will learn and make use of what he has learned. In addition, you will be are still unsolved: for instance, how do we learn to avoid opposed to escape from) pain, does punishment erase learning or simply suppress it, is learning a gradual process,

## 3. Sensory processes and perception

We experience colour, form, movement, sound, odor, warmth,
and so on in the world about us. The brain receives information and so on in the world about us. The brain receives information
from this world in the form of coded messages transmitted through sensory systems. Psycoled messages transmitted only to measure preception but also to explain why we experience things as we do. In considering such questions as why some parts of the skin are more sensitive to cold than
warm objects, or why things normally look single event han we view them with two eyes, psychologists have developed we
theories about the means, used by by the nervous system to signal information. These theories have often been successful prealing which conditions affect perception.
Detailed attention will also be given to the way experience opportunity of pattern vision animals reared without the permitted to see; are normally sighted people able to avoid obstacles in the dark as easily as blind people; why do young heen studied experimentally a ? Questions like these have been studied experimentally, partly because of their practical we know the world about us.

## 4. Human Performance

his part of the class is concerned with the general situations. The discussion will hinge mainly on the idea that the mind (or the brain) acts as a device which processes and picture of what actually number of complex steps in which the evide end product of is sorted and encoded, rejected or amplified, and integrated with other memories which are already in store.

When a child learns to talk, he does not simply parrot all the sounds which are spoken to him by his elders. The structure of is nervous system, the limitations of his ability to attend and member, and his past experience all orce hoes so, and how e manages to construct for himself an intuitive understanding of the grammatical rules of his native language, will serve as ne of the examples in erception and learning.

Finally, some emphasis will be given to the practical molications of the research discussed in this section for ducation and teaching, industrial design, and the adapta ions of men to new environments.

200 Problems in Experimental Psychology, lect. 2 hrs.
his class has two basic goals:' (a) to teach you something about science in general and experimental methodology in particular; and (b) to give you some idea of the con

The class is divided into two major components which are to some extent independent in the sense that: (a) there is little attempt to coordin wee in the lecture with those covered in the laboratory; and (b) there are different people involved in the teaching and grading of the lecture and laboratory materia.
The general sequence of events in the laboratory is the following. During the first part of the class you will find yourself running experiments which we have planned in order to give need to know in order to plan your own experiments later. Following the procedural experiments, you will design conduct, and report an independent research project which meets your own interests.
As you might imagine, you will make extensive use of primary source material in the library in formulating your own independent research projects. In addition to this journa
reading, two textbooks are used in the class. One is Rober reading, two textbooks are used in he lass. Statistical Concepts by McCollough and Van Atta.
The lecture section of the class will be devoted to a discussion experimental psychology in general. This include reference to the specialized methodologies which have been developed by experimental psychologists and the research problems which are though
Prerequisites: Psychology 100; restricted to major and honours students, but other students will be admitted with th honours students, but oth

## 201B Applied Psychology: Behaviour Modification, lect..

 hrs.: J. P. Winczehe class will examine behaviour therapy procedures applied the modification of problems in human behaviour. The ather on techniques derived from the principles of learning heory which may be used to modify problem behaviou Discussion will cover the historical roots of behaviour therap and will compare the behavioural model of therapy to the medical model. In addition, the following topics will be covered: classical and operant conditioning, systematic
desensitization, token economy therapy, aversion therapy modelling, and implosion therapy

Prerequisite: Psychology 100
202A Applied Psychology: Social lssues, lect.: 3 hirs.; E. O
The class on social issues will survey research findings of social psychology directly applicable to everyday life. The xamined - that is, how we create an image for others with our mannerisms, speech, dress and the use of such nonverba cues as posture, eye contact, and expressions. How the viron mon and and taverns to airports will be discussed, as well: as such social behaviours as aggression, learning and altruism. Topics will vary accordang current issues and may incluce social psycho other supernatural phenomena. supernatural phenomena.
Prerequisite: Psychology 100

## 20plied Psychology: Psychological Measurement

 ect. 3 hrs.; R. S. Rodger.After some of the abstract properties of measurement system are described (e.g., representation theorems, uniqueness
theorems, meaningtulness, admissible scale transformations, scale types, fundamental and derived measurement), as pects of psycho-physical measurement whre in Psycho Further elaboration of edasu statistical theory. The required ogy requires a knowl is given and then used in the context of signal detection theory and the analysis of data trom paired comparison experneg. ( multiple choice type), including item analysis, reliability and validity. Class notes have been prepared by the instructor Exercises are scheduled regularly for students io do out of
class. A knowledge of higher mathematics is not necessary to lass. A nowledge of highers the materia in this course: a knowledge of nigh understand the materia in inis course a knolly a sufficieni background
Prerequisite: Psychology 100
204B Development of Behaviour
The extent to which an animal's behaviour is a reflection of its genetic heritage as opposed to being a product of individual expenturies. Recent advances have stressed the importance of documenting the developmental relationships between both animal's lifetime
Comparative material will be presented for many different species from insects to man: and for many different behaviora systems including sensory, motor, motivational: and social Students will be expected to seek general principles in
behavioral development while also demonstrating knowledge behavioral development while also demonstrating knowledge
of the diversity of developmental processes that affect behaviour in nature as well as in the laboratory

## 300 ₹elected Research in Modern Psychology, seminar

 and lab.: 4 hrs.; R. L. RudolphThis class is designed primarily for students wha wish to gain further experience and understanding of contemporary psychoogical research. A stuadent who stan whis class adviso hroughout the academic year. The student will be expected onsent of the instructor.
304 Learning and Motivation, lect.: 2 hrs.; lab.: 2 hrs.; R. L
sychology 304 deals with the fundamental principles of earning derived from research with animal and huma subjects. Since most of these principles have been
discovered and investigated in experiments subjects, primarily emphasis is placed on animal learning. The discussion of human learning emphasizes those aspects of behavior that are unique to man - language and abstract hinking - in addition to more general phenomena such as
ransfer and forgetting. Motivation is not studied as a separate opic but is discussed in terms of its effect on learning and performance.

Laboratory sessions involve (a) experiments with animals and uman subjects, (b) discussion of the applicability of and rinciples to everyday behavior, and (c) an occasional film. Prerequisite: Psychology 100 (honours students); Psycho
giy 200 or two 201 A,

305 Perception, lect.: 2 hrs., Lab.: 3 hrs.; D: E. Mitchell, M. Cynader

Psychology 305 considers the way in which information abou the world is provided by the senses and how we use this 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 facts of sensory physio
4. The effects of higher processes, such as recognition attention, and memory, on the way in which sensations

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 rather than factual questions.
The lab work will consist of a general introduction to the apporatus and methods used in perceptual research,
ollowed by experimental studies designed and carried out by each student individually.
rerequisite: Psychology 100 (honours students); Psycholgy 200 or two of 201A, 202B, 203A (general students).
307 Physiological Psychology, lect:: 2 hrs.; lab.: 3 hrs.; S.
Physiological psychology is an attempt to explain behavio of the structures and functions of the central ns with a review
and of the sensory and motor systems. It continues with an analysis of anatomical, physiologica, and biochemica wo types of backgroun knowledo are understand physiological psychology. First, students should ave general knowledge in biology, which can be obtained by aking Biology 1000 . Second they should be familiar with th
sychology 307 is recommended for anyone planning to do graduate study in psychology, and for students intending to Prerequisite: Psychology 200 and at least one class in

308 Social Psychology Boyanowsky.

This class concerns the study of individual behaviour as a research proiects and cirmphasis on extensive studen develops from discussion of research designs and metho the study of basic processes such as person perception, social comparison, and social influence, including behaviour
within within groups and the relations between them. Wha
determines the impressions, how others influence and opinions, how decisions are made, and why people discriminate against members of other ethnic groups are all
topics which will be considered topicsurisites. Psydidere Prerequisites: Psychology 100 (honours students)
Psychology 200 or two of 201A, 202B, 203A (general
students) students).

309 Developmental Psychology, lect.: 2 hrs.; lab.: 1 hrs.; K. Bloom

The developmental psychologist is concerned with the question of how behaviour is acquired, sustained and altered over time. The answers to these questions have practical interest of the psychologist is directed first gut deterce, but the conditions under which behaviour begins and the conditions under which changes take place. This leads some attentiveness, and indiffer and reactions to quiescence, hegative consequences

It leads others to questions about the development of and how the child acquires such immensely complicated behaviours as those involved in speech and concept

The class is experimentally oriented Throughout the emphasis is on learning and transfer operations with less stress on physiological and maturational processes. Because experimental psychology, it deals in depth with such tound aired associate learning, imagery, selective attention ransfer, and behaviour modification in addition to more traditional topics such as language acquisition, preceptual rerequisites: Psychology 100 (hous Psychology 200 or two of. 201A, 202B, 203A (genera
students)

I2 Experimental Analysis of Behaviour Disorders, lect: hrs.; tutorial: 2 hrs.; W. K. Caird, J. P. Wincze
sychology 312 is concerned with an examination of neurotic and psychotic disorders from an experimental psychosent he students current psychological thinking regarding be haviour disorders; what the major probiems are and the way which attempts are being made to solve them. It is prima to dvanced work in psychology

This class is largely descriptive and of a fairly broad nature The concern is with topics such as: the hypothesized and the various models for the study of these; the rationale and utility of diagnosis and classification; expermental methods of esearch into behaviour disorcers, berstanding and explainpsychoiogicatencel behaviour.
ing these patterns of
There are detailed discussions of the manipulative aspects of abnormal psychology - by drugs and various types of
reinforcers. The maior interest is the modification of behaviour by the use of learning theory principles, such as. operant conditioning techniques win schizop the procedures with sitzaissive-compulive disorders: modeling techniques with childhood behaviour problems; and conditioning procedures with alcholism, drug addiction and similar disorders

The tutorial will consist of weekly meetings where current and/or contentious issues will be discussed. To facilitate an exchange
students.
Students intending to enrol in Psychology 312 should have a clear understanding of some of the fundamental concepts of psychology aut he masic notions of conditioning and earning. motivation and perception.
They should also understand the fundamentals of autonomic and central nervous system processes. In short, a thorough Kimble and N. Garmezy: Principles of General Psychology 3rd ed. 1968) is necessary if the student is to derive benefi from the class Prerequisite: Honours students or general students who
have credit for Psychology 200 and two of 201B, 202A, 203a.

313 Cognitive Processes, lect.: 3 hrs.; B. Earhard
A child enters this world without a memory, thought of language - with only the requirement that certain has
needs be satisfied. Within two years, a child has 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 ascertaining the character of mechanisms that must underly such human abilities. Cognitive psychologists ask such questions as: How does an individual recognize an object in position or orientation produces a different contexts o orientation, when each shift in position or orientation, produces a different pattern of stimulation on the eye? Hory 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 concount for
thought and language in the human organism. - Psycho Prerequisite: Psychology 100 (honours students); Psyc
ogy 200 or two of 2018 , 202A, 203 A (genera students).

## $315 A$ Psychological Testing and Evaluation, lect.: 3 hrs.; W.

## $315 A$

This course will provide an introduction to psychological esting. The major emphasis will be on the assessment of inteligence.
n addition to discussing the validity, reliability and genera usefulness of intelligence tests, the student will be expected to ecome proficient in the administration, scoring and interpre.

Restricted to honours students.

## 16 B Behaviour of Organisms, lect.: 3 hrs.; B. R. Moore

This course will examine the natural and, to a lesser extent, the aboratory behaviour of several intensively-studied species Foraging and feeding, aggression and sex, predation and honeybee blowfly and noctuid moth, pigeon, rat and chimpanzee

533B Philosophy of SCi and Experimet Psychotgy, seminar: 2 hrs. W. K. Honig. A. Rosenberg.

An examination of methodological and conceptual issues in experimental psychology. Topics treated include the charac er of explanations, general statemenos, as well as particular issues in current research programmes: conceptformation in non-humans; perception studies; computersimulation. Readings from the
Pserequisites: One full course in Philosophy or Psychology beyond the 100 level, or consent of instructo
356 Advanced Motivation, lect.: 2 hrs.; lab.: 2 hrs.; P. J. Dunham.
The topic of motivation is one of the most difficult to describe in psychology. The material which appears in the standard
textbooks on motivation could easily have been placed in a textbook on learning on perception, on personality theory, or on physiological psychology. Because of the bread of the subject matter, Psychology
with selected topics in the area of advanced motivation. In addition to these special topics discussed in class, outside readings are assigned to familiarize ine student with the various classic issu Prerequisite: This class is primarily intended for honours students, but other students will be admitted with the consen of the instructor hrs.: M. Earhard
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 he lopic oregristics, and progresses through parametric and non-parametric tests of significance, correlation and regres
sion techniques, analysis of variance and covariance. The
general approach is to introduce each on methods by reasoning throuch each of a variety of statistical 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 students are encouraged to participate actively and abs, and 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 tary 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

358 History of Psychology, lect. 3 hrs. J. W. Clark
The emphasis in this seminar class is on the evolution of
though about a number of psychological issues that have hough about a number of psychological issues that have the localization of function in the brain, the principles of association in learning, the nature of intelligence, the evolution of behaviour, the measurement of sensation, the developmen of perception, the causes of abnormal behaviour, etc. emergence of experimental psychology in the nineteenth century, and their development is examined in the work of the major psychologists. Structuralism, functionalism, be havicurn vieints of psychology's first century - are also
tic vien examined in the writings of their proponents.
rerequisite: This class is intended for honours students, bu iner students will be admitted with the consent of the

450A Functions and Structures of the Nervous Systems, lect.: 3 hrs.; M. G. Yoon.
introduction to research problems in neuro-sciences with electrophysiological methods,

450 B Neurophysiological Laboratory, lab.: 4 hrs.; M. G
Introduction to research problems in neuro-sciences with electrophysiological methods.

464 Ethology, lect.: 2 hrs.; lab/field work: 3 hrs.; F. J
Ethology is a relatively new science which bridges psychology and biology. In Psychology 464, we approach ethology through a survey of schools of thought concerning animal behaviour and a review of trends in field and laboratory
research. This overview of the science of animals behaviour is supplemented by observations of animals in both natural and experimental settings. These observations illustrate techniques employed to study animal behaviour and allow the student to

The format and the content of the course are somewhat variable and depend on the composition of the class. For
example, topics or species of particular interest to the students may be examined in depth through discussions, paper presentations, or direct observations of behaviour. students, but other class is primarily intended for honours of the instructor.
465 Honours Thesis, Members of the Department.
Pychology 465 is designed to acquaint the student with experimental psychology. Each student is assigrecedures in member who advises the student about research in his maio area of interest, and closely supervises an original research required to submit a formal by the student. Each student is 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 repor
Prerequisite: Restricted to hondurs students in their gradua
ion year.

## 470 Honours Seminars. (2 hrs )

These are advanced level seminars designed to provide the series student with both the breadth a nd depth of knowledge necessary for understanding recent research in various areas of psychology. The actual times of the seminars are to b
(1) A. Motivation, P. Dunham
(2) A. Human Performanham
(3) A. Animal Learning, R. Moore
(4) B. Perceptual Processes, M. Cynader
(5) B. Conditions and Learning, V. LoLordo

Other tapics may be arranged by mutual agreement between
students and staff

500 Research Assignment, Members of the Department.
The student is assigned to an on-going research project and
works under the direction of a staft required to submit a report, written in thesis form, of the work completed during the year.
Prerequisite: Restricted to qualifying-year students

## Graduate Studies

Courses leading to the M.A. and Ph.D. degrees in psychology are offered. Further details on graduate courses and general the Calendar of the Faculty of Graduate sudy may be found in the Calendar of the Faculty of Graduate Studies.

## Religion

Professor
Wilfred Cantwell Smith (Chairman
Associate Professor
Associate Pro
R. Ravindra
The study of religion as a phenomenon in human history is the attempt to know and to understand the data of religious
life. The aspiration is to achieve such knowledge and such life. The aspiration is to achieve such knowledge and such
understanding as will do justice simultaneously both to the meaning that the data have had for those persons to whom they have been religiously significant, and to the academic
tradition within which the university study of religion lies tradition within whe critical analysis of outside observers. The intellectual interpretation of a more than intellectual reality in human life consititutes a challenge; a successful rising to it central point.
This department being new, additional classes not ready at the time of this calendar's going to press will be offered

100 Introduction, Historical and Comparative, to Religious Man, lect.: 2 hrs.; section meeting 1 hr.: W.C. Smith.
A synoptic presentation of the major religious traditions of mankind, and an attempt to interpret the faith expressed through or inspired by them; with some attention to
representative and significant minor traditions. Prehistoric man and modern "primitives"; the Hindu tradition and the
Buddhist; other religious aspects of China and Japan; the Buddhist; other religious aspects of China and Japan; the ancient Ne
traditions.

200 Hindu and Islamic instances of faith: the Bhagavad Gita and Ghazzali's Autobiography. Reading and discussion, 2 hrs. w.c. Smith.
rerequisite: Religion 100.
In the first term Hindu, and in the second term Islamic patterns of faith will be explored, by studying in each case a particular text that will be examined intensively, and
addition there will be an extensive consideration of context so as to discern how this specific matter fits into the general
pattern of the tradition, historically and otherwise. The Gita will be read as scripture, with attention to mediaevil and modern commentaries and Western critiques. The personality of the illustrative and brilliant Muslim thinker, jurist, mystic will be critically studied in relation to

251 Religion and Science. Seminar: 2 hrs. R. Ravindra. An historical and analytical study of the relationship between scientific inquiry and religious aspirations and concerns,
Particular emphasis will be placed on the writings of thinker such as Kepler, Pascal, Newton, Goethe and Einstein, each of whom combined scientific commitment and spiritual sensibility to a very high degree and has an enormous influence intellectual history
Prerequisite: One
rerequisite: One class in Religion or one class in Science
(oreferably both) Premat
00 Faith and Belief: A Comparative Study, seminar: 2 hrs, w.c. Smith.
A.C. Smith. consideration of the possibility of a generic conce "faith" as intellectualizing an apparently universal human quality. Faith as conceptualized classically in Budahist,
Hindu, Islamic, Jewish and Christian instances will be explored, and religious belief as conceptualized there and in modern Western thought. Through comparisons and contrasts
faith as a multiform human (or religious) constant. Limited enrolment. Prerequisite: knowledge of at least one classical scriptural language (Hebrew, Greek, Arabic, Sanskrit, Chinese, etc.), and preferably two; some philosophy or history of religion, preferably both.

Russian

## Teaching Staff Irene Coffin <br> Irene Coftin Nicholas Maloff

Natan Nevo
It is most evident that Russia's outstanding achievements in We can no longer ignore a country of 250 million people whose culture has produced such literary giants as Dostoevsky,
Tolstoy, Chekhov, Pasternak and Solzhenitsyn; composers Tolstoy, Chekhov, Pasternak and Solzhenitsyn; composers
such as Mussorgsky, Tchaikovsky, Stravinsky and Shos takovich and whose scientists have gained many firsts in space exploration, research in environmental pollution, medicine, geology, oceanography and in all other waiks of life:
Moreover, man's very existence will be possible anly through mutual cooperation, exchange of knowledge and the pooling
of each other's resources. Here is where Canadians must play a leading role in in furthercing a beetter wndere Canandians must pof the people. Interestingly enough, the most widely studied toreign
language in the U.S.S. R. is English. whereas we have a great shortage of qualified Russian-speaking Canadians in the government, industry and the community at large. Contacts
with Soviet tourists, scientists, scholars, sailors, government officials and cultural exchange groups are now a daily occurence. Therefore, the ability to converse in Russian, handle Russian correspondence, as well as literary and
scientific source materials are great assets in all professions. scientific source materials are great assets in all professions.
Russian is also accepted as a second-language which is required in most post-graduate programmes.
Russian at Dalhousie University is taught by native speakers with the aid of one of the most modern and up-to-date language laboratories in Canada. The main emphasis is
placed on the spoken language to enable the student to gain an extensive working vocabualary and a a basis of grammatical groups and In additition to participation in small conversation groups and tutorials, students may obtain additional help by in some courses to accont. Late afternoon classes are offered activities, such as plays, folk dancing and singing, guest speakers and films provide ample opportunities for broaden-
ing the scope of the student's Russian studies.

Russian studies are divided into two programmes
(1) Study of the Russian language from the introductory level
(Russian 100), intermediate Russian (Russian 200 and 201), to (Russian 100), intermediate Russian (Russian 200 and 201), to advanced Russian (Russian 300, 301 and 400 )
(2) Study of Russian literature, drama, culture and civilization and their influence on the Western literary and philosophical tradition (Russian 204-Russian Culture and
Civilization; Russian 205 - Survey of Russian Literature. Russian 302 - 19 th Century Russian Literature; Russian 303 - Russian Drama; Russian 305 - 20th Century Russian Literature: Russian 306A - Dostoevsky and Russian 306BCriticism and Thought.

## Degree Programmes

(1) Russiann
2) Russian as a major
(3) Combined Honours with another foreign language.
(4) Concentrated Honours

For further information on any of the above programmes consult the Chairman of the Departmen

Classes Offered
100 Elementary Russian, lect.: 3 hrs.: Irene Coffin/Nicholas Maloff//Natan Nevo

This class is designed for students who have no previous knowledge of the Russian language. Classes are kept small so that all students can actively participate in the conversations and thereby rapidly develop their proficiency in the language,
The programme is closely correlated with intensive language laboratory work. Equal emphasis is placed on developing oral and reading skills with a sound grammatical basis.

## $\mathbf{2 0 0}$ Second Year Literary Russian, lect.: 3 hrs.: Irene Coffin

 Prerequisite: Russian 100 or equivalent.This course is a continuation of Russian 100 . It is designed to develop oral and reading skills with a continuing study of
grammatical concepts through the study of original Russian literary texts and other related materials.
201 Second Year Scientific Russian, lect.: 3 hrs.; Natan Nevo.
Prerequisite:
This course is a continuation of Russian 100 . It is designed to develop translating skills with a continuing study of grammati-
cal concepts through the study of original Russian scientific texts and other related materials. 204 R Conducted in English No prerequisites.

This course traces the development of Russian culture and civilization from their eariest origins to the present day and
their influence on literature, drama, ant, architecture and music. Numerous masterpieces of the Russian arts will be illustrated with slides, film strips and recordings.

205 S Conducted in English

When the literary masterpieces of Turgenev, Gogol, Dosof the nineteenthoy made their appearance in the second half by surprise. For centuries Russia appeared to be a dark, mysterious and barbaric nation possessing no literary or cultural achievements. Yet, seemingly overnight Russian letters were catapulted into the arena of world literature and
influenced the further development of all literatures throughout the twentieth century. This course traces the evolution of Russian literature from its earliest beginnings to the present
time.

300 Conversational Russian, lect.: 3 hrs. Irene Coffin Prerequisite: Russian 200 or 201 , or by arrangement with the The.aim of this class is to develop in students the ability to
express themselves freely and correctly on a variety of concrete and abstract top

## Russian Area Studies, seminar: Irene Coffin.

Conducted in Russian. 200 or 201, or by arrangement with the instructor
his seminar traces Russia's past through a study of its history, geography, and culture. Students present reports on Age, seminar: 2 hrs.; Natan Nevo
Conducted in Russian. instructor
The best way to fully appreciate the merits of Russian literary masterpieces of the Golden, Age is through a study of representative works in the loriginal Russian language. Seminar discussions sithers as Pushkin, Lermotov, Gogol, reports on such wsy, Tolstoy and others.
303 Russian Drama, lect.: 2 hrs.; Nicholas Maloff/Natan Nevo.
Conducted in English
Conducted in Eng
No prerequisites.
The immense wealth of the Russian dramaturgical heritage has become an object of universal recognition. Moscow Ar world's mostceleb only served as the stage for many Theatre, has not one spectacular premieres, but also as the laboratory in which the "methods" of Stanislavsky and Nemirovich-Danchenko were perfected.
The Russian dramaturgical school which has produced such great masters as Fonvizin, Pushkin, Turgenev, Gogol great mast.ers ashov, Gorky, Mayakovsky and, most recently Solzhenitsyn, is deeply rooted in the ancien strose to retain its folklore. Anticually Russian national image, it evolved under the strong influence of Shakespeare, Moliere, Racine and others and has, therefore, creato a unique s .iussian national and foreign elements.

Following a brief introduction into the early beginnings of the Russian drama, the course will concentrate on a detailed study of the representative works of the 19th and 20 h centuries

Century Russian Literature, lect.: 2 hrs Nicholas Maloff.
Not offered in 1975-76
Conducted in Englii
A study is made of selected works representing the contributions to 20th century world literature by such writers as Chekhov, Tosternak, Solzhenitsyn and others.

306A Dostoevsky, lect: 2 hrs. Nicholas Malof Conducted in English
No prerequisites.
Open to students in all departments. This course is designed to give the student an insight into Dosto
through an analysis of his major works.
Man is a mystery: if you spend your entire life trying to puzzle it out, then do not say that you have wasted your time. Ioccupy myself with this mystery, because I wan
Dostoevsky's letter to his brother (1839).
Dostoevsky takes his rightful place among the great writers of world literature: Dante, Cervantes, Milton, Pascal and Tolstoy Long before Freud and the school the subconscious. Ye psychology for him was not an end but a means. He remarke I am called a psychoobist, the hii
soul."
The existence of God has also "tormented" his entire life and he foresaw history in the light of the Apocalyose to be culminated in the transfiguration of the world by the "new and last Resurection"

## 306B Tolstoy, lect:: 2 hrs. Natan Nevo

Conducted in Eng
No prerequisites.
Open to students in all departments. This course is designed for students wishing to become acquainted with Tolstoy's

Tolstoy and Dostoevsky are the two great columns, standing apart in the propylaeum of the Russian literature "Golden Age" purpose of being "constrasted with Dostoevsky", said D. S Mirsky. Indeed Dostoevsky is considered the "surgeon of the muman soul" and Tolstoy a "doctor of humanity"

Tolstoy's talents and genius enabled him to capture the search for identity in 19 th century Russia and to interpret through his own solipsism - a sense of being the geaw people should be based on "reason, that is, good".

## 400 Advanced Russian Conversation and Composition,

 lect. 3 hrs.: Nicholas Maloff.Prerequisite: Russian 300 or by arrangement with the instructor.
This course is a continuation of Russian 300 . Students will be equired to do translations and exercises in syntax, and to perfect Russian stylistics in their oral conversations and written essays on various subjects. The ho sory of
ussian Masterpieces of Literature, Criticism and minar: 2 hrs. Nicholas Maloft Not offered Conducted in Russian.
Perequisite: Russian 300 or by arrangement with the instructor.
This course is an in-depth study of representative masterThis course is anig-al from the Ancient Kievan era to the
pieces in the origina
present dealing with literature, literary criticism and thought.

## Sociology / Anthropology

499 Russian Special Topics, staff.
This course is designed to offer the student an opportunity to work with an advisor and to research subjects which are not egularly offered by the Department. These may include Iterary, linguistic or other topics related to Russian studies. consult the chairman of the Department

## Sociology Professors

T. Bottomore

## Associate Professors

D. F. Campbell (Chairman)
D. H. Clairmont
D. H. Elliot
H. V. Gamberg
G. Morgan

Assistant Professors
R. Apostle
G. D. Bouma
. G. Clark
J. D. Stolzma

The sociologist is concerned in general with the growth and development of societies to modern, complex industrial units. Within any particular society, sociologists may analyze the
distribution of wealth, power and prestige, problems of distribution of wealth, power and prestige, probiems. of
conformity and nonconformity, and social problems such as conformity and nonconformity, and
crime, racism, suicide, overpopulation, or the development of personality.
As part of a liberal arts education, sociology teaches the student to think critically about problems which are part of his own society. His or her willingness to think about the reasons for racial prejudice, poverty, or war, should be increased by
exposure to this field. The career possibilities in sociology exposure to this field. The career possibilities in sociology
nclude research in government, indusstry, or university and teaching at the university level.
Sociology 100, as a general introduction, is normally a prerequisite for all advanced classes in the department. The content of this class is especially designed to provide students contemplating concentration in sociology with a solid foundation for subsequent study in the field. Multiple sections
will be offered and each section will include lectures plus will be offeree and each section will include lectures plus Sociology may be permitted to take selected 200 level classes
without having taken Sociology 100 . 200 -level classes include without having taken Sociology 100 . 200-Ievel classes include
all the classes normally taken by students concentrating in sociology. 300 -level classes are structured primarily as seminar courses and ordinarily presume a fair degree o familiarity with the discipline. 400 -level classes are restri

- Degree Programmes

Sociology and anthropology are both approved fields for concentration. In addition, the department offers honours degree is recommended, and frequently required, preparation for most advanced work in sociology and anthropology interested students are Advising Committee (sociology anvice on application and
(anthropology) for detailed ade requirements for both programmes. Normally, an application for honours study is made on the basis of the results of the Study space and limited financial support are available for honours students.
B.A. wine soin lef
quired for the honours degree should include statistics (301) research methods (310) two classes in theory (401A $405 A / B)$, and the honours seminar 450 . The seminar pape produced in 450 will be examined as an honours thesis, to be presented in an open meeting. This will futfill the university tion covering his honours work in order to receive an honours degree

## Combined and Unconcentrated Honours.

ns programme can be taken with economics,

## eneral B.A. in Sociology

Students enrolled in the general (i.e. three year) degree programme must take at least four and no more than eigh
 intend to major in sociology are listed below:

Year I $\qquad$
At least one of Anthropology 100 , Economics 100, Politica science 100, or Psychology 100 .
Year II
6. Either Sociology 201 or 224.

7-8. Two other classes in sociology.
$9-10$. Two classes chosen from fields other than sociology
Year III
1-13. Three classes in sociology
14-15. Two other classes chosen from fields other than sociology.

Students should work out a programme tailored to their interests and needs with the departmental student advisor. programme (cf. p. 12) an early consultation of instructors and programme (ct. p. 12), an eariy consutal
the Undergraduate Advisor is essential

## Canadian Studies Programme

The Department is coperating with several other Departments in offering a Canadian Studies Programme. Interested students should contact Professor P. G. Clark

Sociology Classes Offered
A supplement to this list of cldsses containing addilions and deletions will be issued by the Department in the spring of 1975. Students entering their second and subsequent years
are strongly advised to obtain a copy of the supplement from are strongly advised to the registration desk
the Department or at
100 Introduction of Sociology, lect.: 2 hrs.: tutorial: 1 hr.; $G$ D. Bouma
Stolzman.

Sociology 100 is designed to provide both a genera introduction to the discipline of sociology as well as toundation for more specialized study in the tield. Emphasis th nature of the sociological perspective, the logic of social inquiry, and recurrent theoretical and methodological problems of the discipline. In addition, some of the more importan areas in sociology will be surveyed. In paricular, this would ncuade the stuly al and religious institutions, bureaucracies
and complex organizations, ethnic and minority grou relation
zation.
201 Figuring Out Society, lect.: 2 hrs.; tutorial: 1. hr;; D. H.
his course is designed for students who for reasons of curiosity or practicality wish to acquire the skills used by selves intimidated by statistical tables and mathematica ymbols. A variety of quantitative and qualitative methods will be introduced which will enable the student to understand and social phenomena which are routinely carried out not only by academic sociologists, but also by pracatitioners in such field as business, government, social work, public health, and education. Emphasis will be placed on the progressive
efinement of a research project of the student's croin
202 Comparative Sociology, (not offered in 1975-7.6)
203 Deviance and Social Control, lect.: 2 hrs.; tutorial: 1 hr. D. F. Campbell

Groups make formal and informal rules in an attempt to members. Violations af these rules occur in many differen 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, alcholism prostitution, suicide, and minority group relations are
discussed in this context

204 Social Stratification, lect.: 2 hrs.; discussion: 1 hr.; B Apostle

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 considere

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, the stratification system and the impact on social strücture are dealt with. Theoretical discussions in the class are largely attention is also paid to contemporary theretical Weber, but to stratification.
205 Sociology of Religion, lect: 2 hrs.: tutorial: 1 hr.; G. D. Bouma.
This class analyzes the relaticns between religious beliefs and human behavior and social structure. Major themes include: systems; the question of whether beliefs quide and direct human behavior; the formal organization of the religious nstitution, social psychological considerations of religious behavior.
n Canada

06B Social Change and Modernization, lect.: 2 hrs.; tutorial
his class is primarily concerned with the social and economic
roblems of underdevelopment in the Third World, with industrially advanced and backward countries, which these relations have taken since political independence. An attempt is made to identify the economic and socia causes of underdevelopment in this relationship. Critica
attention is also paid to the traditional societies and values as obstacles to industrialization and social change

## 207 Socialization, lect - 3 hrs. W. N. Stephens

Comparative materials on childhood and adolescence in a
variety of societies will be presented variety of societies will be presented. Interpretation of youth will be reviewed. Effects special features or modern society schooling, and delayed opportunities for work will receive special-emphasis
Socialization into teenage peer groups will be considered, as
will will professional socialization within selected university programmes in medical training. The students will participate
in a research proiect which will indude life, and questionnaire, interview, and autobiographical

207A Socialization, lect. 2 hrs.: seminar 1 h
This class deals with the processes by which individuals become members of groups. The lectures focus on such substantive issues as: child-rearing, age grading, sex typing zation of norms, and expectation formation, internalitheoretical issues will be examined, primary emphasis is placed on empirical research findings in the areas of An empirical social psychology and symbolic interactionism.

208 Communities, lect.: 2 hrs. seminar: 1 hr:; P. G. Clark Sociology 208 examines a wide variety of territorially based residential groupings. The emphasis in the first term is on such social netwarks the power structure ecology, neighborhood settings. Both the rural village and the metropolis is dealt with, in addition to such sub-communities as ethnic ghettos, slums, suburbia, and bohemia. Emphasis in the second term is on company towns, and religious communities Students are expected to design a model of an intentional community.

## 211 Canadian Society, lect. 3 hrs. $M$ 'Waters.

An analysis of selected aspects of Canadian society employing theoretical perspectives and empiricial materials
The aim of the course is to develop a composite view of the society as a whole through an understanding of the interrelationships between its parts. Major foci will include the
integration and survival of Canadian society structur hange, and the management and conseqenctur inequality. Prospects for the future of Canada will be discussed in terms of these characteristics

212 Minority Groùps, lect.: 2 hrs.; tutorial: 1 hr.; J. L. Elliott. he social status of minority groups will be examined in the ight of contemporary theories of prejudice and discriminatio
The societal consequences of discrimination will be cons dered with respect to their effect on both minority and majority groups. Special emphasis will be placed upon an analysis of

13A Complex Organizations, lect: 2 hrs.; tutorial: 1 hr.; $M$ Waters
is class makes a critical study, from the comparative point view, of theoretical models for the analysis of comple rganizations. Students will examine the classicapoaches to organizations. The class will entail a systematic survey of the ociological literature on this subject, with special cor of

214B Industrial Sociology, (not offered in 1975-76)
15 Mass Society, (not offered in 1975-76)
216B Sociology of Occupations, (not offered in 1975-76)
217A Political Sociology, lect:: 3 hrs.: H. V. Gamberg and J. . Stolzn
his course is designed to introduce students to the major concepts and theories which inform the sociological study of politics. In adalition to this gill be devoted to the role of power and ideology in Western society, the interplay between economy and polity in contemporary North America, and political Itransformation as a social process

220 S
Butler
Family in one form or another is an aspect of all societies. It is he most important agent of early socialization and personality formation. The first part of the course will be devoted to a consideration of some of the cross-societal characteristics of traditional societies in particular. The second term will be devoted to a consideration of family characteristics in urban-industrial societies, concentrating on the nuclea
family. An attempt will be made to understand the processes by which family's structures and functions have changed through time as societies evolved from a traditional to an urban-industrial social organization
222 Social Psychology, lect.: 2 hrs.: tutorials: 1 hr.i V Thiessen.

An intensive consideration of selected problems concernin how individuals relate to groups. Theoretical and methodolog-
ical issues will be equally stressed in an integrated fashion.

## 224 Sociological Theory - An Introduction, lect.: 2 hrs,

 tutorials: 1 hr. J. G. MorganThe class provides a systematic introduction into major topic in sociological theory. During the first term classical theorist Pareto etc.). During the second term, more recent theoretica developments within the field are dealt with.
201 Statistics, lect. 3 hrs. V . Thiessen.
his class is designed to give the student some expe an elementary level with those branches of statistics which at nost trequently uhen and how to use non-parametric tests. He will also be given a general introduction to factor analysis,
303 Social Problems and Social Policy, seminar: 3 hrs
his seminar focuses on the policy implication of research into arious social problems. It addresses the issue of moving from delineation of a social problem, to doing the necessary research, tote issues in problems of implementation of policy

## 06A Modernization and Development, lect.: 2 hrs.; semina

 1 hr.; T. Bottomore.he class will treat change, modernization, and developmen s distinct but related notions. Beyond examining the meanings and implica of the complex processes involved in planning for national development of traditional societies. For purposes of concrete illustrations, the class will focus on the roblems of South Asia

09 Population and Society, lect.: 3 hrs.
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 oftit three major components of demographic change: fertifity economic, and political causes and consequences.

310 Research Methods, lect., 3 hrs.; R. Apostle.
This class will provide a detailed survey of the basic methods of social research. The topics discussed in the class incluade the construction of theory, the formulation of research problems, research designs, measurement, meinoastention is given to the sample survey as one of the main methods of social science research. Practical experience in survey methods is proved through a class project.
311 Sociology of Leisure, lect., 3 hrs. (not offered in 1975-76) 312 Social Conflict, seminar 3 hrs.i, J. D. Stolzman.
This course will endeavor to introduce students to the various analytical perspectives sociologists have employed to
understand the patterning and consequences of conflict in society. In this regard particular attention will be devoted to the functional, coercion, and Marxian theories of conflict. The course will further be concerned with contict in contemporary society, with special reference to patterns of confict and submission of term paper
313A Sociology of Health and IIIness, seminar: 3 hrs. (not offered in 1975-76)

316 Sociology of Education, seminar: 3 hr

318A Issues in the Theory of Society, seminar: 3 hrs. (no offered in 1975-76)
319 Social Movements, seminar: 3 hrs: : D. F. Campbell This seminar examines both conventional (formal) and viewed as efforts by individuals and groups to challenge culture-values, social institutions and/or a political order Focus is upon participantobserva and the Atlantic region

320 Social Change and the Canadian Society, seminar: 320 Social Change and the

## Anthropology

325 Sociology of Science and Ideas, lect: 2 hrs.: tutorials: 1 hr. (not offered in 1975-76)

327B Sociology of Careers, seminar: 3 hrs.; W. N. Stephens This course will focus on the career-choice process in late adolescence and early aduthood. heories of caree will contribute to a class research project on university career-choice problems. Also treated will be the changing and recruitment and career lines in selected occupations.

331 Time and Society, seminar; 3 hrs.; D. H. Elliott.
This class will deal with the way man organizes and budgets time Oif particular interest will be the dichotomy in Western society between work time and leisure time. In particular, the
class will deal with the historical and cultura oricin Class will deal with the historical and cultural origin of leisure
time as a major social phenomenon, with factors affecting variations in amount and use of leisure time among individuals in Western society
4018 History of Sociological Thought, seminar: 3 hrs.; M. J. alrs
An examination of the development of classical sociological
theory. Maior theorists will be coll theory. Major theorists will be compared with special
reference to their discussions of the development and structure of modern society and their contributions to contemporary sociology. Those contributors under discussion will include the British empiricists, ' Spencer, Marx
Durkheim and Weber.

405 Contempory Sociological Theory, seminar: 3 hrs: T
In this class a number of recent theoretical developments in sociology wir be critically examined. The choice of specific

450 Honours Seminar in Sociology, seminar: 3 hrs.; H. V. Gamberg
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 dividual student's honours programmes

## 451A Readings in Sociology

451B Readings in Sociology
452B Readings in Sociology
areaaing class the student is assigned to a member of staff Papers and research projects will be expected.

## Professor

L. Kasdan
W. N. Stephens
J. H. Barkow
R. R Larse

Lecturer

## The Field

Man is a diverse animal, both in biology and in the way he lives Anthropology is the comparative study of this diversity comparing the biology and cultures of human groups.
Traditionally, Anthropology has consisted of four subfields: archaeology, anthropoliogical linguistics, physical anthropology, and social/cultural anthropology. Archaeology is the study of the material relics of past cultures, and deals with
such topics as the dispersal of early tool traditions, the peopling of the New Worlds. Anthropological linguistics deals primarily with the relationship of language to culture; other opics include language structure and classification, and
echniques for analyzing languages not previously studied. echniques for analyzing languages not previoust siological evolution of our own and related species and the distribution of physical characteristics of mankind in living populations. Social/cultural
organization.

A background in anthropology provides a broad view of the human animal, his diverse cultures and his biological cialism and an invaluable perspective for interests and studies in the other social sciences, the humanities, psychology, and eiological medical, and legal disciplines.

The anthropology programme has affinities with several other

- social science disciplines, including economics, history, were interested primarily in small-scale, mostly non-literate societies studying them by "participant observation" and comparing aspects of culture and social structure. In recent years, however, anthropology has applied its unique methodological and theoreical urban life, and governmental regulatory agencies.
The classes offered by this Department are concerned with both biological and cultural aspects of the human species. In both biological and cultura aspects of the
Anthropology 100 , the student will be introduced to all of the Antrields of the discipline, while higher level offerings will
subin
B.A. With Honours in Anthropology

Nine credits in anthropology above the introductory level, including Anthropology 451, 452, 453, and 459. Anthropology 459 carries two credits and consists of the writing, under acceptable to at least two members of the anthriopology staff. Applicants to the programme are asked to contact Professor L. Kasdan, its coordinator. Admission is based upon a
personal interview and the examination of any paper which the applicant feels best demonstrates his writing ability. Following admission to the programme, each honours student must select one faculty member to serve as his principal advisor. In a accordance with University regulations, a student must pass a
comprehensive examination covering his honours work in order to receive an honours degree.

## B. with Combined Honours

Students Anthropology and either Psychology or Sociology, provided they consult early with the appropriate departments. Com ans the possible if the departments concerned agree.

## African Studies Programme

The Department is cooperating with several other Departments in offering an African Studies Programme. Interested Anthropology Classes Offered
As a general rule, most classes above the 100 level require either Anthropology 100 or permission of the Instructor as rerequisite. Because Anthropology at Dalhousie is elatively new programme, you will ind that fly.

A supplement containing additions to and deletions from this ist of classes will be issued by the Department. Students in heir second and subsequent years are urged to pick up vailable beginning March. 1975, from any anthropology professor or in Rms. 415B and 322 Forest, and at registration.
you are deeply interested in an aspect of anthropology fo hich no class is offered, you are invited to discuss the

## 100 introductory Anthropology, lect. 3 hrs. Stafl

This class is intended to introduce students to all subifields o Anthropology. Topics will include man's evolutionary past, his elationship to other species of primate, his physical structure, behaviour. The second term will treat the varieties of human societies in terms of levels of social and cultural integration rom isolated hunting groups hrough bands, kingaoms, various modes of maintaining a view of society as adapting to and influencing the environment in which it is found.
During both terms, films will be used to present concrete examples for analysis.

## 200 B An Introduction to Archaeology: B. Preston.

This class will be restricted to approximately 20 students and will be held at the Nova Scotia Museum on Thursday Additional meetings may be arranged during the term. The Adalitional meeings will be covered: archaeology and its relationship to history and prehistory; the origins and growth of
the discipline of archaeology: the application of archaeologithe discipline of archaeology; the applicait ox exchaeooogi-
cal techniques in the field of prehistory; the excavation of a cal techniques in the fien of a chronological framework; the site, the estabismmen of the prehistoric pastican outline of the
reconstruction of the
reconstruction of the prehistoric past; an outine of the reconstruction of the prehistoric past; an outline of the
prehistory of Eastern North America; the prehistory of Nova Scotia. The course will also involve practical work on the archaeological collections at the Nova Scotia Museum and weather permitting, at least one field trip. Those interested
should contact the Instructor at the Nova Scotia Museum (429-4610) before November 30, 1975 .

## 210 Cultural Ecology, lect. 3 hrs. R. Larsen

The focus of this class will be the contributions ecorogical
factors make to variations in cultures and patterns of socia and social organizational choices will be explored and attention will be directed to problems of understanding how complexes of cultural traits operate in maintaining a balance between a population and its subsistence resources. The
mergence of particular complexes of traits and their existence at specific points of time and place will also be discussed. Class will be a combination of lectures and

This class will be offered either as a full class or as a " $B$ " class in 1975-76. Consult the mimeo, "Anthropology Classes," o ne time schedule, before registering

220A Social Anthropology, lect.: 3 hrs.: L. Kasda
An examination of alternative ways of analysing culture and variety of rative case studies will be used which represen a variety of geographical areas, types of society (i.e., from Since different theoretical perspectives have been applied to specific institutions (economic, political, religious, kinship, etc.)., such institutions will be examined where appropriate
Consult the mimeo, "Anthropology Classes," to see if offered

Prerequisite: Anthropology 100 or permission of instructor.
222 Psychological Anthropology, lect.: 3 hrs ., Sta
This class deals with the areas of overlap between psychology and anthropology. Topics to be covered include: culture and sychiatry, culture chang; culture and mental health; ethnop. psychocultural capacity: and hiosocial pary; evolution of thropology. A paper will be required. Not offered in 1975-76.

2264 Culture and Political Behaviour, Kasdan,
Political systems examined comparatively. Relation between poritical and other social institutions and analysis of the
organization of conflict in non-Western societies. The relation of tribal and peasant politics to national politics in developing countries seen in a comparative framework. Consult the mimeo, "Anthropology Classes," to see if offered in $1975-76$.
Prerequisite: Anthropology 100 permission of instructor.
227 Language and Culture, lect.: 3 hrs., V. P. Miller
This course offers an introduction to aspects of linguistics, which relate to anthropology. The history of anthropological
linguistics will be reviewed, with particular attention paid North American workers in the field, including Boas, Sapir, and Kroeber. Current areas of study in anthropological linguistics, change, will be examined. The relation of language to culture will be considered, drawing on examples trom 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. language

Barkow.
societies, treated from the perspective of rigion of small-scale of symbols giving meaning to the universe rend ane's asystem it. Topics will include religion as a biological phenemenon nature of ritual, religion and healing, religion and altered states of consciousness, sorcery and wichcraft, religion and culture offered in 1975-76 fered in 1975-76
participate in class discussion write a term paper and to
231A North American Indians, lect: 3 hrs., W. N. Stephens.
This class will move through three parts. (1) New World prehistory, demography, language groups: (2) Areview of the
North American culture areas: Eskimo Canadian Indians Eastern Woodlands, Northwest Coast, California BasinPlateau, Southwest, and Plains; (3) Modern Indian problems The class grad will be based on several quizzes, and on two term papers.
Prerequisite:

$$
\text { Anthropology } 100 .
$$

232A Ethnohistory of North American Indians, lect.: 3 hrs.
V. Miller. (Not offered $1975-76$.
321 Peasant Society and Culture, lect.: 3 hrs.: L. Kasdan.
A comparative examination of the way of life of the majority of mankind. Problems of defining' salient characteristics which with. Various models for describing and analyzing the behaviour of peasants (economic, political, religious, traditional Canadian fishing communities, and to French Caniada, are examined. The role of peasants in modern social change is a major focus. Consult the mimeo, "Anthropology Prerequisite: An

306A The Social Organization of Pre-Literate Societies, ecture, 3 hours, L. Kasdan.
This class gives a systematic and detailed description and
analysis of the social organization of pre-industrial societies where men earn their living by gathering hunting herding or agricultural activities, and those segments of industrial societies which combine traditional modes of adaptation with etc.). Not offered in 1975-76. Prerequisite: Anthropology 100 or permission of instructo
307 Biosocial Anthropology, lect.: 3 hrs., J. Barkow/R. Larsen.

The theme of this class is that many human characteristics, product of biological evolution (Anthrop 307 stresses the theoretical basis of biosocial anthropology, while Anthrop 308 discussed include the byntesocial research.) Topics to be of socioccultural evolution, the fossil record of human evolution the behaviour of apes and monkeys, and the biopsychological basis of human behavior. At least one paper will be required. Consult the mimeo "Anthropology Classes" to see if offered in , 975 -76. biology or psychology.
308 Biosocial Research, lect.: 3 hrs., R. Larsen/J. Barkow.
his class applies the theoretical perspectives discussed in Anthrop 307 to empirical research. Representative topics clude the study of nonverbal behavior and communication maression and sex differences, uns Consult the mimeo "Anthropology Classss" to see if offered in 1975-76. Prerequisite: Anthropology 100 , or a bac

16 Atrica: Ethnography and Modernization, seminar: 3 hrs., J. Barkow.
This class introduces the student to the anthropological study of the peoples of Africa. The class is organized in terms of opics to be discussed during the autumn session will include general background, family and social organization, personality and socialization. During the spring session our ocus will be on contemporary, rather than colonial or pre-colonial Africa. The major topic will be the influence of Students in Dalhousie's African Studies Program are cordially invited to register for this class.
20A, 320B Readings in Anthropology. (not offered in 1975-76.

This class is intended for students who wish to delve deeply ito a subject for which no appropriate advanced class is requirements for the course
Prerequisite: Written permission of instructo

## 325 His Miller.

A course designed to acquaint students with the foundations and development of anthropology. The growth of theory in anthropology will be stressed, with special attention paid major schools of thought and the work of prominent individuals
within those schools, including Cultural Evolution and Morgan; American School and Boas; Functionalism and Malinowski and Radcliffe-Brown; Culture and Personality; Ethnoscience, and the directions in which contemporary anthropology
points. Special efforts will be made to expose students to the original writings of prominent anthropologists.
original writings of prominent anthropologists.
Prerequisite: An insthropology 100 or consent of the instor.
330 The Family and Socialization in Crosscultural Perspective. (Not offeredin 1975-76.)
331 Cross-Cultural Study of Socialization, lect - 3 hrs. Staft 331 Cross-Culturarsuad

332B Ethnohistorical Method, sem.: 3 hrs.; V: Miller. (No offered in 1974-75.
340 Ethnicity and Nationhood, Lecture: 3 hours, L. Kasdan.
This class focuses upon the tensions between ethnic ties and loyalties and the demands of citizenship in both old and new
states. The focus is comparative covering a variety geographical areas and societal types. We will examine the problems of integration in the new states of the Third World as well as the resurgence of ethnicity as a political factor in old
states (e.g. Canada, Spain, Belgium, etc.). We will examine states (e.g. Canada, spain, Bello these problems (e.g., class
various explanatory models viural society, etc.). Not offered in 1975-76.
por

Prerequisite: One of the following: a course in Sociology or
Anthropology, Political Science or History.
51 Proseminar in Anthropology: Stafi
tensive examination of major issues in anthropology. The lirst part of the class is devoted to a survey of major issues present to the seminar his formulation and analysis of particular problem.

## 52 Supervised Read

The student should secure written permission of the istruction before registering for this class. The student and the former's interests and background.

## 33 Readinge in Ethnology, tutorials Statt.

The student should secure written permission of the instructor before registering for this class. The student and his instructh will plan a programme of readings essentially dealing with eographic area (or areas).

## 59 Honours Thesis, tutorials: Stafi

This class carries two credits. The student writes an honours hesis under the supervision of his principal advisor.

## Spanish

## Associate Professors

S. F. Jones, Chairm
A. Ruiz Salvador

## Assistant Professor

I. A. Luraschi

## Lecturer

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.

Spanish America is making international headlines as political identity studgale for independence and a new political identity. Students of political science, economics, 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.
Knowledge of the Spanish language will be useful to all Canadians seeking careers as diplomats, members of the oregin service, bankers, politicians, businessmen, interpreters, translators, teachers, professors, critics, editors, jour-

It goes without saying, of course, that a knowledge of Spanish
would be of great benefit to anyone planning to travel or live in Would be of great benefit to anyone planning to travel or live in 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 lluency in the language

It is also a widely recognized fact that some of the best novels nd poetry are coming out of Latin America today, providing stimulating and challenging material for many of our literatur

I your tastes and abilities lie in the direction of Spanish Bachelor's degree with Honsour in possibility of taking a Spanish and another subject combined. Those who wish to to 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 acilitates access to graduate studies.

## Spanish Degree Programmes

General Bachelor's Degree
course should include: Spanish 102, 202, and either 230 or
Two or more classes from the 300 or 400 level (two must be nducted in Spanish).

## Bachelor of Arts with Honours in Spanish

ourse should include:
Year I

1. Spanish 102

2-5. One class to be chosen from each of the groups A, B, C, and D (see Programme Planning Guide). Consult Department

6 -8. Spanish 202, 230240
9. Class in the minor subject

Year III
Year III
11-13. Spanish 304, 336, 341 .
15. Elective in a subject other than 10

Year IV
16-18. Three classes to be chosen from Spanish 400, 432 436, 441, or 499.
19-20.

In addition, students are required to write an Honours essay. supervised by a member of the Department

## Bachelor of Arts with Combined Honours in Spanish and

 Another Subject. possible) with the deparrtments concensed station (as early as a combined Honours course should consider, however, tha the number of classes saken in eitherider, however, that insufficient for admission to many graduatect might be without at least an extra year's work.Notes:
The "other" classes chosen as electives in the requirements
(2) Combinations of classes other than those set for ato er than those set forth above express permission of the Department.
3) A student may, with the permission of the Department be admitted to a Spanish course at an advanced point because (except as he may be granted transfer a creditent in the usua way), must normally take the same total number of classes a other students in the same course.

## 102 Begin

 For studeSpanish. This course is designed for students wishing to achieve
proficiency in spoken and written Spanish Class tections proficiency in spoken and written Spanish. Class sections are limited to titteen students, to facilitate oral participation. The
text, written 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 controversia subjects that young people in Spanish-speaking countries are
likely to discuss: the pros and ans success and failure of marriage, the generation gap. women's lib, the population and pollution crises, and other items of human and social interests.

202 Intermediate Spanish, lect.: 3 hrs.; language lab.: 202 Inte
and completes the work begun in panish 102

230 Introduction to Spanish Literature, lect.: 3 hrs
ntroduction to the main works and trends in Spanish literature Study of illustrative works.
Prerequisite: Spanish 202 (which may be taken at the same time).
240 Introduction to Latin-American Literature, lect: 3 hrs
Introduction to the main works and trends in Latin-American Interadure of the 19th and 20th centuries. Study of illustrative works. Prerequisite: Spanish 202 (which may be taken at the same time).
300A Cervantes, lect: 2 hrs
Conducted in English. No prerequisites. Open to students in all departments.
This course will examine Cervantes' philosophy of life through an analysis of his great materpiece, 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 dislusdioneve. All truth is
ance and reality, chivalrous love and wordly love realtive, but the ultimate irony is felt by the reader himself who discovers, in the end, that Don Quixote's view of the world is
 be mad.

304 Composition, lect.: 3 hrs.
Training towards accuracy in reading and writing Spanish Exercises in translation from Spanish to English and from omposition.
Prerequisite: Spanish 202
336 Spanish Prose of the 20th Century, lect.: 3 hrs.
Spuisite: Spanish 202 (Spanish 304, which may be ren at the same time, is strongly recommended)

341 Latin-American Prose of the 20th Century, lect.: 3 hrs rerequisite: Spanish 202 (Spanish 304, which may b Prerequisite: Sp
taken at the same

00 Introduction to Spanish Linguistics, lect.: 3 hrs
Students will study new methods of linguistic analysis and ncrease their competence in Spanish through a series of in class.
Plass. Spanish 202 and 304
432 The Golden Age, lect: 3 hrs.
436 Contemporary Spanish Poetry, lect.: 3 hrs.
441 Contemporary Latin-American Poetry, lect.: 3 hrs.
499 R Cor Hon Students.

## Theatre

Faculty
Alan Andrews
Gordon Gordey
Lionel Lawrence, Chairman
Arthur Murphy, Visiting Professor
David Overton
eter Perina, Scenographer
Pat Richards
Praham Whitehead

## Special Instructors

David Dague, joint appointment Neptune Theatre (Properties) Robert Doyle (Design, costumes) Anne Hardcastle (Voice \& Speech
David Mardon (Technical Directon
David Renton (Makeup)
an Thomson (Construction)
Theatre is a performing art. It is rich, complicated and involves refined creative work in many different fields. The Dalhousi
theatre programme is a concentrated one runs for tour years theatre programme is a concentrated one, runs for four years,
allows for choice by the individual student, and has certain allows for ch
clear biases.
The programme currently exists within the faculty of arts and science, and students wishing to achieve a theatre degree
must expect to take certain classes outside the discipline theatre. However the art of theatre is a consuming one and an overwhelming amount of the student's time will be spent in studying and practicing i.
The theatre programme demands certain firm requirements
and at times allows for choice by the provide the best opportunity for each student to develop her or his individual preferences, 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 With this in mind the current classes can be arranged in at
least three ways to provide emphasis on a general theatre education, an acting concentration, or a scenographic one The overall programme is flexible though, and students who discover new areas of interest as they proceed with thei stures can, in most cases, adjust their airection
Every theatre student is expected to be involved regularly in
production work, either acting or in other areas of production The performance of theatre sometimes falls within the actual work of a class, sometimes not. But the regular experience provided, by performance is axiomatic to understanding the theatre, and theatre students are expected to be part of as
many pieces of production work each year as possible Involvement in the local professional and semi-professionai companies is encouraged.
Students who wish to study the theatre should draw up a plan of studies for a four-year programme. Each student should
consult with the department chairman consult with the department chairman to make sure that the programme falls within the university requirements for a
a degree.
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 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 estricted enrolment. All students wishing to take any class

## The Classes

The classes in theatre are designed to provide a sensible programme for a student proposing to graduate with a B.A with Honours in Theatre. Some of the classes are for students in the honours programme only, but there are others that ar
open to anyone who is interested in the topic.
How to Plan Your Programme

Step 1. Read the faculty regulations for: a) first-yea requirements ( 5.1 .1 ), and b) honours programmes ( 5.3 and
5.3 .51 ) 5351) Make ste untind

Step 2. Read the descriptions of the theatre classes Understand that of the nine theatre classes you will take afte first year there are two particular theatre classes you must
take: Theatre 201 in second year, and Theatre 490 in fourth take: Theatre 201 in second year, and Theatre 490 in fourth
year. Every theatre degree student must include these two classes in her or his programme of studies.
Step 3. Year by year organization. Normally you are expected to take five university classes a year. Given this, you
should arrange to take three theatre classes a year after first should
year.

Year 1: Five classes. Theatre 150; at least three classes in other subjects. (Please read Theatre 399 description.)

Year 2. Five classes. Three in theatre: Theatre 201 and two other second-year theatre classes. (See the three programme Year Five
theartre Five classes. Three in theatre; three third-year because the overall programme you choose will provide your yearly selection in particular for third year.)

Year 4: Five classes. Three in theatre; Theatre 490 and two
fourth-year theatre ourth-year theatre classes.

Recommended Options in the Theatre Programme Theatre students pursuing an honours theatre degree can arrange their theatre classes in several ways. The department

No. 1 The general one
Year 2: Theatre 201, 270 and 280.
Year 3.
Year 3: Theatre 360, plus choice of two third-year classes.
Year 4: Theatre 450,460 and 490

## No. 2. The acting stream.

Year 2: $\quad$ Theatre 201, 202, 280.
Year 3:
Year 4: Theatre 380, choice of two third-year classes.

## No. 3. The scenography stream. <br> Year 2: Theatre 201, 270 and choice of one second-year

 Year 3:Year 4: 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 protessional training opportunities are intro-
duced. Before registering for $1975-76$ students should
contact the department for information on recent develop-
ombined Honours
噱 xist. Interested students should spoply to the department for further information.

Classes Offered
Theatre 101: An Introduction to the Theatre, 3 hrs. lect. discussion, demonstration.
The class is designed for students who are concentrating their studies in other fields, but wish to take one class in theatre. The class considers the nature of the theatre, its history and current impact, and wait, live performance, television, and film, theatre in different societies, and the component elements of the theatre are analysed, to enable the student to gain a firm understanding of how lo appreciate and enjoy the

Theatre 150: An Introduction to Theatre Studies, 6 his
This class is intended for students who think they may concentrate their studies in theatre, or know definitely that they will. The class involves: written reviews of local productions,
improvisations to enable the students to understand some of the basic questions of performance; introductory voice and
movement training; and stagecraft work to familiarize the student with the basic organization, equipment and materials of the theatre. Students taking this class should expect to d should not enrol in night classes.

Year 2 201. The History of the Theatre, 3 hrs. lect. Theatre 201: The, Histion

This class is designed to provide the student with a basic and comprehensive understanding of the development of heatre and drama. Emplevasis wirl the classical theatre of Greece, the theatre in the medieval period and in the Renaissance, and the evolution of the modern theatre

## Theatre 202: Modern Dance, 6 hrs

This basic dance class is designed to introduce the student to ques of modern dance; the use o space, ryythm, dynamics, The development of persona
ness and composition. The expression through the medium of dance will also be

Creative Drama, Second summer sessio only; 2 hrs. a day
This class is designed to show potential or current theachers, or any person involved or interested in the development of children, how drama can be used both to guide persona development and to heighten learning ability. The class
considers how best to adapt creative drama to schoo 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 a detailed syllabus for subsequent use.

## Theatre 270: Scenography 1, 6 hrs.

This class examines two-dimensional design, colour composition, perspective, and three-dimensional design. Students wii undertake considerable drawing and basic design practice Before enrollin
the instructor.

## Theatre 280: Acting 1, 6 hrs.

This class involves work in movement, improvisation, role playing, voice and speech, and scene study.

Year 3
heatre 301 : Introduction to Film, 3 hrs
This is an introductory class for students with no background in film. Each week a tilm is screened and analysed. The class also involves an examination of film history, genre, and
techniques, and requires extensive viewing of films outside techniques, and requires extesive viewng in this in production.
those shown in classes. This is not a class in
Theatre 360: The Playwright in the Theatre, 6 hrs. Prerequisite:
programme.
This class is concerned with the creation of theatrical events, usually, but not necessarily, on the basis of a formal written script. It may further involve a study of the playwright's sources and practical explorations of the ways in which a script can be prepared.

## Theatre 371: Scenograp 2 ,

Part of this class involves an examination of the history of art from the theatrical point of view; part of it includes the basis or
technical drawing and theatre construction; and part of it involves directed work in the various technical phases of stagecraft.

## Theatre 380: Acting $2,6 \mathrm{hrs}$. Prerequisite: Theatre 280

This is an advanced class in acting involving movement, role playing, character study, and scene work.

## Theatre 399: Production

honours theatre stude
year.

This class is assessed on accumulated credit over three years. Students should therefore plan to accumulate the necessary credit from their first year. Credit is awarded for crew. Students will normally accumulate eight separate pieces of work for this credit. A student can enrol in this class in his third year, only it he has completed five approved pieces, the three remaining pill beces a pass/fail basis.

## Year 4

## Theatre 450: The Modern Theatre, 3 hrs.

The modern theatre has been characterized by successive bursts of creative energy'and experiment. This class gives and to examine several important theatrical theories. Thei implementation in particular plays and in theatrical practice will also be examined.

Theatre 460: Directing, 4 hrs .
The procedures that lead to theatrical events are analysed in his class. Specific and directorial theories are explored and tested. The work.in the class involves directing scenes and at

Prerequisite: Special Topics
Prerequisite: Only available to fourth-year concentrated
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 length of meetings will be decided to meet the needs of the particular topic or project under study. This class is open only to
fourth-year honours theatre students.
Theatre 490: Dramatic Theory and Criticism, and the
Aesthetics of the Theatre, 4 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 valuated. This class sets out to tackle that problem as far as
the theatre is concerned. It looks at the various hypotheses the theatre is concerned. It looks at the various hypotheses attempts to judge their present worth. It aliso asks what critica values are necessary for the survival and future growth of the heatre. Practical work will form a part of the work of the group

Graduate Studies
Graduate studies in theatre are not at present available at Dalhousie. Members of the department will be glad to help
students with advice about opportunities for graduate study a students with adv
other universities


[^0]:    5. Admission of mature students and those lacking normal admissions requirements

    In individual circumstances, the Universit may admit persons who lack the normal hig school preparation including those who hav
    been away from school for a number years, provided they can show by letter and hrough interview that they possess $q$

