

CALENDAR 1975-1976

University of King's College

FOUNDED A.D. 1789

HALIFAX, NOVA SCOTIA 187th SESSION



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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)

Imanac

july, 1975

uesday, 1 University holiday.

Wednesday, 2 Last day for receiving applications for admission to Arts and Science from transfer students and those who do not meet the normal admission requirements.

School registration (2nd Summer session).

thursday, 3 Summer School classes begin.

Monday, 21 Halifax Natal Day (University holiday).

August, 1975

Wednesday, 6 12:00 noon Dartmouth Natal Day (University holiday).

Tuesday, 12 Last day for receiving applications for admission to full-time study, Arts and Science.

Friday, 15 Final day of classes, Summer School.

September, 1975

Monday, 1 University holiday.

Tuesday, 2

Last day for receiving applications for admission to part-time study, Arts and Science.

Monday, 8

Tuesday, 9 Class and course approval, registration and payment of fees for new full-time students, Arts and Science.

Wednesday, 10 Thursday, 11

Registration and payment of fees for returning full-time students and parttime students, Arts and Science.

Thursday, 11 Classes begin in the Foundation Year Programme.

Saturday, 13 8:30 a.m. - 12 noon. Registration and payment of fees for part-time and special students in Arts and Science.

Monday, 15 Classes begin in Arts and Science.

Sunday, 21 University Church Service - Chapel 4:30 p.m.

Monday, 22 First day for change of course or class in Arts and Science.

Wednesday, 24 Registration and payment of fees for all Extension Courses - 7:00 to 10:00 p.m.

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

October, 1975

Monday, 13 University holiday.

November, 1975

Tuesday, 11 University holiday.

Friday, 14 Last day for withdrawing from "A" classes, Arts and Science.

December, 1975

Wednesday, 10 Last day of classes, Arts and Science.

Classes end in the Foundation Year Programme.

Thursday, 11 Examinations begin, Arts and Science.

Sunday, 21 Student holidays begin.

Thursday, 25 University holiday.

January, 1976

Thursday, 1 University holiday.

Monday, 5 Classes resume. (Regular and Foundation Year Programme).

Monday, 19 Last day for adding "B" classes, Arts and Science.

Thurşday, 29 Last day for withdrawing from full-year or "C" classes, Arts and Science.

Friday, 30 Munro Day (University holiday).

Saturday, 31 Winter Carnival.

February, 1976

Wednesday, 11 Meeting of Convocation 8:00 p.m.

Monday, 23 Study break.

March, 1976

Monday, 1 Classes resume

Monday, 8 Last day for withdrawing from "B" classes, Arts and Science.

April, 1976

Wednesday, 7 Last day of classes, (Regular Programme) Awards Banquet.

Friday, 9 Last day of classes, Foundation Year Programme.

Monday, 12 Examinations begin, Arts and Science.

Friday, 16 Good Friday (University holiday).

Friday, 30 Last day for submitting work, Foundation Year Programme.

May, 1976

Thursday, 1 Last day for receiving applications for admission from foreign students (Other than Americans) Arts and Science.

Sunday, 9 11:00 a.m. Baccalaureate Service.

Wednesday, 12 Encaenia Day - King's Convocation -Arts and Science.

Thursday, 13 Dalhousie University Convocations.

Friday, 14 Dalhousie University Convocations.

Monday, 17 Summer School registration (1st session).

Tuesday, 18 Summer School begins (1st session).

Monday, 24 Victoria Day (University holiday).

June, 1976

Wednesday, 30 Summer School ends (1st session).

Office Hours

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

Officers of the University:

Patron

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

Visitor

The Most Reverend the Lord Archbishop of Nova Scotia and Metropolitan of the Ecclesiastical Province of Canada.

Chancellor

The Hon. Mr. Justice R. A. Ritchie, Q.C., B.A. (Vind et Oxon.), D.C.L. (Vind) LL.D. (Dal.), 177 Coltrin, Rockcliffe Park, Ottawa

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Miss Marlene Mulley

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Historical Sketch

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

Since that time, King's has maintained in Canada certain of the Oxford traditions. 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 Royal Charter dating from 1820, is the third 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 faculties of Arts and Science, so that undergraduates of King's read for the B.A. and B.Sc. of Dalhousie, King's having left her own degree-granting powers in abeyance in these faculties.

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

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

A significant development in King's history began in the 1972/73 academic year with the introduction of the Foundation Year Programme for first year undergraduates, an integrated and interdisciplinary approach to undergraduate studies which is unique in Canadian higher education.

The University of King's College having entered an association with Dalhousie University, the students registered in Arts and Science attend classes jointly with 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 academic standard. The University of King's College Foundation Year Programme, however, is available only to students registered with the University of King's College.

King's College is residential, on the Oxford and Cambridge pattern, and, in addition to the day students who live out, 125 men and 100 women can be accommodated in residence. 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 residential facilities at all, or the English provincial plan of housing a proportion of the student body in "halls of residence" entirely separated from the university itself. The corporate life in King's thus emerges as something rare on the North American continent, since it is designed to educate "the whole man" and not simply to train him for specific examinations.

In addition to its athletic activities, the College runs a Debating Society, known as the "Quintilian", and a Dramatic Society which stages two plays each year. Daily services are held in the Chapel for those who wish to participate. Although the College is an Anglican foundation, there is no denominational bar aimed at the exclusion of non-Anglicans from membership of the College, either as lecturers or students. Members of Faculty may themselves be resident and function in the traditional manner as "dons" for the staircase (i.e. "bays"). The bays are

named Chapel Bay, Middle Bay, Radical Bay, North Pole Bay, Cochran Bay, and The Angel's Roost. Alexandra Hall is the residence for women.

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

King's tries to be a miniature of the Christian ideal of the larger community. It is this General Discipline rather than any more superficial resemblance, which links King's with 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 President of the 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, and not more than eight co-opted members. The Governors have the management of the funds and property of the College, and the power of appointment of the President, professors and officials. The Board appoints an **Executive Committee.**

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

Exemptions Granted by Other Institutions

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

chapel

aular chapel services are an integral part he community life afforded by the Unisity, and all students are invited to atd them. The times of service are anunced at the beginning of each session while the Book of Common Prayer is I in the services in the chapel, students all denominations are welcome and enmaged to attend. There is a morning ad evening service every week day and a orning service on Sunday. The University Chaplain is available to all students and con ts discussion groups for students and

the maintenance of discipline is in the universities of Britain and makes it unusual hands of the College Board which is comused of the President, the Dean of Resilence, the Dean of Women, President of the sudents' Union, Chairman of the Men's Residence Council, Women's House President, three professors on the King's Foundation chosen annually by the Faculty. The udents exercise a large measure of selfgovernment in maintaining good order and discipline in the residences. Students conducting themselves in an 'unbecoming manner, within the precincts of the college, may be fined, suspended or expelled. When a student is expelled from residence here is no return of fees.

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

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

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

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 Inglis sent his son to England with £250 to begin the purchase of books. The library grew steadily during the 19th century and was probably one of the best libraries in English-speaking Canada of the time. There were various benefactors over the years, chief of whom was Thomas Beamish Akins. From Mr. Akins the library received 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 Professor Burns Martin Memorial Fund continues to aid the library's growth in this area.

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

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

Book purchases in the general field are aided by memorial funds to the following persons: the Hon. William Johnston Almon,



Frances Hannah Haskell, James Stuart Martell, and Thomas Henry Hunt (Alumni Memorial).

The Library hours are:

Monday to Friday	9:00 a.m 5:00 p.m. 7:00 p.m 11:00 p.m.
Saturday	9:00 a.m 12:00 noon 1:00 p.m 5:00 p.m.
Sunday	2:00 p.m 5:00 p.m. 6:00 p.m 10:00 p.m.

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

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

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

Degrees

The degrees of Doctor of Divinity and Doctor of Civil Law, may be conferred honoris causa in recognition of eminent literary, scientific, professional or public service.

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

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 recommendation of the Graduate Studies Committee of the Institute of Pastoral Training. Convocation also awards the diploma of Associate of 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 taken as a student of King's College.

Dons in the Bays, the Dean of Residence, the

University Regulations

All students are required to report their local address while attending the University, to the Office of the Registrar, on or before October 11. Subsequent changes must be reported promptly.

Place of Residence of Students.

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

Admission

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

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

Occasional students are those who wish to take one university class because of their 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 without credit towards a degree or diploma at Dalhousie-King's may be admitted, if qualified, as a special student.

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

No student shall be admitted to a degree in a course in this university unless he has attended and passed in at least one year's 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 at 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 and deposits before entering any class or taking any examination.

Under no circumstances may a student register unless all previous accounts, including and King's before May 5.

fees, library fines, and other fines, to the university have been paid.

Late Registration

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

Withdrawal

See the individual faculty regulations, and the Fee Section.

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

If a student so requests a copy of a medical certificate will be enclosed with the tran-

Discipline

scripts.

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 a manner that shows he is unfit, for a serious non-academic reason, to continue in attendance.

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 regarded as dismissed on grounds of general discipline and his right to be considered for admission to another faculty is unaffected.

When the work of a student is unsatisfactory, or his attendance is irregular without sufficient reason, he may be dismissed from one or more classes, or from the University.

No return of fees will be made to any student dismissed from classes, residence, or from the University

Dalhousie Libraries

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

Conferring of Degrees

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

STUDENT SERVICES AND **STUDENT AFFAIRS**

Student Employment

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

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

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

Student Counselling Service

Students worried or anxious about any matter, 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 committee which arranges tutorial services for students.

University Health Service

The university (Dalhousie) operates an outpatient service and in-patient infirmary in Howe Hall.

Further specialist services in a fully accredited 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 applies particularly to residents of any province requiring a premium for Medicare Insurance.

Canadian students remaining in Nova Scotia less than twelve months have their hospitalization paid by their home province. For residents of Saskatchewan and Ontario (and any other provinces with similar regulations) this requires that the student's premium for hospitalization Medicare be paid at home while they are absent to study.

...Canadian students who have resided Nova Scotia for more than three months show intention of remaining more than lve months are regarded as residents of Scotia and hence qualify for N.S. pitalization and Medical Services In-

av student who is not covered by any of above insurance, private insurance st be obtained. Advice and applicaat special rates are available through Health Clinic.

egistration Requirements

Any student who has had a serious illness the previous 12 month period will be quired to submit a statement from his mily doctor.

All returning students are required to omplete an annual medical questionnaire at time of registration.

Students from overseas are required to hmit a recent certificate of health.

Il information gained about a student by he Health Service is confidential and may ot be released to anyone without signed remission by the student.

Tuberculin Tests

The tuberculin tests and reading is a remirement for registration for all students ttending King's.

Emergency Treatment

In the event of a medical emergency stuents should telephone the University Health Service, 424-2172 or appear at the clinic in person.

Exclusions

The University Health Service does not provide 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 Ser-

(c) Medications. (Prescriptions, drugs, etc.). (d) Dental treatment.

(e) Treatment for illness attributable to misconduct.

(f) Eyeglasses and examinations for 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, including x-ray, laboratory service, rendered off-campus except in emergency cases or where prior approval was received.

Prescriptions Medications prescribed by Health Service physicians or consultants to whom the student is referred by the Health Service are paid by a prepaid drug plan operated by the Student Union (Dalhousie). All other prescriptions 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. Activities offered include field hockey, basketball, fencing, soccer, badminton, volleyball, swimming and hockey.

Non-Academic Student Activities

Students representing the College in nonacademic activities must be in good standing. Those who are ineligible for such representation are as follows: (a) Students on probation in any Faculty. (b) Students registered for fewer than ten

lectures per week, a period of two laboratory hours being regarded for this purpose as equivalent to one lecture. (c) Students who have more than two

failures in college subjects.

These regulations do not apply to the Dramatic Society.

Canadian Armed Forces

Subsidization Plans

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

For further information on above plans, students should contact the

Canadian Forces Recruiting and Selection Unit, Sir John Thompson Building, 1256 Barrington Street, Halifax, Nova Scotia.

Phone: 422-5956 or 423-6945.

Children of War Dead (Education Assistance).

Children of War Dead (Education Assistance Act) provides fees and monthly allowances for children of veterans whose death was attributable to military service. Enquiries should be directed to the nearest District office of the Department of Veterans' Affairs.

Admissions

1. General Statement

For further information on admission to the Faculty of Arts and Science, visit, write or telephone: the Registrar's Office, University of King's College, Halifax:

Minimum age

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

Language requirement

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

Definitions

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

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

(c) Special students are students who are not candidates for a degree or diploma but who wish to take one or more university classes. Such students may be admitted if qualified. 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 credit and to whom no official transcript is issued.

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

(e) Credits: See General Faculty Regulations 2.

2. Admission from High Schools in Nova Scotia

General

The normal minimum requirement for admission to King's College is completion of Province of Nova Scotia Grade XII examinations in the University Preparatory Programme, or the equivalent. In past years 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 normal requirements, but who appear acceptable on other grounds. Any student who submits the required documents will be considered for admission. (See Application Procedure).

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 Application Form (available from the Admissions Office, or from most high schools) to the Registrar, King's College, as soon as possible after January 1st, and normally not later than August 15th. To complete the application, a candidate must provide:

(a) evidence of successful completion of Grades XI and XII in the University Preparatory Programme (senior Matriculation standing) from a public high school in Nova Equivalences Scotia, or the equivalent, as shown in a certified high school record-transcript, Provincial Examination Certificate, or Princi- Nova Scotia: 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 possible after their credentials have been received and studied.

Preparation for Admission

Students wishing to study at King's College should choose their high school subjects from a University Preparatory Programme. They should read the sections of the Cal.

endar headed Degree Programmes and Programmes of Study, and in particular, the description of the first-year programmes Many departments make suggestions about high school preparation in the descriptions of their own introductory programmes (These are found in the section entitled Programmes of Study). Students who lack preparation (in. Grade XI and Grade XI) in Mathematics, English, and at least one other language may find themselves initially cut off from certain programmes. Guidance counsellors in high schools can also offer advice on the suitability of individual high school programmes. Another source of advice is the Registrar's Office, which will arrange interviews, whenever possible, be tween prospective students and members of the Faculty.

3. Admission from Outside Nova Scotia at Senior Matriculation Level

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

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

Application procedure and ways of appraising applications: as for students from Nova Scotia.

The following levels are considered equivalent to Senior Matriculation (Grade XII) in

Other Provinces of Canada

(a) Newfoundland: first year Memorial University

(b) New Brunswick: requirements are the 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 Collegial programme. Well qualified students may be admitted after one year of CEGEP.

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

Manitoba, Saskatchewan, Alberta, British mbia: Grade XII.

her Countries

USA: first year at a recognized university similar institution of higher learning inimum: 30 semester hours). Students: clesser standing will be considered if they appear exceptionally well qualified, for exle on the basis of CEEB scores or adanced placement work.

Great Britain, West Indies, West Africa: General Certificate of Education with pass randing in at least five subjects, of which least two must be at Advanced level, nd one must be English.

Hong Kong: GCE as for Great Britain;

University of Hong Kong Matriculation retificate under same conditions as for CCE

India, Pakistan: Bachelor's degree with pst or second-class standing from a recognized university; or in certain circumtances, first-class standing in the Internediate examinations in Arts and Science, provided the candidate has passes at the niversity level in English, Mathematics md a language other than English.

k) Countries not mentioned above: Write o the Registrar's Office.

4. Transfer from other Colleges and Universities

Deadlines for Receipt of Applications Canada and the USA: August 1st. Other countries: May 1st.

Applications received after the above dates will be considered, but prompt processing cannot be assured.

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

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

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

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

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

Transfer of Credits

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

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

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

a) A student from another college or university who is not eligible for re-admission to that college or university on academic

grounds will not be admitted to King's College.

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

c) To 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 area of specialization (normally classes taken at second-year level or higher).

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

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

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

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

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

General Faculty Regulations

Changes of Regulations usually become d) a new area of concentration is to be Method of Assessment chosen. of the Faculty of Arts and Science. Students are subject to changes in regulations and courses made after their first registration unless specifically excused by the Faculty. All enquiries about the regulations hereunder should be made to the Registrar. Any student suffering undue hardship from application of any of the regulations may appeal for relief through the Registrar to the Committee on Studies at Dalhousie.

1. General

Admission to Classes

No student shall be admitted to a class until he has satisfied the regulations' regarding entrance and complied with the General University Regulations.

Duration of Undergraduate Studies

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

Auditing

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

Advanced Placement

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

Counting of Classes toward Two Undergraduate Degrees

A student who holds one undergraduate degree (B.A., B.Sc., or B.Com.) and who wishes to gain a second undergraduate degree must fulfil the requirements of the second degree and meet the following stipulations:

a) only classes that are applicable to the course for the second degree may be counted for credit:

b) each class carried forward must bear a grade of C or higher:

c) a minimum of six new classes must be taken, of which four must be in a declared major subject;

Note: Conversion of a General degree to an Honours degree (degree Programmes section) does not involve the award of a second degree; hence it is not subject to this regulation.

Concurrent Registration at University of King's College and Another Educational Institution

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

Forced Withdrawal Consequent on Unsatisfactory Performance

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

2. Credit and Assessment

A credit toward a degree is earned in a fullcredit class, a class in which typically there are two to three lecture hours weekly for the regular (September to May) academic year. Credits may be obtained for university-level studies

a) normally during the regular academic year; or exceptionally

b) during a summer session or by correspondence,

c) by transfer from other universities attended prior to entrance to University of King's College,

d) in other Faculties of Dalhousie, or e) at other institutions while registered at Change of Grade

King's.

Regulations governing each of these ways of earning credit are presented below in sections 4 through 8.

Gaining Credit

To gain credit toward a degree or diploma, a student must meet the requirements relevant 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 satisfactorily.

Credit Contingent on Settling Debts to the University

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

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In determining pass lists, the standing, attained in prescribed class exercises, in field or laboratory work, and in the various examinations, may be taken into consideration by an instructor. Each instructor must ensure that students are informed of the method of evaluation to be used in a class within two weeks of the first meeting of the class; within four weeks after the beginning of each term the departmental chainnen must report to the Dean at Dalhousie the method of evaluation to be used by each instructor in each class.

Grades

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

Submission of Grades

On completion of a class, the instructor is required to submit grades to the Registrar such grades to be based on the instructor's evaluation of the academic performance of the students in the class in question. Christ mas grades must be submitted to the Regis trar in 100-level full-year classes with enrolments in excess of 25 (on October 1); Christmas grades are normally submitted in other full-year classes. Christmas grades in classes other than A classes should be submitted as early as possible and in no event later than January 2nd; for "A" classes grades must be submitted by December 27th, (an "A" class is one given in the first term with the class ending in December).

Incomplete

Each student is expected to complete class work by the prescribed deadlines. Ordinarily there is no obligation for any instructor to extend such deadlines. Incomplete work in a class may not be completed for credit after September 1 following the academic year in which the class was taken, and no incomplete notation will be changed by the Registrar after that date.

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

Examinations and Tests

A period of roughly two weeks in the spring and one week in December will be set aside for the scheduling by the Registrar of formal written examinations. An instructor who wants an examination scheduled by the Registrar for his class must so inform the Registrar by October 15 for the Christmas period and February 15 for the Spring period. Departments will advise the Registrar, on request, of examinations to be scheduled by the Registrar. An instructor may also arrange his own examinations at a time and place of his choosing (including the formal examination periods), but with the under-

danding that in cases of conflict of examinafor an individual student, the Regisexamination schedule takes priority. tests or examinations covering the work an entire term (or year) shall be held the last two weeks of classes in the No tests or examinations shall be held uring the period between the end of classes nd the beginning of the official examinaion period.

Reassessment of a Grade

On payment of a fee, a student may appeal the Registrar at Dalhousie for reassessnent of a grade in a class. The Registrar I direct the request to the Chairman of e Department concerned, who will ensure hat the reassessment is carried out and rearted to the Registrar.

special Examinations

special examinations may be granted to stulents in case of genuine illness, supported by medical certificate, or in other unusual or exceptional circumstances. Medical certifreates must be submitted at the time of the illness and will normally not be accepted after a lapse of one week from the date of the examination. A student wishing to appear as a candidate at a special examination shall be required to give notice of his intention to the Registrar's Office at Dalhousie on or before July 10. Students wishing to write at outside centres must apply by July 10.

Supplemental Examinations

A student is permitted to write a supplemental examination in one class which he failed provided that:

- (a) he obtained a final grade of F/M;
- (b) he has satisfied the requirements for the class (see Regulations);

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

The supplemental examination must be written in August immediately following the failure. It may not be deferred. Notice of intention to write, together with the required fee, must be presented to the Registrar'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.

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

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

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

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

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

3. Merit Points and **Minimum Standing**

Merit points are awarded for each class as follows: Grade A+, A, A-

B+, B, B-C D

Note that although D is a passing grade, no points are awarded. For fractional credit classes, corresponding fractional merit points are awarded. (e.g., in a half-credit class, an A would yield 11/2 points). Students receiving credit for classes taken at another institution are 'not awarded points for those classes; the minima stated in the rules below are adjusted in proportion to the number of King's credits received relative to the number required.

Minimum Standing for a General Degree In order to qualify for the award of a general degree, candidates must have obtained a minimum of ten merit points on the fifteen classes required. For all students graduating in 1976 and subsequently a minimum of twelve merit points on the fifteen classes required must be obtained. (Note that the rule on minimum standing stated in the 1972-1973. Calendar was not approved by Senate; if applied it would be more stringent than the regulation stated above).

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

Minimum Standing for an Honours Degree Students in honours courses are expected to maintain an overall standing of at least C in each year of study; if they fail to do so, they may be required by the Committee on Studies to transfer to a general degree course.

4. Regular Academic Year

Workload

Five classes shall be regarded as constituting a normal year's work for a student, and may not be exceeded without written permission from the Committee on Studies. Such permission will not normally be granted to any student who is in his first year of study or to any student who, in the preceding academic year, has failed any class or had an average of less than C.

Failed Year

A student is considered to have failed his year if he passes fewer than three of the full classes (or their equivalent) for which he is

Points

registered, unless:

(i) the year is the first he has spent at any university, when passes in only two classes are required;

(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 first university year and three-fifths thereafter

(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 academic year determine whether a student has passed or failed his year.

Penalty for Failed Year

(a) A student who has failed his year for the first occasion is required to reapply to the Faculty for consideration for readmission.

(b) A student who fails a year on two occasions will be ineligible to return to the University as either a full-time or a parttime student. Ordinarily an appeal will be allowed only if illness has seriously interrupted the student's studies and this is established by submission of a medical certificate from the physician attending the student to the Registrar at the time of the illness

5. Summer School and **Correspondence** Classes

Limits on Credits

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

Maximum Workload

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

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

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

Credit for Summer School Classes at Other Institutions

A student wishing to take, at a university other than Dalhousie, a Summer School class to be counted for credit towards a Dalhousie-King's degree must:

(a) obtain an application form from the Office of the Registrar at Dalhousie University;

(b) obtain from the university he proposes to attend a full description of the Summer

School classes (or alternative classes) he wishes to take; usually the Summer School calendar will suffice;

(c) make application to the Registrar of Dalhousie University and submit the class description of the class he wishes to take (alternatives should be indicated where possible).

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

Correspondence Classes

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

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

6. Transfer Credits

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

7. Credits from Other Faculties

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

8. Credits from Other Universities under Concurrent Registration

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

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

The class fee will be paid by the student if registered as a part-time student at Dalhousie-King's.

9. Change of Registration

Changing a Class

Class changes will not be permitted during

the first week after commencement of classes in September. Students should decide during the first week of classes what changes they wish to make and make these changes during the second week of classes (see below).

Adding Classes

The last date for adding classes is two weeks from the commencement of the term in which that class begins. Students must complete the appropriate registration change form which must be approved by the 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 classes: 16th November, for B classes: 1 week after study break, for C classes: 31st January, for full year classes: 31st January. Classes dropped after these dates are recorded as W (withdrawal). Students must complete the appropriate registration change form which must be approved by the in-structors concerned and by the Registrar.

(b) No class may be dropped after the last day of classes in the term in which that class ends.

(c) Classes may not be added to replace withdrawn classes after the second week of the term in which that class begins (see Regulations).

(d) A student may not transfer from full to part-time status by withdrawing from classes after the deadlines listed (see Regulations)

Withdrawing from the University or Changing to Part-time Status

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

10. Experimental Classes

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

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

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

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

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

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

One faculty member taking part in each experimental class shall be designated the rapporteur of the class. It shall be his responsibility (a) to advise the Curriculum Committee of the formation and content of the class; (b) to obtain from the Curriculum Committee a ruling as to what requirement or requirements of distribution and concentration and credit the class may be accented 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 of instruction, and the success of the class as an experiment in pedagogy (judged so far as possible on the basis of objective comparisons with more familiar types of classes).

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

programmes of Study

CULTY OF ARTS ND SCIENCE

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

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

King's provides an alternative to the ordinary A. and B.Sc. first year programmes.

the ordinary first year programme consists five classes.

the King's alternative first year programme, he Foundation Year Programme, is a first year programme for both general and honmurs students. Bachelor of Arts students enrolled in the Foundation Year Programme do one class in addition to the Foundation Course. Bachelor of Science students in the Programme do two additional classes.

Foundation Year Programme

Introduction

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

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

Thus for B.A. students the Foundation Year Programme is equivalent to 4 classes, for B.Sc. students it is equivalent to 3 classes.

Diploma for Studies in the Humanities and Social Sciences.

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

King's Interdisciplinary Studies

In addition to the Foundation Year Programme for first year students, King's College offers classes at the second year level for degree credit as non-departmental electives in the B.A. and B.Sc. programmes. These classes are available primarily for students who have successfully completed the Foundation Year Programme.

thoughtful living. To provide these is the aim of this new programme.

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

The form of the teaching is designed to meet the special problems of first year students. Enrolment in the Programme is limited to 100 Arts students and 25 Science students. The very favourable ratio of staff to students and the concentration of the student's work within one course permit the course to offer a wide variety of experiences and allow it to help students analyze, focus, and evaluate their experiences. The amount of time spent in small group tutorials permits close attention to be paid to each student's development. The exposure to many different aspects of our civilization, and the large number of departments recognizing the Programme as a substitute for their introductory class, give Foundation Year students both a wider experience from which to judge their interests and wider options for second year study.

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

Classes in 1974/75 included:

K220 Selected Topics in Interdisciplinary Studies. 1 Full credit Instructor: Members of Staff

This class provides the student with the opportunity to undertake specialized interdisciplinary study on a topic to be agreed upon by the chosen instructor.

- K221 The Aristotelian System as an Integration of Disciplines. 1 Full credit Instructor: W. J. Hankey
- K223 The Social and Political Context of Revolutionary Ideas in the Nineteenth and Twentieth Centuries. 1 Full credit Instructor: H. G. Yesus

K224 The Decline of Liberalism as an Ideology. 1 Full credit Instructor: J. A. Lennon

Teaching Staff (1974-75)

J. P. Atherton, M.A. (Oxon), Ph.D. (Liverpool),

Associate Professor of Classics.

R. D. Crouse, B.A. (Vind.), S.T.B. (Harvard), M.Th. (Trinity), Ph.D. (Harvard),

Associate Professor of Classics and Chairman of the Department.

H. V. Gamberg, B.A. (Brandeis), Ph.D. (Princeton),

Associate Professor of Sociology. W. J. Hankey, B.A. (Vind.), M.A. (Toronto), Assistant Professor and Director Foundation Year Programme.

A. Lennon, B.A., M.A. (Toronto),

Lecturer in Humanities and Social Sciences. C. J. Starnes, B.A. (Bishops), S.T.B. (Harvard), M.A. (McGill),

Lecturer in Humanities and Social Sciences. H.G. Yesus, B.A. (Haile Selassie), M.A. (Illinois et Brandeis),

Lecturer in Humanities and Social Sciences. J.G. Morgan, B.A. (Nottingham), M.A.

(McMaster), D.Phil. (Oxford), President, Univ. of King's College and Asso-

ciate Professor of Sociology. D. H. Steffen, Ph.D. (Goettingen),

Associate Professor of German and Chairman of the Department.

J. Stolzman, B.A. (Oregon), M.S. (Florida), Ph.D. (Oregon),

Assistant Professor of Sociology.

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.),

Associate Professor of Music.

J. F. Graham, B.A. (U.B.C.), A.M., Ph.D. (Col.),

Fred D. 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. (Ill.), 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 Chairman of the Department.

Admission Requirements

The admission requirements are those pertaining 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 been out of school for some time and who may or may not have completed their high school course, and from exceptional students completing junior matriculation (Nova Scotia Grade XI). These students will be individually 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 open to all entering students. In addition, the Henry S. Cousins Scholarships of \$1,000 and \$750 per year, the Dr. Norman H. Gosse Entrance Scholarship of \$400 and the Foundation Year Entrance Scholarships of \$500 are open only 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 and made on the basis of tutorial participation and essays. There are no examinations. The final grade is a composite of all evaluations. Final grading is the result of discussion among all those teachers who have had grading responsibilities. Grades are given in terms of the letter grade system of the Faculty of Arts and Science.

Successful completion of the Programme gives students in the Bachelor of Arts course twenty-four credit hours or four class credits toward the Bachelor of Arts degree. These students do one other class besides the Foundation Year course to achieve a complete first year. Bachelor of Science students 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.

Upon successful completion of the Programme the normal departmental requirement of passing an introductory course in the discipline concerned is waived by the following departments;

Classics (except in the case of courses in the classical languages).

English Language and Literature. German (except in the case of courses in

language). History.

Political Science. Sociology (except for courses in Anthro-

pology)

In addition the following departmental provisions have been established

German

Successful completion of the Foundation Programme may be regarded as a substitute for German 221.

Economics:

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

Philosophy

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

Religion:

The Department of Religion has indicated 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 part of the pre-professional work they require for admission to their respective faculties. Students may substitute the Programme for the appropriate requirements laid down by these faculties; for details of these provisions consult the Director of the Foundation Year Programme. The Department of Education of Dalhousie University waives its requirement of English 100 for students enrolled in the B.Ed. Integrated Course who have successfully completed the Foundation Year Programme.

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Course Designation, Lecture and **Tutorial Hours**

The formal designation of the Programme courses is as follows:

King's Interdisciplinary Studies

K100 (Arts): Foundation in Social Science 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 M. W. F 9:35 a.m. - 11:25 a.m.; Four hours of tutor. 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 them in accord with the interpretation of our culture which it develops. As we work out this interpretation, we consider works of various kinds, some of the most crucial works in this culture. These we consider no matter what discipline ordinarily studies them. Thus we look, for example, at Mozart's Don Giovanni, early Greek urns, Michelangelo's "Prisoners", and Brooklyn bridge; these are usually understood to belong to the disciplines of music, archaeology, art history and architecture. We read Homer's Iliad, Marlowe's Faust, Dicken's Hard Times; works usually studied by the departments of classics, theatre, and English literature. We analyse St. Anselm's Proslogion, Descartes' Meditations, and Luther's The Freedom of a Christian, which are usually studied by departments of philosophy, theology and religion. We study Huizinga's The Waning of the Middle Ages, Rousseau's Social Contract, Marx's Capital, Sweezy's Modern Capitalism works thought to belong to history, political theory, economics and sociology. We read selections from Copernicus' On the Celestial Spheres, Newton's Optics, Darwin's On the Origin of the Species; texts taken from the history of astronomy, physics and biology.

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

The following are the teaching units of the course. One or more of the aspects of culture mentioned above tends to be stressed in each unit in accord with the difference between the general character of each period and the particular character of the approach of the person responsible for coordinating the teaching of the period. Four teaching weeks are devoted to each of these units.

The Ancient World: The origin of the mary institutions and beliefs of the stern world in Greece, Rome, and Israel. religion manifesting itself in art, myth and stitutions provides a focus for our approach this epoch. *Co-ordinator:* Dr. Atherton.

The Medieval World: The formation of hristendom. The forms of the City of God eveloped in the assimilation of ancient culto Christianity provide the elements the consideration of this period. We tempt to grasp their unity, as the medieals saw it, through the Divine Comedy of pante. Co-ordinator: Dr. Crouse.

The Reformation and Renaissance: The hreak up of the medieval world in the opposition of faith and nature. We begin to consider philosophy, science, politics: the secular arts in general, as self-consciously independent of the Church and attempting o achieve secularly what it proclaimed reigiously. Co-ordinator: Mr. Starnes.

The Age of Reason: The enlightenment; Protestant freedom developed in relation to nature and society. Special attention is paid political theory and natural science in this section. Co-ordinator: Dr. Steffen.

5. The Triumph of the Bourgeoisie: Bourgeois culture from its triumph in the French Revolution to its collapse in World War I. The nineteenth century is mainly treated in erms of the revolutions: political and industrial. Marx provides a crucial analytical focus; novels provide a new form of literary experience. Co-ordinator: Dr. Morgan.

6. The Contemporary World: From the decline of the European empires to contem-porary industrial society. The focus is the stand point of the new social sciences which came into view in our investigation of the nimeteenth century. The revolutions of the twentieth century are considered central. *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 registered in the Science section of the Programme. Some of this additional work will relate to the Thursday lectures which are required for Arts but not for Science students. This additional lecture will consider one text or topic in detail during the whole unit. A different kind of work will be considered in each period so that instruction is given in the different techniques appropriate 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 the written requirements.

The following are the recurring general topics which are discussed in each of the units outlined above.

(a) Political institutions, the modes of authority, conceptions of law and the person, the political ideal.

(b) Theological and philosophical positions and forms.

(c) The conception of nature and forms of natural science.

(d) Economic institutions. (e) The structure of society.

(f) Literary, musical and artistic expression.

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

Required Reading (1974-75)

The following list of required reading for 1974-75 gives an indication of the theoretical works through which our understanding of these aspects of our culture is developed.

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

"The Akkadian Creation Epic"

Wother

Aquinas

Virgil

Dante

Huizinga

Mirandola

Julian of

Norwich

Cohen

Marlowe

"Genesis" 1-3	
Hesiod	Theogony se
Homer	Iliad
Sophocles	Oedipus Rex
Sophocles	Antigone
Sophocles	Oedipus at (
Plato	The Republi
Coulanges	The Ancient
Virgil	The Fourth
The Bible	Exodus 3, 19
The Diote	Job 1-14 and
	Psalm 89
	Epistle to th
	Epistle to th
	1-6
Fuschius	Vita Consta
Eusebius	(selections)
Augustine	The City of
Augustine	(short select
Savore (trans)	The Song of
Sayers (gails)	The bong of

Documents illustrating medieval social life, for example, Epistola de Litteris

Charlemagne 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

Regula St. Benedict (extensive selections) Peter Abelard Helen Waddell Medieval Philosophy Wippell and (extensive selections) Summa Theologica, **Ouestions I and II** Aeneid, Book VI Divine Comedy: Inferno, Purgatorio, and Paradisio The Waning of the Middle Ages Oration on the Dignity of Man (a substantial portion) Revelations of Divine Love (extensive selections) The Prince Machiavelli Utopia Thomas More Birth of the New Physics Doctor Faustus*

lections

Colonus[°] City Eclogue ,20 40-42°

Romans 1-8 e Ephesians

ntinae

God ion) Roland

Martin Luther

Weber

Descartes

Hobbes Locke

Hume

Kant

Koyré

Westfall

Rousseau

Goethe von Kleist

Carlyle

de Tocqueville

Appleman Balzac Mill Engels

Marx

One of the following novels

Gaskell

Dickens Disraeli Kingsley

Nietzsche

Lenin Felix Greene Sweezy Miller Eric Wolf

William Hinton George Grant

"The Freedom of a Christian" "An Address" and other selections The Protestant Ethic and the Spirit of Capitalism Meditations on First Philosophy Principia "Author's Letter" Leviathan, Books I and II Second Treatise of Government* An Inquiry Concerning Human Understanding (a selection).* Foundation of the Metaphysics of Morals (first section) * "The Significance of the Newtonian Synthesis" The Construction of Modern Science ** The Discourse on the Origin of Inequality The Social Contract Faust Parts I and II° Prince Frederick of Homberg Signs of the Times, "The Mechanical Age" The Old Regime and the French Revolution Darwin* Pere Goriot On Liberty Socialism Utopian and Scientific "Letters on Historical Materialism' Marx and Engels Manifesto of the Communist Party Wage Labour and Capital For a Ruthless Criticism of Everything Existing A Contribution to the Critique of Political Economy, Preface

> Mary Barton or North and South Hard Times Sybil Alton Locke

On the Genealogy of Morals Imperialism The Enemy Modern Capitalism Death of a Salesman Peasant Wars of the Twentieth Century Turning Point in China Technology and Empire (three essays) Lament for a Nation, **Chapter Five**

Divinity

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

(Vind.):

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

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's Bachelor of Divinity (B.D.) Registrar on request.

Master of Sacred Theology (M.S.T.)

In conjunction with the Institute of Pastoral Training, the University of King's College offers the degree of Master of Sacred Theology in the field of pastoral care. Particulars concerning regulations for this degree may be obtained from the Executive Director of the Institute of Pastoral Training at the University of King's College. A degree in new registrations after November 30, 1973) 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 established the diploma of Associate of King's 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).

Students who have received the M.Div B.S.Litt., or B.S.T. and graduate students who have qualified for the L.Th. may proceed to the final examination for the extramural degree of B.D. under the General Synod Board of Examiners. By agreement among all Anglican Theological Colleges in Canada, the Degree of Bachelor of Divinity is now awarded only by examination by the Board of Examiners of General Synod. (No

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 upon application to the Registrar. (No new registration after November 30, 1973).

astitute of Pastoral Training

niversity of King's College antic School of Theology cadia Divinity College

organization of the Institute in collaation with Pine Hill Divinity Hall, the winity School of Acadia University, Presterian College, (Montreal), Medical culty of Dalhousie University, pioneered is modern development in Theological ducation on the Canadian scene. It is the bjective of the Institute to bring pastors d theological students face to face with suman misery as it exists both in and out of stitutions, through courses in Clinical restoral Education in both general and nental hospitals, reformatories and juvenile ourts, homes for the aged, alcoholism meatment centres, and other social agencies. In this connection, the Institute now sponors six-week courses in Clinical Pastoral Education, usually commencing mid May, at the Nova Scotia Hospital, Dartmouth mental), the Nova Scotia Sanatorium, Kentille, the Victoria General Hospital, Halifax, the New Brunswick Provincial Hospital in Lancaster, King's County Hospital, Waterville, and Springhill Medium Correctional Center, Springhill.

While the above mentioned courses aim primarily at increasing the pastoral compeence of the parish minister or church work-

Extension Courses

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

Registration for all courses will occur on he evening of September 24 from 7:00 to 10:00 p.m., fees being payable at that time.

1974-75 Courses

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

These lectures attempt a practical application of the theory of communications. Subjects discussed include: History and Philosophy of Public Relations, communications research (persuasion and public opinion), interpretation of problems,

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

A recent development in this field was the formal constitution in December 1965 of "The Canadian Council for Supervised Pastoral Education". In 1974 the Canadian Council for Supervised Pastoral Education officially adopted the shorter and now more appropriate title of Canadian Association for Pastoral Education which seeks to co-ordinate training across Canada, establishing and maintaining high standards, accrediting training courses, and certifying supervisors. The Institute of Pastoral Training has links with the Council, a former Executive Director served as President of the Council and as a member of the Board of Directors, and 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 Theology who has directed the six-weeks course at the Nova Scotia Hospital, Dartmouth, and now directs courses at the V.G. Hospital,

planning and action evaluation, improving PR standards, image, language of public relations, the publics (shareholders, employees, customers, the community), PR for business and industry, utilities, welfare agencies, churches, schools, government; technique of communications (mass media, printed and spoken word, films, speeches, displays, advertising), case histories. Seminar discussions include letter writing, human conflicts and publicity.

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

These lectures attempt a practical application of journalistic theory and mechanics. Subjects discussed include: Canons of journalistic practice, newspaper organization, ethical standards, physical aspects of a newspaper, beginnings of 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,

King's College Chapel

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has been certified as a Chaplain Supervisor, by the Canadian Council and also by the Association for Clinical Pastoral Education in the United States.

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

A number of one-day and four-day workshops have already been held in various localities in the Maritimes, and information as to what is involved in setting one of these up may be obtained from the Secretary of the Institute.

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

science, education, crime, business and industry, sports, etc.), editing the news.

- C. Is a Dialogue Between Christians and Marxists Possible? Instructor: H. G. Yesus, B.A., M.A. 8 sessions of 2 hours each. October - November
- D. A Canadian Identity: Our National Dream Instructor: J. A. Lennon, B.A., M.A. 8 sessions of 2 hours each. October - November
- E. Detente and Dispute: The Chinese -Russian - American Triangle. Instructor: H. G. Yesus, B.A., M.A. 8 sessions of 2 hours each. Mid January - Mid March
- . The Uses and Abuses of Propaganda 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 the Modern World. Instructor: C. J. Starnes, B.A., S.T.B., M.A. 8 sessions of 2 hours each. Mid January - mid March

Fees

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 registration (including Sunday, September 8) until the day following the last regularly scheduled examination in the Faculty of Arts and Science (for students in this Faculty). The annual charges for these periods for board, light, meals, are as folfows:

Double	Single
\$1150.00	\$1225.00
\$1150.00	\$1225.00
(Suite)	\$1300.00
	Double \$1150.00 \$1150.00 (Suite)

A graduating resident student may stay in residence without charge after these periods up to and including the last day of Encaenia activities, but will be expected to pay for meals during this time.

In exceptional circumstances a student may seek 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 deposit of \$650.00 at commencement of the first term, the balance of the bill to be paid in 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 accommodation has been received by the Registrar or the Deans before August 15.

Resident students as well as non-resident, must pay the following at commencement of the first term: Student Body Fees \$40.00, Gown \$15.00, and any tuition fees payable to the University of King's College. (Gowns for non-resident students are optional).

Surcharges

If deposit is not paid within 21 days of registration day a surcharge of 111% will be charged. The same applies to charges pay-able by non-resident students.

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

(All fees noted are for 1974-75. They are subject to change for 1975-76.)

Caution Deposit

On enrolment each resident student is required to make a deposit of \$25.00 as caution money to cover damage done to furniture, etc. This amount, less deductions, will remain a credit on the books until the 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 students in residence are held responsible for the care of furnishings within their respective rooms. Losses or damages incurred during the session will be charged to the caution deposit.

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

The items above, together with a key deposit of \$5.00 are payable at King's Business Office.

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, laboratory fees, library fees, examination, diploma and registration fees, instrument rental and hospital clinics where applicable.

Incidental Fees are collected for the Students' Union.

(These charges include incidental fees of registration and library only):

Part-time students are students registered for three credits, or less. Total fees must be

one full credit class \$150.00 Students registering for 1/2 credit class \$75.00

1/3 credit class \$50.00

paid at registration.

Audit students (This charge does not entitle students to any privileges other than attendance at class);

Students not candidates for University credit who wish to take one university lecture class because of their interest in it. No credit or official transcript will be issued to such students. Total fee must be paid at registration.

1 full credit class \$75.00 1/2 or 1/3 credit class \$37.50

(A student enrolled at King's is required to pay the King's Council of Students' fee of \$40.00, but not the Dalhousie Council Students' fee, or the Rink and Athletic Field fee. However, any King's student who wishes to participate in the Dalhousie Council of Students' activities must pay both of the above Dalhousie fees. Dalhousie students resident at King's College must pay King's College Council of Students' fee of \$30.00).

Divinity

Full-time students, M.S.T. \$575.00 Part-time students for each semester course at Master's level \$60.00 Arts and Science courses, when necessary \$150.00 A.K.C. Registration . . on application \$10.00 A.K.C. Examinations: per paper to be paid by the preceding December 1, and nonrefundable\$ 5.00

Regulations for Payment of Tuition Fees

Payment of tuition fees for Arts and Science students is to be made to Dalhousie University Business Office. Please note that cheques are to be made payable to Dalhousie University. A charge of \$5.00 is made 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 credits.

Payment

Fees are payable in full at registration or if preferred, in two instalments, the first payable at registration, the second instalment on or before January 23.

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 issued at registration will show the balance, if any, which is outstanding.

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

alties for Late Payment

dents unable to pay the first instalment for fees may register conditionally. A Ity of \$5.00 per day, to a maximum of 100, commencing on the first business following the regular registration day, be charged. To accounts outstanding r September 30, an additional charge of g interest from October 1 will be added.

unalty and interest charges will be waived students paying accounts from provincial who pay by October 31 and give idence of having received the loan from he province. Students who produce evilence that their application for a provincial has been rejected and pay accounts by netober 31 will also have penalty and inrest charges waived.

udents who receive payment or notificaof rejection of application from the province after October 31 and pay accounts othin seven days may have the penalty harges waived, but interest will be charged om October 1. Proof must be provided to he Awards Officer that an application for a provincial loan was made prior to August 15 md that payment or notification of rejection of application had not been received by ctober 31.

nterest at 11%% will be charged on second stalments outstanding after January 23. No examination results will be released, nor will the student be permitted to register for another session until all accounts are paid in full. The names of graduating students whose accounts are not completely paid by April 25 will not be included in graduation

Part-time Students - Fee must be paid at registration.

Audit Students - Fee must be paid at registration

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

Late Registration

Students are required to register on the

regular registration dates as shown in the Academic Schedule. Late registration requires the approval of the Registrar, and payment of an extra fee of \$5.00 per day, to a maximum of \$20.00.

Diplomas (Divinity) Diploma fees are payable at registration in the final year of the course, A.K.C. M.S.T. B.D., A.Th.

Examinations

An application for a supplemental examination must be accompanied by the proper fee: Supplemental and Special (per examination)\$15.00 Each examination written at an outside 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 three months 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 Registrar prior to May 9 if not planning to be present to receive a degree. If this notification is not given and the student does not attend the graduation ceremony, a 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 released.

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 issued until all charges owing to the university have been paid in full.

Student Photograph

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

Laboratory Charge No laboratory deposit is charged. Students

will be charged for careless or wilful dam-

		\$12.00
		20.00
	•	40.00

Parking on the Campus

Each student who has a car on campus may obtain a parking permit from the General Office upon the presentation of insurance and license number for a charge of \$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 to any refund of nor exemption from unpaid fees.

A student withdrawing within two weeks of the date of the commencement of classes will be entitled to full refund of fees paid.

A student withdrawing after two weeks of the date of commencement of classes will be charged in full for the incidental fees and may receive a refund of the balance on a proportional basis, calculated in monthly units; a full charge will be made for the month in which the withdrawal is approved, including the month of December.

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

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

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

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

Fee For Student Organizations

At the request of the King's student body, a fee of \$40.00 is collected on enrolment from each student who takes more than one class. This fee entitles the student to the privileges of the various students' organizations and clubs, and a copy of the King's College 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 Radbourne Miss Jean Sherrard Mr. Hagos Yesus

Residence life at the University is encouraged for all students because the community life there enjoyed forms an essential part of the student's education. Exceptions will be made in the case of a student wishing to reside in a home or lodging outside the university.

All students registered at King's College are guaranteed residence accommodation should they wish it, on completion of the form for application for accommodation, and subject to the approval of the application 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 the supervision of the Dean of Residence. Female students live in Alexandra Hall, a residence accommodating 100 women, under the supervision of the Dean of Women.

All rooms are furnished with bed, dresser, desk, and chairs. Students are required to provide their own bedding and towels, and to attend to their own laundry arrangements. 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 rooms 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 double and single rooms are available and 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 resident students in Prince Memorial Hall, erected in 1962.

Students accepted in residence by the 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 be charged with room for the complete



It should be noted that the University as sumes no liability for personal property in the case of theft or damage.

The residence will be open for new students from the evening of September 7, 1975, and for returning students September 9, 1975 until December 20, 1975, and from the even ning of January 4, 1976, to the morning of May 14, 1976 (Students not in their gradu. ating year will be expected to vacate the residence 24 hours following their last examination). Resident students in faculties whose terms exceed these periods may reside in the College by permission of the deans on payment of rent; and, when Prince Hall is open, meals may be eaten by arrangement with the Deans.

Except under unusual circumstances and with the permission of the appropriate Dean. no student is permitted to occupy the residences over the Christmas Holidays.

Confirmation of accommodation will not be made until the student has been accepted by the University for the coming session and a \$50.00 residence deposit has been received by the Business Office. Deposits for all applications made prior to July 15th 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 15th 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 available, to a maximum of three nights per week per student on a first-come first served basis for a nominal per diem charge. Lockers may be rented for 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 community. Further details on the operation of these "hostels" will be mailed to each Day Student early in the fall term.

the University of King's College sudents' Union

the University of King's College Students' nion is the organization in which the stuents enjoy their right of self government. be Constitution revised in 1964, provides a democratic government in which the articipation of every student is expected. the students endeavour to play a deternining role in every aspect of university life. the Union's main organs are the Student ssembly, the Executive of the Students' Inion, the Students' Council. The power of self discipline is exercised through the Inion's Male and Female Residence Counils and the Campus Police.

The Union operates through a number of remanent committees, e.g.: the Academic Committee, the Social Committee, committees on the constitution, elections, finnces, Dalhousie relations, awards, etc.

King's College Women's Amateur Athletic Association

The object of this association is the promoion of women's amateur sports at the College. The K.C.G.A.A.A. is a member of the Atlantic Women's Intercollegiate Athletic Association and competes in the Intermediate section of this Association, field hockey, volleyball, and basketball are played at the Intercollegiate level, and loor hockey, badminton, table tennis, and swimming are available on a regularly versities complete the Society's wide range scheduled basis in the University Gymnasium.

King's College Amateur Athletic Association

The object of this association is the promotion of amateur sports at the College. The K.C.A.A.A. is an honourary member of the Atlantic Intercollegiate Athletic Association and a full member of the Nova Scotia College Conference. The University competes in interscholastic competition in the following sports: soccer, golf, hockey, volleyball, and basketball. There is also strong inter-bay or inter-residence competition in volleyball, road racing, softball, hockey, volleyball, basketball, and floor hockey. The gymnasium also has available or personal use a swimming pool, weight lifting room, and regulation size gymnasium.

King's College Dramatic and Choral Society

This society was founded in 1931 to further interest in dramatic and choral work. The

student Organizations programme of the society might include, for example, an evening of one-act plays during the first term, and a three-act play. In addition, the society sponsors an inter-bay 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 direction of experienced instructors. King's students are invited to participate in the activities and productions of the Workshop on the same basis as Dalhousie students.

The King's College Record

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

The Quintilian Debating Society

This Society was founded in 1845. Quintilian sponsors interbay debates in competition 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 Debating. During the Easter weekend of each year a High School competition is co-ordinated by the Society, the Quintilian 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 Uniof academic activities.

The Haliburton

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

The Ancient Commoner

The "Ancient Commoner" is the students newspaper.

The Students' Missionary Society

This society was founded in 1890. Its object is to promote interest in missionary work and to further the missionary work of

the 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" upon amassing 160 points and a gold "K" upon amassing 250 points.

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

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 student who, in the opinion of his fellows, contributes most to residence life in King's.

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

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

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

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

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 the winner of the Scholarship during its tenure. This arrangement increases the value of the Scholarships Funds, as it enables other students of scholarly attainments to attend the University.

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

No special application forms are required as all students who have been admitted are automatically considered for a scholarship. Students who hope to receive scholarships Alumni "Annual Giving" Scholarships are encouraged to apply for admission by March 15.

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

ARTS AND SCIENCE

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 of King's College and proceeding to the degree of Doctor of Medicine at Dalhousie University. It is renewable yearly provided that the student maintains a first class average, and lives in residence each year until the regulations of Dalhousie Medical School require otherwise.

By the terms of the will preference is given to a descendant of Dr. William Johnstone Almon.

Henry S. Cousins Scholarships — (a) \$1000 a year, maximum \$4000 for four years, (b) \$750 a year; maximum \$3000 for four 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 entering the Foundation Year Programme only.

Susanna Almon Scholarships - \$750 a year, maximum \$3,000 for four years. Established 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 from \$300 to a maximum of \$1000 for students entering the Foundation Year Programme only.

Board of Governors Scholarships - \$350 a year, maximum \$1,400 for four years. Established 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 University, this scholarship is open to a Science student entering the Foundation Year Programme.

Halifax-Dartmouth Scholarships - \$300. An entrance scholarship for students entering the University from the Halifax-Dartmouth area.

\$600. Established by the Alumni Association, these scholarships are intended for entering 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 holders 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 high academic standing entering the University to study Arts and Science and who is a resident, or a descendant of residents, of Charlotte County, New Brunswick. Failing any qualified applicants from this county in any one year, the bursary for that year only will become available to a student resident anywhere outside the Maritime Provinces of Canada. The holder must live in residence

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 School, Rothesay Collegiate, Edgehill, Netherwood or Halifax Ladies College; and one unrestricted.

Keating Trust Scholarships - \$125. Awarded from a bequest to the College from the Rev. J. Lloyd Keating to students entering College with outstanding marks in Science, these scholarships, according to the will of the donor, are intended to encourage students, and preferably Divinity students, in the study of chemistry and physics, and scholars will be required to take at least one class in physics or chemistry during the year in which they hold the scholarship.

Nova Scotia Power Corporation Scholar, ship - \$300 a year, maximum of \$1200 for four years. The Nova Scotia Power Cor. poration offers an entrance scholarship of \$300 a year, tenable for three or four years.

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

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

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

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

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

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

Walter Lawson Muir Bursary - \$175. To 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 previous year. Endowed by Mrs. W. L. Muir.

The United States Scholarship - \$500. Awarded annually by Friends of New York State Corporation, to a student resident in 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. In any year the scholarship may be divided among two or more students.

erial Oil Higher Education Awards. al Oil Limited offers annually free on and other compulsory fees to all chilor wards of employees and annuitants proceed to higher education courses. awards are tenable for a maximum of years, or the equivalent, at the underate or bachelor degree level.

ther information and application forms be obtained from The Secretary, Comttee on Higher Education, Imperial Oil mited, 111 St. Clair Avenue West, Toronto Ontario.

o.D.E. Bursaries, value \$100 to \$200. warded to entering students who show ademic ability and financial need. Ad tress applications to Provincial Education cretary, Provincial Chapter, I.O.D.E., 137 Parker St., Halifax, N.S. B3K 4T6. oplications open March 1, close May 1.

ing's College Bursaries - The University fers a limited number of small bursaries to tering students of satisfactory academic anding and in need of financial assistance.

B Scholarships, Bursaries and Prizes Awarded in Course

he Honorable Ray Lawson Scholarships -1600 and \$400. Established through the enerosity of the Hon. Ray Lawson, Chanellor of the University 1948-56, these scholships are awarded to students entering heir second year. Preference will be given o students who hold no other scholarship.

The President's Scholarship - \$250. Three cholarships of \$250 will be awarded to students entering their second, third and fourth years respectively. Preference will be given to students who hold no other scholarship.

The Stevenson Scholarship - \$120. Found ed by the Rev. J. Stevenson, M.A., (someme Professor of Mathematics), of the value of \$120 a year tenable for two years, this scholarship will be awarded to a student with the highest average on the five best subjects in the first year examinations.

Alexandra Society Scholarship — \$300. An annual award offered by the Alexandra Society of King's College to a woman student who stands highest in the second or third year examinations, provided that she lives in residence. If the student who stands highest is otherwise ineligible, the award shall e left to the discretion of the Scholarhip Committee.

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

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

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

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

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

The Akins Historical Prize - \$100. Founded by T. B. Akins, Esq., D.C.L., Barrister-at-Law and Commissioner of Public Records. The award is made for the best original study in Canadian History submitted in competition.

Essays must be handed in, under a nom de plume, with the writer's name in an attached envelope, on or before the 1st day of April of the year concerned. Essays become the property of King's College.

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

The Henry D. deBlois English Prize - \$15. The late Rev. Henry D. deBlois, D.C.L., a graduate of King's College, left the sum of \$200 to the Governors of the College to establish a prize in English. Awarded to the student of the 2nd, 3rd or 4th year in Arts or Science who submits the best essay on some subject relating to English Literature.

For conditions, apply to the Registrar. All essays must be in the hands of the Registrar of King's College by April 10.

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

The McCawley Classical Prize - \$35. Established as a testimonial to the Rev. G. McCawley, D.D., on his retirement from the office of President.

Open to students who have completed their first year.

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

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

The Binney Bursary - \$50. Founded in the year 1858, by Miss Binney, sister of the late Bishop Binney, and daughter of the late 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 scholarship.

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

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

the Rev. G. O. Cheese, M.A. (Oxon.), in memory of his former tutor, the late T. W. Jackson, M.A., of Worcester College, Oxford.

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. Prince for annual award to both Dalhousie and King's Students.

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

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

1909 Medley Kingdom Parlee, B.A., '08

- 1910 Robert Holland Tait, B.C.L., '14
- 1913 Arthur Leigh Collett, B.A., '13
- 1916 The Rev. Douglas Morgan Wiswell, B.A., '14 M.A., '16
- 1916 The Rev. Cuthbert Aikman Simpson, B.A., '15, M.A., '16
- 1919 William Gordon Ernst, B.A., '17
- 1924 The Rev. Gerald White, B.A., '23, M.A., '24
- 1925 M. Teed, B.A. '25
- 1936 Allan Charles Findlay, B.A., '34
- 1938 John Roderick Ennes Smith, B.Sc., '38
- 1946 Nordau Roslyn Goodman, B.Sc., '40, 1 M.Sc., '46
- 1949 Peter Hanington, B.A., '48
- 1950 Ian Henderson, B.Sc., '49
- 1950 Eric David Morgan, B.Sc., '50
- 1955 Leslie William Caines, B.A., '55
- 1962 Roland Arnold Grenville Lines, B.Sc., '61
- '63
- 1969 John Hilton Page, B.Sc., '69

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

The Canadian Federation of University Women Fellowships - \$1500 to \$2500. For 'by the President and Divinity Faculty to the information apply to the Registrar.

The Jackson Bursary - \$25. Founded by The Imperial Order Daughters of the Empire Post-Graduate Scholarships - \$5000 (for study overseas) and \$3000 (for study in Canada). For information apply to the Registrar.

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

> Commonwealth Scholarships. Under a Plan drawn up at a conference held in Oxford in 1959, each participating country of the Commonwealth offers a number of scholarships to students of other Commonwealth countries. These scholarships are mainly for graduate study and are tenable in the country making the offer. Awards are normally for two years and cover travelling, tuition fees, other university fees, and living allowance. For details of the awards offered by the various countries consult, the Registrar's office or write to the Canadian Universities Foundation, 75 Albert 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 1st of previous year. Information may be obtained from Rotary Clubs or the Registrar.

DIVINITY

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

Owen Family Memorial Scholarships - Two of \$250. Established by Mr. and Mrs. D. M. Owen, in memory of the Owen family, tenable for one year, but renewable, and open to applicants who are Nova Scotia born, and resident therein, and are or are 1963 Peter Hardress Lavallin Puxley, B.A., about to become theological students preference being given (1) to native residents of the town of Lunenburg, and (2) to native residents of the County of Lunenburg.

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

The Scholarship may be awarded annually most deserving member of the present or

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

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

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

This examination will consist of two papers: a. A paper on the content of the Old and New Testaments, and

b. A paper on A. H. McNeile's Introduction to the New Testament (revised edition by C. S. C. Williams) Oxford, 1953. Awards will not be made every year.

The Daniel Hodgson Scholarship - \$240. Founded in 1883 by Edward J. Hodgson and the Reverend G. W. Hodgson in memory of their father Daniel Hodgson, who died about that time. This Scholarship of an annual value of \$60, tenable for four years, is for the purpose of encouraging students to take an Arts Degree before entering upon the study prescribed for Holy Orders. Candidates, who must be residents of Prince Edward Island, shall file their applications and certificates of having passed the full Arts matriculation require ments before August 15th, and must not be over 24 years of age at that time. They

must also satisfy the Diocesan Committee Holy Orders as to their aptitude for the vinistry of the Church. At the end of each cademic year the Scholar shall file with the rustees a certificate from the President or secretary of the University "that during the ast year he has resided in College (or has een excused from such residence) and has Hended the full Arts course in the College", ngether with a certificate that his moral onduct, his attention to his studies and his eneral conduct have been satisfactory to Board of Governors.

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

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

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

Order of The Eastern Star - \$300. Four scholarships are to be awarded, primarily on the basis of financial need, to 2nd or 3rd 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, who was an active Lay Reader and prom-

inent Layman of the Diocese of Nova Scotia for many years.

The scholarship is to be made to an outstanding and deserving Anglican Divinity Student at the conclusion of his final year of training and who is intending to enter the ministry 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 elsewhere, provided that the student intends to return to Nova Scotia for ministry in that Diocese.

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

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

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

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

John Clark Wilson Memorial Bursaries -\$100 each. Established in 1947 by Miss Catherine R. Kaiser, in memory of John

Clark Wilson. Two bursaries of \$100 each, tenable for one year. Awarded to Divinity students deemed worthy of financial help.

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

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

Moody Exhibition - \$100. The "Catherine L. Moody" Exhibition of \$50 a year for two years is awarded every two years to the student entering the second year preparing for Holy 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 fund of \$2,000 to be awarded annually to the Divinity student who gains the highest aggregate of marks at the end of his penultimate year, provided that in that year he takes the regular full course in Theology.

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

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

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

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

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

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

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

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

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

Prince Prize in Apologetics - \$60. Established by a bequest of the late Dr. S. H. Prince. Awarded every alternate year, at the discretion of the Faculty. (Next award 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 a year of completing his Arts course. If there is no student meeting the above requirements the award will be left to the discretion of the Divinity Faculty.

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

A. Stanley Walker Bursary - \$200. Awarded by the Alexandra Society of King's College. To be given to an Anglican student at the Atlantic School of Theology for the year 1975-76.

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

Divinity Grants. Grants to aid students in

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

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

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

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

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

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

Kenelm Eaton Memorial Scholarship - \$60. This scholarship is provided by the Synod of Nova Scotia as a memorial to The Hon. Captain Kenelm Edwin Eaton, B.Sc., L.Th., who made the supreme sacrifice while serving as a Chaplain in Italy, August 31, 1944. For particulars apply to the 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 Fund are those who have, at one time, been full-pledged members of any Parochial C.B.L. branch in Canada. Particulars are available from the 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

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final year in Theology, who are ready to take up missionary work, either in Canada or overseas. Academic standing and financial need are taken into account in making the award.

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

The Florence Hickson Forrester Memorial Prize — \$100. The prize, presented in memory of the late Mrs. Forrester, by here husband, is to be awarded on Encaenia 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 provided always that the standard is sufficiently high.

Bibliography:

T. W. Manson: The Sayings of Jesus (SCM) I. Jeremias, The Sermon on the Mount, (Athlone Press)

F. W. Beare: The Earliest Records of Jesus, (Blackwell) pp. 52-69 and 95-98.

H. K. MacArthur: Understanding the Ser. 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 and education of divinity students who were before being enrolled residents of Halifax and members of a Parish Church there, and who are unable to pay the cost of such maintenance and education.

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

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

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

The Ott Reading Prize - \$25. Established by Dr. T. Gordon Ott. Awarded annually to a student of Divinity for the best reading of the Bible and the Services of the Church.

he Ott Preaching Prize - \$25. Establishby Dr. T. Gordon Ott. Awarded anly to a student of Divinity for the extempore sermon of an expository

william A. and Kathleen Hubley Memorial sursary - \$175. This bursary is designed assist students from St. Mark's Parish, dalifax, and failing a suitable candidate hen from any parish in the Diocese of yova Scotia, who are studying for the sacred Ministry at any recognized College the Anglican Communion, preference heing given to students studying at the atlantic School of Theology. The award is made on the basis of need and may be renewed provided a certain acceptable standard is attained. The recommendations of the Rector of St. Mark's and the Divinity Faculty are necessary conditions. The hursary must be applied for annually.

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

older men preparing for ordination. The award is to be made by the Divinity Faculty.

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

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

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

Halifax Deanery Laymen's Association Burs-

A bursary in the amount of \$100 or more awarded to a deserving Divinity student nominated by the Divinity Faculty.

Societies Connected With The College

Alumni Association of King's College

This Association, incorporated in 1847 by Act of the Legislature, consists of graduates of the welfare of the University.

The Association maintains annual scholarships.

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

The Officers of the Association in 1974-75 Patroness, President. The Rev. D. F. L. Trivett, 2271 MacDonald

St., Halifax, N.S.

Vice-President, Ms. Mary L. Barker, 1149 Wellington St., Hon. Vice-President, Halifax, N.S. B3H 3A2

Treasurer, Dr. Henry Muggah, Q.C., 6033 Belmont Road, Halifax, N.S.

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

Halifax in 1902 as the Women's Auxiliary to the College. It maintains an annual scholarship and bursary and supports the Alexandra Special Lecturer in Pastoralia (Director of Parish Field Work).

Officers 1974-75

Mrs. W. W. Davis.

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

Mrs. G. F. Arnold. **Immediate Past President**,

Miss Miriam Morris, 2438 Gottingen St., Halifax, N.S. President.

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

Amherst Deanery Bursary - \$150. Offered annually by the Brotherhood of Anglican Churchmen in the Deanery of Amherst.

It is awarded to a needy and worthy student from the Amherst region. If no candidate is available from this Region, in any one year, then any needy and worthy Anglican student would be eligible.

LOAN FUNDS

Edith Mabel Mason Memorial Students Loan Fund.

Established by Alumni and friends as a memorial to the late Miss Edith Mabel Mason, M.A. a former Dean of Women and Professor of Modern Languages. Available to women students entering upon their third or fourth year. Application to be 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 by requesting application forms from the provincial authority in order to have the money available for registration.

Vice-Presidents,

Mrs. A. MacKeigan, 68 Reserve St., Glace Bay, N.S.

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

Mrs. J. E. Lane, 211 Willett St., Apt. 206, Halifax, N.S.

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

President, Joseph Calvin Atkinson **Vice-President Christine Elizabeth Zinck** Secretary, Kathleen Annette Teresa Soares 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. Colonel (Ret'd.) Indian Army, Meerut, India
- Master of Sacred Theology Sharam, The Reverend Henry John, B.A., B.D., Halifax, N.S.

Bachelor of Arts Degree Adams, Susan Marie, Middleton, N.S. Atkinson, Carl Stuart, Cape Sable Island. N.S. Atkinson, Joseph Calvin - Distinction, Glace Bay, N.S. Balcom, Berton Alexander (Honours in History), Dartmouth, N.S. Barrett, Lawren Gene, (First Class Honours in Sociology), Fredericton, N.B. Chandler, Mary Catherine, Liverpool, N.S. Cole, James Edward, Port Elgin, N.B. Enwood, Morgan Wayne, Sydney, N.S. Fillatre, Jean Margaret, Halifax, N.S. Foley, Michael Earl, Head of Jeddore, N.S. *Fralick, Adah Royd, Moser River, N.S. Gillespie, Melissa Mae, Eureka, N.S. Gregory, Martha Louise Mowbray, Halifax, N.S. Harris, Susan Elizabeth, (Honours in English), Halifax, N.S. **Hollohan, Brian Douglas, New Waterford, N.S. **Howe, Robert Walker, Kentville, N.S.

*Hutchinson, Carol-Ann Elizabeth, Dartmouth, N.S. Kamperman, Barend Wilhelm, Oakfield, N.S.

*Keeping, Gerald Victor, North Sydney, N.S.

McArel, John Lawrence, Glace Bay, N.S. McNutt, Carol Lee, Truro, N.S. Mitchell, Derek Verdun, Pierrefonds, P.Q. Mossman, Patricia Elizabeth, Bridgewater, N.S.

••Pelrine, Ella Maria Jacqueline, Halifax, N.S.

**Raniseth, David Hubert, Sydney, N.S. Reeves, Deborah Jean, West Northfield, N.S.

*Skinner, Philip Blane, North Sydney, N.S. Soares, Kathleen Annette Teresa, Halifax, Jan Wellem

Weaver, Anne Madeline, Sydney, N.S. Wilson, Nora Jean, Rio de Janeiro, Brazil Zinck, Christine Elizabeth, Chester, N.S.

Honours Certificate

N.S.

Borlase, Timothy James, B.A., (Honours in Theatre), Lewisville, N.B. D'Orsay, John Vincent, B.A., (Honours in Sociology), Dartmouth, N.S.

Bachelor of Science Degree

Bernier, Peter Francis, Sydney River, N.S. Chisholm, Elizabeth Anne Mary, Westmount, N.S. *Corkum, Robert Harding, Middle LaHave,

N.S. ••Fitt, John Wilson, Dartmouth, N.S.

Hinch, Patricia Rae, Halifax, N.S. Hunter, David Norman, Halifax, N.S. Jamieson, John Wayne, B.A., Halifax, N.S. MacLean, Roderick Scott, Truro, N.S.

° Ormiston, Arthur Alexander, Sydney, N.S. Paton, Andrew James, Halifax, N.S. ° Thomson, Moira Ann, Fredericton, N.B.

Vondette, Christopher Stephen, B.A., Bedford, N.S.

••Weidhaas, Frederick William, Bridgetown, N.S.

Divinity Diploma: Associate of King's College (Nova Scotia) McCall, The Reverend Harry Lambert,

Dip.Th., Marion Bridge, N.S.

Certificate — Clinical Pastoral Education Pitt, The Reverend John Victor Cavill, Dartmouth, N.S.

Degrees Awarded by the **Atlantic School of Theology**

Bachelor of Theology

Pitt, The Reverend John Victor Cavill, Dartmouth, N.S. Swain, The Reverend John Herbert, Halifax, N.S.

*Conferred during the session • •In absentia

Encaenia Awards

Arts and Science

The Governor General's Medal, Lawren Gene Barrett The President's Scholarship (Third year), David Secord The President's Scholarship (Second year), Eric Simpson The President's Scholarship (First year), John Matheson Alexandra Society Scholarship, Barbara Meier The Stevenson Scholarship, Peter Bryson, Margaret vonMaltzahn The Lawson Prize, Geoffrey Henderson

Dr. M. A. B. Smith Prize, Brent Halford Bishop Binney Prize, Brent Halford The Beatrice E. Fry Memorial Prize, Man

Bremner The Zaidee Horsfall Prize in Mathematics Gordon Brown, Margaret vonMaltzahn The Almon-Welsford Testimonial Prize

Robert Nickerson The McCawley Classical Prize, Nyckola

The Binney Bursary, Donna MacAulay Charles Cogswell Bursary, Robert Nickerson The Harry Crawford Memorial Prize, Donna MacAulay The Jackson Bursary, Robert Nickerson The Claire Strickland Vair Scholarship **Geoffrey Henderson** The Akins Historical Prize, Berton Balcom 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 The Archdeacon Forsyth Prize, Vincent McBain Tobin, The Reverend John Victor

Cavill Pitt The Shatford Pastoral Theology Prize, The

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 Reverend John Herbert Swain

The George M. Ambrose Proficiency Prize, Keith Allan Hamlin

The Prince Prize in Apologetics, The Reverend John Victor Cavill Pitt

The C. Pennyman Worsley Prize, Donald Eugene Routledge

Entrance Scholarships and Bursaries Awarded May, 1974 (Arts 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

Mary Whyte

Jifax-Dartmouth Entrance Scholarship

oan Allwood vnne Drysdale hn MacLeod heena Masson Kathy Oakley ne Townsend pebra Williams

Jumni Scholarship

aVerne Cluett Kathleen Grant

Jumni "Annual Giving" Scholarship

David Coleman Douglas Heighington Nancy Vondette

Nova Scotia Teachers College Bursary

Sharon Shearer

Walter Lawson Muir Bursary

Kathleen Grant

Winfield Memorial Scholarship

Kathleen Grant

Keating Trust Scholarship

Barbara Tilley

Deihl Bridgewater Bursary

Cynthia Campbell

Agnes Buffett Barry Corkum Wendy Davis Helen deMarsh **Christopher Flerlage** Kathy Hatcher David Maynard Alberta Schaap

University Entrance Scholarship

Gary Biddle Lynne Sherman

University Bursaries

Patricia Clattenburg Vernon Dawson Donald Donovan **Barbara** Tilley

The United States Scholarship

Jill Ceccolini

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 Administration

2. Subject Grouping

A. Languages French German Greek Latin Russian Spanish

Anthropology

Economics

Psychology

Sociology

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

C. Social Sciences **Political Science**

The Faculty is in the process of reviewing its system of

numbering classes. Most classes are numbered with a three digit number; others, however, are numbered with a four

digit number. The following general criteria apply to both

kinds of numbering. Students are urged to consult the

relevant departments if they are confused by any specific

Classes are numbered to indicate their general level and the year of study in which they may first be taken. The first digit

in either a three or four digit number normally indicates the year of study. Thus, classes in the 100 + series are

introductory and can normally be taken by fully matri-

culated students without any special prerequisites. Comple-

tion of a 100-level class is normally a prerequisite for admission to further classes in the subject. Classes in the 200

+ series, 300 + series and 400 + series are normally taken in

Certain classes in the 200, 300, or 400 series are restricted to

Honours students and may not be taken by students in the

General Degree programmes, except with special permission

Classes in the 500 + and 600 + series are normally regarded as

graduate classes; however, some may be open to senior

the second, third and fourth years respectively.

Hebrew, Arabic, Coptic, and Syriac.

3. Numbering of Classes

numbering system.

of the instructor.

D. Sciences Biochemistry Biology Chemistry Geology

Theatre

Mathematics **Physics** Classes are offered also in other subjects: Architecture, Art

History, Commerce, Computer Science, Education, Engineering, Oceanography, Humanistic Studies in Science,

ment.

or earlier.

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

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The Letters A and B denote classes given in the fall and

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

undergraduates with the permission of the department or instructor concerned.

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

4. Programme Advice

4.1 Entering Students

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

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

4.2 Students who have Completed the First Year

Every student entering the second year is assigned a Facultyadvisor with whom he must consult regarding his programme. Normally the department concerned assigns an advisor to a student once he has declared his major subject. Students seeking to enter an Individual Programme (section 5.2.3 below) or an Unconcentrated Honours Programme (section 5.3.5.2 below) must approach the Chairman of the Programme Advisory Committee (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 Education regarding their programme of study. Those considering music teaching should consult the Chairman of the Department of Music.

5. Bachelor of Arts/Bachelor of Science

General: three years-15 classes required Honours: four years-20 classes required

5.1 The First Year

5.1.1 Requirements

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

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

(c) One of the five classes chosen must be selected from a list of classes in which written work is considered frequently and in detail. These classes are approved by the Curriculum Committee and listed in the Programme Planning Guide.

¹Application of Regulations to students who entered in 1972

5.1.2 Recommendations

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

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

(b) Students should consider becoming fluent in French,

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

5.1.3 Special Options

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

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

5.2 General B.A. and B.Sc. - Requirements for the Second and Third Years

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

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

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

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

The rules governing each of these options are outlined below.

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

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

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

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

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

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

5.2.1.3 For the B.A., the major may be chosen from French German, Greek, Latin, Russian, Spanish, classics, English, history, philosophy, music, anthropology, economics, political science, sociology, or from any of the B.Sc. subjects except engineering

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5.2.1.4. For the B.Sc. the major subject must be chosen from biology, chemistry, engineering, geology, mathematics, physics, or psychology.

5.2.1.5 Electives may be chosen from any of the subjects listed in the preceding two paragraphs and from Architecture 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 Theatre 100.

5.2.2 Co-ordinated Programmes (B.A./B.Sc. General)

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

(a) that the equivalent of five class units constitute a normal vear:

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

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

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

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

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

5.2.3 Individual Programmes (B.A./B.Sc. General)

A student whose academic needs 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 of 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 constructing and 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 meet the requirements of either paragraphs 5.2.1 or 5.2.3, and may declare a new major subject.

5.3 Honours Programmes

Able and ambitious students are urged to enter an Honours Programme. These programmes entail a higher quality of work than that required for the general bachelor's degree. There are two types of honours courses: concentrated. involving a major concentration in a single discipline or a combined concentration in two related disciplines; and unconcentrated, involving breadth of study in several related disciplines. A student may transfer from the honours to the general programme without serious inconvenience, Students considering an honours course are advised to consult as soon as possible - preferably before their first registration - with the departments in which they may wish to do their

advanced work.

5.3.1 Acceptance

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

5.3.2 Application for Admission

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

5.3.3 Conversion to Honours of a General B.A., B.Sc., or B.Comm. Degree

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

5.3.4 Joint Honours: Dalhousie-Mount Saint Vincent

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

5.3.5 Requirements for the Second, Third, and Fourth Years

5.3.5.1 Concentrated Honours Programmes

(a) Honours in a major programme are based on the general requirement that the 15 classes beyond the first year of study comprise:

(i) nine classes beyond the 100 level in one subject (the major subject):

(ii) two classes in a minor subject satisfactory to the major department: and

(iii) four classes not in the major field.

(b) Honours in a combined programme are based on the general requirements that the 15 classes beyond the first year of study comprise: (i) eleven classes beyond the 100 level in two allied subjects.

not more than seven classes being in either of them; (ii) four classes in subjects other than the two offered to satisfy the requirement in the preceding clause.

(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 examination 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 first year of study comprise:

(i) twelve classes beyond the 100 level in three or more subjects. No more than five of these may be in a single

Study.

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subject; no less than six and no more than nine may be in two subjects. (ii) three other classes.

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

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

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

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

(d) At the end of an unconcentrated honours course, a student must obtain a grade of B- or higher on an honours essay or a comprehensive examination regarding his honours work. In addition, he must attain an average of B- in the required advanced classes which comprise his honours programme. Achievement of an average of at least A- on the honours essay or examination and in the required advanced 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 Bachelor of Science Degree from Dalhousie and qualifies for admission to the junior year of the Nova Scotia Technical College. Students who plan to study further at a college other than the Nova Scotia Technical College should consult the Department of Engineering and Engineering-Physics on initial registration. See also Architecture below.

Details of the curriculum are given under Engineering and Engineering-Physics in Programmes of Study.

7. Bachelor of Science with Honours in Engineering-

Four years - 21 classes required.

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

Details of the curriculum for the course are given under 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 follow a concentration programme should consult the Department of Commerce prior to registration.

(a) The Institute of Chartered Accountants in most provinces in Canada offers exemptions to graduates in commerce of Dalhousie who are candidates for the Diploma in Chartered Accountancy.

(b) The Society of Industrial and Cost Accountants offers exemptions to graduates in commerce of Dalhousie who are candidates for the Diploma in Registered Industrial Accountancy.

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.Sc.): four years -22. classes, including field experience.

Integrated (with Honours B.A. or B.Sc.): five years - 27 classes, including 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 Department of 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 certification awarded upon completion of the B.Ed. programme for vocational teachers is dependent upon type of certification held on entering the programme. Graduates of this programme are advised to consult the Registrar, Nova Scotia Department of Education about certification and licensing.

Transfer of Credit:

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

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

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

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

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

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

10. Bachelor of Music Education

Four years - 20 classes plus practice teaching required.

By arrangement with the Nova Scotia Department of Education, students completing the course are awarded a Teacher's Certificate (Class 5). Details of the curriculum and 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 Administration is available to persons who meet the admission requirements 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 may apply for admission as a Special Case (see Admissions, section 1.3). The Department of Political Science will review applications for admission under this provision and make recommendations thereon

11.1 Prerequisite Requirement

Standing in Political Science 100 or its equivalent.

11.2 Programme Requirements

(a) Government of Canada (Political Science 202);

(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.

Normally four of the five classes in the programme must be taken at Dalhousie University. Except for the prerequisite class, credit will normally be given only for classes taken after the 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 of the subjects required for the degree after the award of the Certificate.

A degree programme and the Certificate programme cannot be taken concurrently. A person registered in a degree programme cannot also be registered in a Certificate programme, nor can a Certificate in Public Administration be awarded for work taken as part of a degree programme.

12. Dentistry

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

12.1 Entrance Requirements

At a minimum, applicants pursuing a predental course in the Faculty of Arts and Science are required to have completed ten classes during regular attendance at a university acceptable 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

(b) Credit for the remaining five classes may be obtained in either of the following ways:

(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 Canadian Dental Association Dental Aptitude Testing Programme. Applicants from other countries may submit the American Dental Association Dental Aptitude Testing Programme results.

13. Medicine

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

13.1 Entrance Requirements

At a 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 (or the equivalent) including credits in English and mathematics, are required to have completed ten classes in a regular degree programme prior to June 10 of the year of expected entrance.

(a) Five of these classes are imperative, namely: English 100, Biology 1000 or 2000, Chemistry 110 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 from the following: anthropology, biology, chemistry, classics or classical languages, economics, English, history, mathematics, modern languages, philosophy, physics, political science, psychology or sociology.

In choosing electives pre-medical students are generally well-advised not to anticipate medical school subjects such as bacteriology, biochemistry, histology, and physiology at the expense of fundamental training, but for students intending 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 completion of at least two years at any university or equivalent institution or recognized standing. A university course in mathematics is prerequisite, except that the applicant may instead be required to take a written examination in this subject.

Providing it has been undertaken at a recognized university, virtually any course of studies, including arts, fine arts, engineering and other technologies, science, agriculture, social 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 form obtained from the Registrar, NSTC; (b) an official transcript of his university record; (c) a letter of recommendation from some person of academic rank with close personal knowledge of his academic background.

15. Design

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



African Studies

Professors J.E. Flint (History) K. A. Heard (Political Science) Z. A. Konczacki (Economics) J. B. Webster (History)

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

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 around the focus of one major world region. Students wishing to read towards a B.A. with a concentration on African Studies should note the following recommendations and regulations.

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

II In the second and third years at least seven of the ten classes required for a degree must be chosen according to the following regulations:

(a) African Studies 200 (compulsory)

(b) Four classes to be chosen from List I below (direct focus on Africa)

(c) A further two classes must be chosen from List I or List II the latter list being classes concerned with the problems of development and underdevelopment.

(d) Two of the ten classes must be at the 300 level.

200 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 are graded on the basis of three 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, J. B. Webster (History)

3. Imperial Intrusion & Impact on East Africa, J. E. Flint (History)

4. Economic change from 1890 to the Present, Z. A. Konczacki (Economics)

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)

LISTI

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

Anthropology 316, Africa: Ethnography & Modernization, J. H. Barkow.

Economics 234A, Pre-Colonial History of Sub-Saharan Africa, Z. A. Konczacki.

Economics 235A, Economic History of Tropical Africa: Colonial Period, Z. A. Konczacki.

Economics 236B, Recent Economic Development in Sub-Saharan Africa, Z. A. Konczacki.

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, T. 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. Heard

Political Science 3544A, Conflict and Cooperation in Southern Africa, T.M. Shaw.

LIST II

Anthropology 301, Peasant Society and Culture, L. Kasdan,

Anthropology 306, Social Organizations of Pre-Literate Societies, L. Kasdan,

Economics 333A, Theories of Economic Development, A. A. Konczacki.

Economics 423A, International Economics of Development, C. M. Oueilette

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.: 2 hrs., P. Manning.

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 architectural design; in the second term, architecture in present day life. Available as an elective in the general degree programmes in Arts and Science.

Art History

Classes Offered

101A Survey of the History of Art, lect.: 2 hrs.;

Palaeolithic to the end of the 18th Century.

101B Survey of the History of Art, lect.: 2 hrs.;

The 19th and 20th centuries: A survey of painting sculpture, architecture and allied arts.



Biochemistry

Professors

- C. W. Helleiner (Chairman) L. B. Macpherson S. J. Patrick
- D. W. Russell S. D. Wainwright

Associate Professors

A. H. Blair F. I. Maclean C. Mezei F. B. Palmer J. A. Verpoorte

Assistant Professors

W. F. Doolittle C. B. Lazier . C. Stewart M. W. Gray F. M. Smith M. W. Spence

Lecturers

J.T.R. Clarke

M.S. DeWolfe

E. S. MacFarlane 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 fundamental 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 explanations 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 agricultural research, or in government or hospital laboratories; some are employed in industry. Training to the B.Sc. level enables one to work as a technician or research assistant; more responsible positions usually require a higher degree. Graduates in biochemistry can go on to further training in medicine, pharmacology, physiology, and various other branches of the biological sciences.

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

Degree Programmes

The study of biochemistry requires a prior knowledge of elementary biology, mathematics and physics, and a good grounding in organic and physical chemistry. Accordingly, the honours programme in biochemistry is planned in such a way that these subjects are covered in an orderly fashion before students begin the study of biochemistry proper. 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 should ensure that the necessary background is provided in their earlier years. The outline of the honours programmes will serve as a guide in this respect. It should be noted particularly that a class in organic chemistry is a prerequisite for the elementary class in biochemistry, 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 biochemistry and allied fields. It is also a suitable preparation for the study of medicine or dentistry. Because the chemical content of all branches of biology is rapidly increasing, biochemistry can be recommended 'as a starting point for a career in many fields of biology.

Three major programmes in biochemistry are outlined below, with minors in biology, physics and mathematics. Honours students must pass a comprehensive examination in biochemistry at the conclusion of their period of study.

Year I

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

Minor in Biology 5. Biology 2000.

Minor in Physics 5. Physics 110

Minor in Mathematics 5. Biology 2000.

Year II 6. Chemistry 230.

7. Chemistry 240,

Minor in Biology

8. Elective 9. Physics 110.

10. Two Biology half classes (2020, 2030, 2040, or 2050) or one Microbiology class.

Minor in Physics 8. Biology 2000.

9. Physics 230. 10. Physics 221 or 222.

Minor in Mathematics

8. Elective. 9. Physics 110. 10. Mathematics 200.

Year III

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 class.

Year IV

16. Biochemistry 403A and 403B.

17. Biochemistry 406A and 406B.

18. Biochemistry 407A and 407B

19. Additional Biochemistry or Chemistry class.

Minor in Biology 20. Additional mathematics or physics class.

Minor in Physics 20. Additional biology or microbiology class.

Minor in Mathematics 20. Additional biology or microbiology class.

Classes Offered

302 Introductory Biochemistry, lect.: 2 hrs.; lab.: 3 hrs.; 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 aspects of the general field of biochemistry.

Approximately half the class is devoted to a study of the structures and chemical and biological properties of the molecules of which living things are composed. These include the biological macromolecules: polysaccharides, proteins and nucleic acids. The properties of enzymes as catalysts and the basis of their activity are discussed.

The remainder of the class deals with intermediary metabolism: the pathways of transformations which molecules undergo in the living organism. These pathways provide for the generation of usable energy, and for the utilization of this energy for the synthesis of new molecules characteristic of the organism. Finally, the class includes an introduction to biochemical genetics: the means by which the living cell specifies the structures of the molecules to be synthesized by 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 that students are familiar with the structures and reactions of the major classes of organic compounds. A basic class in physical chemistry is very desirable. The prospective student will be much better prepared for this class if he has some prior knowledge of chemical equilibrium, pH and elementary chemical kinetics.

403A Intermediary Metabolism I, lect.: 2 hrs.; C.B. Lazier/F.I. MacLean/C. Mezei/ F.B. Palmer.

This class is intended to expand and complement the study 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. Emphasis is placed on the interrelationships between the different metabolic systems and, wherever possible both cyclic and non-cyclic systems are examined for mechanisms by which the control and direction of metabolism are achieved. The material is taken from the recent scientific literature.

A consideration of the diversity of different energy yielding systems which occur throughout nature is presented which includes the details of the photosynthetic phosphorylation systems as well as some fermentative pathways. The physical 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 protein synthesis. Controlling factors at all stages are emphasized.

Prerequisite: Biochemistry 302 or an equivalent class in basic biochemistry.

The class is principally concerned with aspects of carbohydrate, glycoprotein and amino acid metabolism in animals, plants, and micro-organisms. Also discussed are the biochemical aspects of synaptic transmission in nerves and modern concepts of mitochondrial electron flow.

Selected aspects of the chemistry of biological macromolecules, mainly proteins. Topics include: discussions of the relationship between structure and biological activity, the stabilizing forces in maintaining structure as well as chemical and physical methods for isolating polymers, and studying their molecular properties.

Prerequisites: A basic class in biochemistry and in physical chemistry. 407B Enzymes, lect.: 2 hrs.; A. H. Blair/J. A. Verpoorte.

403B Intermediary Metabolism II, lect.: 2 hrs.; M.S. DeWolfe/F.I. MacLean/F.B. Palmer.

The intent of this class is the same as that for 403A; however it may be taken independently.

Prerequisite: Biochemistry 302 or an equivalent class in basic biochemistry.

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

Instruction is provided for advanced students in the use of instrumentation. The principles and operation of the equipment will be discussed. The class includes discussion of spectrophotometers, a spectrofluorimeter, atomic absorption spectrophotometer, spectropolarimeter, automatic titration equipment as well as ultracentrifuges.

Prerequisite: Biochemistry 302 or an equivalent class in basic biochemistry.

406B Special Project in Biochemistry, lab.: 6 hrs.; various staff members.

A 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 answer an appropriate question. The results will be interpreted and a report written in the standard scientific manner.

Prereguisite Biochemistry 302 or an equivalent class in basic Biochemistry.

407A Physical Biochemistry, lect.: 2 hrs.; J. A. Verpoorte.

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 interactions are important for the control of cellular metabolism. The relationship between the structure of catalytic and regulatory sites and their function will be considered for selected enzymes.

Prerequisite: A basic class in Biochemistry.

408 Nucleic Acids, 2 hrs.; W.F. Doolittle/M.W. Gray/C.W. Helleiner

A class dealing with chemical and physical approaches to the structure of nucleic acids and the enzymology of nucleic acid biosynthesis and repair! Emphasis is placed on reading and interpreting recent research reports and solving numberical problems. Offered in 1974-75 and alternate years.

Prerequisite: A basic class in Biochemistry and permission of the instructors.

Biology

Professors

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

Associate Professors

E. W. Angelopoulos R. G. Brown R. W. Dovle J. Farley E. T. Garside L. E. Haley B. K. Hall M. J. Harvey

Assistant Professors

A. R. O. Chapman J. V. Collins G. S. Hicks P. A. Lane R. W. Lee R. P. McBride R. K. O'Dor E. Zouros

Instructors

B. Pollock W. Joyce B. Joyce P. Malcolm D. Sarty S. Singh C. Schom W. Bohaychuk S. Silcox A. Hicks J. Wilson T. Mobbs

Research Associates

C. Bays

D. Brewer J. S. Craigie G. McLelland D. Patriquin T. Platt D. P. Pielou R. Rajaraman A. Taylor J. Mortenson M. Yoon

Postdoctoral Fellows

R. Bradbury A. Jones G. Newkirk P. V. Thorogood D. L. Waugh M. Willison

The programme in biology is designed to provide the student with an understanding of living things. Understanding of the biological world is so important for us because we are part of it We carry to a large degree the responsibility for the state of the biosphere and we can act responsibly only if we understand it and relate ourselves to it.

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

Degree Programmes

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

Honours in Biology and Preparation for Graduate Study.

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

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

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

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

Honours students must attend a weekly Honours Seminar in their fourth year.

Unspecialized Program

Students wishing to obtain a broad overview 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 their studies in particular areas of biology. In some cases the order in which classes are taken is important, but cannot be rigidly specified here because students 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 in the following fields (among others): Molecular biology, W.C. Kimmins, L. C. Vining; *Microbiology*, R. G. Brown, R. P. McBride; *Genetics*, L. E. Haley, O. P. Kamra, R. W. Lee, E. Zouros; Ecology/Environmental 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. Cameron, J. Collins, R. K. O'Dor; Developmental Biology, B. Hall, G. Hicks; Big Picture, J. Farley, K. von Maltzahn.

Combined Honours in Microbiology

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

Ćlasses 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 heading Numbering of Classes under Degrees and Courses).

Biology class offerings may be grouped into four general types:

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 require an overview of biology.

2. Core classes — These consist of a full-year class Biology 2000 and six half-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 these classes as possible. Biology 2000 is required of all Biology major and honours students.

3. 3000-level classes - Intermediate classes are mainly for second and third year students. The classes Biology 3110A-3324 represent studies of the biology of the groups of organisms specified. The other 3000-level classes are 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 without having completed, or being registered in, 2000-level core classes in Biology totalling at least two full credits.

4. 4000-level classes - These classes are primarily for honours and graduate students. They are open to others with permission of the instructor.

Introductory Classes Offered

All students registering for a biology class for the first time should read the following regulations carefully before completing registration.

(a) Course 1000 is designed for, and must be taken by, those who did not take, or scored less than 75% in, Grade 12 Biology. It thus serves as an introduction to biology and enables students to progress to other offerings 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; 2020A or B: 2030A or B; 2040A or B; 2050A or B; 2060A or B.

(c) Students who receive credits for 2010A or B, 2020A or B. 2030A or B, 2040A or B, 2050A or B, or 2060A or B in their first year cannot take Biology 1000 for credit in a later year.

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The subject matter puts emphasis on those features common to all or large groups of organisms. It thus contrasts with Biology 2000 in searching for unity among organisms rather than the major differences between groups. The course starts by considering the basic functions of whole organisms, studying a typical plant and a typical animal. Then the organism is examined in finer detail considering the structure of cells, cell chemistry, energy needs, the coding system and protein synthesis. This leads to the topics of genetics, evolution, ecology and systematics.

The following classes are core classes in the general biology programme. Students concentrating their studies in biology may want to include all of these classes in their programme of 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 Maltzahn, 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. Although the present diversity is the outcome of long range historical changes, this class does not attempt to trace the historical events or to understand the mechanisms underlying historical change. The class is concerned principally with the present diversity of structural design of different types of organisms as 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 instructions leading to observation and analytical experiment are the main activities within the study centre. Comprehension of a specific topic of the week and understanding of it within the broader framework of the class as a whole are assisted through tutorials held in small groups. Lessons are supplemented by lectures which explore the relevance of the esson to contemporary human affairs.

Students are advised to take this class early in their programme of biology classes, since some knowledge of diversity of organisms is required in other classes.

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

1000 Principles of General Biology, Study Centre 3 hrs.; Tutorial Quiz 1/2 hr.; Lecture Assembly 1 hr.; M. L. Cameron, M. 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 regular tutorial quiz sessions are held but the traditional lecture no longer has any great importance in the system; this latter time slot is used for question-and-answer sessions, class tests and the occasional lecture.

2010A/B Molecular Biology, Lect. 3 hrs.; Lab. 3 hrs.; W. C.

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

Background in chemistry is essential.

2020A/B Cell Biology: Form and Function, Lect. 2 hrs.; Discussion 1 hr.; Lab. 3 hrs.; J. V. Collins, R. K. O'Dor; instructor, T. Mobbs.

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

Laboratory work is integrated with the lecture material and includes the theory and practice of light microscopy, living and fixed, stained material, as well as an introduction to basic 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 orally in group discussions.

Texts: Oyson (1974), Cell Biology: A Molecular Approach. Prerequisite: High school chemistry.

2030A/B Genetics, lect. 3 hrs.; Lab. 3 hrs.; L. E. Haley, O. P. Kamra, R. W. Lee; instructors, A. Hicks, C. Schom.

The following three questions will be discussed in this class: (1) What is the nature of the genetic material, i.e. the structure and function of DNA; (2) How is the genetic information transmitted from one generation to the next; and (3) How does the genetic material act? Taught by audio-tutorial method. Text: Levine, Biology of the Gene.

2040A/B Evolutionary Biology, Lect. 2 hrs.; Turorial 2 hrs.; optional laboratory, time to be arranged; R. W. Doyle, E. Zouros; instructor, S. Singh.

A study of evolution as the interaction lof genetic and ecological processes. The first half of the class introduces certain areas of population and biometrical genetics, an explicit statement of natural selection and an ecological model of population growth and competition. In the second half of the class these ideas will be applied to the problem of the origin of new species in space and time, to aspects of human cultural and biological evolution, 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 problem set or paper due at each tutorial. A thorough grasp of Mendelian genetics at the senior matriculation or Biology 1000 level will be assumed from the beginning; experience indicates that the background provided by Biology 2030 may be helpful.

2050A/B Developmental Biology, Lect. 2 hrs.; study session 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 and regulation of growth and ageing; cell specialization and its possible reversal.

Text: Ebert and Sussex, Interacting Systems in Development

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, function, and development of ecosystems. The laboratories give some insight into techniques and modes of thought used by ecologists, and include independent projects by students

Text: Colinuaux, Introduction to Ecology.

The following is an interdepartmental half-credit class, not forming part of the core program normally required of Biology majors and honours students:

2100A/B Introductory Microbiology, E. S. McFarlane, R. G. Brown, R. P. McBride.

This class introduces the basic concepts of microbiology through lectures, laboratory sessions, demonstrations and films. Subjects to be covered include the uniqueness of microorganisms, their structure, growth and genetic regulation, as well as their involvement in other fields such as medicine, industry and ecology. Prerequisite: Biology 1000 or equivalent.

Intermediate Classes Offered

Intermediate classes are mainly for second and third-year students. They may be taken before completion of the core of classes described above. Please notice, however, prerequisites for the classes listed below. Students registering for these classes will have completed, or be registered in, a minimum of 2 full credits at the 2000-level.

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.

3011B Metabolism II, Lect. 2 hrs.; Lab. or Tutorials: 1-3 hrs.; L. C. Vining; instructor, J. Wilson.

Metabolic pathways, information transfer, and control of metabolism within the cell. Prerequisite: Biology 2010A or B. Text: Lehniger, Biochemistry, 1970.

3021A Techniques in the study of the cell: E. Angelopoulos.

This course is designed to familiarize students with techniques available to elucidate function and form of cells and cell 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 members of the class.

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

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 complement each other. Students can register for both classes, or they may register for one 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 2030A or B.

3031B Molecular Genetics of Eukaryotes, Lect. 2 hrs.; Lab. 3 hrs.; R. W. Lee.

The replications, organization, and regularion of general material in eukaryotes. Emphasis will be placed on coordinating these topics into a discussion of our current understanding of the genetic processes underlying development in higher organisms.

Prerequisite: Biology 2030A or B, Biology 2010A or B, Biology 2020A 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 experimental evidence. Emphasis is placed on the origin and fate of genetic variation in natural populations as the raw material of evolution. A detailed discussion of the dynamics of change in gene frequencies and an attempt to account for the observed pattern of genetic variation in natural populations.

Prerequisites: Biology 2030A or B; Math 100 and Math 106 or permission of the instructor.

3050B Development and Morphogenesis in Animals, Lect. 2 hrs.; Lab. 3 hrs.; B. K. Hall.

This class assumes the material of Biology 2050A/B as background and studies the mechanisms underlying the control of development, morphogenesis and growth in animals. Topics of studies include: descriptive embryology of invertebrates and vertebrates; mammalian development and its hormonal control; histogenesis and morphogenesis of tissues and organs; regeneration of lost body parts; growth; cellular differentiation; aspects of metamorphosis.

The laboratory classes emphasize the experimental approach to the lecture topics.

Prerequisite: Biology 2050A or B, Biology 2000.

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

Utilizing a systems approach to production, decomposition,

or 150. Dovle.

respiration, 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 a review of specific investigations reported in the literature emphasizing techniques and data manipulation.

Prerequisites: Biology 2040A or B and 2060A or B, Math 100

3064B Topics in Population Biology, seminar 2 hrs.; R. W.

Controversial topics in the general areas of population ecology, population genetics and evolutionary theory. Topics will vary from year to year but generally will emphasize quantitative genetics, natural selection and life-table phenomena, and the genetics of adaptation to local environments. The research literature is the only text. Seminars every week plus five essays.

Prerequisites: Biology 2040A or B, 2060A or B, Math 100 or 150. (a minimum B grade is required).

3063 Theoretical Ecology, lect. 2 hrs.; lab. 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 recent research will illustrate, with a variety of examples from both plant and animal ecology, the whole sequence of steps that an investigation follows: this starts with formulating a problem and deciding what observations would lead to a solution; then follows the planning, performing and analysing of the observations and finally the drawing of conclusions. Emphasis is given to the overriding importance of judging how much (or how little) a particular set of field observations can contribute to general ecological theory.

Prerequisites: The class is intended for honours students who have done Mathematics 100 or 151. Other mathematical topics will be explained as they arise; the time to be devoted to them will be adjusted to the needs of the class. For students who have not done a course in elementary statistics, N. T. J. Bailey's Statistical Methods in Biology is required reading. Biology 2060A or B.

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 (forestry, entomology, conservation, wildlife management, parks administration, range management, fisheries etc.). It aims to give students a thorough grounding in techniques for estimating the numbers of individuals, or the biomass, in living populations of all kinds. Prerequisites: Biology 2060A or B; Math. 106 or 206 or Psychol. 357.

3070A Animal Physiology I, Lect. 2 hrs.; Discussion 1 hr.; Lab. 3 hrs.; R. K. O'Dor. M. L. Cameron; instructor, B. Pollock.

The class discusses the mechanisms which coordinate the activities of cells within multicellular organisms and permit such organisms to maintain a stable internal environment in a changing external environment. The emphasis will be on the most successful mechanisms — those most widely distributed through the animal kingdom. The laboratories will be designed to illustrate these "principles of physiology" in a variety of organisms and to demonstrate the experimental approaches used to study physiology.

Prerequisites: Biology 2000, 2020A/B. (a minimum C grade is required).

3071B Animal Physiology II, lect. 2 hrs.; Lab. 3 hrs.; R. K. O'Dor, M. L. Cameron; instructor, B. Pollock.

This class continues 3070A and admission requires completion of that class. Many of the topics discussed in 3070A will be considered in greater depth, but the emphasis will be on the diversity of mechanisms used in different animals to solve similar problems. In the laboratory students will be encouraged to follow their interests and develop their own experimental approaches. Prerequisite: Biology 3070A.

3073B Plant Physiology, W. Kimmins and staff.

3111B Bacteria, Viruses and Fungi II, lect. 2 hrs.; lab. 3 hrs.; R. Brown, R. P. McBride.

Study of their physiological and ecological characteristics. Admission to 3111B requires the completion of 2100A or B, or 3110A. The object of Biology 3111B is to acquaint students with the "microbial world"

A format of assigned readings, tutorials and laboratory research 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 3110A.

3212A Algology, lect. 2 hrs.; lab. 3 hrs.; A. R. O. Chapman.

This class deals with algal organization at the cellular, organismic, population and community levels. A thematic approach is used and only passing reference is made to systematics.

Prerequisite: . Grade B minimum in Biology 2000.

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 experimental systems, sample topic areas: differential gene activation, induction, polarity, determination, totipotency, photomorphogenesis.

The laboratory sessions emphasize application of sterile culture technique to developmental problems. Prerequisites: Biology 2000 and 2050A 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 of functional performance of different constituent parts and 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 species; second, to go into some of the newer concepts of classification arising out of the 'computer revolution': The latter is still in an experimental

stage here and will involve some study of numerical taxonomy, automated identification and key construction. Prerequisite: Biology 2000.

Text: A Takhtajan, Flowering Plants: their Origin and Dispersal, M. S. Percival, Floral Biology.

3216B Adaptation and Speciation in Higher Plants, lect. 2 hrs.; lab/seminar 2 hrs.; M. J. Harvey.

This course deals with the discipline known as biosystematics or, alternatively, experimental taxonomy. The approach taken is the analytic one of considering particular examples and trying to deduce which peculiarities of their biology have contributed to their relative success. In this way the mechanisms which have caused particular species pairs to diverge are studied. Examples considered are many and range from evening primroses and irises, through bananas and maize, down to the humble, but complex, dandelion. Prerequisite: Biology 2000.

Texts: D. Briggs and S. M. Walters, Plant Variation and Evolution; G. L. Stebbins, Chromosomal Evolution in Higher Plants.

Reference text: W. Williams, Genetical Principles and Plant Breeding.

3321 Invertebrates, lect. 2 hrs.; lab. 3 hrs.; 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 incorporated that allow them to survive in environments or to assume a manner of life alien to their evolutionary predecessors

Because there are so many kinds of invertebrate animals, certain morphological and functional changes will be considered in those animals where they are most pronounced or where they first occur. The course will progress chronologically through the phylogenetic series: the characteristics of the animals in a group will be considered and new physiological systems and morphological peculiarities will be emphasized.

A laboratory session each week will give students an opportunity to examine the morphology and life traits of live invertebrate animals based on observation of feeding, respiration, locomotion, etc. Prerequisite: Biology 2000.

3322B Animal Parasitology, lect. 2 hrs.; lab. 3 hrs.; E. W. Angelopoulos.

The class is intended to give students an understanding of parasitism, diversity and ubiquity.

Although the class gives a survey of parasites from parastic protozoa to vertebrates, the emphasis is not on taxonomy and morphology. Instead, one or more representative species from each group are discussed in detail and used to demonstrate the life cycle as well as the host-parasite 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 and transmission of parasites are stressed. Different hypotheses of the origin of parasitism and recent trends in evolution arè considered. Prerequisite: Biology 2000.

3323 Vertebrates, lect. 2 hrs.; tutorial 1 hr.; lab. 3 hrs.; E. T. Garside

The main purpose of this class is to acquaint the student with the current state of knowledge and speculation concerning the evolution of vertebrate animals from an invertebrate ancestral line at least 500 million years ago.

The structure of vertebrates and their sequential deposition of fossils in progressively more recent formation of the superficial crust of the earth form an unparalled and unequivocal exposition of organic evolution, the gradual, natural development, through the long expanse of time, of progressively more complex organisms. Those vertebrates which have survived the stresses imposed by the restless environment form a series of stages or steps, each characterized by several pronounced alterations in various organ-systems and in the general form of the body. Approximately three-quarters of the programme is given to an analysis, by procedures of comparison and contrast, of these changes and their relevance in the synthesis of the evolutionary pathway of vertebrates.

An appreciation of the classification, structure and evolution of vertebrates is essential to considerations of the development and functional capacities of vertebrates and of their relations with their surroundings and with each other.

The laboratory study of a broad array of vertebrates provides the core of this class and serves to familiarize the student with the gross anatomic features of these animals while giving instruction in the traditional approach to comparison and contrast. The background which is required for this study is not particularly extensive but should incorporate the rudiments of animal form and function and an introduction to the principles of evolutionary biology. Although this class is often considered to belong at the intermediate level, it can be mastered by any diligent student who has completed a basic

Prerequisite: Biology 2000.

3324 Entomology, lect. 2 hrs.; lab., 3 hrs.; D. P. Pielou.

class in biology.

Entomology, the study of insects, is not only an important branch of academic biology; it is also one of the largest divisions of applied biology.

This class is an introduction to the study of insects and it deals with:

(1) The classification and evolutionary diversity of insects.

(2) The biology, ecology and behaviour of insects. (3) Applied aspects - medical, agricultural and forest entomology; harmful and beneficial insects: the pros and cons of chemical control; other methods of pest control. Prerequisite: Biology 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 although all students must have a strong background in either a science, history or philosophy. The class will stress the period from the 16th to the 20th centuries, and will attempt to show how ideas of what constitutes an acceptable scientific explanation have changed. There will be constant emphasis on the social context of science and the interactions between the different sciences. Important: General degree students may take this class as an elective only, not including it in the,4 classes required for a Biology major. Honours students may 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 instructor.

4010B Advanced Topics in Molecular Biology, L. C. Vining and staff. Prerequisite: Permission of instructor.

4020C Advanced Topics in Cell Biology, Collins and staff. Prerequisite: Permission of instructor.

4021B Cytology Project; E. Angelopolous.

A research project using one or more of the skills acquired in Biol. 3021A (Techniques in the Study of the Cell), selected by the student in consultation with the instructor.

4022B Microbial Ultrastructure Project; K. B. Easterbrook.

A research project using one or more of the skills acquired in Biol. 3022A (Microbial Ultrastructure), selected by the student in consultation with the instructor.

4030A Advanced Topics in Genetrics, Lee and staff.

A general topic from the current literature in genetics will be examined in seminar format. The nature of the topic and the instructor in charge of the class will vary from year to year. Students will be expected to present at least one seminar during the term.

Prerequisite: Permission of the instructor.

4032B Cytogenetics,

4033A Microbial Genetics, C. Stuttard.

This class is concerned with the study of heredity in microorganisms, especially bacteria and their viruses. Emphasis is placed on general aspects of genetic analysis in microorganisms, and on special methods used for particular bacteria. Some understanding of basic biochemistry, especially primary metabolism, protein synthesis and nucleic acid chemistry is assumed.

Prerequisite: Biology 2030.

4034B Biological Effects of Radiation, lect. 2 hrs.; lab. 3 hrs.: O. P. Kamra. (1976-77)

The class consists of a survey of the current knowledge of the effects of ionizing radiation on biological materials on the three levels: 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, J. 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.; P. Lane and other staff.

Community structure, population dynamics, energy and materials budgets (topics vary from year to year). Fourth-year Honours and Graduate students only. Prerequisite: Instructor's permission.

4064C Pleistocene Biogeography, lab. 3 hrs.; H. B. S. Cooke, J. G. Ogden, 111. (1976-77)

Lecture, discussion, and laboratory experience in the reconstruction of environmental change during the Pleistocene epoch. Laboratory and field experience will pay particular attention to the environmental history of the Maritime region, including environmental changes caused by man. Techniques of pollen analysis, plant and animal macrofossil study, dendrochronology, geochemical and isotopic dating methods will be explored. Field and laboratory work include a class problem in an area in the Halifax region.

Prerequisites: At least two credits in Biology or Geology. This 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 laboratory project will be chosen to suit the student's interest and background. Permission of the instructor is required. Prerequisites: Biology 2000 A or B; Biology 2100 A or B, or Biology 3110A.

4067B Introduction to Biological Oceanography, lect. 2 hrs.; E. L. Mills.

A survey of marine populations and their relationships with their physical environment and with each other. Permission of the instructor is required.

4068 Advanced Biological Oceanography, lect.; 2 hrs.; G. A. Riley, C. M. Boyd, E. L. Mills.

Physiology and ecology of marine organisms with particular reference to community structure and population dynamics; seasonal and regional variations in populations, interrelations with the physical and chemical environment. Prerequisite: Biology 3061B. Permission of the instructor is required.

4069B Ecological Diversity, lecture 2 hrs., discussion 1 hr.; E. C. Pielou. A critical study of the diversity of ecological communities; i.e. of the factors determining the speciesrichness of a community and of the relative abundances of the species

Prerequisites: Math 206; Biol. 3063 or 3064 or 3065; instructor's permission.

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, as well as certain specialized topics.

Prerequisite: Biology 2100 A or B or Microbiology 302 and 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.

4117C Advanced Topics in Immunology, L. Kind. Prerequisite: Biology 4115C.

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 by immunofluorescence; determination of cytotoxic effects of lymphocytes; production of m/f by lymphocytes. Purification of antigens and/or antibodies by immunoadsorption. Prerequisite: Permission of instructor.

4214B Physiology of Marine Plants, lect. 2 hrs.; (1975-76); J. S. Craigie.

A comparative study of the physiology and biochemistry of the various algal classes will be conducted. This will include studies of carbohydrates, proteins, fats, pigments and nutrition.

Prerequisites: Biology 2010A or B, 3010A.

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.* Readings and projects will be chosen to suit the individual student's interests, background, and future plans. Prerequisites: Permission of the instructor and Biology 3324. Each prospective student must approach the instructor at the end of the preceding academic year, and, if accepted, make a synoptic collection of insects during the summer months.

4379A Ichthyology, lect. 3 hrs.; E. T. Garside.

Evolution, systematics and structure, embryology, life history and distribution of fishes. Prerequisite: Biology 3323.

4400 Ethology, lect. 2 hrs.; lab. or field work 3 hrs.; J. F. Mortenson.

The behaviour of animals is studied in the field and in the laboratory. These observations and other presented material will be discussed in the context of modern ethological theory.

4401 Pharmacology: Influence of Chemical Agents on Living Organisms, lect.: Mon., Wed., Fri. 1:30; lab.: Wed. 2:30-5:00 p.m.; D. J. Echobichon.

This introductory class is designed to acquaint students with the actions of drugs on physiological and biochemical functions of man and lower animals. The basic mechanisms of action and structure-activity relationships of various groups of pharmacological agents will be stressed and, wherever

possible, discussed at the molecular and macro-molecular level of cell organization. Factors influencing the absorption, distribution, biotransformation, and excretion of drugs will be discussed, as will potential uses.

The lecture course will be augmented by a practical laboratory course designed for student participation in the demonstration of basic principles of pharmacology.

4403 Human Physiology, lect. 3 hrs.; lab. 3 hrs.; B. Issekutz.

A class dealing with the physio-chemical basis of the physiological processes in man. Prerequisite: Introductory classes in Chemistry and Physics. Permission of the instructor is required.

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. Prerequisite: 4402A and permission of the instructor.

4451A Organs of Sense; R. W. Dykes.

General principles of organization and physiology of selected sense organs. Includes guest speakers. Prerequisite: Permission of instructor.

4454A Membrane Transport Theory: I. W. Richardson.

A mathematical development of the physical principles governing the movement of molecules across membranes, biological membranes in particular. Prerequisite: Permission of instructor.

4455A Biological Control Systems; H. K. Wolf.

Control is ubiquitous in biological systems, occurring at all levels from the subcellular to the communal. This class will include the general mathematical techniques required for the analysis of such systems. Prerequisite: Permission of the instructor.

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

The aim of this course is to establish the relationship between measured electrocardiographic body surface potentials and the underlying electrical phenomena of the heart. Prerequisite: Permission of the instructor.

4459B Mechanics of Cardiac Muscle; A. Y. K. Wong.

Mathematical characterization of the mechanics and energetics of muscle.

Prerequisite: Permission of the instructor.

4800 Special Topics.

4805A/4806B Special Projects, staff.

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 departments, are eligible.

The six departments are: Economics, English, History, Political Science, French, and Sociology,

Aim

The purpose of the programme is to allow such students to concentrate part of their work on Canadian studies both within their major field, and outside of it. For example, a student who is planning to major in Political Science would take at least 3 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 Canadian Economics, Canadian History, Canadian Literature (either English or French), or Canadian Sociology.

In other words, the Canadian Studies Programme does not attempt to establish a new major field. It seeks to use any one of six present departments in the Faculty of Arts and Science as a base around which a student may effectively cluster a number of classes in Canadian subjects.

Classes

Year I

Students who are interested in such a programme should plan in their first year to take at least four classes from the following:

- (1) Three classes from: **Economics 100** Sociology 100 History 120, or a History 199 with Canadian content English 100 (Sections 1, 5, 7, 10, 13, 15, 16, 20) Political Science 100
- (2) A student who does not have a competent reading knowledge of French should take French 102 or French 106 in the 1st or if necessary, 2nd year. Adequacy 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 to provide a useful environmental base.

Year II

Students should plan to take at least one class within their major department from the list appended

They should also plan to take two classes outside their major department from the same list, as follows:

English 207 Economics 232 French 202

French 230

French 231

History 220 Political Science 202 Sociology 211 Sociology 212 **Canadian Literature Canadian Economic History** Spoken and Written French 202A 202B Canadian sections

Introduction to French Literature

The Canadian Mosaic **Canadian Politics and Government 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 list:

Economics 324 Economics 326B French 312 French 340 History 325 History 327 **History 328 History 329 Political Science 313 Political Science 314A Political Science 315 Political Science 316 Political Science 322 Political Science 330B** Political Science 334A Political Science 373B Sociology 320 **Public Finance** Money and Banking **Civilization of France and French Canada** Introduction to French-Canadian Literature Canada Within the Empire The Nova Scotia Experience The Age of Macdonald and Laurier **Religion and Society in Canada** Intergovernmental Relations in Canada The Policy Process in Canada Politics, Government and Constitution of Canada Politics in Nova Scotia since Confederation **Canadian External Relations Canadian Political Parties** Local and Regional Government in Canada **Urban Problems** Social Change and Canadian Society

It should be possible for students to take a number of 2nd year classes in their 3rd year, and in a few cases, vice versa.

How to arrange it

Students wishing to discuss a Canadian Studies Programme, or wishing to take it, should get in touch with any of the following, within their respective departments:

Professor B. Lesser, Economics Department Professor Allan Bevan, English Department Professor Hans Runte, French Department Professor S. D. Clark, Sociology Department Professor J. M. Beck, Political Science Department Professor P. B. Waite, History Department

Chemistry

Professors

W. E. Jones (Chairman of Department) W. A. Aue W. J. Chute J. A. Coxon K. E. Haves O. Knop K. T. Leffek D. E. Ryan

Associate Professors

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

Assistant Professors

G. D. Abrams A. Chattopadhyay J. B. Faught P. M. Froehlich T. B. Grindley. J. C. T. Kwak T. W. Melvnk P. D. Pacey J. A. Pincock R. Stephens A. Terzis C. H. Warren

Special Lecturer M. L. Heit

Demonstrators

M. Ahmed P. Renault D. Silvert M. Yeats

Research Associate J. Holzbecher

Postdoctoral Fellows R. Aigner

M. Cheuna M. Daniewski A. Held O. I. Liardon

A. Lumb I. A. Oxton

B. A. Rao

E. G. Skolnik

- 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 in chemistry should be competent in mathematics as well as chemistry, since mathematics is the language of the physical sciences. We say honours program advisedly, for the honours B.Sc. is the minimum professional requirement for a chemist — the general B.Sc. with a major in chemistry has no professional standing. Chemists with honours degrees are employed in widely differing areas in industry and government, reflecting the diversity of fields in which

At the second year level the student is exposed in the substances, and with the detection of elements in quantities structural chemistry, radiochemistry, electrochemistry and theoretical chemistry.

laboratory to the four areas of specialization into which chemistry has been traditionally subdivided. Inorganic chemistry deals with all the chemical elements except carbon, and the compounds 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 increasingly concentrated in one of these four areas. The student may also be introduced to biochemistry, or the chemistry of living organisms, as well as such specialties as

Because advances in chemistry have been and continue to be published in many languages, those who look forward to postgraduate study and research are urged to acquire a reading knowledge of at least two foreign languages. These are usually chosen from among French, German and Russian. The student is referred to the regulations of the Faculty of Graduate Studies regarding language requirements for advanced degrees.

chemistry plays an important role. For some students, a first degree in chemistry will provide a background for further graduate work in medicine, law, business administration,. biochemistry, oceanography, geology or other areas. Many students will proceed to further studies in chemistry, working toward the degree of M.Sc. or Ph.D. A postgraduate degree is essential for those who wish to engage in independent original research or in university teaching.

The first class in chemistry is an introduction to the discipline. Non-science students who elect to take chemistry to fulfill requirements for a degree will find that the subject provides a good insight into the scientific method, though once again it should be stressed that because chemistry is a physical science, the laboratory and class work stresses mathematics more than does that of a life science such as biology. Many students who do not intend to become professional chemists are required to take introductory chemistry and may be required to take second and third-year classes in the subject as well. This group of students can include those taking courses in engineering, pre-medicine, pre-dentistry, dental hygiene, nursing and pharmacy. Engineering students contemplating chemical engineering should consult the Department of Engineering for advice on desirable classes in chemistry. All students intending to take classes in chemistry beyond the first year level should include classes in mathematics and physics in their first year, and final grades in these classes should not be less than 65%, if they are, the student is bound to find advanced classes in chemistry difficult and frustrating.

Degree Programmes

General B.Sc. in Chemistry

A candidate for this degree must satisfy all of the general requirements. He will take Chemistry 110 in the first year. In the subsequent two years he must undertake no less than four and no more than eight full classes chosen from Chemistry 210, 230, 240, 300(A), 310, 320, 330(C), 331(B) and 340 (two of 300(A), 330(C) and 331(B) constitute a full class). It is essential that Mathematics 100 be secured as a prerequisite to 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 individual interests of students. All students are required to consult annually with the Chairman of the Department, and to obtain his approval of their course selection.

Year I will normally consist of:

- 1. Chemistry 110
- 2. Mathematics 100
- 3. A foreign language at 100 level
- 4. One of Biology 1000, Geology 100 or Physics 110
- 5. Elective

Years II, III and IV must include:

(a) Chemistry 210, 230 and 240

(b) Six full classes from Chemistry 300 and 400 levels. Chemistry 300(A), 310, 320, 330(C), 331(B) and 340 are required classes.

(c) Mathematics 200 a prerequisite for Chemistry 300(A), 330(C) and 331(B).

(d) Five other classes. These must be chosen as follows:

(i) If Physics 110 or a foreign language were not taken in Year I, they must be taken in Years II-IV.

(ii) Two classes beyond the 100-level must be taken in a minor subject. Minor subjects allowed for this degree are biochemistry, biology, geology, mathematics or physics.

It is suggested that these five other classes be chosen according to the future plans of the student. For example: those planning future study in physical chemistry should take additional mathematics and physics classes; those planning future study in organic chemistry should take one or more biology classes; those planning future study in geochemistry should take one or more geology classes.

In all cases it is in the interests of the student to consult with the Chairman and other professors in the department. This may be done at any time during the first year. Experience indicates that March is the most suitable time for discussion of a future programme.

Classes Offered

105 Chemistry, (for dental hygiene students), lect.: 3 hrs.; lab.: 3 hrs.; G. A. Dauphinee.

This class is taken by dental hygiene students in their first year. It will not serve as a prerequisite to second-year chemistry classes. Organic chemistry is discussed in the second half of the year, since the regular programme of the students does not include further study of chemistry. The subjects discussed in the first term include atomic structure, solution equilibria and simple inorganic chemistry. laboratory experiments are integrated with the material discussed in lectures. Quantitative aspects of chemistry are not emphasized in this class.

110 General Chemistry, lect.: 3 hrs.; lab.; tutorial: 3 hrs.; W. A. Aue, A. Chattopadhyay, W. J. Chute, G. A. Dauphinee, J. B. Faught, P.M. Froehlich, K. E. Hayes, M. L. Heit, J. C. T. Kwak, 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 chemistry. Included are stoichiometry, acid-base and oxidation-reduction reactions, gases, liquids and solids, solutions, thermochemistry, equilibrium, chemical kinetics, and atomic and molecular structure. Emphasis is placed on the formulation of theories which will be useful in the correlation of experimental facts, rather than on the memorization of the facts themselves. Wherever possible, such a theory is derived using standard mathematical methods from basic physical principles. In tests and examinations the student is expected to demonstrate his knowledge of the basis of these theories and of their limitations and to show a logical approach to the solution of numerical problems.

It is assumed that students entering this class will have some knowledge of elementary chemistry, mathematics and physics. The minimum background in chemistry is the equivalent of Nova Scotia Grade XI with emphasis on its numerical aspects. It is important that students be able to use exponents and logarithms, proportionality and variation, and be able to solve quadratic and simultaneous equations.

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 intensive discussion of chemical equilibria (solubility, acidbase, redox, metal complex) with and without the use of approximation will be given.

Correlation to qualtitative and quantitative, analytical chemistry, such as competing equilibria, titration of weak and polyprotic acids, is attempted. The laboratory work will involve modern physical separation methods on exchange, thin-layer chromatography and quantitative analysis (precipitation, titration).

The second 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 to the 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 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 hrs.; W. E. Jones, C. H. Warren.

This class is designed to give a theoretical and practical background in the fundamentals of physical chemistry. The lecture periods include discussions of the following topics: properties of real gases, liquids and solutions; atomic structure; molecular structure; thermodynamics; thermochemistry; 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.

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.: 2 hrs.; optional tutorial: 1 hr.; lab.: 3 hrs.; G. D. Abrams, T. P. Forrest, D. L. Hooper, T. B. Grindley, J. S. Grossert.

This class will provide a broad introduction to the chemistry of carbon compounds, including molecular shapes and bonding, characteristic reactions and the way in which they take place, and the application of spectroscopy to organic chemistry.

Prerequisites: A good comprehension of the principles studies in Chemistry 110. In particular, the student is required to understand the relation between carbon and the other elements of the periodic table; valence; covalent and ionic bonding; electronic orbitals; orbital hybridization and the determination of molecular geometry by all types of s and p atomic orbital hybridization; electronegativity; the physical chemistry of solutions; chemical equilibria; velocities of reactions; oxidation-reduction; acids and bases. An examination may be set on these topics at the beginning of the academic year.

'243 Introductory Organic Chemistry with Biochemistry, Iect.: 2 hrs.; Iab.: 3 hrs.; W. J. Chute.

This class is taken by nursing students. It will not serve as a prerequisite to third-year classes in chemistry. During the first term a basic introduction to the chemistry of carbon compounds is given. In the second term students transfer to the Biochemistry Department.

300(A) Introductory Theoretical Chemistry, lect.: 2 hrs.; C. H. Warren.

This class provides an introduction to quantum mechanics and its application to spectroscopy and the electronic structure of atoms and molecules. The postulates of quantum mechanics are first presented and applied to some simple physical systems. This is followed by a discussion of the rotations and vibrations of molecules, the electronic structure of atoms, molecules and the chemical bond and the electronic structure of conjugated molecules.

Prerequisites: Mathematics 100 and 200, Chemistry 210 or 230 or consent of instructor.

310 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 the elements and their compounds. The first term will deal with the typical elements, the second term will be devoted to the study of the transition elements. Appropriate use will be made of modern bonding concepts such as molecular orbital theory and crystal and ligand field theories, 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. Experiments will be selected to demonstrate the principles and uses of vacuum-line and high temperature techniques, work in controlled atmospheres (glove-box handling) and nonaqueous solvents, crystal growth, etc. Characterization will utilize physical methods and measurements such as optical microscopy, magnetic susceptibility, magnetic resonance, differential thermal analysis and others. *Prerequisite:* Chemistry 210.

320 Analytical Chemistry, lect.: 2 hrs.; lab.: 5 hrs.; L. Ramaley.

Chemistry 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 analysis may be rationally selected and used, or modified if needed. Statistical treatment of data, chemical equilibrium, theory of titrations, electrochemistry, separation theory, and

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the interaction of light and matter are topics covered in presenting volumetric, electroanalytical, spectroscopic, and chromatographic methods of analysis.

The laboratory work is primarily concerned with modern separation techniques and the final step in the analysis process, the quantitative determination. Examples of all methods discussed in the lecture are performed in the laboratory. Essential to the class is the ability, both chemical and mathematical, to handle stoichiometric problems. A basic knowledge of chemical structure and solution equilibria is assumed.

Prerequisites: Chemistry 210

330(C) Chemical Thermodynamics, lect.: 2 hrs.; lab.: 3 hrs.; K. E. Hayes.

This class, while primarily intended for Chemistry Honours and major students should prove of interest to students in the fields of Biology, Biochemistry and Geology.

The class will proceed via a review of the laws of thermodynamics as applied to ideal closed systems, to consider the problems of real gases and open systems. Extensive use is made of the chemical potential and the various Maxwell relationships. Specific topics to be covered include, free energy and equilibria, phase equilibria, activities and activity coefficients, solutions of electrolytes and the Debye-Huckel theory, partial molar quantities and E.M.F.'s and the thermodynamics of ions.

The 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 formal reports, following the format of the Canadian Journal of Chemistry.

Prerequisites: Chemistry 230, Mathematics 100, 200.

331(B) Chemical Kinetics, lect.: 2 hrs.; lab.: 3 hrs.; every other week; K. E. Hayes, W. E. Jones, P. D. Pacey.

This class deals with the rates and mechanisms of chemical changes. Topics include treatment of experimental kinetic data, free radical intermediates, inhibition and catalysis, photolysis and luminescence, and special techniques for studying fast reactions. Examples will be drawn from reactions in the gas phase, at the gas-solid interface and in liquid solutions.

Prerequisites: Chemistry 230 and Mathematics 200 or equivalent or consent of instructor.

340 Organic Chemistry, lect.: 2 hrs.; tut.: 1 hr. lab.: 3 hrs.; J. A. Pincock.

This is an intermediate class in organic chemistry. The main purpose of the class is to develop an understanding of the principles of organic chemistry and their application to 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 problems in the laboratory and is given freedom to use his initiative in solving these.

The first section of the lectures is devoted to an outline of the principles of organic reactions. The application of these principles to synthetic organic chemistry is next considered

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 familiarize the student with a large number of classes of compounds.

Students taking the class are expected to have a knowledge of the nomenclature of organic compounds. They should also be familiar with the functional group classification of organic compounds and the basic reactions of these functional groups, and with the basic concepts of kinetics and thermodynamics as applied to chemical reactions. *Prerequisites:* Chemistry 110 and 240 or equivalents.

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 introduced and applied to spectroscopy and molecular orbital theory. *Prerequisite:* Chemistry 300(A).

410 Advanced Inorganic Chemistry, lect.: 2 hrs.; lab.: 3 hrs.; O. Knop.

All chemical elements and compounds can exist as crystalline solids, and most of them normally do. The arrangements of atoms and molecules in such solids, known as crystal structures, closely reflect the bonding properties of the constituent elements. They can only be studied by methods that do not destroy or modify the crystal structure. The aim of this class is to acquaint the student with the methods most frequently employed for this purpose and with the principles of structural inorganic chemistry in general.

Prerequisites: Chemistry 320, 330(C) and 331(B) (or equivalents) or consent of instructor. May be registered for only with prior consent of the Department.

420 Instruments in Analytical Chemistry, lect.: 2 hrs.; lab.: 3 hrs.; R. Stephens.

420 is given as two half classes; 420(A) and 420(B), covering respectively non-elemental and elemental techniques of instrumental analysis.

420(A). Instrumental methods applicable to molecular species, such as samples of organic material, are discussed. Techniques covered are the elemental analysis of organic samples, spectroscopic methods for functional group analysis (infrared, ultraviolet, nuclear magnetic resonance and mass spectroscopy) and the application of colligative properties in the analysis of high purity samples. The operating principles of each instrument are described, together with the methods of sample preparation and the applicability to both qualitative and quantitative analysis appropriate to each technique. Solution of practical analytical problems using the combined techniques is an integral part of the class.

420(B). Instrumental methods of elemental analysis are discussed. Techniques covered include atomic emission and absorption spectroscopy using both flame and non-flame cells, arc and spark spectroscopy, x-ray fluorescence, neutron activation and radiochemical methods. Both theoretical and practical experience in these techniques is given. In addition to normal laboratory operation, students are expected to solve at least one specific analytical problem by instrumental means.

Prerequisite: Chem. 320 or permission of instructor.

430(A) Statistical Thermodynamics and Absolute Reaction Rate Theory, lect.: 2 hrs.; K. E Hayes.

In the first half of this class the methods of statistical thermodynamics will be developed so as to enable calculation of classical thermodynamic functions from a molecular basis. The topics to be considered include, derivation and significance of the Boltzmann distribution law, the relation of thermodynamic functions to the partition function, the evaluation of partition functions for ideal gases, the heat capacity of gases and solids, the equilibrium constant in terms of partition functions and the statistical thermodynamics of adsorption.

The second half of the class considers the failure of collision theory to predict the absolute rate of chemical reactions, and proceeds to use statistical methods to evaluate the Absolute Reaction Rate Theory which will then be applied to systems of particular interest.

Prerequisites: Chem. 330(C).

431(A) Electrolyte Systems, lect.: 2 hrs.; lab.: 3 hrs.; J. C. T. Kwak, 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 application of the physical chemistry of electrolyte solutions in life sciences and medicine. Topics include equilibrium and transport properties of solutions, especially electrolyte solutions, with applications, colloid chemistry and electrokinetic phenomena as applied to e.g. electrophoresis and centrifugation, and a description of membrane transport and coupled transport with examples of biological importance. Laboratory experiments emphasize the measurement of electrical potential differences in low and high impedance systems, micro-electrodes, redox-electrodes and selectiveion electrodes, as well as thermodynamic and transport properties of electrolyte solutions.

Prerequisite: Chem. 230 or permission of instructor.

432(B) Atomic and Molecular Spectroscopy, lect.: 2 hrs.; lab.: 3 hrs.; W. E. Jones, C. H. Warren.

The class is designed to introduce the student to the theoretical and practical aspects of atomic and molecular spectroscopy. The major topics will include discussions of techniques 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 a knowledge of various spectroscopic instruments and the analysis of the resulting spectra.

Prerequisites: Chemistry 110 and Chemistry 230 or permission of instructor.

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 spectroscopy, however the focus of the class is the application of these techniques as well as infrared and ultraviolet spectroscopic methods in the structure determination of organic compounds.

Prerequisite: 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 use of free energy relationships, kinetic data, and isotope 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 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 equivalents, or permission of instructors.

Graduate Studies.

The department offers graduate classes leading to the degrees of M.Sc. and Ph.D. Details relating to admission, scholarships and fellowships, requirements for the degree, classes of instruction, etc., can be found in the Calendar of the Faculty of Graduate Studies.



Classics

Professors

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

Associate Professors

R. D. Crouse (Chairman) M. A. Usmiani J. P. Atherton

Assistant Professor

R. Friedrich

Special Lecturer W. J. Hankey

Classics is the study of our origins - how the Christian-European tradition to which we belong arose out of the ancient civilizations of the Mediterranean area. The fundamental ideas and beliefs of Europeans and North Americans, by which we are 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 own contemporary culture, we must study its historical origins.

Classics is much more than the study of ancient languages. Languages are not learned for themselves, but because they are necessary for the scientific study of ancient history, literature, religion, mythology and philosophy. The Classics Department at Dalhousie provides instruction both in these subjects and in ancient/anguages. While previous preparation in one or more ancient languages is desirable, it is nevertheless quite feasible for a student who discovers an interest in classics to begin his language studies during his university course.

A student taking classics at Dalhousie can approach the study of ancient cultures through literature or through history and the study of social structures or through the study of Greek and Christian philosophy. Honours course are offered which 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 may also be had in Hebrew, Coptic, Syriac and Arabic.

It is obvious that classics is worth studying for its own sake by students who wish to obtain a better understanding of the common assumptions and beliefs of our society. This ,*, (iii) Four classes not in the major field may include additional knowledge has always been regarded as pertinent to a career in politics and the higher levels of the civil service. For those who are thinking of the clergy classics is the most relevant preparation.

Classical studies also prepare students for a life of teaching and scholarship in several directions. Now that Canada is no longer a colony culturally; but responsible for its own culture. we have great need of scholars and teachers who know about our origins. Teachers of classics for schools and universities are hard to find in Canada. Classics is also the best preparation for the study of non-European cultures (Chinese, Indian, Islamic, etc.), and there is a growing need for specialists in these fields. For the older history of philosophy, and for the history of Christian belief, until, and including, the

Reformation, a knowledge of classics is indispensable. The same may be said for mediaeval studies in general. Classics leads also to ancient Near Eastern Studies (Jewish, Babylonian, Egyptian, etc.) and to archeology.

Degree Programmes

General B.A. and B.Sc.

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

Honours Programmes

The 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 Classics (Ancient Philosophy). In each case, it is highly desirable, but not essential, that the student begin the study of at least one of the classical languages during the first year of study. In conformity with University regulations, the fifteen 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 credits, or as History and Philosophy credits, respectively)

B.A. with Honours in Classics

(i) Nine classes beyond the 100 level in the major subject must include advanced work in both Greek and Latin, at least two 300 level classes in each. The course must include work beyond the 100 level in both ancient history and Ancient Philosophy, one of which may be counted as the minor subject.

(ii) Two classes in a minor subject: either Ancient History or Ancient Philosophy.

(iii) Four classes not in the major field: Ancient History or 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 * Medieval Philosophy, advanced work in Greek (including two classes at the 300 level) and some work in Latin (at least to the level of Latin 204).

(ii) Two classes in a minor subject: History (Ancient and Medieval).

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 in Ancient History, but must include work to the 300 level in at least one of Greek and Latin and at least 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.

(ii) Two classes in a minor subject: Philosophy (Ancient and Medieval).

(iii) Four classes not in the major field may include additional classes in History or Philosophy, or other electives.

Combined Honours

Classics may be taken as part of a combined honours programme with French or German. Students interested in either of these programmes should consult with the chairmen of the respective departments.

> Classes Offered Literature, History and Philosophy

Note: The Introductory classes, and the more elementary classes in Ancient History and Religions, and Classical Philosophy listed below do not require knowledge of the ancient languages. However, students who plan to do advanced work in any of these areas are advised to begin study of the appropriate languages as early as possible.

Introductory

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 to the art, religion and social forms of these cultures as well as their political development; in the second term the civilizations of Greece, Rome, and Israel will be studied, and their issue in the Early Christian world considered.

As the class is intended as an introductory one, no special preparation is expected, and there is no foreign language requirement.

Classics 202 Classical Art and Civilization, lect.: 3 hrs., MA 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 translation 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 ancients. The lectures will be illustrated.

In addition to collateral reading, short papers on selected topics will be required. The course will be useful to students interested in ancient civilization, ancient history and in particular to those studying ancient art. There is no foreign 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 of Greek 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 drama (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)

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

The class will consider the meaning of Christian doctrines in relation to their Jewish and Greek origins and their development in the classical world, with some attention also to their further development in medieval and modern times.

Classics 336 surveys the whole history of ancient Greek philosophical thought from its beginnings in Ionia in the sixth century B.C. to the end of the public teaching of Greek philosophy by non-Christians in the sixth century A.D. Proper attention is paid to the great classical philosophies of Plato and Aristotle studied in their historical context: and much emphasis is laid on the Greek philosophy of the first centuries A.D. and its influence on developing Christian thought.

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

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

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

Classics 230 History of Christian Doctrine, lect.: 2 hrs.; W. J. Hankey and others.

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

Classics 253/553 Seminar on the Roman Empire and the Rise of Christianity, seminar: 2 hrs.; J. P. Atherton) (not offered 1975-76)

Classical Philosophy

Classics 336 Ancient Philosophy from its Beginning to the Sixth Century A.D. (same as Philosophy 336), lect.: 2 hrs.; A. H. Armstrona.

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 related political, institutional, literary and theological concerns. An attempts is made to show how the legacy of classical and Christian antiquity was appropriated and reformed to constitute the ideology of mediaeval Christendom

The class will be devoted mainly to the study and discussion of a few fundamental texts, beginning with Boethius' Consolation of Philosophy. Special attention will be given to Anselm's Proslogion and the first few questions of Thomas Aquinas' Summa Theologica. It will be the object of lectures to present the continuity of the historical development and to emphasize the broad implications of the philosophical doctrines presented in the texts. In the latter part of the class, some attention will be given to late mediaeval Platonism and Mysticism, so that something can be shown of the beginnings of Reformation and modern philosophical and religious thought.

Classics 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 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 Hegel in relation to Plato and Aristotle.

Classics 470/570 Seminar on the Philosophy of the Church Fathers, R. D. Crouse.

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. (not offered in 1975-76)

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

Classical Languages and Literature

Note: Greek 100 and 200 classes are language classes: the 300-level classes are seminar classes, for which a sound knowledge is taken for granted. Of the list of 300-level classes two will be offered each year. The present selection is tentative.

Greek 100 Introductory Greek, lect.: 4 hrs.; R. Friedrich.

This is the beginners' class in the Greek language, and no previous knowledge is required. The aim of this class is to teach the student to read a Greek text. After he has become accustomed to the new alphabet - which does not take long - the study of grammar is introduced along with reading and translation of Texts from original Greek literature. Text: Stephen W. Paine, Beginning Greek.

Greek 200 Intermediate Greek, lect.: 3 hrs.; R. Friedrich.

Greek 200 is a continuation of Greek 100. The aim of the class is to develop the student's ability and to read and translate prose as well as poetic Greek texts. At the beginning of the class there will be a systematic review of Greek grammar. This will be followed by the reading of texts of Plato, Herodotus and Homer.

A study of Homer. Prerequisite: Greek 200. Greek 301/501 A and B Greek Lyrical Poetry, seminar: 2 hrs.; R. Friedrich, J./A. Doull.

Greek lyric'poetry of the Archaic Age will be the subject of this seminar: the works of the poets of this period will be studied against the background of the preceeding period of epic poetry.

In the first term elegiac, iambic and monodic lyric poets will be studied (Archilochus, Solon, Tyrtaius, Alcaius, Sappho. Anacreon); the second term will be devoted to a study of Pindar.

Prerequisite: Greek 200.

Greek 302/502 A and B, Greek Drama: Tragedy, seminar: 2 hrs.; (not offered in 1975-76). Prerequisite: Greek 200.

Greek 303/503 A and B, Greek Drama: Comedy, seminar: 2 hrs.; R. Friedrich.

A study of Aristophanes and Menander. Prerequisite: Greek 200.

Greek 304/504 A and B, Greek Philosophical Texts, seminar: 2 hrs.: J. Doull. Prerequisite: Greek 200.

Greek 305/505 A and B, Greek Historians, seminar 2 hrs. (not offered in 1975-76) Prerquiste: Greek 200.

Latin 100 Introductory Latin, lect.: 4 hrs.; A. Usmiani.

This class is for students who wish to begin the study of Latin in the University. The aim of the class is to enable the student to read classical Latin by the end of the course with the help of the dictionary. In the course a very basic survey of the Roman civilization is also given. The emphasis throughout is on direct reading with the grammar fed in as necessary.

Latin 200 A and B Latin Rhetorical Works. lecture/discussions 3 hrs.; M. A. Usmiani.

This class consists mostly of the reading of the works of Cicero, especially his speeches which show the range of his interest and give a vivid picture of the cultural and social 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.; J. 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 the late Middle Ages. Prerequisite: Latin 100.

Latin 205 A and B Roman Historians, lect.: 2 hrs.; J. P. Atherton. (not offered in 1975-76)

Latin 300A and B. The Roman Satire, lecture 2 hrs.; M.A. 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 half (B) of the Satires of Juvenal, but the class is normally given

as one full course as described here.

This advanced class is designed primarily for graduate students and undergraduate honours students. By special arrangement the class can also be taken by students from other departments even if they possess little or no knowledge of Latin. They would be permitted to read the texts in translation.

The class follows the development of Latin satire from its origins to Juvenal. The chief representatives of Latin satire that survived are Horace and Juvenal, and a wide selection of their works is read and studied thoroughly. Students are required to read the assignments for themselves and to follow the lectures which are informal and are combined with discussions of problems that arise from the texts. There are also occasional seminars on special topics and problems in the Roman satire.

Additional reading is suggested as an aid and is left to the discretion of the individual student.

Latin 301 A Study of Vergil, lect.: 2 hrs.; M.A. Usmiani.

The purpose of this class is to study the development and importance of Vergil's basic themes and ideas that are embodied in the Aeneid. In the first part of the class special attention is given to his early work, the Bucolics, where his themes begin to appear, and their development is then followed through the relevant parts of the Georgics. The main part of the class is devoted to the reading and discussion of the chief themes of the Aeneid, especially as they illustrate Roman political, religious and social ideas which have greatly influenced our own beliefs and institutions.

Lectures are given and discussions and seminars are held on special topics as they arise in the course of study.

This class may be taken also by students who do not read Latin, by special arrangement. Prerequisite: Latin 200.

Latin 302A and B. Roman Comedy, lect.: 2 hrs.; M. A. Usmiani. (not offered in 1975-76)

This class is normally given as one full course but it can be taken in two parts, the first (A) consisting of the Study of Plautus and second (B) of the study of Terence.

This 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 general lines of Roman comedy are sketched. The class work is conducted in seminar style, students reporting on their readings and impressions of the individual plays.

The class may be taken also by students who do not read Latin

Prereguisite: Latin 200.

Near Eastern Languages

The classes in Hebrew, Coptic, Syriac and Arabic, are available as electives at the discretion of the Department, only in relation to the needs of the particular student.

Note: The classes in Hebrew and Arabic are taught at the Atlantic School of Theology.

Hebrew

101 Elementary Hebrew and Introductory Readings, J. B. Hardie

Coptic

101 Introduction to the Coptic (Sahidic) Language and Literature, E. Segelberg.

200 Reading of Selections from other Coptic Dialects, E. Seaelberg.

Svriac

202 Intermediate Hebrew, J. B. Hardie.

303 Advanced Hebrew, J. B. Hardie.

402/502 Reading of Coptic Texts, E. Segelberg.

Partly Nag Hammadi Papyri, and partly Manichaean texts.

100 Introduction to the Syriac Language and Literature, E. Segelberg.

200 Svriac Language and Literature, E. Segelberg.

Reading of some early writers such as Aphrates and Aphrem, the famous hymnographer.

Arabic

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

100 Introductory Grammar and Reading of Texts.

200 Intermediate Arabic

Graduate Studies

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

Commerce

Professors C. R. Brookbank R. E. George M. J. L. Kirby C. W. Schandl R. C. Shook

Associate Professors

J. D. Misick (Chairman) R. H. R. Glube J. R. Hanrahan J. W. Matthews E. W. Scott J. Scheibelhut R. G. Storey

Assistant Professors

C. R. Dipchand C. J. McManus L. W. Mealiea I. Muncaster R. S. Sandhu G. E. R. Zinck

Part-time Special Lecturers

H. A. McKinley A. Shaw R. L. Towler P. Mason G. Duncan P. O'Neil

J. A. Dougall

The Department of Commerce offers a curriculum of undergraduate and graduate studies designed to equip students to serv the community in business, government and the professions. Graduates in good standing from all faculties can apply to enter the graduate programme, leading 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 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 pattern of part-time study will consist of the equivalent of three full classes each year. Two of these will be taken in the September to May term and one in the summer.

In all courses the main effort is directed towards drawing out the principles which govern traditional and contemporary practice. The principles are related to current developments in business, government and society at large, and special discussion meetings are arranged in which recognized authorities participate.

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, Organizational Behavior and Quantitative Methods.

All students entering the Commerce programme will be required to satisfy the department as to their competency in the English language,

General Outline of

Undergraduate Studies

I. Honours Programme

Four years of study are required comprising the equivalent of twenty full classes; nine and one-half required, four and one-half elective classes taken from the core areas, three elective classes from outside the core areas, and three classes chosen without restriction. At least one of the required classes must be an honours seminar. The core areas are 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. These include the possibility of a larger number of exemptions from professional courses of the accounting bodies in Canada, credit for part or all of the first year classes in the Master of 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 performance satisfactory to the department in each year of study. If this standard is not maintained, the student may be required to transfer to a general degree programme. The honours programme, will, therefore, in the first three years, satisfy the requirements of the general degree. Students in the general degree programme may apply for transfer into the honours programme.

II. General Programme

Three years of study are required comprising the equivalent of fifteen full classes; eleven from core areas (eight and 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

Three required core area classes: Commerce 101 Economics 100 or 110 Mathematics 111A plus 112B or 110*

Two classes selected from outside the core areas.

*Those planning further study in Mathematics should elect Mathematics 110 as Mathematics 111A and 112B will not satisfy prerequisite requirements for higher level Mathematics classes

Year II

The equivalent of four and one-half core area required classes:

Commerce 204 Commerce 207A/B Commerce 208A/B Commerce 209A/B Commerce 213A/B Commerce 215A Commerce 216B Economics 220A/B or 221A/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 approved by the department.

Year IV (honours)

One required Honours seminar.

Two classes selected from within the core areas.

One class chosen from outside the core areas,

One class selected without restriction from those offered within the Faculty of Arts and Science.

No 100 level classes may be taken in the fourth year.

Note: When selecting their electives, students are urged to seek combinations of classes which form a coherent whole.

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 study in consultation with faculty in the department. For the 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 those without a special area concentration.

Year II Required o

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Year I as f

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ore area classes. rce 204 rce 207A/B rce 208A/B rce 209A/B rce 215A rce 216B rce 216B rce 216B	(
rce 310	F
ore area classes rce 213A/B rce 311	
one-half full class equivalent electives chosen	1
rce 206A/B rce 214B rce 301 rce 320A rce 451 rce 452	
	1
arce 450 seminar	1
alent of three classes from one or more of the areas. ting a nics natics	
lent of one elective from outside the core areas.	
ssional accounting bodies allow certain exemptions of classes taken in the Department. These differ nce to province.	
can be obtained from the provincial offices of: ute of Chartered Accountants iation of Certified and General Accountants by of Industrial Accountants ered Institute of Secretaries	
nics	

Year II and Year III as for those without special area concentration except that certain electives are listed below. In 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 level Commerce core classes to the third year. The Depart-

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ment of Commerce should be consulted in regard to the classes to be postponed.

Concentration in Micro-Economics Economics 220A/B or 221A/B* Economics 320B

Economics 325 Economics.328

One and one-half additional classes in Economics.

Concentration in Financial Management and International

Trade .Economics 220A/B or 221A/B* Economics 324 Economics 326B Economics 330A Economics 423A one and one-half additional classes in Economics.

Concentration in Development Economics 220A/B or 221A/B* Economics 230 Economics 329 Economics 334B Economics 432 One-half additional class in Economics.

oncentration in General Economics Economics 220A/B or 221A/B*

our additional classes in Economics.

Whichever was not taken to satisfy core requirements.

Year IV

Economics seminar The equivalent of four full electives chosen in consultation with the Department.

3. Finance

Year I As for those without a special area concentration.

Year II

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

Year III

Required core area class Commerce 311 -

Recommended electives Commerce 301 or 312A Commerce 307.B Commerce 331A Commerce 332B

Suggested electives to total of five full classes:

Commerce 214B

Commerce 310

Commerce 320A

Economics 220A/B or

Economics 221A/B*

Economics 324

Economics 326B

*Whichever was not taken to satisfy core requirements.

Year IV

Commerce 460 seminar

The equivalent of three classes from one or more of the following areas.

Finance

Accounting

Economics (Money and Banking, Price Theory)

The equivalent of one elective from outside the core areas.

4. Marketing Year I

Required core area classes Commèrce 101 Economics 100A & B Mathematics 111A plus 112B or 110 Commerce 208A

Core area elective Commerce 218B

Outside Elective Psychology 100

Year II

Required core area classes Commerce 204 Commerce 207 A/B Commerce 213A/B Commerce 215A Commerce 216B

Core area electives Commerce 313A Commerce 318B

Outside elective Sociology 100

Year III

Required core area classes Commerce 209A/B Economics 220A/B or 221A/B Commerce 311

Core area electives Commerce 314A/B Commerce 319B Commerce 315B One-half additional core area elective.

One elective chosen without restriction.

Year IV

Commerce 465 seminar The equivalent of four full electives chosen in consultation with the Department.

5. Organizational Behaviour

Year Required core area classes Commerce 101 Economics 100A & B Mathematics 111A plus 112B or 110

Outside electives Sociology 100 Psychology 100

Year II As for those without a special area concentration.

Year III Required core area class Commerce 311

Core area electives Commerce 322A Commerce 323B Commerce 324B One-half class core area elective. Two electives chosen without restriction.

Year IV

Commerce 470 seminar The equivalent of four full electives chosen in consultation with the Department

6. Quantitative Methods

The area of concentration may be either (a) Computer Science or (b) Probability and Statistics or (c) Operations Research and Programming Concentration in Computer Science

Year I

Required core area classes Commerce 101 Economics 110 Mathematics 100 or 110 Two classes selected from outside the core areas.

Year II

Required core area classes Commerce 204 Commerce 207 A/B Commerce 208A/B Commerce 209A/B Commerce 215A Commerce 216B Economics 220A/B or 221A/B

Core area elective Mathematics 240

Year III

Required core area classes Commerce 213A Commerce 311

Core area electives Commerce 309B Mathematics 335 Mathematics 340 or 225 and 230

The equivalent of one full elective chosen without restriction

Concentration in Probability and Statistics

Year I Required core area classes Commerce 101 Economics 110 Mathematics 100 Two classes chosen from outside the core areas.

Year II

Required core area classes Commerce 204 Commerce 207A/B Commerce 208A/B Commerce 209A/B Economics 220A/B or 221A/B

Core area electives Mathematics 206 Mathematics 306

Year III

Required core area classes Commerce 213A Commerce 215A Commerce 216B Commerce 311

Core area electives Commerce 309B Mathematics 330 Mathematics 410

Concentration in Operations Research and Programming. Year I as for the concentration in Computer Science.

Year II and Year III as for those without special area concentration except that certain electives are listed below. In order to ensure that the prerequisite requirements of the 300 level and 400 level. Mathematics classes will be met, it will be necessary for students to postpone one or more of the 200 level Commerce core classes to the third year. The Department of Commerce should be consulted in regard to the classes to be postponed.

Core area electives

The equivalent of four and one-half full classes/chosen from: Commerce 309B Mathematics 203A/B Mathematics 204A/B Mathematics 225A/B Mathematics 230A/B Mathematics 316A/B Mathematics 330 Mathematics 410 Mathematics 430

Note: Not all the mathematics classes listed above will necessarily be offered each year.

Classes Offered

101 Introductory Accounting, lect.: 3 hrs.; workshop; 1 hr.: G. E. R. Zinck, J. R. Hanrahan, R. L. Towler, P. O'Neil.

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 both within and outside the business, and studies the interpretation and use of financial reports for decision-making purposes.

The first half of the term will emphasize principles and their application in what is generally known as financial accounting. In the second half of the term the focus will be on accounting information for management needs.

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 the class in his second year.

102 Renumbered Commerce 311 below

204 Statistics for Economics and Business, lect.: 3 hrs.; workshop: 2 hrs.; R. E. George, C. Marfels (Same as Economics 222).

Topics studied include the definition, functions and sources of statistics; the design and execution of statistical enquiries; statistical tables; graphs and diagrams; measures of central tendency, dispersion, skewness and kurtosis; curve-fitting; probability (estimating mean and proportion in population from samples, and testing hypotheses about means and proportions); quality control; index numbers; time series analysis; elementary correlation.

Background knowledge that is essential for this class includes; algebra at approximately Grade XI level; some experience of 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 university level; familiarity with national accounting concepts.

Note: Each of the following A/B classes may be offered only as A or B.

206A/B Computer Applications to Business Problems, lect.: 3 hrs.; P. E. Mason.

Computers are playing an increasing role both in business and in modern society. In order to familiarize the student with the concept of a computer, its advantages and disadvantages and current applications, this class takes a threefold approach:

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runs made.

3. COBOL, the most commonly used business oriented language today, will be introduced. A survey of the language combined with introductory problems will be conducted. Prerequisites: There are no prerequisites to this class except the ability to think coherently. It is recommended that this class be taken as early as possible because the use of computer facilities will ease the workload in other classes.

1. The computer will be introduced as a tool for solving numeric problems commonly encountered while in 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 introduced from the point of view of a manager rather than from that of a programmer. Computer Packages actually used for such applications as cost analysis, inventory control and accounts receivable will be implemented, data bases created and simulated production

207A/B Introduction to Managerial Finance, lect.: 3 hrs.; C. Dipchand, J. R. Hanrahan, R. Storey.

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 concepts for evaluating financial decisions. This necessarily involves consideration of how the firm can achieve successful interaction with its external environment and make an appropriate contribution to the operation of the economy.

Essential background knowledge: An understanding of economic principles and the economic environment in which a business operates, and sufficient knowledge of accounting processes and principles to enable the student to use financial data intelligently.

Prerequisites: Economics 100A and Economics 100B and Commerce 101.

208A/B Marketing Management, lect.: 3 hrs.; R. H. R. Glube, I. Muncaster

This class is designed to give the student a basic understanding of the character and scope of marketing and its role in business operations. It focuses upon the concepts and techniques 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 distribution; pricing systems; selling and promotional activities. 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 Commerce 208/B in their first year.

There are no prerequisites for this class, although some knowledge of accounting would be helpful.

209A/B Production, lect.: 3 hrs.; 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 decision-making process in production.

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

Prerequisites: Commerce 101, Economics 100, Mathematics 110 and Commerce 204. The latter will normally be taken concurrently.

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 object, mistake, misrepresentation; statute of frauds.

Privity of contracts; interpretation and discharge of contracts; breach of contracts; agency.

214B Commercial Transactions, lect.: 3 hrs.; R. S. Sandhu.

Contract of sale, bailment, employment; negotiable 'instruments, real property, tenant and landlord, mortgages; 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 fields of sociology, anthropology and psychology are used as aids in the development of understanding and objectivity. As well as dealing with substantive data from the behavioral sciences, the class pays considerable attention to case material

The purpose of this class will be to survey both theory and research pertaining to complex organizations with emphasis on design, structure and administrative practices in connection with the environmental setting and how the interaction of these variables relates to organizational performance. Concomitant with this 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 material, time will also be devoted to the formulation of general solutions and decisions for action.

Commerce students are required to take 215A and 216B as a complete unit with 215A taken prior to 216B. Non 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 208A/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 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 planning their programme for the following year.

301 Cost Administration, lect.: 2 hrs.; workshop: 1 hr.; G. E. R. Zinck.

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 reporting the necessary information. Cost determination, planning, control and budgeting (cash and capital) are analyzed in relation to the internal needs of the management team.

Essential background knowledge: an understanding of

accounting processes and principles and the ability to work with accounting information.

Prerequisites: Commerce 101 and Commerce 310. The latter may, with the approval of the instructor, be taken concurrently

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 situations. Students are expected to review and supplement their knowledge of basic business functions, to find and analyze pertinent materials in libraries and from other sources, and to organize and integrate relevant materials and business principles into workable recommendations for managing a variety of small businesses.

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 facing the operator of a retail or service business. Although primarily designed for Pharmacy students, this course is open to Arts and Science students who have had no previous Commerce classes. Commerce 305A is the course available for Commerce students who are interested in this topic. Students may offer for credit only one of Commerce 305A and 306B

307B Intermediate Finance, lect.: 2 hrs.; E. W. Scott.

A more intensive study of capital budgeting, cost of capital and valuation theory than that of Commerce 207 A/B. Special emphasis is placed on long term capital and the bargain for funds vital in financing the business enterprise. 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 209A/B, which is a prerequisite. and will cover topics such as quality control, inventory control, production scheduling, and methods planning in greater detail. Group and individual projects will be undertaken as part of the course.

310 Financial Accounting, lect.: 3 hrs.; workshop: 1 hr.; J. Matthews.

This class is concerned with the concepts of external reporting by business firms. The theory and procedures 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: Commerce 101.

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 firms operate; the effect of these environmental constraints and opportunities on business decisions; the way in which business decisions are made and implemented; management practices.

Prerequisites: Commerce 101, Commerce 207A/B, Commerce 208A/B, Commerce 215A, and Commerce 216B. Students who have obtained credit for Commerce 102 in prior years will not be permitted to take this class.

312A Managerial Accounting, lect.: 3 hrs.; E. W. Scott.

Introductory cost analysis for control and decision-making. Budgeting. Selected problems in external financial reporting including consolidated statements, tax allocation, price level changes and leases.

Prerequisites: Commerce 101, Commerce 207A/B.

Note: Students whose major area of concentration is Accounting should take Commerce 301 and Commerce 310 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 operations and actions. Prerequisites: Commerce 208A/B.

31'4A/B Sales Management, lect.: 3 hrs.; J. Scheibelhut.

Organization of sales departments; sales planning and forecasting; quotas; territories; performance standards; analysis 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 overall promotional mix. Problems are viewed through the eyes of the marketing manager in both business and institutional organizations and major emphasis is placed on understanding the factors, both business and social, that affect his decision and mold communications strategy. Prerequisite: Commerce 208A/B.

318B Marketing Research, lect.: 3 hrs.; J. Scheibelhut.

The class will use the scientific method in solving marketing and formulating the research problems, research design, application of sampling methods, statistical design of experiment, 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 . 208A/B, Commerce 204 con-

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 situations. The class will be based on use of projects involving actual companies and on the use of cases. Prerequisite: 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 their effect on business decisions.

Essential background knowledge and technical skill: knowledge of economic principles and the economic environment in which a business operates and the ability to work with accounting information.

Prerequisites: Commerce 101 and Economics 100A and 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. The intention of this half class is to build upon the knowledge

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gained in Commerce 216B and will employ such learning techniques as sensitivity training, structured exercises in interpersonal relations, and case studies. 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 substantial number of people. Such organizations must deploy personnel on the basis of skills (task specialization) and be concerned with staffing appraisal, training and development, compensation, collective bargaining, handling grievances, health and safety, leadership and justice with respect to employees. All of these processes comprise the personnel 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 knowledge acquired in the class on Organizational Behaviour. Cases will be used to simulate reality-oriented work environments.

Finally, the role of personnel management and the administration of the personnel function will be subject to consideration and analysis.

Prerequisites: Commerce 215A and Commerce 216B.

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 bargaining.

Prerequisites: Commerce 215A and 216B, or permission of 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 concentrates on investment analysis suitable for the individual, the estate or small group. The main focus is on marketable securities, stocks, bonds, and investment trusts. Case material is primarily Canadian and covers such areas as growth stocks, new issues, convertibles, closed end funds, mutual funds, and warrants. Reading assignments and case-analysis will provide the student with opportunities to handle investment analysis and portfolio management on a problem basis. Prerequisites: Commerce 207A/B, Commerce 204, and

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 structure. 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 capital markets. The class will be conducted in terms of reading assignments, case-analysis, evaluation of available research results and classroom discussion.

Prerequisites: Economics 221A/B, Commerce 207A/B. The latter may be waived with the consent of the instructor.

450 Accounting Theory and Systems, (for honours students), lect.: 2 hrs.; C. W. Schandl.

The class makes independent investigations in the philosophy of accounting and auditing, based on recent literature.

Topics studied include information theory, role and function "theory", measurement theory, systems, accounting systems; the concept of control; forms of control; theory of auditing; investigation in the nature of "evidence", current 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

This class explores the concepts of management control systems, their establishment and review, together with the standards and procedures involved in the attest function (auditing). The role of the computer and statistical sampling in he attest function are examined. The problems of undertaking investigations for special reports are also considered.

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 consignments are discussed. The theory and problems involved in business reorganizations and liquidations are also explored.

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 study intensively selected facets of marketing management. Restricted 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 (Philosophy) R. Friedrich (Classics) R. Ilgner (German) S. Jones (Spanish) F A. Kretschmer (French) N. Maloff (Russian) R.M. Martin (Philosophy) S. Mendel (English) N. Nevo (Russian) 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 following classes in Comparative Literature. These classes may form part of an area of concentration. All lectures are 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 problems of life through the study of selective masterpeices of European literature, which may include works by Dante, Chaucer, Cervantes, Shakespeare, Moliere, Goethe and others.

Note: English 100 is acceptable as an equivalent to Comparative Literature 100. (Class description to be found under English 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 Drama.

(Class description to be found under Classics 207)

210 Theories and Manifestations of Love in Medieval Europe, H. R. Runte.

Not offered in 1974-75.

212 The Realistic Novel in 18th Century France and England, R. Runte.

Not offered in 1974-75.

214 Arthurian Romances, H.R. Runte

An historical, archaeological cultural and literary investigation of French, English and German Arthurian texts dealing with the mediaeval legend of King Arthur and the Knights of the Round Table. All readings in modern English translations. 215 Women in Literature and Society, G.F. Waller and R. Runte (Panel Leaders)

A panel of professors will present women as authors and the role of the woman and her portrait in literature as a reflection of society in England and France with appropriate references to Italy and Germany. The development of the woman's image will be studied chronologically with reference to contemporary themes and problems.

216 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 with exercises in assembler programming. Data storage and elementary sorting. Application programs. Introductions to high-level languages: Algol, COBOL, APL, simulation languages. Interactive programming in Basic. Applications in numerical analysis and optimization. Prerequisite: Mathematics 100 or 110. An introductory class

on the efficient use of digital computers.

35 Data Processing, lect.: 3 hrs.

Review of Fortran. Basic concepts of data. Arrays, lists and strings. Storage allocation. Files management, updating, searching, merging and sorting. Report generators. Cobol programming with applications to payrolls, accounting, sales analysis, business statistics and inventory control. Simulation of industrial processes. Management games. Prerequisite: Mathematics 240 or Commerce 206.

340 Computer Science, lect.: 3 hrs.

Algorithms. Basic concepts, single and multi-precision arithmetic. Implementation of mathematical functions. Combinatorial and enumerative algorithms. Random number generation and transformations.

Data structures. Lists, strings, arrays and trees. Storage media and allocation. Symbol tables. Up-dating and searching. 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 programming, learning algorithms, pattern recognition and picture processing. Elements of abstract languages and compilers. Prerequisite: Mathematics 240.

Economics

Professors

R. E. George J. F. Graham J. G. Head Z. A. Konczacki R. I. McAllister N. H. Morse A. M. Sinclair (Chairman)

Associate Professors

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

Assistant Professors

F. M. Bradfield G. A. B. Kartsaklis B. Lesser T. A. Pinfold

U. L. G. Rao

Do you know what inflation means and why it is a problem? Do you know why unemployment should be a matter of national concern?

Do you know the price that Canada will pay for a clean environment?

Do you understand your newspaper when you read about Gross National Product, Investment, Price Indexes, Seasonally Adjusted Unemployment Rates . . .?

Are you interested in studying problems in the economics of labour?

Are you interested in studying the economic system of Canada in contrast to that of Russia, Yugoslavia, Great Britain, or Argentina?

Are you interested in studying the international monetary 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 development 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 breadth and variety in order to accommodate a variety of interests on the part of students. Students will find that they can major in Economics exclusively or that economics goes hand in hand with work in sociology, political science, 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, research and administrative positions in universities, business, government and international organizations.

General Degree Programmes

The Department offers undergraduate and graduate programmes in economics. Students should consult the timetable and the Department at the time of registration for changes in or additions to the classes listed here.

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The necessary core courses for a major in Economics are: Economics 220 (A or B), Economics 221 (A or B), and Economics 222 or 322.

As a guide to the student who is majoring in Economics, the following outline represents a course structure for a typical well-rounded programme.

Yearl

Year II

6-7. Economics 220 (A or B); Economics 221 (A or B), Economics 222 or 322. 8. One other class in Economics.

Year III

Students considering economics as an area of concentration should consult the Department about their programme.

Although students may offer fewer classes in economics than the seven suggested, this number is deemed necessary to provide a basic knowledge of the discipline and should be regarded as the minimum for preparation for a graduate

programme in economics.

Students must satisfy the overall requirements for the degree programme in which they are registered. (B.A., B.Com., B.Sc., etc.)

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Economics can be taken as the major subject in a general B.A. or B.Comm. degree programme, and it may also be taken in conjunction with major programmes in subjects such as mathematics, accounting, political science and history.

Recommended Course Structure

1. Economics 100, 110 or 120.

2. Mathematics 110, or equivalent.

3-5. Three classes chosen from fields other than Economics.

9-10. Two classes chosen from fields other than Economics.

11-13. Three classes in Economics.

14-15. Two classes at least one of which is not in Economics.

Concentrated Integrated Programme

The Department is now offering an alternative course structure which may be of interest to students who wish to prepare themselves for a two-year M.A. programme or for work as an economist. The Concentrated Integrated Programme differs from the normal course of study since students will work on 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 the second year would 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 April 30, 1975. The programme is designed for a maximum of 20 students and a minimum of 10 students.

African Studies Programme

The Department is cooperating with several other Departments in offering an African Studies Programme. Interested students should contact Professor Z. A. Konczacki.

Other Programmes

The Department is prepared to assist students who may wish to devise their own programmes under the present curriculum regulations. Interested students should consult the Undergraduate Co-ordinator.
Honours Degree 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 321B; Economics 322; Mathematics 110 or equivalent; a course in Economic History; a course in the History of Economic Thought.

The following course structure is recommended: Yearl

- 1. Economics 100 or 110.
- 2. Mathematics 110 or equivalent.
- 3-5. Three classes in fields other than Economics.

Year II

6. Economics 220 (A or B) and 221 (A or B).

- 7. Economics 322.
- 8. Economics 232 or other economic history class.
- 9-10. Two classes chosen from fields other than Economics.

Year III and IV

11-16. Six economics classes including 327, 320A, 321B. 17-20. Four classes in other areas chosen in consultation with the Department.

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

Honours students must pass a comprehensive examination at the end of their fourth year, or write a series of short papers, at their option.

Of the classes selected outside of economics in the third and fourth year, students must include at least two classes above the elementary level.

Students are advised that mathematics is required for graduate work in most good graduate schools. The value of econometrics and of additional mathematics is therefore stressed

In some instances, the Department may permit students to take classes in other subjects in lieu of classes in economics and may permit minor variations in the required classes.

Students must be careful in arranging their courses to ensure that they satisfy the overall requirements for the General B.A. degree.

Combined Honours

Combined honours programmes may be arranged with other departments: For combined honours programmes with economics where the major concentration is in the other discipline, students should consult the other departments concerned.

Classes offered

100 Principles of Economics, lect. 2 hrs., tutorial 1 hr., various members of staff.

This class serves as an introduction to economics for students with no previous background in economics, and can be taken as the first in a series of classes in economics or as an elective for students wishing some background in the subject. The emphasis in the class is on developing the basic analytical tools and applying them in the context of

contemporary, and generally Canadian, economic problems. Sections 5 and 6 of Economics 100 differ in offering a problem oriented framework in which the analytical tools are developed by examination in each term of a question such as the multinational firm in Canada, urban economics, Canadian government and the economy, and the economics of inflation

110 Principles of Economics: A Mathematical Approach, lect.: 2 hrs., tutorial 2 hr., T. Pinfold.

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

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

This course will analyse a number of episodes from Canada's past as a means of illustrating and developing the principles of economic analysis.

Episodes such as the economic factors leading to Confederation, the development of the Prairie wheat economy, the building of the CPR, the beginnings of U.S. investment in Canada, and the Great Depression will be examined as a means of developing the basic analytical principles of economics.

(Note: Economics 120 is not open to Commerce students needing to satisfy their Economics 100 requirements.)

220A/B Micro-Economic Theory I, lect.: 3 hrs.; (offered both terms).

Microeconomics deals with the economic behaviour of households as purchasers of output and suppliers of input services, and of firms as producers of outputs and purchasers of inputs, as well with the behaviour of groups of households and firms. This class covers material in this area which may be required for other classes in economics at the 200 to 400 level. Geometry' and a limited amount of high-school algebra are employed.

In addition to standard topics such as consumer and producer behaviour under various market structures, an introductory treatment of general equilibrium, external economies, and welfare economics is included. Although the major emphasis is on theoretical ideas, applications of these ideas are considered, in order to illustrate the range and power of micro-economic theory in dealing with practical economic issues.

Prerequisite: Principles of Economics.

221 A/B Macro-Economic Theory, lect.: 3 hrs.; (Offered in both terms).

This class is intended to provide a sufficient treatment of macro-economic theory to serve as a basis for other classes in economics which require a knowledge of macroeconomics. The class is not mathematical in its treatment of the material. Topics covered include: national income accounting; the theory of employment, interest, money, and prices; and the theory of economic growth. Both "open" and

"closed" 'economies are considered. Major emphasis is placed on the development of the theoretical ideas. Prerequisite: Principles of Economics.

222 Economic Statistics I (same as Commerce 204), lect.: 3 hrs.; workshop 2 hrs.; 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 central tendency, dispersion, skewness and kurtosis; curve-fitting; probability (estimating mean and proportion in population from samples, and testing hypotheses about means and proportions); quality control; index numbers; time series analysis; elementary correlation,

Background knowledge that is essential for this class includes: algebra at approximately Grade XI level; some experience of constructing and interpreting graphs; the ability to think quantitatively which is usually gained by the study of geometry and algebra at the high school and university level; familiarity with national accounting concepts.

231B 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. Characteristics claimed to be unique to the health care sector are analysed within an economic framework. Determinants of demand, supply and utilization of health services are examined with particular reference to the organization and evolution of Canada's health care system.

This one-term survey course consists of a literature review, lectures, and student seminar presentations on selected topics. To accommodate part-time students the class will meet during late afternoon or evening one day per week. Prerequisites: Principles of economics; Economics 220A/B is desirable.

232 Canadian Economic History, lect.: 3 hrs.; (same as History 222); N. H. Morse.

This survey class is a study of the economic development of Canada from the age of discovery to the present. However, as Canada from the beginning has formed part of a larger system, the approach taken in the class is to present Canadian economic history in relation to the larger system which can be broadly described and analyzed in terms of the relationships between the Old World and the New. The class therefore covers areas of economic history that are considered to be relevant to an understanding of the economic development of Canada. The aim is to make the class a unit as much as possible by using themes of trade, commodity, technology, vested interest, institutions, and so forth, as a means of developing the argument. As the class proceeds, the focus shifts more and more towards Canada, but the general subject matter deals with the penetration of Europeans coming from across the Atlantic and across Siberia into the Western Hemisphere. The class therefore is a study in the formation and breakup or change in empires; the shifting balance of power between countries and regions, the role of the Caribbean areas, the rise of the United States to a position of pre-eminence, and Canadian responses to these changes and to internal problems as well.

More theory is introduced towards the end of the class than is used in the earlier parts, as some theory is helpful in

The topics considered include: methodology of African economic history; the significance of environmental differentiation; some speculations on economic, prehistory; economic contacts between distinct ecological regions and different cultures; introduction and spread of agricultural crops; landholding systems; mining and metal-working; longdistance trade routes and trade centers; overseas trade; slavery and slave trade; Arab and European penetration and

its economic impact. The discussion concentrates primarily on tropical Africa and it is carried up to the times of the partition of the Continent by the European powers in the late nineteenth century.

235B Economic History of Tropical Africa: Colonial Period, lect.: 2 hrs.; Z. A. Konczacki.

This class deals with an era which began with the "scramble" for African colonies, and ended with the coming of independence. A survey is provided of colonial economic policies, prior to World War II, problems of their implementation and eventual introduction of the "development and welfare" approach. More specifically, the topics discussed include: development of transport, mining; agriculture and trade; some aspects of investment and technological diffusion: growth of labour force and the problems of migrant workers; colonial planning; socioeconomic impact of European colonization on Africans; African response to economic

incentives; a balance-sheet of colonialism. No prerequisites are required, although Introductory Economics and Economics 234A are desirable.

discussing Canadian problems and policies, especially in the twentieth century. However, no strict prerequisites are required, although a class in economic principles and some knowledge of history would be beneficial.

234A Pre-Colonial Economic History of Sub-Saharan Africa, lect.: 2 hrs.; Z. A. Konczacki.

The object of the class is to introduce the student to the most important problems of African economic history, with particular concentration on the pre-colonial period, and to prepare him for further reading in this area of study.

No prerequisites are required, although Introductory Economics and some knowledge of history is desirable.

236B Recent Economic Developments in Sub-Saharan Africa, seminar: 2 hrs.; Z. A. Konczacki.

This class centres on the last decade of development. Topics discussed include: impact of colonial heritage, present structure of African economies, infrastructure, agriculture, mineral development, industrialization with particular emphasis on impact substitution, trade: overseas and intra-African, foreign investment and aid programmes, economic planning, and the prospects for the future of development and co-operation between African economies. This class cannot be taken by the students who already have a credit in Economics 236A.

Prerequisites: Introductory Economics. Economics 234A and 235B are desirable.

241A Comparative Economic Systems: National Economies, seminar: 2 hrs.; P. B. Huber.

The object of this class is to sharpen the student's ability to

think about problems of economic organization and control, to improve his skills in writing and speaking with respect to these problems, and to provide him with a broad background of institutional material on the structure and performance of a variety of economies. Readings on specific countries provide the basis for several short papers, but there is no written examination.

The student taking this class must understand the interrelated character of economic activity and have a good grasp of the way in which the price system operates. Preliminary reading should have included The Making of Economic Society by R. L. Heilbroner.

Prerequisite: Introductory Economics.

242B Comparative Economic Systems: Economic Organization and Planning, seminar: 2 hrs., P. B. Huber.

Initially, this class examines, the economic behaviour of organizations and the ways in which this behaviour can be controlled. This provides the basis for consideration of the theory and practice of economic planning at micro-economic and macro-economic levels in various institutional contexts. Readings include selections from Dahl and Lindblom, Galbraith, Mishan, Tinbergen, and Ward.

Prerequisite: Introductory Economics, plus an additional half class in Economics.

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

The 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 tackling some current problem in project teams.

The class consists of several main strands, which often run concurrently. These include:---

1. Economic Development in theory and practice. A survey of some main development theories and their implications, drawing on the experiences of selected countries and regions - including the Atlantic Provinces.

2. Development Planning. Particular attention will be given to the Canadian social, political and economic context. Case studies will be utilised from World Bank experience in developing countries, from Canadian and O.E.C.D. member countries at various levels of government, and from the private sector. Regional, urban and rural, as well as national planning, 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 improve the costeffectiveness of development planning e.g. programme budgets, cost-benefit analysis, critical-path scheduling, etc.

4. Application. The gist of development theory and comparative case study experience is utilised by working on current problems. Project teams will review how agencies in the Atlantic region are planning and budgeting - largely through extensive interviews. Teams will also tackle 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 inter-disciplinary approach, and will give them practice in harnessing information and advice from a range of sources.

^{*}Class Membership

The class is provided for two main groups of people:--1. Students interested in applying their background in economics and related subjects (e.g. political science, commerce, sociology) in a working environment, as part of a team that will include colleagues who already have some experience of development economics in practice.

Persons who are presently working in government agencies and business, who have an interest in reviewing how they might learn from comparative development experience lessons of value to their present, or future, work situations. Prerequisites: Introductory Economics or degree in a related discipline. The work requirements are streamed to fit students' backgrounds.

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

320A Micro-Economic Theory, lect.: 3 hrs.: G. A. B. Kartsaklis

This class is mainly concerned with the theory of the firm. The discussion centers around managerial motivation and the equilibrium of the firm in theory and practice. Selected topics include the alternatives to profit maximization, breakeven charts, cost-plus pricing, and the pricing of factors of production. This is followed by a discussion of problems of market conduct under oligopoly: collusive behaviour, administered prices, and basing-point prices are the main issues in this part. The last part of the class covers problems of resource allocation and of welfare economics. This class will be of particular value for students intending to do graduate work in Economics. A knowledge of calculus would beuseful

Prerequisites: Mathematics 110 or equivalent and Economics 220A/B which may not be taken concurrently.

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

This is a class for persons who wish to do relatively advanced work in economic theory, possibly with the thought of going on to do graduate work in economics. The class will assume some knowledge of calculus. Topics covered include: classical models of income and employment; Keynesian models of income and employment; the theory of economic growth (including two-sector models); and trade cycle models

Prerequisite: Economics 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 the basic theory of mathematical statistics. Statistics in its applied form has become a basic tool in all fields, recently, statistical techniques, suited to tackle economic problems, have become increasingly sophisticated. This class is designed as an introduction to econometrics; it is presumed that advanced techniques of econmetrics can be understood by the student who has taken this class.

This class concentrates on the theory of Probability, building from an axiomatic point of view, mathematical expectation, moment generating function, and statistical inference.

Multiple linear regression models will be discussed and a critique of various problems that arise consequent to violations of the assumptions of the general linear model will be presented. This will prepare the student to undertake applied econometric work; besides, it would provide a springboard for the student to take up advanced econometrics.

The student is expected to have at least a one-year class in calculus (Mathematics 110 or equivalent) and preferably linear algebra too. Introductory Economics is also required.

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 public expenditure which is illustrated by reference to the major economic functions of government.

The second part of the class is concerned with the theory of taxation in relation to the objectives of public policy. This section explores the possible role of a sample of important taxes in the design of a good tax system. The third section examines the role of public finance in relation to economic stablization. The final section considers the special problems of public finance in a federal system. The analysis of the various sections will be illustrated from and applied to the fiscal systems of Canada and other countries. Prerequisite: Introductory Economics, Economics 220A/B

and 221A/B are desirable.

325 Labour Economics, lect. and seminar: 3 hrs.; C. Steinberg

Some nine million Canadians are directly dependent upon wages and salaries for a living, and their earnings constitute about 65% of the National Income. Over two million of these workers belong to trade unions in critical sectors of our economy. Economic analysis of the factors affecting wages and salaries, employment and unemployment, the conditions of labour, and the labour market is therefore important to an understanding economy as a whole.

The subject is introduced by reviewing: the emergence of the labour problem; the development and structure of the labour market; the growth, structure and outlook of trade unions; and the historical and legal foundations of labour relations.

Most of the year is spent in:

(a) Analysis of the supply of and demand for labour, opening with a review of classical wage theory.

(b) Examination of the theory and practice of collective bargaining, exploring also the interaction and relative strengths of market (economic) forces, and institutional (government-union-employer) forces.

(c) Study of labour's share of the national income and the relative effect of unions on it.

(d) Analysis of the determinants of employment in the macro-economic sense, and of the measurement and problems of unemployment.

We conclude with a review of public policy with respect to labour, and an effort is made throughout to relate current events to the theoretical framework.

This class is concerned with the nature and operation of the financial system, with particular reference to Canadian examples and experience. As such the class is concerned with financial instruments and institutions and with those processes whereby the social control of the supply of money and credit in the system is effected. The class is complete in itself, but is complemented by Economics 426B which continues the analysis with a consideration of the theory and effectiveness of monetary policy. Prerequisite: Economics 221A/B.

The approach taken in this class is to study "the intellectual efforts that men have made in order to understand economic phenomena". A brief survey of mediaeval and mercantilist literature is followed by an examination of English classical political economy and Marxian economics together with that of other socialists. The focus then shifts to the marginalists, neo-classicists, and the institutionalists. Problems of economic instability and depression, especially in this century, require that some attention be given to Keynesian economics and its extensions. The time allotted to the study of European writers and schools and of various contemporary writers and current topics depends in part on the interests of students. It is recognized that the tremendous expansion of the literature and the emergence of highly specialized fields in economics makes it necessary to select from recent sources only a relatively small sample of writings which relate this class to others which the student may be taking. The links can be forged, nevertheless, by means of a number of topics such as the following: the theory of value, the treatment of money, the theory of economic growth, the theory of distribution, and the relationship between growth and distribution.

The class structure is intended to be flexible; however, as a base it has two lectures and one seminar (in which student teams of four each provide the materials) each week.

Prerequisite: Introductory Economics and an interest in social science and its methods. Economics 220A/B and 221A/B are desirable.

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

327 History of Economic Thought, lect.: 3 hrs.; N. H. Morse

Although this class is intended to supply a background for several other classes in economics, it is also true that other classes serve as background for this one. It is considered essential, however, that students in this class have taken a class in economic principles. A class in micro-economics (price theory) and in macro-economics (income determination) would be helpful. The presentation, except for a few specific points, is largely non-mathematical. Therefore, the main requirement of students is an ability to read and assimilate a certain body of literature rather quickly.

Prerequisite: Economics 220A/B and 221A/B are recommended.

328 Industrial Organization, seminar: 2 hrs.; C. Marfels.

Industrial Organization is the application of the models of price theory to economic reality. In a specific industry, the problems of a firm competing successfully with its rivals in order not only to survive but to acquire a higher market share are far more complex than those in price-theory where we have to deal with more or less simplified assumptions to find a solution at all. The traditional approach to the analysis of the competitive process in an industry is divided into three parts: market structure, market conduct, and market performance. These are the three main parts of the class.

Briefly, market structure refers to the number and size distribution of firms in general and to economic concentration in particular; in market conduct the pricing process is discussed; market performance concerns the problem of the degree of optimality of allocation of resources. The latter part includes a discussion about whether a reallocation of resources is necessary, and this involves looking at the basic elements of public policies directed towards business. *Prerequisite:* Economics 220A/B or equivalent microeconomics course.

329 Urban Economics, lect.: 3 hrs.; T. Pinfold.

Urban Economics is essentially the application of tools of economic analysis to the problem or urban areas. Urban area is loosely defined so as to include small towns as well as large cities. Topics discussed include: the origin of cities, factors affecting urban economic growth, the goals of an urban area, problems in intra-urban resource allocation, urban transportation, production of public goods in urban areas, and urban planning. Flexibility in selecting class content is considered important. Topics suggested by students are welcome. Students are expected to present papers on topics of their choice.

Prerequisites: It is strongly recommended that students have a sound background in both macro- and micro-economics. Economics 220A/B and 221A/B, or their equivalent would be a minimum. The class is designed as an application of theoretical tools. No theory will be taught. Students will also find a knowledge of calculus useful, but not necessary. If a prospective student is unsure about the suitability of his background, he should consult the instructor.

330A International and Interregional Exchange, lect.: 2 hrs.; A. M. Sinclair

This class considers the causes of international and interregional exchange of goods and services and analyzes the effects of international integration on the incomes and growth rates of national economies. The theory and practice of commercial policy and other restrictions on trade are considered after the pure theory of international trade and its implications have been explored. Depending upon class interest and availability of time, the subjects of economic integration and of Canadian commercial policy may be discussed in some detail.

Prerequisite: Introductory Economics and 220A/B, or two full-year classes in economics.

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

The approach taken in this class reflects an economist's view of the relationship between environmental questions and his own discipline. Topics considered include: theories of economic development in the light of a scientific view of man and nature, an introduction to the general systems analysis and some problems of research methodology, determinants 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 the world, and the implications of a steady state model. This class provides a general background for Economics 332B. Economics 331A cannot be taken by the students who already have a credit in Economics 424B.

Prerequisites: Principles of Economics. Economics 220A/B, 221A/B and 333A are desirable.

332B Resource Economics, lect. 2 hrs.; N. H. Morse.

This class is concerned with an analysis of the physical and economic characteristics of renewable and non-renewable resource industries and of environmental philosophy. Selected case studies of resource management in Canada and elsewhere will be discussed.

Prerequisites: Introductory Economics. Economics 220A/B and 221A/B are desirable.

333A Theories of Economic Development, lect.: 2 hrs., Z. A. Konczacki.

The purpose of this class is to provide a theoretical framework for the understanding of the process of economic development in the more and the less developed countries with a view to an eventual application of this framework to the solution of practical problems.

Topics considered include: basic definitions and distinctions; measurement of economic magnitudes; characteristics of the less developed countries; selected theories and models of economic development and their appraisal. The concluding seminars are devoted to the problem of the foundations of the theory of economic development, and a distinction between the concepts of unilinear and multilinear evolution is discussed.

Prerequisite: Introductory Economics. A class in macroeconomics equivalent to Economics 221A/B, and History of Economic Thought is desirable.

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 foreign aid are considered as alternative ways of increasing the rate of capital formation. The focus of the class then shifts to the problem associated with choosing the best use of investible resources from such alternatives as investment in education, 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.

Prerequisite: One half-year class in economic development, or Economics 241A and 242B; alternatively 220A/B and 221A/B.

336B Regional Development, seminar 2 hrs.; tutorials; R. I. McAllister.

This class enables students to examine the process, prospects and problems associated with regional development in Canada in particular, and in the more industralised countries in general. The interdependence of economic, political and social forces is markedly in evidence in the evolution of regional policies, and while this course will be oriented largely from a concern with the economic forces underlying the process - these other factors will be taken into consideration. The approach will contain four main elements: (a) the application of economic 'principles' in the context of regional development; (b) a comparative review of regional development experiences and policies of a number of industrialized countries; (c) Canadian regional development experiences, with particular focus on the Atlantic region; (d) regional field case study; each student will examine the background the role of one pertinent project such as D.E.V.C.O. in Cape Breton, the Newfoundland

centralization program, the Saint John multi-industry complex. The class will visit several such projects over the period. *Prerequisite:* This class is intended very largely for graduates (not necessarily in economics), who already have a number, of years work experience on problems associated with regional development. A limited number of other students (with a substantial background in economics and/or political science) will be admitted.

422 Econometrics, lect.: 3 hrs.; U. L. G. Rao.

This class attempts to introduce econometric theory at a fairly advanced level and is designed mainly for one who likes to work on theory or model building.

A review of the general linear model will be made. Violations of the assumptions crucial for least squares estimation brings in various problems. The following problems will be discussed in detail: Stochastic regressions, generalized least squares, Autocorrelation, Heteroskedasticity, distributed lags and dummy variables. All these problems are single equation problems.

Simultaneous equation problems occupy an important place in econometric model-building. A critical analysis of the problem of identification and single equation bias will be made.

Limited information methods and full information methods of estimation will be discussed.

Monte Carlo methods as alternatives to analytical techniques will be discussed.

This class requires a high level of work and is open to graduate as well as undergraduate students. Minimum prerequisites for undergraduates will be an undergraduate statistics course and undergraduate work in micro- and macro-economics. The prerequisites are Economics 322 and 220A/B and 221A/B.

423A International Economics of Development, seminar: 2 hrs.

This class applies international economic theory to problems of economic development policy. Topics discussed include the terms-of-trade, external balance, foreign aid, private foreign investment, commercial policy, and development through trade. Approximately one-half of the readings concerns foreign aid. Subtopics include the economic - objectives of foreign aid in relation to national, political and 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 capacity, debt service, and loan terms; the micro-economics of aid, including economic criteria 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 development 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 experience. The first part of the class deals with the objectives and instrumental role of monetary policy

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and introduces such problems as the question of rules versus authority, and the question of lags in monetary policy. 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 interest, the availability doctrine, the problems for policy of a fixed versus flexible exchange rate and the discriminatory effects of monetary policy. The last part considers the adequacy of the tools of monetary policy, again particularly in the light of the Canadian money market experience.

Prèrequisites: Economics 221A/B. It is advantageous for students to have completed Economics 326A as well.

Economics 431B International Payments, seminar: 2 hrs:; B. Lesser

Selected topics in recent international monetary history are examined, the causes of and remedies for external inbalance in national economies are considered, and the reorganization of the international monetary system is discussed. Depending upon class interest, certain issues of international development finance and problems of instability and growth in the international economy may be discussed in detail.

A substantial proportion of class time is devoted to the discussion of papers prepared by students. A comprehensive reading list is distributed.

Prerequisites: Economics 330A or 326B and 220A/B. These are strict prerequisites in the sense that they must be 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 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 course is to develop a logical analytical approach to the problems of regional development. The course develops an understanding of the basic problems, their interrelationships, and their correction or amelioration. When the basic problems are understood, policy issues become clarified 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 Nova Scotia, or the Maritimes, given the usual 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, defining needs and directing the 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 assumptions and analyses, directions, and if necessary, serve as referee.

Prerequisite: Economics 220A/B and 221A/B. Students must have a knowledge of both macro- and price theory, especially the market mechanisms determining factor flows and the production relationships between factor prices, productivities and proportions.

433B 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 federal-provincial and provincial-municipal levels.

Prerequisites: Economics 220, 221, 324. Political Science 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 tutorials; R. I. McAllister.

For description see Economics 250.

448A Philosophy, Politics, and Economics: Public Goods and Political Choices, D. Braybrooke.

(Same as Philosophy 448A ant Political Science 4460A Offered in 1975-76)

449B Philosophy, Politics, and Economics: Applied Social Philosophy — The logic of Questions, Policy Analysis and Issue Processing, D. Braybrooke. (Same as Philosophy 449B and Political Science 4461B Class description to be found under Philosophy 449B)

Graduate Studies

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

Education

Professors

D. J. Dyke (Chairwoman) E. Z. Friedenberg

Associate Professors

A. Barton E. Chelsom W. Cooke W. Hare P. Keane E. T. Marriott (part-time) J. B. Roald S. W. Semple S. S. Sodhi

Assistant Professors

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

Lecturers

M. Bishop (part-time) R. Ginsberg (part-time) T. Johnston A. Manicom (part-time) G. Punke (part-time) E. Ricker

Special Lecturers

L. Dubinsky (part-time) L. Fisk (part-time) R. Peart (part-time)

Demonstrators

R. Brewer F. MacGillivray B. Stronach

Adjunct Professor 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 teaching 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 of Education at Dalhousie is concerned to involve the students in such problems, to call attention to the relevant literature, and to aim at the high level of intellectual inquiry. It is vital that the student challenge ideas which he will encounter, and think out his or her own position on the issues. This is no more than to point out what is true of educational processes at all levels, that they are concerned to develop understanding. Involvement cannot be summarised in terms of "listening and learning" but extends to reading, thinking, contributing, rejecting, debating, experimenting, and so on. The general outlook permeates the whole "programme, including academic courses and methods courses as well as the periods of field experience.

Facilities of the Department

The Department occupies three buildings: the white house at 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 house also contains a lounge and recreation area. The Education Centre has faculty offices, student lounge, Learning Materials Unit, Elementary School Workshop area, Cardboard Carpentry Workshop, Audio-Visual Unit, and an Experimental School. The Centre places an emphasis on open space and the mobility of people, equipment and materials within the larger area.

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

The Department offers:

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

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

3. B.Ed. for Vocational Teachers,

4. Part-time study toward a B.Ed. 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 of Education. Two classes chosen from the above areas may be used for credit towards a B.A. or B.Sc. Some classes are cross-listed with other departments, e.g. French, German, Philosophy, so that a student who is not enrolled in a B.Ed. programme, may register for such a class through the cognate department.

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

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

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

Certification of Teachers

Licenses to teach are issued by the Department of Education, Province of Nova Scotia. According to the regulations of the Province of Nova Scotia, every applicant for a Teacher's license or Professional Certificate must submit with his application, documentary evidence (in a form prescribed by the Minister of Education) respecting the applicant's moral character, age, health, training, and qualifications. Further information may be obtained from the Registrar, Nova Scotia Department of Education. 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

1. B.A., B.Sc., or B.Comm. by September 1975. Candidates with other bachelor degrees should enquire from the Secretary, B.Ed. Programme.

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

Application

Upon request, a student will receive a Dalhousie University Application form, the Department of Education Application form, two reference forms, and further details from the Admissions Office, Dalhousie University, Halifax, Nova Scotia. Application should be made by May 30, 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 after initial application has been made. The date of interview must be confirmed by the applicant.

Selection is based on:

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

- 2. References
- 3. Interview

Applicants from outside the Maritime Provinces need not attend for interview; other arrangements are made for them.

Students are advised to consult the Programme Planning Guide which will be available on and after April 1, 1975 from the Secretary, B.Ed. Programme.

B.Ed. (Elementary), Sequential Course

Candidates for the degree of B.Ed. (Elementary) must complete successfully the following academic classes: a minimum of one-half credit in each of the education foundation areas (sociology, history, philosophy and educational psychology) and the equivalent of three full credit courses 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 Experience); one elective. A total of 7 full classes constitutes a complete B.Ed. programme.

B.Ed. (Secondary), Sequential Course

Candidates for the degree of B.Ed. (Secondary) must complete successfully the following academic classes: a minimum of one-half credit in each of the education foundation areas (sociology, history, philosophy and educational psychology) and the equivalent of three full credit courses made up of a combination of the four categories, depending on their interests; a full credit in a methods course in their major subject area; Education 4900 (Field Experience); two electives. A total of 7 full classes constitutes a complete B.Ed. programme.

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

Transfer of Credit

Decisions concerning transfer of credit will be made following consideration of transcripts and students' intended areas of study. Enquiries should be directed to the Secretary, B.Ed. Programme.

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

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

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

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

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

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

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

In the integrated course, the classes in education are integrated with academic classes in the second, third, and fourth years, the first year being confined to the regular classes required for the B.A. or B.Sc. degree or Kings' Foundation Year. 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 their second year.

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

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

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 Degree Programmes, sections 5.2.1.

Specifically,

(A) The major (four to eight classes selected in accordance with major departmental requirements) must be in a subject 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 department 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, up to three classes in Commerce, Computer Science, 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 Degree Programmes, section 5.2.1.

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 taught in Nova Scotian schools. The seven classes must be chosen so that either five classes are taken in one subject and two in 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 subjects other than those offered to satisfy the requirements in the previous paragraph. The subjects may be selected from group A, B, C, and D (Degree Programmes, section 2), or Art History, up to three classes in Commerce, Computer Science, Engineering, and Humanistic Studies in Science.

(C) On registration in his second year, the student must declare his major and have it approved by the department concerned.

Degree for Vocational Teachers

Entry Requirements The applicant must:

 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.

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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 certification as a teacher in the area of specialization.

Application

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

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

1. Five of the fifteen credits *must be* in education selected as follows:

Three classes in education foundations with a minimum of one-half credit in each of the following categories:

- (a) Sociology of Education (class numbers 4000 to 4090)
 (b) History of Education (class numbers 4100 to 4190)
 - Philosophy of Education (class numbers 4100 to 4190) Philosophy of Education (class numbers 4200 to 4290)

(d) Educational Psychology (class numbers 4300 to 4390); Two other education classes.

 Ten credits in classes offered in the Faculty of Arts and Science, selected so as to satisfy the following requirements:

 (a) Three of the ten credits may be education classes or Arts and Science classes.

(b) Seven of the credits must be classes offered in the Faculty of Arts and Science outside the Department of Education. At least two of the seven credits must be at the second-year level or above.

3. The Department of Education will ensure that the candidate's performance as a teacher is satisfactory before recommending the award of the degree.

Section 5.1 of General Faculty Regulations covering the number of Summer School and Extension classes that may be accepted towards the requirement for a degree, will not apply to candidates in the programme.

Part-time study toward a B.Ed.

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

Classes Offered

The following list represents the 1975-76 classes. Minor changes will be noted in the pre-registration material sent to students who are accepted into the programme.

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

Within several of the classes listed below, separate sections have been scheduled in order to accommodate the varied academic backgrounds, specific 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.

Educational Foundations

1. Sociology

4000 Sociology of Education

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

Offered as two half classes as well: 4001A: first term (one-half credit), 4002B: second term (one-half credit).

4011 The Education Process and Sex Role Differentiation

A critical examination of socialization both in schools and the wider society with special reference to the internalization of 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 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 option for Sociology of Education.

4030 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 impact on the ideological outlooks of the population. The mass educational compaigns 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 problems encountered in attempting to reshape the thinking of the adult population.

With this as a background, a second major focal point will be the means through which the new ideology is inculcated into the younger generation. The formal school system — its organization, methods of instruction, relationship between teachers and students, etc., — will form the core of this part of 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 educational history.

4152 The Historical Development of Education in the Canadian Social Context

Analysis of Significant social issues in Canadian educational history.

3. Philosophy of Education

4201/Philosophy 218A Introduction to Philosophy of Education

Conceptual analysis of certain crucial ideas in educational theory such as indoctrination, discussion, controversy, and miseducation.

4212:Philosophy 218B Curriculum Problems

Philosophical investigation of important ideas in curriculum theory such as needs, interests, creativity, aims and relevance.

4231 Existentialism and Education

Introduction to readings in existentialism with a view to understnading existential thought as an educational theory. A 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 human decisions and immediate experience, nevertheless 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 be placed on the psychology of teaching, motivation, learning, cognitive development, and evaluation. The course is open to *only* those students with no previous classes in psychology.

4311 Psychology and Education of the "Exceptional" Child

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

4321 Learning in the Classroom

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

4341 Developmental Psychology

An examination of the area of development including major theoretical positions and relevant experimental data. Emphasis will be placed on incorporating material within a cultural and educational context!

4352 Myths in Special Education

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

4371 Human Relations

Emphasis will be placed on developing interpersonal relation skills to facilitate effective communication in the classroom and among colleagues. Opportunity is provided also for the development of problem solving and teamwork building skills

4381 Introduction to Counselling

This course is designed to introduce the student-teacher to the fundamental concepts and philosophies of counselling. Major concerns will be:

— to introduce teachers to the counselling point of view of present-day education

- to examine in depth at least one theory of counselling

— to provide an exploratory experience for those students wanting graduate preparation for a career in counselling.

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 initiate probes into 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 of the "why, where, when, which, and how" of audio-visuals.

4512B Media in Education

This class will require completion of 4501A 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, communication theory, semiology, development of perceptual awareness, film, "McLuhanism", etc. Although more theoretical than 4501A, it will also demand active participation in production, research, and projects.

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 school classroom. Emphasis is placed on the teaching of pronunciation 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 for this class only with the written consent of the instructor.

4560 Geography in Education

Geographers are concerned to provide accurate, orderly, and rational description and interpretation of the variable character of the earth's surface. They believe that there are world symmetries in the areal pattern, in spite of the impressive diversity of character which is manifested on the surface of the earth; and thus in the uneven distribution of things over the face of the earth geographers seek to create meaning and 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 environments; with regional patterns emerging from those varied responses; with interregional stresses created by the mosaic of regional patterns; and with techniques, 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 geographical thought and the significance of recurrent themes such as the character of place and the use of space.

Course work will be intensive and closely integrated, consisting of laboratories, audio-tutorial sessions and work in the 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 disciplinary backgrounds usually 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 teaching. This course will also make extensive use of university and community resource persons and centres in workshop sessions in order to achieve a broad perspective of curriculum and teaching. The focus of these workshops will be on the development of skills and techniques needed in areas 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 more realistic perspectives of the world for the child at the elementary level. To this end, study will focus upon the relationships between curriculum materials and resources 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.

4750 Methods of Teaching English in Junior and Senior 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; and, to familiarize teacher candidates, through active participation in tasks associated with reading, discussing, writing and improvising, with a range of classroom activities and procedures available to English teachers.

Teacher candidates, without extensive backgrounds in creative drama are encouraged to consult with the instructor about related course offerings in this area. Special work in this area is required of English teachers who wish to become effective both in the use of techniques for helping students to concretize experience and in utilizing human interaction to foster significant learning.

4760 Methods of Teaching History in Junior and Senior High Schools

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

4770 Methods of Teaching Geography in Junior and Senior High Schools

The class will explore the objectives of geographic study; the acquisition of skills and the development of concepts and appreciations. The first half of the course will consider the work of the geography teacher as a facet of the teacher's work as a geographer: it will be concerned with the collection and recording of data, the arrangement of data for instructional purposes, and resources available for learning in geography. The second portion of the course places greater emphasis on the pupil's learning within a curricular framework which deals with skills, concepts, and appreciations. Students will be 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.

4780 Methods of Teaching Mathematics in Junior and Senior High Schools

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

4840 Methods of Teaching French in Junior and Senior High Schools

Deals with objectives, methodology, techniques, materials (including visual aids), language laboratories, and testing. Emphasis will be placed on the teaching of spoken French, and practice in the development of teaching skills will be an integral part of this 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 possible regarding their eligibility. Prerequisites: (a) for four-year integrated students: Education 4520 in conjunction with an 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 writteh consent of the instructor.

4870 Methods of Teaching German in Junior and Senior High Schools

Deals with objectives, subject matter, techniques, materials, curriculum design and testing in teaching German. For special one-year programme, see the Department of German section.

4860 Methods of Teaching Economics, in Junior and Senior High Schools

This 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 of learning materials and aids are examined.

4873C Further Educational Studies

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

4880 Methods of Teaching Science in Junior and Senior High Schools

This course will look at the traditional science courses offered at both the junior and senior high level. Various methods of teaching these courses will be examined.

4893C Additional Curriculum Projects

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

3. Field Experience and Others

4900 Field Experience

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

Students who intend to apply for a Nova Scotia Provincial Teachers' Certificate should plan to log a minimum of 100 hours of field experiences in a public school classroom.

All arrangements for field experiences are made through the Field Development Office.

4910C Additional Field Experience

This one-half credit class will be made available to the B.Ed. students as an elective which they may choose to supplement the basic requirement for field experience. These additional field experiences will be acquired through a block of time 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-made tests, standardized tests, random variation, basic statistical ideas, and the evils of testing.

4961 The Politics of the Educational Popocess

The concept of "political culture" (i.e., the underlying propensities by which people play political roles and learn or 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 higher education? Such functions as:

(a) Career training(b) The inculcation of basic myths and understandings of the social system and hence its maintenance

(c) The perpetuation of the values of liberal education tolerance, reason, deference to legitimate authority

(d) Creation of social critics.

will be examined with a view to determining the actual priorities of present-day institutions of higher learning and the significance of those priorities vis-à-vis the needs of the political and economic systems in which they are operative.

(2) What implicit political values surround institutional learning? An examination and search for the attitudes towards authority and power and how they are developed within the institutional 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 logically to a consideration of alternatives (3) below.

(3) Alternatives to present schooling — an attempt to appreciate the political significance of Ivan Illich's networks for deschooling society, Friere's pedagogy for the oppressed and discussions of the place of educational alternatives (for e.g., community and free schools) in creating other political values, attitudes and beliefs.

4962 Educational Alternatives for Political Awareness

The 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 experiment in a group sharing of knowledge and experience.

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 were not sent to school? What are the consequences of such 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 consciousness?

Some knowledge of the political nature of contemporary educational processes and structures is essential although those students who have not taken Education 4961 "The Politics of the Educational Process", can be helped via a few special tutoring sessions.

4990 Statistics

The class covers topics in statistical influence and experimental design used in selected educational research. Some background reading is required of students with no experience in statistics. Details are available from the Department of Education.



Engineering and Engineering-Physics

Engineering and Engineering-Physics

Engineering Professor K. F. Marginson (Chairman)

Associate Professor

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

Assistant Professors E. N. Patterson

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

Assistant Professor

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 classes and changing the 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 playing major roles in engineering training while conventional topics such as drafting and surveying call 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 student to play a responsible role in the modern world.

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

Architecture

Students who plan to study architecture may take the first two years of the course for the Uniform B.Sc. for Engineering. Having completed the course, they will be admitted without further examination to the Nova Scotia' Technical College 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 student receives a General B.Sc. from Dalhousie and is qualified for admission to the junior year of the Nova Scotia Technical College. Students planning to continue their studies at some college other than the Nova Scotia Technical College should consult the department when they first register.

Degree Programme

Uniform B.Sc. for Engineering

Yearl

- 1. Physics 110
- Mathematics 100 2
- 3. Chemistry 110

Elective (chosen 'to meet the B.Sc. requirement (see

- below)
- 5. Elective (may be Engineering 200 (see below) Engineering 001

Engineering 001, An Introduction to Professional Engineering, is a non-credit class, which should be taken by all students 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 registration for Year II to discuss their programme.

6. Physics 221

- Mathematics 228
- 8. Science Elective
- 9-11. Engineering 200, 220A, 220B, 240C

Students planning to specialize in mining or civil engineering may take Engineering 210B and Engineering 211B in addition to the above classes. Mining or civil engineering students who do not take these classes while at Dalhousie will have to elect 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, 330A, 330B, 340A, 340B

Students planning to specialize in mining engineering are required to take Geology 100 in addition to the above classes. Students planning to specialize in civil engineering may take Geology 100. Civil engineering students who do not take Geology 100 while at Dalhousie will have to elect a class in 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 problems. The area is interdisciplinary and the study is suitable for students whose interests involve experimental work in the physical sciences or who contemplate research or development work in industry or resource development. The mathematical content of the course is similar to that of physics. with, however, special emphasis on applications. The physics content is identical with that of honours physics in the first two years, but has special requirements in the last two years dealing with system design, information and control theory, materials science, instrumentation and measurement techniques. The course leads to the degree of Bachelor of Science with Honours in Engineering-Physics.

Completion of the course is excellent preparation for industrial research or graduate studies in applied sciences.

Degree Programme

B.S. with Honours in Engineering-Physics Yearl

- 1. Physics 110
- Mathematics 100
- 3. Chemistry 110
- 4. Elective (Arts)
- 5: Elective

Year II

- 6-7. Physics 211 and 231
- 8. Mathematics 220 or 200
- 9 Mathematics 200-level class
- 10. 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 Physics 300-level class
- 15. Mathematics 300-level class 16. Elective (Arts)

Year IV

Marginson.

- 17. Physics 400
- 18. One other Physics 400-level class
- 19. Engineering 400-level class
- 20.

Classes Offered

001 An Introduction to Professional Engineering, lect. 1 hr.; 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.

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. Text: TBA

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 of meridian, azimuth and latitude based on celestial observations, construction surveying, alignments, 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 weeks' duration. The use of surveying instruments and equipment will be practiced by all students. Assigned 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: Engineering 210A Text: Same as in Engineering 210A

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

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- the text.

- Engineering or Physics 400-level class
- 21. Mathematics 300-level class

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 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

Prerequisite: Mathematics 100, Physics 110.

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 accelerations will be discussed graphically and analytically.

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 100: Mathematics 100.

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 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 devices and introduces the student to conventional methods of testing electronic and electromechanical equipment.

Prerequisite: Mathematics 100; Physics 110; (taken concurrently)

Text: (1974-75) Del Toro, Electrical Engineering Fundamentals.

240C Engineering Problems by Computer Methods, 1 afternoon per week, D. M. Lewis/E. N. Patterson.

This is a class which will prepare the student to write his own Fortran IV digital computer programs for the solution of engineering problems. It will consist of a series of case studies of actual engineering problems which each student will execute on the CDC 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 COGO and ECAP.

Prerequisites: Registration in second-year engineering, or consent of instructor.

Text: (1974-75) Murrill & Smith, Fortran IV Programming for 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 deal with kinematics and dynamics of single particles and in the second term these fundamentals will be applied to rigid bodies.

Prerequisites: Mathematics 100; Engineering 220A, 220B; Engineering 240C.

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 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 includes time set aside for students to prepare an individual project on an aspect of materials science applicable to the particular branch of engineering in which they intend to specialize in the future.

Prerequisites: Chemistry 230, Physics 221 or permission of Instructor.

Texts: Rosenthal and Asimov, *Introduction to Properties of Materials*, (Van Nostrand, Reinhold, 1971);

330B Strength of Materials, lect.: 3 hrs.; lab-tutorial 3 hrs.; D. 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 transformation relation of stress and strain; torsion of circular sections; stresses and deflection of beams; column action.

Prerequisite: Engineering 220A; Engineering 330A. Text: (1974-75) Higdon, Ohlsen, Stiles, Weese, Mechanics of Materials.

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 transmission lines and filters. The following topics are treated: network reduction, the 4 terminal network and solutions by matrix methods, non linear systems, modulation, demodulation and rectification; carrier transport in semi-conductors, properties of diodes and transistors; electromechanical analogues and analogue computation methods, feed-back and control systems, stability criteria, nature of information and noise, properties and distributed constant lines and filters.

Prerequisites: Physics 231, Mathematics 200 or 220, which may be taken concurrently.

Text: Ryder, Electronic Fundamentals 4th Ed.

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

This class covers the theoretical portion of classical engineering thermodynamics. Calculus to the level of partial differential equations is prerequisite. General topics are: first law for open and closed systems, reversibility, enthalpy; second law, entropy, availability and efficiency, psychrometrics. Various real processes and thermodynamic devices will be discussed. This work covers applications other than those involving chemical reactions. *Prerequisites:* Mathematics 100: Physics 100; Chemistry

230 (may be taken concurrently). Text: (1974-75) Van Wylen, Thermodynamics.

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340B An Introduction to Fluid Mechanics, lect.: 3 hrs.; lab-tutorial 3 hrs.; E. N. Patterson.

Fluid mechanics is the engineering science upon which such specialties as aerodynamics, gas dynamics, rate processes, hydraulic 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 underlying concepts, definitions and basic equations of fluid dynamics. Laboratory experiments will be carried out to investigate some of these basic aspects.

Prerequisites: Concurrent registration in Engineering 320, or the consent of the instructor.

400 Advanced Physics laboratory, lab.: 6 hrs.; A. Levin, S. T. Nugent.

This is a physics and engineering-physics laboratory class in which students in groups of two work largely on their own initiative. The experimental work covers nuclear disintegration, gamma and beta spectroscopy and absorption measurements; proton spin quantitative measurements and Planck's constant determination; thermionic emission and ionization experiments using a vacuum pumping and instrumentation system; properties of solid state semiconductors and devices; experiments on the spectral noise distribution of transistors and the use of analysis systems; experiments with a Helium-Neon laser, holography, etc.

Experiments in other areas, such as acoustics, optics and fluid dynamics, are available if requested. A report upon a topic to be agreed with the instructor is required as part of this class.

420A Signals, Spectra and Information Theory, lect.; 3 hrs.; S. T. Nugent

Topics discussed include: discrete and continuous spectra, energy density spectra, sampling theory and approximations, discrete probability theory, continuous random variables, statistically independent random variables, probability density functions, density functions of sums, density functions with discrete components, ergodic processes, autocorrelation functions, networks with random inputs, autocorrelation input-output relationships, optimum systems and basic information theory.

Text: Carlson, Communication Systems.

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433B Materials Science, lect.: 3 hrs.; H. W. KIING.

The physical properties of engineering materials are discussed in terms of their crystal structure and microstructure, using 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 shown to be strongly dependent on defects in the crystal structure. 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 in a discussion of the effects of microstructure on the properties of polycrystalline and polyphase materials. *Prerequisite:* Permission of instructor.

Texts: Hutchinson & Baird, *Physics of Engineering Solids*, (Wiley, 1968). Reference: Nye, Physical Properties of Crystals (Oxford Univ. Press, 1969).

435A Electronic Techniques for Energy Conversion, lect:: 3 hrs.; A. Levin.

This course discusses the properties, efficiency and uses of energy conversion systems based on electronic techniques. Topics discussed include: thermojunction generators and refrigerators, solar generators, thermionic generators, fuel cells and related devices.

Reference: Levine, Selected Papers on New Techniques in Energy Conversion.

440B Optical Electronics, 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 Optical Electronics.

480B Optimal Control, lect.: 3 hrs.; S. T. Nugent.

Topics discussed include: statistical design of linear systems, state representation of systems, calculus of variations, the maximum principle and dynamic programming. *Text:* McCausland, *Introduction to Optimal Control.*

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English

Professor Emeritus C.L. Bennett

Professors

A.R. Bevan J. Gray (Chairman) J. Fraser M.G. Parks M.M. Ross S.E. Sprott D.P. Varma

Associate Professors

S.A. Cowan R. MacG. Dawson A.J. Hartley J.T. Low S. Mendel R.J. Smith H.S. Whittier

Assistant Professors

R.S. Hafter A. Kennedy M.A. Klug H.E. Morgan C.J. Myers N.S. Poburko R.L. Raymond H.D. Sproule G. F. Waller

Part Time Instructors

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 beyond their shores to include the study of writing in Canada, the United States, parts of the Englishspeaking Commonwealth and indeed, some European countries, in translation.

It ranges widely in time, too, from early Anglo-Saxon works of the eighth century through thirteen centuries of changing ideas and language to the still-changing thoughts, feelings and expression of the 1960s and 70s. The many forms that the written word may take - poetry, fiction, drama, essay, history - are read, not only for an understanding of the literary evolution that brings them to be what they are, but also for an understanding of that which is temporary and that which is more enduring in the values and ideas that they embody.

Indeed, the purpose of English studies at Dalhousie, briefly stated, is the enjoyment and understanding of the written word. Since the word is the principal link between the individual heart and mind and the rest of the world, such studies naturally touch upon philosophy, politics, religion and the fine arts as well. At the same time, the student is himself required to think, and to use language with clarity, judgement and imagination.

In more detail, the goals of English studies are to perceive that reading is a source of pleasure, knowledge and wisdom, to sharpen the powers of discrimination between what is good and bad in literature and ideas, to gain some understanding of the process by which great writing is achieved and

indeed to inspire the student to his own best expression.

In the first year, English 100 is required by all students who wish to take further English classes. There are some twenty different sections ranging from historical surveys to more specialized studies of periods or themes. To enable students to choose the one most suited to their inclinations and needs the English Department and the Registrar's Office have an English 100 supplement which includes the aims and reading lists of each section. Only under very extraordinary circumstances is exemption from English 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 classes beyond 250 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 professor concerned.

Faculty Advisors

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

Degree Programmes

The General B.A. in English

Students should consult with their Faculty Advisors about their choice of classes. The Department expects General students to form coherent programmes of four to eight classes in English above English 100. Students should note that:

(1) of the classes beyond English 100 required to constitute a programme in English for the general B.A. degree, not more than three should be drawn from any one of the following three groups of classes: (a) 203, 214, 218, 224 (b) 205, 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 Graduate Studies should arrange with their Advisor and with the Chairman of the Department to complete several Honours classes before graduating with a General B.A. It is possible to enter a two-year M.A. course on completion of a General B.A. degree, but only if the student has completed four or five Honours rather than General classes for his concentration and has attained at least a second-division average in them.

The B.A. with Honours in English (Major Programme)

The Honours course in English offers a systematic study of the subject which acquaints the student with the major writers and trends from mediaeval times to our century. It'is therefore of particular relevance to the student who is interested in detailed study of English as a basis of a liberal education, to the prospective high-school teacher of English who needs a comprehensive understanding of the subject, and to the student intending to proceed to the graduate study of English and to complete in one year the requirements for the M.A. degree.

Students intending to enter the Honour course in Year II must consult the Chairman of the Department in advance to plan their course and be formally enrolled. In the subsequent years, Honours students are encouraged to seek advice of the Department in choice of classes.

The Honours course consists of hine classes (in addition to English 250A and 250B) beyond English 100. At least one class must be taken from each of the following six sections:

Section A. English 252 (recommended for third year) Section B. English 253; English 351 Section C. English 251; English 352 Section D. English 254; English 356 Section E. English 354; English 452; English 457 Section F. English 453; English 455

The student may choose his three remaining classes from those not already chosen in Sections B to E, or from Section

Section G. English 201, 206, 207, 218, 454

B.A. with Combined Honours

English and French

English and German

English and History

English and Spanish

English and Theatre

English and Philosophy

English 250A (Bibliography) and English 250B (Practical Criticism), non-credit classes which meet one hour per week, are required, of all Honours students and are to be taken in the first year of the Honours course. (See page 56 for details.)

The Honours student must meet the requirements for the General B.A. degree. He is advised to select a minor from one of the subjects listed under either Group A or Group B in the "Degrees and Courses" section of the Calendar.

There are several Combined Honours programmes:

Students interested in any of these combinations should consult with the Departments concerned. If a student wishes to combine English and a subject 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 Dalhousie, has been established. Students interested in this programme are advised to consult the Chairman of the Department for further details.

207 Canadian Literature, lect.: 2 hrs.; M. Parks, H. Sproule.

Classes Offered

100 Introduction to Literature, lect.: 3 hrs.; Members of the Department

Since English 100 consists of sections taught by many different instructors, statements about its objectives and approach must be confined to generalizations. All instructors of English 100 have these two broad objectives in common: (a) to involve the student in the serious study of literature as a crucial part of education: (b) to involve him in the discipline of words so that he will be

a more critical and responsive reader and a more exact and imaginative writer.

The subject matter varies from section to section. Detailed syllabi of all sections are available. Practice in writing is carried on throughout the year in fortnightly essays.

Each section attends three lectures per week. In addition, the tutors attached to each section conduct small discussion groups and personal interviews with students.

Whittier

This class in intended to provide the student with the opportunity to do intensive reading of selected major works from Western literature. The selections vary from year to year. The intensive reading is designed to broaden the student's outlook on literature and also to increase his familiarity with works that are not only stimulating in themselves but also comprise the basis for the development of English and other literatures.

Classes for General Degree

(Tentative List)

201 The English Language

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

203 Masterpieces of Western Literature, lect.: 3 hrs.; H.

Generally, works will be taken up in chronological order. As the class proceeds, interrelationships and comparisons of theme, form and artistic perspectives in the various works will be developed. Classes generally consist of a combination of lecture and discussion. Voluntary tutorials are held once a week for open discussion in addition to class meetings.

204 The European Novel, lect.: 2 hrs.; S. Mendel.

This class is devoted to an intensive study of about a dozen representative European novels of the last two hundred years. The method of approach and the character of tests and examinations are such as to render it necessary for the student to attend most of the lectures. A considerable amount of attention is paid to the philosophical ideas which bulk large in many of the novels studied.

205 Victorian Literature

206 American Literature of the Nineteenth Century, lect.: 2 hrs.; S. Cowan.

This class is an introduction to the American Literature through representative works by major writers from 1800 to 1900. Some of the writers studied are Cooper, Hawthorne, Poe, Emerson, Melville, Whitman, Dickinson, and Twain. Each term the student will write one paper of moderate length which he may have an opportunity to read to the class to initiate discussion, and two in-class papers or exercises. There is an examination in the Spring.

This class is a survey of English-Canadian literature with emphasis on poetry and fiction from the 1920's to the present. Some knowledge of nineteenth-century British literature, though not essential, is very useful to the student of Canadian literature. A few representative writers of the nineteenth century (Haliburton, Richardson, DeMille (prose); How, Goldsmith, Isabella Crawford, Carman, Roberts, Lampman, D. C. Scott (poetry)) are studied briefly in the first term, and essay topics are set on nineteenth-century writing. Twentieth-century novels and poetry are studied in the last month of the first term and throughout the second term. The following authors will be included: Leacock, Grove, MacLennan, Callaghan, Davies, Raddall, Buckler, Laurence, Watson (prose); Pratt, A. J. M. Smith, F. R. Scott, 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 pre-Confederation period to the present day, using as much variety as possible in the choice of literary forms and samples for study. Authors will include prose writer's noted below (others may be added) and the principal poets for each of the literary periods into which the Klinck and Watters Canadian Anthology is arranged, with major emphasis on Roberts, Carman, Lampman, D. C. Scott, Pratt, Smith, F. R. Scott, Page, Avison, and Waddington, While there will not be a final 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 length and content. These papers must be submitted by the dates agreed on in class and must be presented in conformity with the rules set forth in either R. M. 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 landmarks of eighteenth and nineteenth-century fiction and to present a survey of the origins and development of the English novel. This involves a thorough investigation of the antecedents and formative influences of fiction and a close examination of some of the chief works of eighteenth and nineteenth-century novelists. The list of novels is available from the Department.

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 American novel. The lectures focus on representative novels of some of the major figures of the first half-century and on significant novels of the past two decades.

This section of English 209 will focus on representative American and Canadian novels of the past fifty years. Novels will be chosen from the works of American novelists such as Fitzgerald, Hemingway, Faulkner, Bellow, McCullers, Kesey, and Ellison and from Canadian novelists such as Buckler. Ross, Laurence, MacLennan, Watson, Richler, and Davis. (Section 2 - Dr. Bevan.)

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 Eliot, with some attention to Auden, Dylan Thomas, W. C. 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 considered will be: D. H. Lawrence, T. S. Eliot, James Joyce, G. B. Shaw, Graham Greene, W. H. 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 influences in succeeding fiction. Not only the chief landmarks of gothic fiction will be charted, but the students will also explore the various chambers of horror-literature. There will be no final examination, but students will work on assigned tests and participate in discussions. End of the term papers will determine final grades.

217 African Literature/African Studies, lect.: 2 hrs.; R. J. Smith.

English 217 is a class on African literature written in English. Novels, plays, and poems will be discussed. The bulk of the material will be by Southern African and West African writers. Works to be studied will mainly be modern, and will reflect the attitudes of various African cultures towards racism, colonialism, and African nationalism.

218 Mediaeval Literature, lect.: 2 hrs.; H. E. Morgan.

This broad survey concentrates upon a study of heroic and romantic attitudes and ideals in some mediaeval masterpieces. including Beowulf, The Song of Roland, Njalssaga, Tristram, and the saga of King Arthur. Later use of this mediaeval matter, as in Tolkien's Lord of the Rings, is also investigated.

220 English Drama

224 Renaissance Poetry

225 Epic Poetry and Prose

226 Tragedy

227 Comedy and Satire, lect.: 2 hrs.; J. Gray.

The comedian and the satirist are interested in both the laughable and the deplorable antics and eccentricities of human nature. This class will concern itself with their points of view, as expressed in such varied forms as stage comedy, graphic satire, the comic novel, and the humorous essay. It will also consider theories of comedy and laughter in their application to literary types, including situational, romantic, satiric, sentimental and domestic comedy, as well as rollicking farce, slapstick, "sick" comedy and the absurd. Wherever possible, lectures and class discussions will be supplemented by play readings, films and other illustrative 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 include the following: the self in the short poem; other persons; public events; love; nature; the city; the machine; wit; myth; traditional forms; free verse; the hokku; lyric as song; spoken poetry; poetry in print; concrete poetry; and possibly other topics to suit the class.

Recommended Preliminary Reading:

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

Classes for the Honpurs Degree

(Tentative List)

250A Bibliography, lect.: 1 hr.; (first term only), R. L. Raymond.

This class is a departmental (i.e., non-university and noncredit) technical class for honours and graduate students. It is planned to acquaint the student with certain research tools in the library that are most frequently used by students of English (bibliographies, catalogues, indices, digests, journals, dictionaries, microfilms), many of which the student is unlikely to stumble upon himself in his own research. The class also includes instruction in the technical aspects of writing papers (planning, research methods, footnotes, bibliographies), and some discussion of the history of printing insofar as it relates to the establishment of texts, particularly older ones.

The class meets one hour a week during the first term only and includes the assignment of an exercise to be done in the library.

English 250B Practical Criticism, lect.: 1 hr. (second term only); R. L. Raymond.

This is a non-credit class designed to give the student practice (supplementary to that of his regular classes) in the evaluation and understanding of the purpose and significance of literature, largely poetry. The class includes some discussion of recent and current attitudes to literature, but the emphasis is upon the practice of criticism on both well-known and obscure or unpublished work.

251 Sixteenth-Century Non-Dramatic Literature, lect.: 2 hrs.; G. Waller.

The class will study the literature of the English Renaissance, concentrating on Sidney', Spenser, and Shakespeare's poetry. Some attention will be given to the cultural context, including the court, music, and art, and to influential continental writers like Castiglione and Machiavelli. Classes will be conducted by a mixture of lecture and discussions, and there will be frequent use made of slide and other illustrative material.

252 Shakespeare and the Drama of His Time, lect.: 2 hrs.; S. E. Sprott.

About fifteen plays by Shakespeare, some by choice of the class, are read in the context of representative plays by his earlier and later contemporaries, especially Marlowe and Jonson. Students should consult the instructor for a list of plays and suggested preliminary reading.

253 Old English, lect.: 3 hrs.; R. MacG. Dawson.

An introduction is given to the Old English language (700-1100 A.D.), followed by a study of some of the prose and minor poems, and, in the second term, of Beowulf. Students will also be introduced to some aspects of Old English art and archaeology. Some knowledge of a classical or modern European language (preferably German) is desirable, though not essential, and an understanding of traditional grammatical terminology will be helpful. This class is not recommended, except in unusual circumstances, to those who are not thoroughly fluent in modern English.

254 Restoration and Eighteenth-Century Literature, lect.: 2 hrs.; J. Gray, H. S. Sproule.

In this class the emphasis will be placed upon three great satirical authors (Dryden, Pope, and Swift), upon a study of Restoration comedy and tragedy, and upon major works of Samuel Johnson. Since the literature of the period is related exceptionally closely to the men and manners of the age, some time will be spent in class on the contemporary climate of opinion that is revealed in the works of a number df writers representative of literary, political, social, and philosophical points of view: Hobbes, Halifax, Pepys, Rochester, Butler, Addison and Steele, Mandeville and Shaftesbury.

351 Middle English, lect.: 2 hrs.; H. E. Morgan.

in the Spring.

Hardy.

Fraser

This seminar is for honours students and for M.A. students in their make-up year. The procedure in it is to present students with a variety of texts and problems in a meaningful sequence and let them argue about them. Each member of the seminar writes two papers to serve as starting points for the class discussions. There are no examinations, but regular attendance is expected, in the interests of effective debate. The following prose works will be discussed: Joyce, A Portrait of the Artist as a Young Man (Penguin); Conrad, The Secret Agent (Penguin); Woolf, To the Lighthouse (Penguin); Orwell, 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: Pound, Eliot, Yeats, Hopkins, Auden, Dylan Thomas, Hardy Graves, Gunn, Hughes, and one or two younger ones. The editions indicated are the ones that the bookstore will be carrying.

This class offers an introduction to Middle English language and literature through study of Chaucer's poetry and of major literary works by Chaucer's near-contemporaries. Through his readings, the student should gain some historical sense of the language, of the social milieu and especially of the late-mediaeval social tensions which contributed to the literature's brilliance.

Preparatory reading: Chaucer's poetry and H. S. Bennett. Chaucer and the Fifteenth Century (Oxford History of English Literature, vol. II, 1); W. F. Bolton (ed.), The Middle Ages (Sphere pbk.); J. B. Morrall, The Medieval Imprint (Penguin); M. Keen, History of Medieval Europe (Penguin).

352 Seventeenth-Century Non-Dramatic Literature, lect.: 2 hrs.: S. Cowan.

This class is a study of representative works of Bacon, Donne, Jonson, Browne, Burton, Herrick, Herbert, Crashaw, Vaughan, and Milton. The aim of the class is, through a study of representative writers, to provide the student with an introduction to both the individual and traditional characteristics of poetry and prose of the period. Classes are conducted by a combination of lecture and discussion. Students present brief reports to the class that establish starting points for discussion. A paper of moderate length is written each term. There are examinations at Christmas and

354 Victorian Novel, lect.: 2 hrs.; G. Harvey.

This class is designed to give the student the opportunity of studying the novels of the period from Scott and Austen to

356 Literature of the Romantic Period, lect.: 2 hrs.; A. J. Hartley.

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.; J.

454 Literary Criticism, lect.: 2 hrs.; R. Hafter.

This class is intended for senior honours students. It involves the history, theory, and practice of literary criticism from Aristotle to the present.

455 Modern American Literature, lect.: 2 hrs.; M. Klug.

This class will study the growth of American literature over the past seventy years. The first term will be devoted to poetry and will centre on readings from Frost, Eliot, Lindsay, Stevens, Williams, Crane, Lowell, and Roethke. Through the second term we will be working with fiction: Dreiser's Sister Carrie, Fitzgerald's Great Gatsby, Hemingway's The Sun also Rises, Faulkner's Light in August, Ellison's Invisible Man, Bellow's Adventures of Augie March, and Mailer's American Dream. The classroom work will involve lecture and discussion. Each member of the class will write one paper in the fall and spring term on a topic of his own choice. A final examination on the year's reading will be set.

457 Victorian LIterature, lect.: 2 hrs.; M. Ross.

A study of the major Victorian poets and prose writers (other than novelists). Attention will be given to the changing philosophical, scientific and social pressures of the period The main emphasis of the class will be on the poetry of Tennyson, Arnold and Browning and the prose of Carlyle, Ruskin, Newman, Arnold and Pater.

Changes and Additions

As the Calendar goes to press before all plans for the next academic year are completed, there may be significant changes in the classes listed above. Students should consult the Registrar's office for revised class and text lists.

Graduate Studies

The Department offers graduate classes leading to the degrees of M.A. and Ph.D. Details relating to admission, scholarships and fellowships, requirements for the degree, classes of instruction, etc., can be found in the Calendar of the Faculty of Graduate Studies,

French

Professors

H.F. Aikens P. Chavy J.R. Lawler (Chairman)

Assistant Professors

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

Lecturers

M. Bishop 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 Department offers an excellent opportunity for pursuing such study to those whose interest is strong enough to make them willing to devote a good deal of their time and energy to it.

In general, students are expected to acquire a good knowledge of spoken as well as written French. As students' skill grows, French is used more and more in classes. The accent aimed at is "international"; that is, recognized as standard both in France and in French Canada. Much use is made of the language laboratory in the acquisition of oral skills. The object of our language instruction is to provide, through the judicious use of modern methods, a solid basic training that will enable students who spend a few months consolidating their knowledge in a French-speaking community to develop fluency rapidly and with precision. 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 studies, you should consider the possibility of taking a 'bachelor's degree with Honours in French, or with Honours in French and another subject combined. Those who wish to do so, or to take French as an area of concentration, in a General Bachelor's degree course, are encouraged to discuss the matter at any time (but the earlier the better) with a member of the Department. An Honours degree is usually required for or facilitates access to graduate studies.

French Degree Programmes

General Bachelor's Degree With French as the main area of concentration, the course may be arranged in two ways:

First Year Either (A) 102 or 134 Or (B) 102/202 combined.

Note 202 is the normal continuation of 102, while 204 continues 134. The combined class 102/202 will normally be followed by 304. Classes 202 and 204 are mutually exclusive.

Third Year

A decision regarding admissibility to Honours is not usually made until the end of the student's second year in the Department, Details of the Honours program in French in the Third and Fourth Years are to be arranged by consultation with the Department. Honours students may like to opt at this point for either a language or a literature bias to their studies. Honours standing may be granted to courses taken at the 200 level if the grade awarded (minimum grade B-) is sufficiently high.

and

Bachelor of Arts with Combined Honours in French and Another Subject Programmes may be arranged by consultation (as early as possible) with the departments concerned. Students planning a combined Honours course should consider, however, that the number of classes taken in either subject might be insufficient for admission to many graduate programmes without at least an extra year's work.

(1) Combinations of classes other than those set forth above should not be chosen to fulfil degree requirements without the express approval of the Department.

(2) A student may, with the permission of the Department, be admitted to a French course at an advanced point because of prior knowledge of the language. Such a student, however, (except as he may be granted transfer credits in the usual way), must normally take the same total number of classes as other students in the same course. (3) A student admitted to a French course at an advanced

(4) No more than two classes in French may be taken for credit at the 100 level. (5) Enquiries concerning prescribed texts should be made at the end of the preceding academic year.

Second Year

Either (A) (If programme A has been followed in the First Year), 202 or 204 and one or more of 230, 231, 232. Or (B) (If programme B has been followed in the First Year), two or more of 230, 231, 232 and 304.

Up to five of 230, 231, 232, 304, 310, 312, 321, 322, 330, 331, 340, 350 (A or B).

Note The following courses may *not* be counted toward a degree in French: 100, 106, 206.

Bachelor of Arts with Honours in French

Students 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 a member of the Department in an area connected with the programme.

Or: write a comprehensive examination;

(b) spend at least one summer in a French speaking community to consolidate their knowledge of the language.

level who obtains-credit for a class at that level, may not later take a French class at a lower level for credit except with the express permission of the Department.

French Classes Offered

100 Comparative Literature, (Comparative Literature Section).

102 Spoken and Written French (Part I), lect.: 3 hrs.; balance will be sought between the skills of oral comprehenlanguage lab.: 3-5 hrs. per week.

This is an intensive course designed for students who wish to achieve proficiency in spoken and written French, either for general purposes or as a preparation for further study in French language and literature. There will be an emphasis on oral proficiency. Most students will have studied French in high school but may have had limited experience in the 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 directly related to individual practice in the language laboratory. Students may choose when they wish to work in the language laboratory. There is no limit to be spent in these sessions although a minimum of from two to five hours per week is considered normal. Students interested in this course should complete a special form available from the Admissions Office.

NOTE: French 102, while a full credit course, forms the first half of an integrated two-year programme, the more advanced portion being French 202. French 102 and French 202 may be taken in the same year (for two full credits). Details are explained in the special form referred to above.

106 Proficiency in Reading, lect.: 3 hrs.

For students wishing to acquire or improve skills in comprehending written French, without extensive training in the spoken language or in the active use of the written language. Although designed primarily for undergraduates, this class 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 week.

This course is designed for students who wish to achieve proficiency in spoken and written French. It differs from French 102 in that there is more emphasis on the acquisition of skill in composition and an introduction to literature. Classes are held three times weekly. There is no language laboratory practice in connection with this course. Using a basic text (Reflex French), the student memorizes key sentences useful in conversations and illustrating correct 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 scripts and free composition. The primary text is then supplemented with two simple novels to build vocabulary, reinforce the student's knowledge of underlying structure and serve as a basis for conversation in class. Toward the end of the second term students are expected to be capable of writing paragraphs or short essays of a critical nature. Students will be assessed on their written exercises, participation 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.

202B 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 half class is to put to practical use the basic material just covered in French 102 and 202A by investigating a subject (or 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. In each case, a suitable 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 202A 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 composition.

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 passages published in the seventies and sixties.

Prerequisite: French 106 or departmental approval.

Suitable for students having reached the appropriate linguistic 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 literature 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 17th 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. per week.

An attempt to understand and to suggest fruitful ways of studying, from an English-speaking North American point of view, what is essential in "being French".

No specific prerequisite, but a good basic knowledge of spoken and written French is necessary. Lectures mostly in English.

321 General Phonetics, lect.: 3 hrs.

Study of the sounds of language, especially those of English and other languages of particular interest to students; how these sounds are perceived and produced; how they may be classified; how they may be taught; practice in the use of phonetic script; introduction to phonemics. Not a class in remedial pronunciation. Language lab work may be required for some exércises.

Prerequisite: Good knowledge of spoken English and familiarity with the spoken form of at least one other language.

322 General Linguistics, lect.: 3 hrs.

The topics discussed include the nature of human language; branches and applications of language study, including various approaches to foreign language teaching; relation between sound and meaning and problems of translation; relationship between speech and writing; linguistic diversity, bilingualism, and standard language; linguistic change, related language families, and major world languages. Emphasis will be placed on the non-historical aspects of language structure (words, sentences, sounds).

325 Applied Linguistics for Teachers of French, lect.: 2 hrs. Same as Education 4520.

This class is intended for students in Education. Enrollment requires the written consent of the instructor. See description under Education 4520.

326 Methods of Teaching French, lect.: 2 hrs. Same as Education 4840.

This class is intended for students in Education. Enrollment requires the written consent of the instructor. See description under Education 4840.

330 French Literature of the 17th and 18th centuries, lect.: 3 hrs. per week.

331 French Literature of the 19th century, lect.: 3 hrs. per week.

340 Introduction of French-Canadian Literature, lect.: 3 hrs. per week.

350A Introduction to Medieval French Literature, lect.: 3 hrs. per week.

350B Introduction te-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 hrs.

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 ideas of the twentieth century.

430A/B Medieval French Literature, lect.: 3 hrs. per week.

431A/B Sixteenth Century French Literature, lect.: 3 hrs. per week.

 $\ensuremath{\textbf{432A/B}}$ Literature of the 17th Century, lect.: 3 hrs. per week.

433A/B Literature of the 18th Century, lect.: 3 hrs. per week.

434A/B Literature of the 19th Century, lect.: 3 hrs. per week.

435A/B Literature of the 20th Century, lect.: 3 hrs. per week.



Geology

Professors H. B. S. Cooke (Carnegie Professor) M. J. Keen G. C. Milligan

Associate Professors

J. M. Ade-Hall F. Aumento F. Medioli P. E. Schenk

Assistant Professors

D. B. Clarke G. K. Muecke D. J. W. Piper P. H. Reynolds M. Zentilli

Visiting Lecturer

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 return? Can you imagine the economic impact on Nova Scotia if oil is discovered in commercial quantities offshore? Or the even greater impact 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 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 melted 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 about the inside of the earth. 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 Newfoundland. 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. Our means of subsistence, food, raw-materials, and energy required for a growing population must be obtained from the outermost rim of the earth. It is one task of the geologist to 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 geology as an aid to other disciplines; for example, a mining engineer; or a physicist interested in X-ray diffraction spectrometry; or a chemist interested in crystallography; or a biologist interested in protozoas. Students may be interested in a geology degree before they take a professional qualification such as law or business administration. Those whose prime interest is the humanities or social sciences will find that the introductory class in geology stimulates their awareness of their surroundings, and their appreciation of the many facets of science.

Careers open to geologists are many and varied. The largest number of job opportunities is provided by industry. primarily in the search for the production of raw materials such as metals, petroleum and water. Geologists competent in mathematics, or indeed mathematicians with some background in geology, might be involved in processing and analysing data using digital computers; those interested in going to sea might work with the Federal Government's marine institutions. The federal and provincial government employ geologists in their geological surveys and Departments of Mines; the Canadian government is responsible for supplying geologists to agencies such as UNESCO to work in under-developed countries. A graduate with a geology degree and a reasonable background in other sciences would find teaching in high school challenging.

High School Preparation

Students in high schools who plan a career in sciences involving the earth, such as geology or geophysics, should note that it is sensible to try to have the following subjects in Grades XI and XII:

Grade XII mathematics, plus two of Chemistry, Physics and Biology. (The third should have been taken in Grade XI if possible).

Note that these are not prerequisites, but we do strongly advise them. The student should aim to make up deficiencies in his or her high school preparation in the first year at Dalhousie. Note too that at present Grade XII Geology is not counted as equivalent to a Geology 100 level class in Geology at Dalhousie.

Degree Programmes

The tables on the pages that follow are only a guide, and are not rigid requirements. Any student who wishes a different combination is welcome to consult with Geology staff 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 year students should make every effort to seek such advice prior to registration for the first time. All students majoring in geology must consult with the Chairman of the Department prior to registration for the second year.

Student's who intend to make their careers in Geology, or intend to pursue graduate studies, should consider taking an honours programme and, if possible, 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 and 301 in their programmes.

Table 1: Programme for General Students majoring in Geology

Year I	Geology 100 Chemistry 110 or Physics 110 Math 100 Two classes chosen from two non-science groups.		
Year II*	Geology 201 and 202. Two classes from Chemistry, Physics, Biology, or Mathem One elective.		
Year III	Geology 301 and two other 300-level classes in Geology. One elective and one class in Biology, Chemistry, Physics of		

*(By the end of the second year the student should have completed a and Physics. If possible two of these classes should be included in the fi

(Note that, in addition to the Geology classes, as suggested here, at le programme to fulfil the general faculty regulations).

Note:

(1) If only one class in Biology is taken, Biology 3321 is relevant to C prerequisites.

(2) If two 200 level Physics classes can be taken, Physics 221 and 230 a (3) Chemistry 210 is a sensible second class in Chemistry.

(4) Mathematics 200, 220, 228 are all sensible second classes in Math 220 or 228 as prerequisites, if further classes in Mathematics are planne (5) Although the general requirements do not demand a class in Math (a) that any one planning a scientific career may be severely han

Mathematics, and (b) that many graduate schools demand reading abili-(6) Any student who is not sure of a suitable programme plan is invit

Table II: Honours (Major)

A stands	l Economic Geology	II Geophysics	III Geochemistry	IV Petrology	V Stratigraphy
Year I	Port - the state	Geology 100 Mathematics 100 Two classes chose	n from Languages, Hum	anities or Social Science	25
	Chem. 100	Physics 110	Chem. 110	Chem. 110	Biology 101
Year II	Geology 201 Geology 202 Engineering 210 and 211 Math 200 or 220 or 228 Physics 110 Elective	Geology 201 Geology 202 Physics 230 Math 200, 220 or 228 Chem. 110	Geology 201 Geology 202 Chem. 210 or 230 Physics 110 or Math 200 or 206 or 227, or 228 Elective	Geology 201 Geology 202 Chem, 210 or 230 Physics 110 Elective	Geology 201 Geology 202 Biology 2000, or 2040A and 2060B Chem. 110 or Math 200 or 206 or 227 or 228 Elective
Year III	Geology 301 Geology 302 Geology 303 Geology 304 Chem. 210 or 230	Geology 301 Geology 306 Physics 221 Geology elep- tive Elective	Geology 301 Geology 302 or 303 Geology 304 or 308 Chem. 210 or 230 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 Geology 404 Geology 403 or 453 Geology elective Math, Phys. or Chem. elective	Geology 303 Geology 405 Geology 304, 404, 445, or 460 Geology elective Math, elective	Geology 454 Geology 407 or 408 Geology 460 or 404 Geology elective Physics, Biology or Math, elective	Two of Geology 407, or 454 or 408 Two Geology electives Elective	Geology 303 or 304 Geology 455 or 401 or 456 Two Geology electives Biology, Phy. Chem., or Math, elective

and the second s		
atics.		
or Mathematics. t least one class in each of: Mathematics, Chemistry, rst year).		
ast one other 200-level class must be included in the	-	
eology students and may be taken by them with no re sensible choices.		
ematics — but note any restrictions there may be on d. lematics or a foreign language, students should note dicapped if he has not taken at least one class in y in a foreign language. ed to consult with the Chairman of the Department.		
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Table III: Honours (combined)					
	l with Physics	II with Chemistry	III with Biology		
Year I	Geology 100 Mathematics 100 Two classes chosen from Languages, Humanities or Social Sciences				
	Physics 110	Chemistry 110	Biology 1000*		
Year II	Geology 201 Geology 202				
	Elective Physics 211 and 231 Mathematics 200, 220, or 228	Elective Chemistry 210 Mathematics 200, 220 or 228	Elective Biology 2000 ⁵ A class in Chemistry, Physics or Mathematics		
Year III	Geology 301 Elective	Geology 305 Elective			
	Elective Physics 315 or 335 Geology elective	Chemistry 230 Chemistry 320 Geology elective	Biology 3321 Biology 3323 Geology elective		
Year IV	Geology 303 Geology 306 Geology elective Physics 320, 416 or 445 Mathematics 200, 220 or 228	Geology 401 Geology 454 Geology elective Physics or Biology elective Chemistry 410	Geology 401, 456 or 457 Geology 302 Geology elective Biology elective Physics 221 or Mathematics 200, 220 or 228		

Note.

(1) A student 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.

(3) A student who intends to concentrate on paleontology should consider obtaining Geology 305 and 456 in his third and fourth year's respectively.

(4) Honours students 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 doing Combined Honours, Geology and Biology this requirement may be met in one of three ways: (a) Write a comprehensive examination (after 20 classes).

(b) Write an honours thesis (after 20 classes), as an Honours student in Geology alone would do.

(c) Write a thesis to count as a class, Biology 4900, and write a comprehensive examination.

(5) *Students with Grade XII Biology should do Biology 2000, or two of Biology 2010A/B to 2060A/B, not Biology 1000, with appropriate changes in other years.

Classes Offered

Classes in Other Departments

Students doing the major part of their work in geology should be aware of relevant classes in other departments. They change from time to time, but the following guide may be helpful.

Biology

3321 Invertebrates I 3063 Theoretical Ecology 3061B Structure and Functions of Ecosystems I 3062A Structure and Functions of Ecosystems II 4064C Pleistocene Biogeography

Chemistry

510 X-ray Crystallography 512 Crystal Chemistry

Mathematics

206 Probability and Mathematical Statistics

- 220 Applied Mathematics
- 227 Numerical Methods and Fortran Programming
- 228 Applied Mathematics for Engineers I
- 328 Applied Mathematics for Engineers II

Oceanography

200, 511A, 512A, 513B, 514B Introductory Classes. 522, 523, 524, 525, 531 Advanced Classes.

Physics

335 Electronics 445 Geophysics 645 Advanced Geophysics

Geology 100, Geology 101 and Geology 140. The study of the earth is based upon observation of natural phenomena, upon experiment and inference. In the last few years intensive study of the rocks of the ocean-floor has led to a revolution in our ideas about the processes responsible for the development of continents and ocean basins; it has led, in a sense, to a new geology. Let us illustrate one aspect only. We know that a huge mountain chain is buried beneath the Atlantic Ocean, running many thousands of miles and rising above sea-level at islands such as St. Helena and Iceland. This Mid-Atlantic Ridge is the place where rock is slowly brought from the interior of the earth, increasing the area of the Atlantic Ocean; the Americas slowly move westwards away from this Ridge, and Europe and Africa slowly move eastwards. One consequence of this as a theory is that the youngest rocks will be found in the middle of the Atlantic, but the oldest on either side. This turns out to be true. But ask yourself questions of this sort: how would you find the ages of the rocks? or how would you make a map of the rocks of the ocean floor or of Nova Scotia for that matter? Animals living in the sea die and their remains are found in the mud on the sea-floor. They provide the record of evolutionary changes; it is only by the study of fossils that we can trace the rise of man from primitive organisms living billions of years ago.

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 million years ago?

100 Introduction to Geology, lect.: 3 hrs.; lab.: 3 hrs.; J. M. Ade-Hall, M. Zentilli, F. Medioli.

This is an introductory class for students intending to take a 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 ocean basins all playing major parts in the new concept.

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.; (alternate weeks), H. B. S. Cooke and staff.

This is an introductory class for students in Arts and Science. It is intended as a science elective for students from disciplines other than science. It emphasizes the concepts and major ideas which concern the development and present state of the earth and planets, and the influence of geological 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 lab.: 3 hrs.; one evening per week, F. 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 student cannot go from this class into Geology 201 or 202, but can enter Geology 240, 241A, and 242B.

Two Hundred Level Classes

The two-hundred level classes fall into two categories.

Geology 201 and 202 are for majors and honours students in Geology and must be taken concurrently. They are classes in which an attempt is made to provide a student with tools needed in 300 and higher level classes, at the same time retaining an awareness of the whole subject. The two classes are integrated through extensive field work in the geology of Nova Scotia. Samples and data collected on the Saturday field trips will be used for subsequent laboratory investigations. 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 either 201 or 202 separately.

Note that the normal prerequisite for Geology 201 and 202 is Geology 100. Under exceptional circumstances Geology 101 and 140 may be acceptable. Students majoring in Geology are strongly advised to select their other classes in Second Year in accordance with the prerequisites for 300-level Geology classes.

Geology 240, 241 A and 241 B are classes for students who do

202 Introduction to Stratigraphy, Paleontology, Structural Geology, lect.: 3 hrs.; lab.: 3 hrs.; P.E. Schenk, G.C. Milligan,

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 geological 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 geologic section of the province. Observations and samples are processed during indoor labs in both 201 and 202. The student is introduced to methods of surveying, simple structual interpretations, paleontological dating and paleoecology, and stratigraphic observations and principles used in deciphering the geological history of an area. Application of plate-tectonics to Nova Scotia serves as an example of the evolution of large crustal blocks.

not intend to major in Geology, but are simply interested in the earth. The only prerequisite for entrance to any of them is one of the 100 level Geology classes. They may not be taken for credit as Geology classes 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 honours students. Geology 342B may be taken for credit by both honours and majors students.

201 Mineralogy and Petrology lect.: 3 hrs.; lab.: 3 hrs.; F. Aumento, D.B. Clarke,

This class is for students majoring in Geology and is to be taken concurrently with Geology 202.

Geology 201 covers such topics as hard specimen mineralogy, optical mineralogy, petrology and some geochemistry, geophysics and economic geology. Laboratory work includes five field trips in the first term taken in conjunction with field work in Geology 202.

240 Marine Geology and Geophysics, lect., lab. and discussion: 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 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 minor; and those who would simply like a second class in geology (including high school teachers, or interested professionals at government insititutions).

Prerequisite: any first level class in geology.

241A Environmental Geology, lect., lab. and discussion: 3 hrs.; one evening per week, D.J.W. Piper and M. Zentilli

Geology lies behind many of the environmental problems facing man today. In this class we consider topics such as energy and mineral resources, geological hazards such as earthquakes and landslides, the relevance of geology in the fields of pollution and waste disposal, and the role that geology has to play in planning urban areas, especially in Nova Scotia.

Geology majors and honours students wishing to take an environmental geology class should register in 341A. Prerequisite: any first level class in geology.

242B Geomorphology, lect., lab. and discussion: one evening per week: D.J.W. Piper and 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 appearance of these landforms in conventional, aerial, and satellite photographs, and in maps

Geology majors and honours students wishing to take a class in geomorphology should register in 342B. 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 microscopic investigations of these rocks provide clues to the conditions prevailing at the time of their formation.

Igneous rocks will be discussed under such topics as mineralogical and chemical classification, methods of depicting chemical data, mechanisms and environment of magma production, various mechanisms of magma evolution and comagmatic provinces.

Metamorphic rocks will be considered as the products of thermal and dynamic processes operation on preexisting rocks. Stability relations of minerals under varying temperature-pressure conditions and concept of metamorphic facies will be stressed

Prerequisites: Geology 201 and 202, Chemistry 110.

302 Stratigraphy and Sedimentology, lect.: 3 hrs.; lab.: 3 hrs.; P.E. Schenk.

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 three-dimensional complexities of rock masses.

The first term involves means of interpretation and discussions of tectono-environmental models of the main sedimentary environments. Each model is displayed with a 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 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 computer is a decided asset in this term.

This class is suitable not only for those specializing in sedimentary rocks, but especially for those in other areas of earth science, general course B.Sc., or emphatically earth science teachers.

Prerequisite: Geology 202 or equivalent.

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 geometrical aspects of the rock structures and their interpretation but there is also consideration, in an elementary way, of the mechanics of rock deformation. The laboratory work is essentially a brief course in descriptive geometry. This trains the student to visualize the three-dimensional geometry of rock 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 Spencer, will be found useful, and students are also referred to other texts and to the geological journals. The class requires a considerable amount of reading. Prerequisites: Geology 201 and 202.

304 Introduction to Mineral Deposits, lect.: 3 hrs.; lab.: 3 hrs.: M. Zentilli

This class is an introduction to the principles and processes. both igneous, sedimentary, and metamorphic, that govern the formation, nature, and distribution of metallic mineral deposits and some industrial rocks and minerals. Economically significant mining districts in Canada and elsewhere are discussed to illustrate particular classes of ore deposits, their geologic environments and the methods used in their investigation.

A text will be recommended, but a considerable volume of reading from technical journals will be required.

Prerequisites: Geology 201, 202. Geology 301, 303 may be taken simultaneously.' Exceptions are made to meet specific programmes, but the student should consult the instructor and obtain permission.

305 Systematic Palaeontology, lect.: 3 hrs.; lab.: F. Medioli. H.B.S. Cooke.

This class comprises a systematic survey of the major phyla of fossil organisms. The emphasis will be on morphology and taxonomy of invertebrate phyla, but a short survey of the main lines of evolution of vertebrates will be included. The purpose of this class is primarily to enable the student to recognize at sight the members of the various phyla. However, it is intended also that he should learn how to tackle invertebrate fossil, material so as to classify it accurately when the resources of a library and museum are available. Prerequiste: Geology 201 and 202 or Biology 2000 or Biology 3321. Note this class is suitable for Biology students without previous geology classes.

306B/556B Plate Tectonics, lect.: 3 hrs.; lab.: 3 hrs.; J.M. Ade-Hall

The study of the ocean floors by geologists, and geophysicists over the last 15 years has lead to a revolution in our understanding of the way in which the earth's crust is made. The continents are now known to be islands of light material which are carried on enormous crustal plates. These plates are changing in form all the time, being added to at the mid-ocean ridges and being lost at the deep trenches. The past and present collision of plates has given rise to the fold mountain ranges of the earth. The Coast Ranges, Alps and Himalayas represent active plate collision and older ranges, such as the Appalachians, represent the fossilized effects of former plate collisions.

This class will describe the rapid development of ideas about the oceanic geology leading to the current state of the plate tectonic model of the earth's crust. Contributing evidence from many areas of geology and geophysics will be brought together in a current synthesis. This means that the student will be introduced to eathquake 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 "Glomar Challenger". We shall also be looking at the geology of fascinating areas such as the volcanic Mid-Atlantic Ridge, the Gulf of California and the San Andreas Fault and the West Coast of South America. These are all areas where 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 level Physics classes. Note this class is suitable for physics students without previous Geology classes.

306A Introduction to Exploration Geophysics, lect.: 3 hrs.; lab.: 3 hrs.; J.M. Ade-Hall.

Canada has major mineral resources in the Canadian Shield. and the sedimentary basins of Alberta, the Arctic and the continental margins contain oil and gas. Exploration geophysics has led in part or in whole to the discovery of many of these. For example, aeromagnetic surveys are used to 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 techniques for themselves during the laboratory. Text: Parasnis, Introduction to Exploration Geophysics. Prerequisites: As for 306A.

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 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 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 by other classes, and no student may register without permission from the Chairman or appropriate undergraduate advisor.

341A Environmental Geology, lect., lab. and discussion: 3 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 honours students.

342B Geomorphology, lect., lab. and discussion: 3 hrs.; one evening per week, D.J.W. Piper and H.B.S. Cooke.

This is taught as Geology 242B, but with additional reading and exercises; it is suitable as a Geology credit for majors and honours students

Four Hundred Level Classes

Note

Classes labelled "alternate years" may nevertheless be given if six students or more register for the class.

401/501 Sedimentology and Sedimentary Petrology, lect.: 2 hrs.; lab.: 3 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 themselves. The class will concentrate on the processes 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 analytical techniques are taught in the lab, with students working on their own material in a small project of their choice. There is some field work.

Prerequisites: Geology 302 completed, or being taken concurrently, or permission of instructor.

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examples.

404/554 Ore Deposits, Advanced Class, hours to be arranged; M. Zentilli, (Offered in 1976-77 and alternate years).

This course is designed for graduate and senior undergraduate students interested in mineral exploration, mining geology, and in particular aspects of the mineralogy and petrology of metallic ores. Ore deposits are analyzed from the point of view of their regional and detailed geological setting; the unifying concepts of metallogenic epochs and metallogenic provinces are emphasized in light of plate tectonics and classical geotectonic theories. The class is taught in a colloquium in which each student in turn leads the discussion for a 3-hour session. Considerable flexibility is possible to meet the special interests or requirements of the individuals in the class.

A wide range of igneous rocks will be discussed from a petrogenetic standpoint. The petrogenetic problem for each rock type will be defined and then its origin considered in the light of-recent information from the fields of geochemistry, isotopic studies and phase equilibrium studies.

Metamorphic rocks will be discussed as products of physicochemical processes in open and closed systems. Experimentally determined phase relations of metamorphic minerals will be critically examined and correlated to natural assemblages. The development of metamorphic belts will be studied in relation to the evolution of the continental crust and plate tectonics.

403 Advanced Structural Geology, hours to be arranged. G.C. Milligan. (Offered in 1975-76 and alternate years).

This class will consider the life-history of a mountain range as a theme upon which to base discussion of tectonic processes. It is proposed to use the western Cordillera and the Alps as

The class is conducted as a colloquium and participants will be required to read extensively in the relevant journals. Prerequisite: Geology 303 or permission, of the instructor.

The text material is drawn predominantly from the technical journals and reference works and a considerable volume of reading is required.

Prerequisites: Geology, 301, 302, 303, 304, Chem. 210 or 230. Exceptions with the permission of the instructor.

407/510 Advanced Igneous and Metamorphic Petrogenesis, lect.: 3 hrs.; lab.: 3 hrs.; D.B. Clarke, G.K. Muecke. (Offered in 1975-76 and alternate years).

Prerequisites: Geology 301, Chemistry 210 or 230.

408/511 Advanced Mineralogy and Crystalography, lect.: 3 hrs.; lab.: 3 hrs.; F. Aumento, D.B. Clarke, G.K. Muecke. (Offered in 1974-75 and alternate years.)

Advanced work in crystallography and crystal chemistry preceeds a systematic examination of the chemistry, structure and occurrence of the major rock and ore-forming minerals. Laboratory work includes the use of X-ray and other modern analytical techniques in the identification of minerals and determination of their parameters, symmetry and structure

Prerequisites: Geology 201 and 202.

445/545 Physics of the Earth, lect.: 3 hrs.; R.D. Hyndman, J.M. Ade-Hall and P.H. Reynolds,

This is a class in solid-earth geophysics and as such complements 306A which deals almost exclusively with crustal geology and geophysics. Topics discussed include: the figure of the earth and gravity, seismology and the intermal structure of the earth, the geomagnetic field, paleomagnetism - the prehistory of the geomagnetic field, heat flow and the earth's thermal history, electrical conduction in the earth, radioactive processes and the age of the earth.

Taught concurrently with Physics 445. See also Geology 306A, B, 462/562; Oceanography 511A. Prerequisite: Registration requires the prior consent of the Department

Texts: Garland 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 645 and Oceanography 645. All geophysics graduate students are expected to attend.

453/503 Hydrogeology, hours to be arranged; J. Jones and staff, (Offered in 1976-77 and alternate years).

This class studies the occurrence, movement and distribution of water, as related to earth materials, with emphasis on the exploration, development, utilization of groundwater and related environmental issues.

The class work includes the principles of groundwater flow, aquifer hydraulics, water chemistry, hydrologic systems, i.e. ground-water-surface water interactions, and digital modelling. Problems regarding the groundwater flow system and natural and artificial contaminants will be discussed, including such items as solid waste disposal, land use relationships and contaminaton due to de-icing salts, oil and gas, fertilizers, pesticides, herbicides, and other pollution sources. The disruption of the natural groundwater flow system due to construction works will also be examined. Problems, literature reviews and assignments on special topics are an integral part of the class. Reference texts and pertinent periodicals for reading will be announced.

454/504 Geochemistry, lect.: 3 hrs.; lab.: 3 hrs.; G.K. Muecke

The 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 lunar 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 rock and mineral analysis and will include an exposure to classical, spectrophotometric, flame photometric, atomic absorption, X-ray fluorescence and neutron activation analysis.

Prerequisites: Geology 201 and 301; or a good background in Chemistry. Students wishing to take this class should have a good background in either geology or chemistry and should consult the instructor before registration. Note that this class may be taken by students with a good background in Chemistry who have taken no previous geology classes.

455/505 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-recent carbonate environments and ancient analogues, and carbonate diagenesis. Rock material for the course is from two 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) student's own collections from the Middle Carboniferous of

Nova Scotia. After field observations, laboratory work involves polished slabs, etching and acetate peels, staining, insoluble residue analysis, and thin sections. Class Time involves demonstrations, surveys, and seminars.

A secondary concern is the microscopy of thin sections cut from siliclastic sedimentary rock. We will concentrate on microscopic reading of provenance, transport, deposition, and diagenesis. The microscope is a necessary complement to field studies in interpreting rock. The prime objective of the study of a thin-section is the reading of rock history. Texts: Bathurst, Carbonate Sediments and Diagenesis; Pettijohn, etc. Sands and Sandstones. Prerequisite: Geology 301, 302, or equivalent.

456/506 Introduction to Micropalaeontology, hours to be arranged; F. Medioli

The class offers a general systematic study of the major groups of microfossils, mainly foraminifers, ostracoda and calcareous nannoplankton. It is intended to provide a survey for those who do not plan to go further with the subject, and to 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 microfauna and techniques 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 special problems involved in the interpretation of Pleistocene deposits, rather than to a particular study of Pleistocene stratigraphy. The matters covered include: the origin, distribution and nature of snow and ice; movement in glaciers and ice caps; glacial stratigraphy; sea level fluctuations; ocean floor deposits; climatic changes evidenced in non-glaciated regions; theories of ice ages.

A special half-credit laboratory programme complimentary to this seminar is offered in the Department of Biology as Biology 4064C, Pleistocene Biogeography. All students taking Geology 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 464C. For details see entry under Biology 4064C.

Students who are admitted to the class are expected to possess sufficient background to be able to prepare competent seminar talks, which are an essential part of the programme. Althought this will normally mean a good background in geology, students with advanced standing in biology will be admitted. Reading forms a substantial part of the class as there is no single text available.

460A/560A Principles of Isotope Geochemistry, lect.: 3 hrs.: lab.: 3 hrs.; G.K. Muecke. (Offered in 1975-76 and alternate years).

The study of naturally occurring isotopes, both radioactive and stable, forms a major and ever expanding field of geochemistry. This class introduces the student to the fundamental concepts of nuclear chemistry such as types of nuclear disintegration, nuclide systematics, nuclear reactions, etc. The role of isotope fractionation in geological processes will be discussed with reference to stable isotopes. Particular 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. Reynolds; (Offered in 1975-76 and alternate years).

The absolute dating of pre-historic events, be they the shaping of tools by ancient man or the formation of the solar system, constitutes a fundamental problem encountered in most geological and geophysical studies. The emphasis in this class will be on methods of age dating based on the radioactive decay of naturally occurring isotopes; other methods will be discussed briefly. The role of radioactive isotopes and their daughters as tracers in geological processes will also be stressed.

Prerequisitess: Geology 460A, or equivalent, plus a good background in geology, or physics, or chemistry, and permission of instructor.

461/561 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 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 convenience of the class and instructors.

Prerequisites: Geology 302 or 306A, B or permission of instructor.

462/562 Time Sequence Analysis in Geophysics Lect.: 3 hrs.; P.H. Reynolds.

This will be a mathematically oriented class designed for graduate students.

This will be a mathematically oriented class designed for senior undergraduates and for graduate students. Substantial background in mathematics is required.

Topics: Convolution of time series; Fourier and Laplace transforms; correlation and covariance; power spectral estimates; spectral windows; deconvolution filter theory; geophysical applications.

Prerequisites: Interested students should consult with instructor.

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 senior students. All graduate students are required to attend.

Field Classes

Spring Class in Field Geology

In co-operation with Mount Allison, St. Francis Xavier, and St. Mary's universities, a field course of approxaimately two weeks' duration is conducted at Crystal Cliffs, N.S. This class is held immediately following the conclusion of spring examinations. It is compulsory for students specializing in geology after their third year. A fee of about \$50, for full board is payable with the second instalment of university fees.



German

Professors F. Gaede

Associate Professors D. Steffen

Assistant Professors

A. Roulston H. G. Schwarz

Lecturers G. Josenhans

Special Lecturer Colin Starnes

German studies are the investigation of German culture and its place in the formation of the modern world. By concentrating on significant aspects of the literary and intellectual culture of the Germanies, the Department, far from following an idle interest in the past, aims to understand the nature of our contemporary world.

Many Canadian students take German to become fluent in one of the more useful languages. German is generally understood in Central and Eastern Europe. German is also needed in many fields of study, such as Classics, History, Music, Philosophy, Religion, and the social and natural sciences.

The literary and intellectual culture of the Germanies is. immediately present to us in the many ways the thoughts of Karl Marx, Nietzsche, and Freud have moved men and nations to change the course of the modern world. Revolutionary Marxism, nationalism, and the influence of Existentialism and Psychoanalysis on contemporary conceptions of human freedom have led to the divisions of the modern world. As we try to overcome the divisive forces so prominent in the contemporary world we have to understand their relative truth. We are thus led to an inquiry into the very nature of the Modern Age. The Reformation gave the first expression to its principle: the freedom of man in and through faith. The Enlightenment of the 18th century developed this principle, but it ended with the seemingly irreconcilable opposition of man and nature, and of one man's freedom with the freedom of all other men. The German Idealists struggled with these oppositions, and they offered a resolution that appears in the music of Bach and Beethoven, in the writings of Goethe and the Romanticists, and in the philosophy of Kant and Hegel. These men of the 18th and early 19th centuries developed in the Arts, in literature, and in speculative thought a profound understanding of the Modern Age. The course of history since the Revolutions of the 18th century is the history of this freedom, both in the Old and New World, in the East and in the West. Revolutionary Marxism and Existentialism, in its religious and secular form, take hold of a particular aspect of freedom. By concentrating on the Age of the Reformation, the intellectual conflicts of the Enlightenment, and the literary and philosophical achievements of the Idealists, German studies aim to contribute to a profound understanding of our world.

Degree Programmes

General B.A. in German

Students concentrating on German should take a minimum of three German classes beyond the 100 level.

B.A. with Honours in German

Students considering an honours course are advised to consult the Department of German.

Combined Honours

It is possible for students to take an honours degree combining German with French, Russian, Spanish, English or Greek. Any student intending to take such a combined honours degree should consult with the two respective departments to arrange the details of such a programme.

Programme for Future Teachers of German.

The Department also offers a special one-year programme in conjunction with the Department of Education for third year students of German. All courses under this programme must be taken as a unit. Any student desiring to pursue this programme should consult with the Department.

1. Prerequisite: Successful completion of an intermediate German Class (such as German 200) or equivalent.

2. Structure of Programme.

- a) intensive language training (German 300)
- b) philology and linguistics (German 350)
- c) teaching methods (German 351)
- d) work in German civilization

German Language Studies

Introductory Classes Offered

100 German for Beginners, lect.: 3 hrs.; G. Josenhans, A. Roulston, H. G. Schwarz.

German 100 is a seminar class for beginners, and no previous knowledge other than a reasonable background of English grammar is required. Its equivalent is two years of German in high school with a final mark of 75% or better. While the texts may be similar to those used in high schools, the University class offers more facilities for learning, such as language laboratories and opportunities for oral work, supplies of books, and magazines and papers in German for study. More independent work is demanded of the student than is customary in high schools.

The class is taught mainly in German, emphasizes the spoken language, and provides the student with the knowledge of basic grammar.

Intensive language laboratory work and attendance at small conversation groups is required.

Text: Schulz/Griesbach: Deutsche Sprachlehre für Ausländer, Grundstufe in einem Band.

Glossary: Deutsch-English. Deutsche Sprachlehre für Ausländer, Grundstufe in einem Band. Huber Verlag, München.

The class or its equivalent is a prerequisite for all classes on the 200 level.

105 German Reading Course for Beginners, lect.: 3 hrs.; A. Roulston.

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 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 Book Co., New York, and German periodicals and newspapers.

150 Intensified German, lect.: 5 hrs. lab. 2 hrs.; v. Maltzahn.

This class combines the objectives of both German 100 and 200; no previous knowledge of German is required. German 150 counts as two classes, equivalent to those of German 100 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 their efforts in one year; students planning to proceed to 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 basis of expanded knowledge of grammar and vocabulary.

Students will first become familiar with the basic patterns of spoken and written German and will learn to use them through repetition.

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 whole year.

Students will spend an average of two hours a week in the language laboratory to support grammatical studies and to develop aural comprehension. One hour a week will be dictated to conversational practice exclusively. Text: Schulz/Griesbach: Deutsche Sprachlehre für Ausländer, Max Hueber Verlag, München.

Intermediate Classes Offered *

Intermediate classes are based on German 100, high school German or an equivalent basic knowledge.

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 knowledge of grammar including declension of nouns and pronouns, conjugations of verbs, active and passive voice, use of preposition, declensions of adjectives, syntax - main clauses, dependent clauses, questions, imperatives, direct speech! The knowledge required can be found in books of German 100 or Grade X, XI, XII German, and in German basic 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 the improvement of grammatical knowledge and vocabulary. The class is based on German 100, high school German or 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.

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This is primarily a reading and translation class designed to enable science students to read scientific papers, reports, and articles in scientific journals in the original language. The grammar text used in the class emphasizes those aspects of grammar that must be known to accomplish this. Class work emphasizes chiefly the analysis of typical sentence constructions found in the reading selections, vocabulary building and sight translations. Reading material is assigned from many sources in the major scientific fields. Students are encouraged to bring in additional reading material of their own interest to 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 field, and be able to translate even at sight, with reasonable facility and speed. A reading knowledge of German is a prerequisite for many Ph.D. dearees.

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 instruction and which are designed to teach students how to use a modern vocabulary and common grammatical and syntactical patterns. Students will find that the type of work they have been accustomed to perform in class will now have to be done in the language laboratory, while most of the instruction time in class is dedicated to the development of their language abilities.

The class work includes the reading of simple and moderately difficult modern German literature and a complete review of the basic grammar.

Prerequisite: German 100 or equivalent.

Texts: Schulz/Griesbach: Deutsche Sprachlehre für Ausländer, Griesbach: Deutsch für Fortgeschrittene.

201 Scientific German, lect.: 3 hrs.; A. Roulston.

Prerequisite: German 100 or equivalent.

Text: Eichner and Hein, Reading German for Scientists, (Chapman and Hall, London).

202 Exercises in Translation and Composition, lect.: 2 hrs.: D. Steffen, G. Josenhans.

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. Dictations are given once a week. The class will be conducted mainly in German.

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 ability to express themselves freely and correctly in different styles (e.g. personal and official letters, reports, descriptions) within the vocabulary of present day German social, political, cultural and scientific life. Students will be required to do translations and exercises in syntax, and to write essays on various topics.

The class will also study the various uses of synonyms, idioms, different meanings of similar words, words within changing contexts, and vocabulary within selected word patterns. Prerequisite: German 200 or equivalent.

350 German Philology and Linguistics, lect.: 2 hrs.; H. G. Schwarz.

The aim of the class is to familiarize the student with the German language in its historic development as well as its present-day structures. The fields of phonology, morphology and semantics will be extensively covered and will also serve 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.

351 Theory & Practice of Language Instruction, lect.: 2 hrs.; H. G. Schwarz.

This class is given in conjunction with the Department of Education and will introduce the future teacher of German into theory and practice of language teaching.

Study of German Literature

Prerequisite: German 200 or equivalent.

German 220 Introduction to German Literature lect.: 2 hrs.: H. G. Schwarz.

A study is made of texts representing major periods of German Literature since the 18th century. Special emphasis is given to the interaction between literature, society and the other forms of art. The class also serves as an introduction to literary criticism

310 Baroque Age lect.: 2 hrs.; F. Gaede.

The class studies German literature between the 16th and 18th centuries as a direct reflection of the important religious, social and scientific developments in Germany after the Reformation and during Absolutism, particularly the 30 Years' War. Poetics, poetry, drama, and prose, their origins in Humanism and the Renaissance and their functions for the following literature will be discussed. An introduction will be given to rhetorics, the art of emblematas and allegory, mysticism and mannerism which determine and characterize 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 students a thorough understanding 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 18th century. The Germans, politically divided, participated in the revolutions not in the form of political action, but in the form 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 traditions that the revolution cast aside.

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 not regularly offered by the Department. This may include literary works of the past, contemporary literature, and topics which 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 Hitler - A Study of Modern Evil lect .: 2 hrs.; Hankey, Starnes, Steffen.

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 a study of Nietzsche and Existentialism, Freud and Psychoanalysis, and Popper and Positivism, we investigate these modern statements of the problem and inquire into the adequacy of their proposed solutions.

410 Aesthetic Theories, seminar, 2 hrs.; F. Gaede.

415 Modern Theories of Art and Literature seminar, 2 hrs.: F. Gaede.

420 Seminar on Hegel's Phenomenology of Spirit, 2 hrs.; D. Steffen.

The Phenomenology of Spirit, published in 1807, was Hegel's first major work. He intended to write an introduction to philosophy by demonstrating the necessity of the advance from the most immediate form of knowledge to absolute knowledge. To achieve this he had to write the Phenomenology as an introduction to his own philosophy.

425 Studies in German Idealism sem., 2 hrs.; D. Steffen,

Graduate Studies

The department offers a graduate programme leading to the M.A. degree. Details of the M.A. programme are given in the Calendar of the Faculty of Graduate Studies.

Health Education

HE412 Human Sexuality and Educating About It, lect. and discussion: 3 credit hrs.; normally Spring; E. Belzer.

This class is concerned with basic knowledges and understandings regarding biomedical, psycho-social, historical, legal, religious, semantic and comparative cultural aspects of human sexuality from conception to senility. Consideration is given to adjustment needs and problems of children and adults in contemporary Canadian society and to educational efforts to help with them, Prerequisite: Permission of the instructor.

Professors

P. Burroughs J. E. Flint P. Fraser H. S. Granter R. M. Haines G. R. MacLean P. B. Waite J. B. Webster

Associate Professors

C. B. Fergusson J. Fingard P. D. Pillay (Chairman) M. Reckord L. D. Stokes

Assistant Professors

J. E. Crowley J. F. Godfrev G. S. Kealey J. T. O'Brien N. G. O. Pereira D. A. Sutherland G. D. Taylor S. Van Kirk

History as a Subject for Study at University

A sense of history is a primitive need felt by individuals and by groups. Just as a person needs to know who he is and how he arrived where he is, so human groups, races, classes, states and nations need a sense of their own past as part of their culture. This primitive sense of history is revealed in myths and legends, when peoples embroider what has come to them from the past to create a comfortable set of beliefs about their own previous exploits and origins. There are still those who wish to use history in this way, as a means to soothe doubt and . demonstrate the essential rightness of their own beliefs.

The academic study of history, however, is concerned to discover as much as possible of the reality of the past and to interpret human behaviour in its changes through time. It is a unique subject, scientific in the way it uses evidence, but still an art because the reconstruction of the past requires a disciplined imagination and an effective rhetoric for the communication of meaning.

The contemporary world is one of intensive specialization, in which the varieties of human knowledge have increased well beyond the capacity of any individual to command them all. These developments have reinforced the role of history as the foundation of a person's education, because history can never draw frontiers around itself to exclude any branch of human knowledge, although individual historians will want to select that portion of it especially relevant for them. History's field of study will always be the whole of human experience.

History is the study of how and why changes in human life occur, and with what results.

Aims of Teaching and Study

Many students entering university history classes have difficulty in adjusting to the university levels of study. The ability to repeat what has been heard in lectures and to memorize events which fall between dates at the end of the class title is of little value. Students should understand the nature of the problems which have been studied; they should also command the knowledge which has been gained, in the sense of being able to arrange it in significant patterns and to allow ideas to be tested against such knowledge.

The Department appoints advisors to counsel students. Before registration students should consult with departmental advisors concerning their programme of study and should secure departmental approval for admission to the particular classes they wish to take.

Students who wish to build up a greater specialization in history than the minimum requirements may do so by taking classes in ancient history from the Classics Department, in economic history from the Economics Department and in contemporary history from classes offered in Political Science. The Biology and Physics Departments also offer a class in the history of science. Such classes are listed in the Calendar under the heading of the department concerned.

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The subject of history does not have a monolithic body of knowledge. Historical understanding is a matter of interpretation, of offering explanations for events and movements which are subject to constant revision by scholars. Arguments, scepticism and controversy are thus the very stuff of history. The history student does not merely acquire a particular mass of information; he learns to think for himself.

At all levels of study in history, students are guided through lectures and tutorials and encouraged to read books and articles which consider the same problems from different viewpoints. Dalhousie has an excellent collection of historical literature and the Killam Library provides students with good conditions for private study and reading. Students are encouraged to acquire gradually a small, well-chosen personal library from the large number of excellent books oublished in paperback form.

Degree Programmes

Classes in history are set out below. There are several levels of study, 100-level classes are primarily for first-year students; 200-level classes treat broad geographical areas over specified periods; and 300/400-level classes provide opportunity for specialized study and advanced work for the undergraduate.

1. 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. First-year students may take two 100-level classes in history.

2. Interdisciplinary Programmes

Mediaeval Studies Programme.

African Studies Programme (for details consult the Depart-

Canadian Studies Programme.

3. Honours Degree Programmes

Students may choose from several honours programmes:

European: A selection of classes in Mediaeval, Early Modern, and Modern European history with emphasis, if desired, on the national history of a European country.

North American: A concentration of classes in the history of Colonial North America and in Canadian and United States national history

African: Classes in African history may be combined with classes in British colonial history.

British and British Imperial: A concentration of classes in the history of England and of the British Empire and CommonGeneral: A wide selection of classes from North American, British and Imperial, African and European history.

All programmes include related studies in language, literature, philosophy, economics and political science.

Classes Offered at the 100 Level

100 This Century Has Ten Decades, lect.: 2 hrs. plus arrangements, J. F. Godfrey.

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 modern world through lectures, video tapes, happenings, and rap 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 prehistoric Indian cultures to Pierre Trudeau. It will have a central core of social and political history, but will range acrosseconomic history as well as Canadian literature. This is history for people who like Canada.

199 Problems of Historical Study and Writing, seminar 2 hrs.

This class is for first-year students only. It is intended to introduce the student to the problems of historical study, including the nature of historical evidence, how problems are analyzed, what is meant by such concepts as "causes" and "results", and especially how the student can learn to think for himself about historical problems and to express his thoughts in carefully organized written work. No lectures take place; instead, each student registers for a section dealing with the type of history which interests him. The sections are limited to fifteen students and meet once a week. Each student must write an essay per month. The general techniques of study and writing are thus acquired by consideration of particular problems in a field of special interest to the student. This is history for people who like history.

Some of the sections that may be offered:

199/1 Revolutionary American and Republican Culture, 1750-1820, J. E. Crowley.

199/5 Mediaeval Life and Thought, R. M. Haines. 199/6 Blacks and Whites, 1496-1970, M. Reckord.

199/7 Fascism and Nazism, L. D. Stokes.

199/8 British Imperialism and Nigerian Nationalism, 1800-1970, J. B. Webster.

199/9 Canada, 1835-1935: Gentlemen versus Rebels, D. A. Sutherland.

199/10 America and the Cold War, 1940-1970, G. D. Taylor. 199/13 (new section): From Artisan to Worker: Topics in Canadian Working Class History. G. S. Kealye. 199/14 (new section): Samizdat and Tamizdat: Recent "Anti-Soviet" Writings. N. G. O. Pereira. 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 200-level classes.

European History

200 Medieval Europe, lecture/discussion/tutorial sessions; 2 hrs.; R. M. Haines.

Within a broader framework the class will give particular attention to the Age of Charlemagne, The Twelfth-Century Renaissance and the concept of decline in the context of the Later Middle Ages.

201 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 national states and their attendant rebellions, the intellectual history of political and scientific development, and the changes and continuities in economic and social structures.

205 Modern Europe, J. F. Godfrey, 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 a 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 all sessions are required. One section of the course will be given in the evening.

British and British Imperial History

210 The History of England, lect.: 2 hrs. plus tutorial sections, H. S. Granter, P. Fraser.

The main features of English history, from Anglo-Saxon times to the twentieth century, are given selective treatment and put in historical focus. The emphasis is on the development of a society and culture which, though similar to Western European, has its own particular and peculiar characteristics.

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 History

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 seventeenth to the twentieth centuries. The treatment of events will be topical and concerned with the French Colonial, the British Colonial, and National Periods. Within these periods the emphasis will be upon interest groups and the colonial, regional, and ethnic characteristics 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-level

222 Canadian Economic History, lect.: 3 hrs.; (for details see Economics 232).

230 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 another in the British imperial system, and later the American nation? How closely did ideas about American social equality and economic opportunity reflect the realities of the emerging society? How did the rise of an industrial and urban nation alter the values and ways of life of a people whose traditions were shaped in small towns, city neighborhoods and rural communities? The course will emphasize basic changes and tendencies in American histogy.

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 history by a study of the internal politics and developments of African states and societies such as the Yoruba empire, Ashanti and Dahomey in West Africa, and African states like Buganda around the East African great lakes. The theme of cultural contact and its effects will be prominent in considering Muslim revolutions in West Africa, and Arab penetration in East Africa, as well as the impact of Christian missionaries in both areas. The second term will deal mainly with the impact of European colonial rule; the patrition of Africa, the establishment of differing types of European rule, and African responses by resistance and nationalism which culminated in the emergence of independent African states. A section of this class will be given in the evening.

Classes Offered at the 300 Level

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 classes. The Department will probably be offering additional 300-level classes, details of which will be available at registration.

European History

300 Mediaeval Civilization, discussion/tutorial: 2 hrs.; R. M. Haines.

History 200 provides the appropriate background for this class. Each year a number of topics is chosen, wide enough to be used as central themes in the context of which mediaeval civilization can be studied; for instance, monasticism, universities, papal government, and architecture. Such topics will be studied in depth, with the help of original documents (in translation) where these are available, and using periodical literature. Students are expected to master the basic work in certain areas, but will also be encouraged to develop special interests of their own. Class discussion will be used to unravel more difficult aspects, and all students will be expected to

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contribute in this way and in the writing of a small number of well argued and documented papers. Some general books should be read before starting the class. Suggestions of this kind, with a list of the topics and appropriate explanation and bibliography will be available well in advance.

302 The Mediaeval Church, discussion/tutorial: 2 hrs.: R. M. Haines,

305 Modern Russia, discussion/tutorial: 2 hrs.; N. G. O. Pereira.

This course examines Russia from the reign of Alexander I through Stalin and slightly beyond, with an emphasis upon intellectual and political history.

306 Modern France from the Revolution of 1848 to the 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 sentiment as much as by reason . . . Instinctively I have the feeling that Providence has created her either for 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 faults of Frenchmen, not to the genius of the land. But the positive side of my mind 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 which 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)

307 Modern Germany, discussion/tutorial: 2 hrs.; L. D. 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 liberalism, the role of Prussia, industrialization, the political parties and civil-military relations. Extensive reading in primary and secondary sources is required and each student will prepare a research paper during the second term. A 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

314 England under the Tudors and Stuarts, discussion/tutorial with occasional lectures: 2 hrs.; H. S. Granter.

This class will deal with such topics as the religious reformation in England, the rise of the gentry, the age of Elizabeth, the agrarian revolution, Anglican, Catholic and Puritan, the Civil War and the restoration of the establishment, parliamentary monarchy and the rule of law, and the growth of individual liberty.

316 England in the Nineenth Century to 1867, discussion/tutorial, with occasional lectures: 2 hrs.; H. S. Granter.

The Nineteenth century was England's century, the Victorian Age, the time of England's greatness. The class is devoted primarily to the study of the making of Victorian England, examining the impact of new machinery and new ideas on an older agricultural aristocratic society.

317 Late Victorian and Edwardian England, seminar, 2 hrs.; P. Fraser.

The class will examine selected aspects of political, social and intellectual history, such as the transformation of the Liberal party under pressures from Socialist groups, the Labour movement and the varied forces of Imperialism; the ideals and policies of special movements associated with temperance, social reform, imperial federation, tariff reform, women's suffrage, national service and defence; and the methods of political organization (whether of central or local government). parties, electioneering or campaignes in the press.

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 1975-76).

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 nationhood; 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 seminar will study the evolution of the Canadian economy from 1850-1935 with a special focus on industrialization. Although involving excursions into economic history the course will be primarily concerned not with the process of industrialization but rather with its social effects. Most time will be spent on the 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. Students will be expected to write research papers based on primary sources.

327 The Nova Scotian Experience, tutorial: 2 hrs.; D. A. Sutherland.

Either History 120 or History 220 provides an appropriate background, and admission is restricted to third and fourth year students. This class examines the evolution of Nova Scotian 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 local archival sources in the preparation of their research 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 North 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 Canadian economic history and Canadian literature. History 120 or 220 is an essential prerequisite, and admission is restricted to third and fourth year students. A reading knowledge of French is not essential, but it is helpful.

329 Canadian Social History, seminar: 2 hrs.; J. Fingard. (Not offered 1975-76).

History 220 provides the appropriate background for this class which examines social attitudes and problems of various elements in the population in the 19th and early 20th centuries. The topics include: British and American influences, immigration, settlement, and class structure; moral and social reform movements; manifestations of nativism; cases of privilege and inequality. For their essays, students will be encouraged to 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 development of permanent colonies, the consolidation of mercantile and imperial organization, the American Revolution, and the establishment of national economic and governmental institutions. The general problem studied is that of cultural 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 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. T. O'Brien.

337 Colonized and Colonizers: Studies of Emergent 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.

339 The United States in the Twentieth Century: The Architecture 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 individual research by the student within this general framework.

344 History from Oral Tradition: The Interlacustrine Region in Africa, 900-1680, seminar, 2 hrs.; J. B. Webster

One of the most fascinating aspects of early African history is how it is written from oral traditions, how rational explanation, myth and symbolism are analyzed to reconstruct the African past. This course will deal with the interlacustrine region of East Africa from c.900 to 1680 an area and time characterized by intensive mixing and fusion of three major linguistic groups, Sudanic, Bantu and Nilotes. It will consider theories about how hereditary leadership becomes established, the formation of 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 class, or History 220 for students wishing to make comparative studies with themes from Canadian history. The class concentrates on the period since the British acquisition of Cape colony, and examines the development of relationships and tensions between the English and Afrikaans speaking groups, and between the white population and other races. The main topics considered are the rise and fall of the Zulu nation, the opening up of the interior, the imperial factor and its effects on Cape and Transvaal politics of the late nineteenth century, South African Union, Afrikaner nationalism and the development of apartheid.

348 Partition of Africa, seminar, 2 hrs.; J. E. Flint.

Classes Offered at the 400 Level

Both History 460 and History 499 are required of fourth-year history honours students; first-year M.A. students may also attend History 460.

400 Palaeography, discussion/tutorial: 2 hrs.; R. M. Haines.

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 Latin, so 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, Staff

All history honours students and those in combined honours courses in which history is their principal subject, must write a substantial essay on a topic to be chosen in consultation with the Undergraduate Committee. The essay will be related to one of their 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.

Humanistic Studies in Science

Attention is drawn to the following classes, offered in several departments. All of these classes are concerned with the humanistic aspects of scientific thought and its development.

History of the Sciences

Biology 3400/Physics 340/History 310, The History of Science; J. Farley, (Biology), R. Ravindra (Physics).

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 Philosophy of Science; R. Ravindra:

Psychology 358, History of Psychology; J.W. Clark.

Philsophy of Schence

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. Elliott.

Details of the above classes will be found under the appropriate departmental listings.

Linguistics

The departments of French, German and Spanish each offer classes in linguistics, details of these classes will be found under the departmental listing.

Mathematics

Professors

J. Ahrens E. Blum M. Edelstein A. J. Tingley

Killam Research Professor

P. A. Fillmore

Associate Professors

H. Brunner D. S. Chehil R. P. Gupta 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 C. A. Field J. F. Goodfellow L. A. Grünenfelder C. S. Hartzman R. D. Holmes L. L. Keener E. B. Mercer D. O'Donovan R. Paré F: J. Servedio W. R. Smith P. N. Stewart K. K. Tan K. Vijayan K. L. Weldon

Senior Killam Research Fellow H. Radjavi

Research Associates

J. Bastian I. Brown S. Fesmire M. Radjabalipour

Post-Doctoral Fellows

J. Borwein D. Granot F. Granot

Degree Programmes

Mathematics as an Area of Concentration.

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 equivalent courses) and at least one course numbered 300 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 majors in the following areas of Mathematics: Calculus and Differential Equations: 200, 300, 311, 312. Analysis: 250, 302, 304, 350. Geometry, Logic, Theory of Numbers: 202, 205, 305, 307. Algebra: 203, 204, 213, 303,

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 Economics) are invited to 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 "make-up" class during the summer immediately preceeding 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 of 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 which do not conflict with the general regulations 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-gualified students with the consent of the instructor, in which case another Class may be selected in Year II.

Year III and Year IV

Math 350 (or 300) and Math 303 and five additional classes at least two of which will be numbered 400 or above. Of these five classes, normally at least three will be selected from groups I and II below with at least one from each group. Other classes may be selected from these or other offerings of the department.

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205*	306 and 317
302 and 304	310 and 316
305*	311 and 312
307*	320
401	330 and 331
403	402

*Note: These classes are usaully offered only in alternate vears.

Honours Comprehensive Examination

The Honours Comprehensive examination will be a verbal presentation of a suitable topic requiring comprehensive knowledge. The topic is to be selected in January of the graduating year for presentation in March.

Combined Honours

Students interested in taking honours in mathematics and another subject as a combined programme should consult the chairman of the department through whom a suitable course of study can be arranged.

A combined honours programme may be appropriate for many. Students contemplating a combined honours course in mathematics and another subject should, however, bear in mind that the work in either subject would probably be insufficient for admission to a regular graduate programme. A qualifying year would usually be necessary.

Classes Offered

All students please note the following: .

The listed prerequisites indicate the mathematical background expected of students entering any class but may be 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 department to determine those classes which are given in 1975-76.

001 Fundamentals of Mathematics, lect.: 3 hrs.

This class may be offered in place of senior matriculation mathematics as a prerequisite for first year classes at the University. Normally, junior matriculation mathematics as taught in Grade Xi in Nova Scotia is expected as a background but mature students or others who are well motivated are able to cope with the work of this class. The text has been chosen to include analytic geometry and elementary trigonometry for those given on to the calculus, but the evolution of the number system, functions and matrices are studied along with other topics to provide a good background for those wishing to build up their knowledge of the fundamentals of mathematics for other reasons.

100 Differential and Integral Calculus, lect.: 3 hrs. (Half-course).

Prerequisite: Familiarity with plane analytic geometry, polynomials and elementary trigonometry. A student completing Grade XII Mathematics in Nova Scotia or a similar course elsewheré should be ready for calculus:

101 Differential and Integral Calculus, lect.: 3 hrs. (Half-course). Prerequisite: Math 100.

These two classes are designed to introduce the basic ideas and methods of the calculus and together constitute a solid foundation for study in the Sciences (Physics, Engineering, Chemistry, Biology, Economics, etc.) as well as for further study in Mathematics.

These two half-classes will usually be offered in both terms.

Mathematics 100 is a self-contained introduction to differential and integral calculus. The topics discussed include: review of precalculus mathematics, functions, limits, differentiation of polynomials, trigonometric, exponential and logarithmic functions, product, quotient and chain rules, applications of differentiation, antiderivatives and definite integrals, integration by substitution.

Mathematics 101 continues the study of calculus with topics including: techniques of integration, higher derivative tests for maxima and minima, L'Hospital's rule, series and Taylor series, continuity, Riemann sums, differential equations and applications.

Two sections of this class are primarily for engineering students while a third section combines the study of calculus with an introduction to the use of a computer. Together with the regular 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, 11-112.

102 Mathematics for Liberal Arts Students, lect.: 3 hrs.

The course is intended for students at the university who wish

mathematics.

continually.

Through extensive use of illustrative real-life examples, the student is introduced to the basic concepts of statistics: data reduction, estimation, and hypothesis testing. These examples will be drawn from a wide variety of disciplines. The emphasis of the course will be on statistical concepts, rather than mathematical manipulations. The course is open to students of any year.

rearession.

This course extends the introduction of statistics provided by 106 to include a collection of techniques that are widely used in the experimental sciences. Topics will include regression and correlation analysis, analysis of variance, and curvefitting techniques. The presentation of these topics will include consideration of the statistical aspects of experimental design.

hrs.

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 matriculation in high school and who wishes to see more of

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 Arithmetic, rational and irrational numbers, the real numbers and some Calculus.

Historical facts and cultural significance will be stressed

This class will be offered only if there is sufficient enrollment. The course cannot be used as a prerequisite for other Mathematics courses. Prerequisite: Senior High School Mathematics.

106 Introductory Statistics for Non-Mathematicians, lect .: 3 hrs. (Half-course).

The principal aim of the course will be to enable students to identify and formulate the statistical aspects of real-life problems and to become familiar with the statistical vocabulary most commonly used in scientific journals. The student requiring a more extensive exposure to the statistical methods of scientific experimentation are encouraged to follow this course with Math 107.

Topics will include descriptive statistics, elementary probability and distributions, estimation, hypotheses testing and

Prerequisite: High school algebra.

107 Statistical Techniques of Scientific Experimentation, lect.: 3 hrs. (Half-course).

The objectives of this course are:

1) to explain what information can be obtained from experiments through use of these techniques.

2) to explain the assumptions that must be satisfied before these techniques can be applied.

3) to illustrate the nature and methods of the necessary computations.

Prerequisite: Math 106.

110 Mathematics for Commerce and Economics, lect.: 3

The class provides a survey of mathematical techniques

which are useful in analyzing mathematical models in economics and management. The material covered in the class is similar to that presented in mathematics 100 and 101. However certain topics (such as Taylor's series, volumes of revolution) included in Mathematics 101 are not covered in Mathematics 110. In their place Mathematics 110 includes an introduction to matrix algebra, maximization of functions of two variables and Lagrange multipliers.

This class is intended as a survey class for students who are not going to take further work in mathematics. Students who are going to take other mathematics classes should take Mathematics 100/101 rather than Mathematics 110 as Mathematics 100/101 uses a more rigorous mathematical approach. Throughout the class, applications of mathematical techniques to economic and management problems will be stressed.

Prerequisite: High school mathematics.

111 Finite Mathematics for Commerce, lect.: 3 hrs. (Half-course)

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 satisfy 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 consult the department in this regard.

Topics include: probability theory, linear algebra, linear programming, decision theory, and the mathematics of 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 sections for each). The essence of calculus is extracted and 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 definite integral and applications of these to pertinent examples. In addition, commerce students will study functions of several variables while pharmacy students will study elementary differential equations.

Prerequisite: High school mathematics.

151 Differential and Integral Calculus for Honours Students, lect.: 3 hrs.

This class, to be formed in the second turn, is designed for students who, after a one-term exposure to Mathematics 100. have shown the ability and interest for a more rigorous introduction to Analysis.

Syllabus: The real line R (as a complete ordered Archimedean field); 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 intermediate values, attainment of lub, etc.) Uniform continuity. 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 standing in Math 100 (December mark) and consent of instructor.

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.

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 determinants, geometry of Euclidean vector spaces with emphasis on three dimensions, elementary differential equations. Prerequisite: Mathematics 100.

Credit will not be given for more than one of Math 200, 220, 228 and 250.

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 applied in the development 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: 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, fank, inversion, determinants, and applications of matrix techniques to other branches of mathematics as well as to social sciences and other disciplines. An introduction to linear algebra will be given with applications to matrix algebra.

Math 204 is an appropriate sequel for this course. Prerequisite: High school math.

Not more than one credit will be given for Math 203, 204 and 213.

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. Prerequisites: Math 203.

Not more than one credit will be given for Math 203, 204 and 213.

205 Projective Geometry, lect.: 3 hrs.

We begin with a brief discussion of the role of the "postulates" of Euclidean geometry, 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 investigated. 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 enjoy engaging in deductive reasoning.

Prerequisite: Math 203 or concurrent registration in 203.

206 Probability and Mathematical Statistics, lect.: 3 hrs.

The following topics will be included: Probability theory, random variables, probability distributions, mathematical expectation, sampling and sampling distributions, estimation criteria and methods. Testing of hypotheses, non-parametric estimation, regression analysis, and correlation. Prerequisite: Math 100 and 101.

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 techniques of linear algebra than is provided by 203 and 204. Topics include: the material of 203 and 204, canonical forms including the Rational Form and Jordan Form, inner product spaces including the Spectral Theorem for formal operators on finite dimensional vector spaces, linear programming and further topics in pure and applied linear algebra. This course provides an excellent background for further study in Mathematics. See the prerequisites for Math 250, 302, 303, 305, 330 and 350.

Prerequisite: Math 101 or 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 theorems, differential equations, series, complex analytic functions.

Students who complete Math 200 are admitted to classes where Math 200 is the normal prerequisite. Credit will not be given for more than one Math 200, 220, 228 and 250. Prerequisite: Math 100 and 101:

225 Introductory Numerical Methods and Fortran Programming. lect.: 3 hrs.; (Half-course).

This class provides an introduction to the use of desk calculators and to the Fortran computer language, which is in wide use throughout the sciences. Examples and applications are included. Particular emphasis is placed on numerical techniques appropriate to linear algebra. Prerequisite: High school mathematics.

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

series

methods.

The mathematical methods studied include optimization techniques from the calculus, solution of polynomial equations, the simplex method for linear programming and the special versions of the assignment and transportation problems, as well as methods for dynamic and random processes as in inventory and queueing problems. These techniques are applied to a variety of problems chosen from business, government and the sciences.

This class will be offered only if there is sufficient enrollment. Prerequisite: Mathematics 100 and 101, which, with the consent of the instructor, may be taken simultaneously.

interpolation of functions, some methods for numerical integration and differentiation and differential equations. These techniques are applied to a variety of problems chosen from the physical and social sciences. A knowledge of Fortran programming to the level of Math 225 is assumed. 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 several variables; multiple integration; complex variables; infinite

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 hrs. (Half-course).

This class provides an elementary introduction to some of the numerical methods which are being applied to problems in business, economics and the sciences. These methods generally determine a best, or optimal, solution to a model of the original problem. Using digital computers it becomes feasible to consider some of the actual applications of these

Prerequisite: Math 101 and 225 (or equivalent). Credit will 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 mathematical background for a good understanding of the structure of the universe and a solid foundation for possible further study. It provides up-to-date information about recent achievements in stellar astronomy. The history of the development of astronomical thought from ancient times to the present will be considered 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, eclipses, and problems in connection with the stars and stellar motions, are treated.

The mathematical treatment is of an elementary nature: students will require knowledge of trigonometric functions, simple differentiation and polar coordinates.

250 Intermediate Analysis, lect.: 3 hrs.

Mathematics 250 is a parallel class to Mathematics 200 and is designed for students who intend to study mathematics as a

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 reference to the cases when n and m are equal to 1, 2 or 3. The question of differentiation and integration of such functions is discussed in detail. For this some knowledge of linear algebra is essential. Prerequisites: Good standing in Math 101 (or Math151) and concurrent registration in Math 213 (or 203 and 204). Credit will not be given for more than one of Math 200, 220, 228 and 250.

300 Advanced Calculus, lect.: 3 hrs.

Functions of several variables, continuity, differentiation, implicit differentian techniques. Taylor's expansion; Jacobians (their geometric meaning). Implicit function theorem; extreme values; multiple integration (especially transformation 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 problems; partial differential equations. Students who intend to honour in mathematics, or do graduate work in mathematics, should take Math 350, not Math 300. Prerequisite: Math 200.

302 Set theory and Foundations of Analysis, lect.: 3 hrs. (Half-course)

This course converns the basic "objects" of mathematics and the proper way of dealing with "infinity". It is essential for a clear understanding of most modern aspects of mathematics. The topics for discussion include: operations with sets, countable and uncountable sets, cardinal numbers, Ordered sets, Well-ordering, Ordinal numbers, Axiom of choice and its equivalents, and axiomatics in set theory. Prerequisite: Math 200 and 213 (or 204)

Sequels to this course: Math 304, 332.

303 Abstract Algebra, lect.: 3 hrs.

In this first course in abstract algebra the following topics will be treated: groups, subgroups, factor groups, homomorphisms, rings, ideals, euclidean domains, polynomial rings, and fields

This course is a good sequel to Math 204 or 213 and leads to Math 403. Prerequisite: Math 204 or 213.

304 Metric spaces and elementary topology. lect.: 3 hrs. (Half-course).

The topics discussed in this class will include: Metric Spaces. examples. Bounded, totally bounded, compact, and complete sets in metric spaces. Lipschitz and contraction mappings. Topological spaces, examples, open and closed sets, bases. Continuity, compactness, connectedness. Prerequisite: Math 200 and 213 (or 204).

305 Differential Geometry and Tensor Analysis, lect.: 3 hrs.

The material presented in this course will consist of two parts. The first part will discuss the theory of curves and surfaces in three-dimensional Euclidean spaces. Topics treated will include: theory of curves, surfaces, first and second

fundamental forms, Gaussian and mean curvature, formulae of Weingarten and Gauss, geodesic curvature and geodesics. The second part will consist of an introduction to Riemannian Geometry and, if time permits, an introduction to general relativity as an application of Riemannian geometry. Topics treated will include: Foundations of tensor calculus; differentiable manifolds; foundations of Riemannian geometry, absolute differentiation and connexions. Prerequisites: Mathematics 200, and 213 (or 203 and 204).

306 Probability, lect.: 3 hrs. (Half-course).

This class is intended to assist the student to acquire as thorough an understanding of basic concepts in probability as is compatible with his mathematical background and to illustrate the great variety of practical applications of probability to science and industry.

The topics covered will include: Fundamentals and axioms. combinatorial probability, conditional probability and independence, binomial, Poisson, normal, exponential distributions, generating functions, laws of large numbers and central limit theorem.

Math 317 is a natural sequel for this course. Prerequisite: Calculus to at least the level of Mathematics 200. This may be taken concurrently.

307 Theory of Numbers, lect.: 3 hrs.

Congruences and residues; elementary properties of congruences; linear congruences; 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 coefficients. Prerequisite: Consent of instructor.

310 Mathematical Statistics, lect.: 3 hrs. (Half-course)

In this class, a number of techniques for determining and evaluating statistical procedures will be developed. This will provide the student with a theoretical basis for doing practical work in statistics.

Topics will include: Distributions of random variables, sampling distributions, interval and point estimation, sufficient statistics, maximum likelihood, statistical hypotheses, regression and correlation.

Interested students should consider Math 316 as a sequel for this course

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 analyze and solve a number of different types of differential equations.

Wherever possible, applications are drawn from the fields of physics, chemistry, biology, and other areas. The course is intended mainly for mathematics students interested in applications and for science students who wish to be able to solve problems arising in their major area of interest. Prerequisite: Mathematics 200 (or equivalent).

312 Differential Equations, lect.: 3 hrs. (Half-course).

The topics discussed in this course are of great importance to any student interested in applied mathematics. Areas treated include Euclidean spaces, Fourier series, orthogonal polynomials. Sturm-Liouville problems, the classical partial differential equations, and some applications to physics, chemistry and engineering. Prerequisite: Mathematics 311.

316 Data Analysis, lect.: 3 hrs., (Half-course).

This course provides the students with experience in solving real statistical problems. The course is organized so that students act as statistical consultants, under the supervision of the instructor, to scientists and others requiring assistance with data analysis. The problems facing a statistical consultant are the following: i) identify clearly the statistical component of the problem facing the consultee ii) decide whether the problem can be handled using standard techniques and, if not, iii) develop a new technique.

Students will be encouraged to develop novel approaches to the consultee's problem. In so far as it is possible, a student will be able to follow up those consulting problems which interest him most. Consultation contact hours will on occasion be replaced by survey lectures prepared by students on topics in applied statistics. Evaluation will be based on participation in consulting, the student survey lecture, and an

examination relating directly to the highlights of the consultation session. Prerequisite: One full course in Statistics comparable to

Math 206. In addition it is advisable that students have Math 310. Mathematical Statistics.

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 to translate from a physical applications. The ability to translate from a physical context into the language of a probability model will be stressed.

Topics will include: Markov chains with their limiting behavior, renewal processes, branching processes, Poisson process, birth and death processes, steady-state behavior of continuous 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 mathematical analysis: under what conditions does a particular algorithm work, and, perhaps even more essential, when and why does it fail to yield the desired results.

The class will cover the following topics: Iterative solution of nonliner algebraic equations (and systems of such equations), direct and iterative methods for systems of linear algebraic equations, iterative methods for eigen-value problems of matrices, linear approximation of functions (interpolation, least-squares approximation, Chebyshev approximation, approximation by spline functions), mumerical differentiation and integration, linear difference equations, finite-difference methods for ordinary differential equations (initial-value problems and boundary-value problems). Prerequisite: Mathematics 200 (or 250).

Second term:

(Half-course).

In this class, the mathematical structure of the LP model will be studied and several solution methods developed. The duality theorem and its uses will be emphasized. An economic interpretation of LP models will be presented using activity analysis concepts (or possibly game theory). The efficiency of several solution methods will be compared by using computerized packages on certain applied problems. Finally the cutting-plane method will be developed for the all-integer problem Prerequisites: Math 200 and 213 (or 204).

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.

(b) Linear ordinary differential equation: linear differential equations, reduction of higher-order equations to systems of first-order equations, applications.

(c) Numerical solution of ordinary differential equations: one-step methods for a single equation and for systems of first-order equations, discussion of stability properties (absolute stability, A-stability) of these methods, examples of multistep methods for first-order equations.

(a) Fourier series and integrals, orthogonal functions.

(b) Linear partial differential equations of order two; Model problems from mathematical physics (wave equation, heat equation, Laplace's and Poisson's equations). (c) Elementary probability and statistics.

Students offering Mathematics 328 will not be given credit for Mathematics 300.

Prerequisites: Mathematics 228 or 200, or equivalent class.

330 Linear and Integer Programming, lect.: 3 hrs.,

Linear programming, 'at its simplest, consists of a procedure for finding the optimal allocation of scarce resources. It is perhaps the most widely used technique in Operations Research and has been applied to a wide range of problems in business, government, and even to proving theorems in linear algebra.

331 Discrete and Dynamic Programming, lect.: 3 hrs., (Half-course).

This class extends the variety of optimization models of Math 330. Initially the study of integer LP problems is continued with the assignment and transportation models. This leads into the general network problems and to matching problems in graph theory. The basic theory of convex programming and the method of Lagrange multipliers is presented. This is followed by an introduction to models of dynamic and Markovian programming. Finally some special methods for large scale problems are considered. In each topic, applications will be presented. These include capital budgeting decisions, production scheduling and multi-period planning models. Prerequisite: Math 330.

332 Applied Group Theory, lect.: 3 hrs., (Half-course).

This interdisciplinary half course is intended for third year undergraduate and first year graduate students majoring in either Physics, Chemistry or Mathematics. The topics covered will include: Fundamentals, normal subgroups, homomorphisms, representations, character, orthogonality, symmetry groups in crystallography, symmetry groups of the Hamiltonian operator and its representation. Applications to quantum mechanics.

Prerequisite: Math 213 (or 204).

This course can be coupled with Math 302 or Math 311

350 Introductory Real Analysis, lect.: 3 hrs.

Real analysis is that branch of mathematics that has grown out of the study of the real number system and its properties. A large 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 theorems from 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. Compactness' Sequences and continuity. The Riemann-Stielties integral. Infinite 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.

Students who intend to do honours or graduate work in mathematics, are advised to take this class, not Math 300. Credit is given for only one of Math 300 and 350. 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 measure, integration, the classical function spaces, differentiation, product measures, and the Riesz representation theorem

Prerequisites: Linear algebra, advanced calculus.

402 Theory of Functions of a Complex Variable, lect.: 2 hrs.

Topics include: topology of the complex plane, integration, analytic functions. Cauchy's theorem, elementary functions, maximum modulus theorem, conformal mapping, power series, analytic continuation, Riemann surfaces, Laurent series, theory of residues, meromorphic functions, normal families, Riemann mapping theorem, harmonic functions. Prerequisite: 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, coproducts and other universal objects. The tensor product is defined and its properties are studied. The language of universal algebra and category theory is introduced. Properties of polynomial rings leading up to Galois Theory are developed 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, the Zariski topology, affine varieties, pre-varieties, dimension, spec, affine schemes, pre-schemes. Prerequisite: Math 303.

406 Statistical Inference, lect.: 2 hrs.

Sampling statistics are generally used to obtain information concerning 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 canbe 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. After 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 unbiased parameters, method of maximum likelihood, method of least square, method of moments, method of minimum X² 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 region, locally most powerful tests, non-parametric tests. Prerequisite: Mathematics 200 and 306.

410 Decision Theory and Theory of Games, lect.: 3 hrs.

In the last few years, statistics have been formulated as the science of decision-making under uncertainty. Decision theory applies to statistical problems the principles that a statistical procedure should be evaluated by its consequences in various circumstances. This model for decision theory is a special case of game theory. A game is characterized by a set of rules having certain formal structure. and governing the behaviour of certain groups.

The central ideas and results of game theory and related decision-making models will be studied in this class: general decision problems, Bayes and minimax solution of decision problems, construction of Bayes decision rules; sequential decision estimation rules, empirical decision rules and testing as aspects of decision theory, rectangular games, games in extensive forms, games with infinitely many strategies, continuous games, separable and cooperative games, zero sum and non zero sum n person games. Prerequisite: Mathematics 306 or 310.

412 Ordinary Differential Equations, lect.: 3 hrs.

Ordinary differential equations in the real and complex domains. Successive Approximation Ascoli-Arzela Theorem, existence and differentiability of solutions. Linear systems with constant and periodic coeficients. Analysis of singular points: Poincare Bendixson theory, perturbation theory, Sturm-Liouville theory and asymptotic expansions. Applications to physical, biological and economic problems. Prerequisite: Consent of the instructor.

413 Ring Theory, lect.; 2 hrs.

Structure of associative rings including Grothendieck's functional representation of commutative rings. Primary decomposition. Jacobson's theorems. Goldie's theorem.

Artin-Wedderburn theorem. Prerequisite: Math 303 and consent of instructor.

414 Introduction to Functional Analysis, lect.: 2 hrs., (Half-course).

An introduction to the basic principles of functional analysis including the following topics: infinite dimensional vector spaces, normed spaces, inner-product spaces, Banach and Hilbert spaces, linear and continuous linear functionals, the Hahn-Banach Theorem, the Principle of Uniform Boundedness, dual spaces, weak topology, weak-* topology and the Alaoglu Theorem, the Open Mapping and Closed Graph Theorems, and consequences and applications. Prerequisites: Math 213 and 304, or the equivalent.

415 Functional Analysis, lect.: 2 hrs., (Half-course).

Topological vector spaces, locally convex spaces, normability, function spaces, strict convexity, uniform convexity, reflexive spaces, support functionals, geometry of convex sets, and other topics. Prerequisite: Math 414.

416 Operator Theory, lect.: 2.hrs., (Half-course).

An introduction to the theory and applications of continuous linear operators on Hilbert spaces, culminating with the Spectral Theorem, and including such topics as spectrum; adjoint, symmetric, self-adjoint, unitary, and normal operators; polar decomposition; differential and integral operators; C* --algebras Gelfand Theorem; spectral theorem. Prerequisites: Math 401 and 414.

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 Theorem. Compactness, Compactifications, Tychonoff Spaces. Metrization. Prerequisite: The equivalent of Math 304.

418 Introduction to Algebraic Topology, lect.: 2 hrs., (Half-course).

Homotopy type and the Fundamental Group, geometry of simplicial complexes. Homology theory of complexes, chain complexes, homology groups for complexes, subdivision, induced homomorphisms, applications. Axioms for algebraic topology. Singular homology, the singular complex. Properties of cell complexes.

Prerequisite: The equivalent of Math 417.

421 Introduction to Partial Differential Equations, lect.: 3 hrs:

Classification, study and solution of differential equations of 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

This class presents a complete treatment of the mathematical theory which underlies the general problem of optimization of a real-valued function subject to a system of constraints. Examples and exercises of an Operations Research nature are used to illustrate the theory. The material studied in this course is a basic prerequisite for understanding and contributing to recent developments in mathematical programming. Prerequisite: Math 300.

452 Biophysics - Biomathematics Seminar. 1 hr./week throughout the academic year, (Half-course).

calculus of variations will be studied and the sufficiency conditions emphasized. A constructive solution of the Euler equations will be presented. Then the modern theory of optimal control will be developed using techniques of mathematical programming. This approach will be applied to a variety of problems such as economic growth theory, inventory control and regulator problems. Numerical methods will also be presented.

Prerequisite: Math 300 and 331.

431 Nonlinear Programming, lect.: 2 hrs., (Half-course).

The role, the science, and the art of the physical and mathematical characterization of biological phenomena form the basis of this inter-disciplinary seminar. Formal presentations 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 study the solution properties of nonlinear differential equations have yielded results 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 a unique opportunity to study Western culture as a whole. Indeed, any attempt to study a part of this period in isolation leads to a conviction that such an investigation can never be satisfying and that the walls between disciplines must be broken down and the literature seen in relation to the philosophy, the philosophy in relation to the history, and the history in relation to the languages. No matter what the vernacular tongue of any geographical area, there was one common language throughout Europe and one church, and the study of these leads inevitably to a consideration of paleography, art, architecture and music.

The field is a very large one and could become a fascinating and rewarding area for a certain type of student - the one who likes to immerse himself in his work and who feels that university studies need not involve storing knowledge in separate pigeon-holes because his language course has nothing in common with the social science he is required to take.

The regulations for the Honours degree permit a structured programme to be set up in Mediaeval Studies which cuts across traditional departmental lines while allowing considerable freedom in choice of classes.

The professors currently involved in this programme are: R. Crouse, J. Doull, E. Segelberg (Classics); R. Dawson, H. Morgan (English); H. Rasmussen, J. Runte (French); K. Fricke (German); R. Haines (History); J. Aitchison (Political Science). A student who is interested in entering the programme in Mediaeval Studies should speak to one of these faculty members, who will then refer him to the Administrative Committee for the planning of his course.

Structure

The Honours degree in Mediaeval Studies must have a major field consisting of 9 classes, selected from those with Mediaeval Studies numbers, which will include at least one in each of: a literature, history, philosophy and Latin. Other classes will depend on the individual student's interests, but all four disciplines must be represented. The minor field may be varied to suit the taste of the student: he may wish to continue into later periods in his favourite discipline or he may wish to acquire another language to help him in his work. No class in the minor field may be from the Mediaeval Studies group. The four classes not in the major field may be widely scattered: one or more of them may be 100-level prerequisites which may be necessary for later mediaeval work, e.g., introductory German or Latin or Political Science.

Some sample programmes which might be followed are:

Literary: English. Major: Med. Stud. 201, 202, 203, 204, 211, 301, 302, 401, 261. Minor: 2 classes in English, possibly English 251 and 252. Four additional classes: possibly Philosophy in Literature (Phil. 270), History of England (Hist. 210), German for Beginners (German 100), and Intermediate German (German 200).

Literary: non-English. Major: Med. Stud. 211, 212, 221, 222, 204, 301, 303, 261, 402. Minor: 2 additional classes, possibly in French or German. Four additional classes: possibly Latin 100, Philosophy 100, plus another Latin and another Philosophy.

Historical. Major: Med. Stud. 301, 302, 303, 304, 311, 401, 414, 202, 261. Minor: History 210, and 314. Four additional classes: possibly introductory and intermediate Latin and two French.

Philosophical. Major: Med. Stud. 401, 402, 403, 414, 301, 302, 204, 211, 261. Minor: possibly two classes in the earlier or later history of philosophy. Four additional classes.

Classes

The classes available from which a mediaeval grouping may. be formed are given below. Some of them are on an ad hoc basis, depending on the needs of students in any given year. The numbering of the classes reflects subject and department, rather than order of difficulty or of priority.

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 II

261 Intro. to Mediaeval Latin

262 Intro. to Mediaeval Greek

301 Mediaeval Life & Thought (Hist, 199/5)

302 Mediaeval Europe (Hist. 200)s,

j303 Mediaeval Civilization (Hist. 300)

304 Roman History (Classics 223)

311 Palaeography (His. 501)

401 Mediaeval Philosophy (Classics 340)

402 Latin Philosophical Texts (Latin 204)

403 Seminar on the Church Fathers (Classics 467)

404 History of the Interpretation of Aristotle (Classics 466)

414 Mediaeval Political Philosophy (Poli. Sci. 207)

It is possible that in the future some of the following may be added to the programme, though they are not offered at present.

Intro. to Med. Spanish Lang. & Lit.

Old English Archaeology

Old Icelandic

Byzantine and Latin Liturgiology.

Microbiology

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 discipline, These classes are:

302 General Microbiology (Equivalent to Biology 3110A + 311B)

3112B Microbial Ultrastructure

4113 Bacteriology

4114 Virology

Microbiology

Professor

K. R. Rozee, Head K. B. Easterbrook C. E. vanRooyen

Associate Professor J. A. Embil-L. S. Kind S. H. S. Lee

Assistant Professor

D. E. Mahony R. S. Martin E.S. McFarlane D.B. Stoltz C. Stuttard

The program in Microbiology is designed to provide the student with an understanding of microorganisms - their structure, their function, their diversity, and their contribution to the biosphere. The field of Microbiology considers the 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 Tupper Medical Building and offers microbiology programs in the Faculties of Medicine, Health Professions, Arts and Science and Graduate Studies. Its members take part in teaching in all faculties and the research done by the faculty members is relevant to both general and special fields of Microbiology.

Degree Programmes

The Department 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 satisfy the general requirements for an honour degree.

Microbiology: Three-year programme of guided study Year I:

Prerequisite: 75% in grade 12 Biology or Biology 1000

2 credits from: **Biology 2000** Biology 2010 A/B to 2060 A/b Microbiology 2100 A/B (compulsory)

2 credits from: Math 100 Chemistry 110 Physics 110 or other science by agreement

1 elective

Year II: Microbiology 302 Biochemistry 302 or Biology 3010 A and Biology 3011B Chemistry 241

, 1

1 elective

Math 106 1 elective

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 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.

This course is concerned with the study of heredity in microorganisms especially bacteria and their viruses. The occurrence and expression of mutations in prokaryote populations and in single cells is covered. Emphasis is placed 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 as Drug Resistance Factors are included.

Some familiarity with Mendelian genetics and an elementary knowledge of conjugation, transduction and transformation in bacteria is assumed. Some understanding of basic biochemistry especially primary metabolism, protein synthesis and nucleic acid chemistry is also required.

Physics 110

Year III: 4 credits from the following (with agreement of the Department)

Microbiology 4033A, 4113, 4114, 4115C, 4118A, 3112B Biology 4010, 3322B, 4116A

Classes Offered

Microbiology 2100A/B: Introductory Microbiology Structure and Diversity of Microorganisms, 2 hour lecture 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 regulation, as well as their involvement in other fields such as medicine, industry and ecology.

Microbiology 302: General Microbiology, 2 hour lecture; 3 hour lab; S. H. S. Lee:

The topics 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, immunological aspects of microbiology; an outline of mycology and parasitic protozoa; classification, morphology and reproduction of viruses. Laboratory work is designed to complement lecture material and to provide experience in the isolation, identification, cultivation and control of microorganisms.

Microbiology 3112A: Microbial Ultrastructure, 2 hour lecture; 3 hour lab.; K. B. Easterbrook.

Microbiology 4033A: Microbial Genetics, 2 hour lecture and lab.; C. Stuttard.

Prerequisites: Biology 2030 A/B; Microbiology 302/Biol. 3110 & 3111B.

Microbiology 4113 (1976-77): Bacteriology 2 hour lecture; 3 hour lab.; D. E. Mahony.

A class for advanced students in bacteriology:- The course includes growth and structure of bacteria, a survey of many groups of bacteria and the methodology of their identification, as well as certain specialized topics. Prerequisite: Microbiology 302.

Microbiology 4114 (1975-76): Virology 2 hour lectures: 3 hour lab.; K. B. Easterbrook.

A class for advanced students in virology - All types of viruses will be considered - animal, insect, plant and bacterial. Structure, replication, natural history and classification will be included in the class coverage. Prerequisite: Permission of the instructor is required.

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 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 sera by means of passive hemagglutination, precipitation and antigen binding techniques; detection of antigens by immunofluorescence; determination of cytotoxic effects of lymphocytes; production of m/f by lymphocytes. Purification of antigens and/or antibodies by immunoadsorption.

Microbiology 4117C (1975-76): Advanced Topics in Immunology, 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 and faculty will be an important facet. Prerequisite: Microbiology 4115C.

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) 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 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 students may buy tickets for most other concerts at reduced prices.

Objectives

There is a great difference between loving music and electing to embark upon full time musical training: the difference between a profitable relaxation open to all and a singular concentration on specialized skills, open only to those with talent and specific pre-university training. The resources of the Music Department are geared towards providing a thorough musical training for those wishing to specialize in music, but they are equally available to the many non-specialist students who wish to increase their musical awareness and involvement.

In the specialist field, the Department offers training as teachers or performers or both. Practical and general 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 Department's concentrated courses are aimed at musicians of high performing ability 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 born 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, creativity, informed inquiry into musical trends and styles and a critical awareness of the living musical scene.

The Nature of Concentrated Music Study

Western music has developed into a most complex language.

Admission to Music Major Courses

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 the Music classes.

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 first year requirements are as for the B.A. (Honours). In each of the following two years, students are required to take four classes from Practical and General Musicianship programme up to and including, 300 level.

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 forperforming. 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 education studies can be programmed for the remaining two 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.

Students who wish to enroll in a degree programme in the Department of Music must satisfy the requirements for admission to the Faculty of Arts and Science and must satisfy additional requirements in the Department of Music. Candidates will be required to demonstrate proficiency as instrumental or vocal performers, and in the basic rudiments and theory of music.

Under the discretionary powers of the Admissions Office, students who do not meet the normal requirements of the Faculty of Arts & Science may be considered for admission if they can demonstrate sufficient skill as instrumentalists.

When making application for admission to the University, · music applicants should request the supplementary application form for the Department of Music.

Degree Programmes

The B.A. (Honours) is a specialist four year course with a major 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 the Practical and General Musicianship classes. At least one 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.

Classes: Theory (120), and Music History (230) count as formal classes in which written work is considered frequently 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. Students with high performing potential will be encouraged to use this period for concentrated applied study.

Service Classes

These will be directed specifically at non-music majors and will provide an introduction to an examination of the social and cultural background to the various topics listed.

Classes offered for Music Majors

A. Practical Musicianship 100, 200, 202, 300, 400, 301, 401. Applied Skills.

- a) Violin
- b) Viola
- c) Cello
- dBass
- e) Flute
- f)Oboe
- g)Clarinet
- h Bassoon
- Horn
- iTrumpet
- k) Trombone and Tuba
- Percussion
- m) Piano n)
- Organ 0) Harpsichord
- P)
- Voice
- q) Guitar and Lute

In general, all students will receive at least one hour per week individual instruction from an experienced professional performer of their major instrument. In addition, at the discretion of the Department, students may receive up to one hour per week of instruction on a second instrument or in composition groups. The programming of lessons will be flexible so that, where appropriate, students may spend up to three hours a week in a group instruction situation. The various levels of applied study indicate the year of study in the department and are not intended as an assessment of standard. Students automatically move up a level each year unless, exceptionally, they are advised to repeat the whole year. Term gradings are based on progress as well as on actual performing standard. At the discretion of the Department, students may opt for Composition as a second applied skill in their third or fourth years. Students with sufficient talent and achievement may be permitted to take two full 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 according to the range of abilities and specialities within the Department. Students will also be encouraged to perform in recitals.

Regular ensembles include the Orchestra, Band, Chorale and Chamber Singers. Many other chamber groups are scheduled 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 periods.

201

A survey of the evolution and history of the main instrument families in relation to the music they were expected to play and to styles of orchestration

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 original composition by the students. Student's work will be evaluated in small group discussions and in individual sessions with the instructor Students will be encouraged to include in their work compositions for performance by students and compositions in a contemporary style that are relevant to the school classroom situation.

General Musicianship

120: Theory

The study of musical styles will be used as a key to a basic understanding of the techniques of melody, rhythm, harmony and formal structure in Western Music.

130: Aural Perception

A basic class of ear cleaning, designed to increase the clarity and sensitivity of aural responses to music. Group improvisations and compositions in the experimental music studio will be used as a basis for developing aural awareness of pitch, rhythm, harmony, sonority and texture.

220: Theory and Analysis

A more advanced study of musical styles, providing the basic skills for musical analysis and criticism.

Prerequisite: Music 120 and 130 or permission of instructor.

230: Music History

An advanced history class covering stylistic periods from the Middle Ages to the present day. Prerequisites: Music 120 and 130.

337: The Contemporary Scene

This course will attempt to foster an understanding of the main trends in 20th century "serious" music, with particular emphasis on the "new" musical practices of the past twenty-five years or so. As one of the primary aims will be to develop perspective regarding the various syntheses and cross-cultural influences in contemporary music, the course will include some consideration of the history and present states of rock and jazz, the influence of "non-western" musics, etc. Included will be opportunities for performance, composition, 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: Projects

The study of music history has expanded vastly in the past few decades. Scholarship has opened up an increasing awareness 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 demanding differing types of sensory responses and new critical values. It has also made relevant and important the study of traditional music of Oriental, societies and primitive music of the Third World. The conventional study of western music from 1500 to the twentieth century has been supplemented to the extent that it is no longer profitable to attempt a study of the whole history of music. "Music" has become "musics": study in depth must be selective and preferably, diverse.

The purpose of the projects class is to enable groups of students to study in some depth periods, styles or aspects of music of their own choosing, to interrelate the various aspects of their previous study and to develop lively and intelligent attitudes toward research. The role of the instructor responsible for each project will be to guide the students towards appropriate source material, records and books, to enlist the services of other members of the staff who have specialisms relevant to the project and to correlate the activities, researches and practical presentations of the students. Within each project group, students will work on different aspects of the subject, singly, or in splinter 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 project

to which they are best suited or at which they most need experience. Individual and group activities could include performances, arranging, original and pastiche composition, study and collection of documentary and background material, compilation of tapes and slide sequences, presentation of the subject with audio-visual material for school use, a short thesis, a combined presentation of the subject to the rest 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 studies of the repertoire of particular instrument families. Subjects may also relate to music education. e.g. study of band instruments, string teaching techniques, orchestration; etc.

Prerequisites: Music 200, 220 & 230.

Electives and Professional

150: Related Arts

A general class that will survey specific periods in Western culture in relation to their social historical backgrounds. The class will examine music, painting, architecture and theatre and the ways in which art and artists have acted and reacted to their cultural environments. Parallels will be drawn with contemporary culture and an examination of the role of the artist today will form an integral part of the course. Prerequisites: None. Also available to non-majors.

250: Teaching Observation

Observation of selected classroom and studio situations, in the district, followed by discussion and evaluation of teaching objectives. Visits to schools may also include some single, isolated teaching experiences. Prerequisites: Music 100, 120 and 130.

activities.

450: Teaching Practice

Schools

Discussion of specific methods to be used in teaching practice, with emphasis on elementary schools, and discussion and evaluation of practice teaching./

This course is designed for students who have a serious

interest in singing and for whom it is not possible to provide 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 Chórale.

207: Guitar and Lute

This course is designed for students who have a serious interest in guitar and/or lute playing and for whom it is not possible to provide individual instruction. The course will deal with the basic techniques of the instruments and with the history of fretted instruments through an examination of a wide variety of related instruments in the instructor's collection. It will also deal with repertoire, interpretation, tablature and song accompaniment.

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

Prerequisites: Music 200, 220, 230.

Supervised classroom or instrumental teaching in Public

Prerequisites: Music 300, 340, 350, Education 406 A & B.

451: Teaching Practice Skills

Courses for Non-Music Majors

105 and 205: Applied Skills

Students who already have an advanced technique on a musical instrument may apply to the Department for a credit class consisting of instruction in that instrument and ensemble participation. Admission will be subject to availability of specialist tutors and a succesful audition.

206: Voice Production and Interpretation

Prereguisite: Personal interview with instructor.

Prerequisite: Personal interview with instructor.

208 Piano Class

This class is designed 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 provide individual instruction. The class will deal with basic technical problems in relation to different pianistic styles and with repertoire and interpretation.

Prerequisite: Personal interview with instructor.

150: Related Arts

See Courses for Music Majors Prerequisites: Personal interview with instructor.

135 Understanding Music

An evening class aimed at increasing the musical understanding and enjoyment of the enthusiastic music listener. Designed for the musical layman the class will introduce elements of theory to deal with musical structure, history and social background and performance styles and practices. It 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" "anarchic" or "underground" 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 two weekly, midday sessions. Other activities will be arranged in the light of the development of the course. *Prerrequisites:* None.

225 Pop Music; Theory and Practice

This 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 appropriate. A major part of the work will be involvement in actually playing and singing the creatings of the class. *Prerequisite*: Personal interview with instructor.

136: Experimental Music

This class will use the percussion instruments and electronic resources 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 than imagination, an interest in contemporary culture and an interest in electronics.

Prerequisite: 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 exposure to music listening. It is designed for the musical layman in that it will not deal with technical analysis. It will, 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. For B.A. Hons. and B.A. General, students select from practical and general musicianship classes as described.



129

Oceanography

Oceanography is a broad, inter-disciplinary science which includes studies of tides and currents, the chemistry of sea water, plants and animals that live in the sea, and ocean bottom sediments and underlying crustal structures. Career oceanographers are presently employed in Canada in a few universities and in various federal laboratories that are engaged in both basic research and applied problems which meet a national need, such as fisheries investigations, exploration for offshore mineral resources, and studies of ice in navigable waters.

A good background in basic science is a necessary prerequisite, followed by specialization in oceanography at the graduate level. Dalhousie is one of three Canadian universities 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 geophysics. Further details about this programme are given in the Calendar of the Faculty of Graduate Studies.

In addition, one undergraduate class is offered.

185 R Introduction to Oceanography, lect.: 3 hrs., R.O. Fournier.

This class will attempt to survey the field of Oceanography in general and to show how the oceans, which account for more than 70% of the earth's surface, function as a dominant 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" course, since little feeling will be obtained for scientific techniques which would otherwise be acquired in a laboratory class. Most of the material which will be covered will be descriptive rather than basic, inasmuch as it is impossible in the time allowed and the material covered to also teach the basic required sciences.

Prerequisite: Restricted to second year, or more advanced, students

Philosophy

Professors

A. H. Armstrong (Dept. of Classics) D. Bravbrooke J. A. Doull (Dept. of Classics) F. H. Page R. P. Puccetti (Chairman)

Associate Professors

R. D. Crouse (Dept. of Classics) I. A. MacLennan R. H. Vingoe

Assistant Professors

S. A. M. Burns R. M. Campbell W. F. Hare (Dept. of Education) R. M. Martin A. Rosenberg P. K. Schotch S. Sherwin

Unlike some subjects, philosophy is not taught in high school. The new student can therefore safely assume that no previous knowledge is required as a prerequisite for the introductory class, Philosophy 100. Philosophy has concerned itself in the past with a number of traditional questions. For example, are men in any sense free, or are they merely conditioned and determined by their environment, heredity, etc. Again, have men souls which might conceivably survive death, or is individual life merely an emergent quality of matter doomed to vanish with the dissolution of the body?

Then there are questions about the nature of knowledge. Are there some truths which can be proven to be true without relying on experience? Or is all our knowledge empirical? Does science require certain principles, like causality, which are more than inductive generalizations from experience? Then there is philosophical theology. Can any reasonable proof be given of God's existence? Finally, there are many 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 existentialist questions as to the meaning and purpose of life. How does one deal with the problematic nature of human existence?

The students may already realize that no final dogmatic answer can be given to the above questions. Nor need they be expected to endure a set of formal lectures. It is the aim of all classes of philosophy to proceed by class discussion. As a result of continually discussing the above questions, and many others like them the students will acquire a certain philosophical technique, which will be of great benefit to them, whatever subject they may decide to specialize in.

The 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 and are open to freshmen and anyone else, with or without background in philosophy. This fact makes it possible for students, including students in the first year of their university study, to begin work in philosophy in different ways, chosen to suit their present interests. However, students intending to take 300-level classes should note that for these classes one or more of Philosophy 100 or Philosophy 200, 201, 202 (the classes in logic) are prerequisites. The 400-level classes are normally open only to advanced students 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 approved by the Department and four elective classes in at 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, if it was taken at the beginning of the course. In addition, students taking honours in philosophy 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. Students intending to take honours in philosophy should arrange their course in consultation with Professor I. A. MacLennan.

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 treated and the class is divided into sections small enough to 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 philosophical authors of the past, both ancient and modern; but Philosophy 100 is not a 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. The classes in logic, 200, 201, and 202, are in one sense narrow by comparison, being devoted to one rather sharply defined branch of philosophy; however, skill in this branch is an indispensable advantage in all advanced work in philosophy - as indispensable as, say, the calculus is in physics — so these classes, too, can be looked upon not only as introductions to philosophy, but also as direct entry routes into the central concerns of the subject. The other 200-level classes are both specialized and less central. However, they are addressed to interests that are uppermost in the minds of many students: religion, treated in two classes on the philosophy of religion, Philosophy 220 and 225; and questions, very much like some of those raised by religion, about the meaning of life and the present condition of man, treated in Philosophy 217 (on the Continental tradition of philosophy known as "existentialism") and Philosophy 270 (on these questions and related ethical questions as they figure in great literature of the 19th and 20th centuries); and, finally, fundamental questions about the meaning and purpose of education, treated in Philosophy 218.

Degree Programmes

General B.A. in Philosophy

Students are strongly urged to take at least one of Philosophy 200, 201, 202, 305, and at least one of Philosophy 230, 310, 319, 320, 335. All students proposing to take a General degree in philosophy should arrange their course in consultation with Professor I. A. MacLennan.

B.A. With Honours in Philosophy

Combined Honours

There are several combined honours programmes:

Philosophy and Economics Philosophy and English Philosophy and Psychology Philosophy and Sociology or other combinations that can be arranged.

Students interested in taking any of these combined honours programmes should consult with Professor I. A. MacLennan.

100 An Introduction to Philosophy, 3 discussion meetings weekly, S. A. M. Burns, W. F. Hare, R. P. Puccetti, A. Rosenberg, 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 philosophical analysis, as well as some of the major historical contributions 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:
- (4) the problems of knowledge.

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 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 to 30 students; 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 attendance should enrol in Philosophy 100.

101 Philosophy and Life, lect. and discussion; 2 hrs.; R. M. Martin and R. M. Campbell,

This is a general introductory class in philosophy in which students study a variety of contemporary issues, such as: Do we, collectively or individually, have the right to commit suicide? Do animals have rights? Have the natural and social 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 a vice? 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 or religious outlook? Can a person ever leave 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 the basic philosophical problems are stated in contemporary rather than traditional terms.

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 mention the other sciences), we are using a simple deductive system, which it is the aim of this course to develop. By taking a course in logic the student should have a better understanding of how we may derive the correct conclusions from our scientific hypotheses. One easy way of understanding the nature of inference is to create a simple artifical language, in which the derivation of one formula from another is analogous to playing a game with pencil and paper. The aim of Philosophy 200 is to create this language, and to discover 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 a fuller understanding of the 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 Philosophy 406.

Text: MacLennan, I. A., Symbolic Logic.

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 arguments so that they can better assess their validity. Unlike Philosophy 202, this class deals extensively with formal manipulations, within a logical system. Unlike Philosophy 200, symbolic logic will not be studied for its own sake, or for its relevance to the foundations of mathematics. No previous acquaintance with symbolic logic is presupposed.

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, attention will be paid to the forms of reasoning as exemplified 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: 2 hrs.; R. M. Campbell.

This class will examine some of the philosophic problems that lie in the intersection of ethics and philosophy of mind and that are of special interest to contemporary psychoanalytic writers. 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 be an introduction to philosophy and presupposes no acquaintance with either philosophy or psychoanalysis.

216 Philosophical Issues of Feminism, lect. with discussion: 2 hrs.; S. Sherwin.

In this course we shall be investigating the major arguments relating to feminism, evaluating their claims. Because there are so many different views on what feminism is and which of the many claims put forward under its rubric are true, each person will be encouraged to try to choose amongst the conflicting claims to determine her/his own attitude towards feminism which is consistent with the individual's more general values. In pursuit of this goal, we shall spend time examining in detail the key concepts at issue, including feminism, sexism, rights, happiness, equality, and freedom. Students will be required to read a great deal of feminist literature 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 Kierkegaard and Nietzsche. The remaining time will then be devoted more or less equally to the works of Sartre and Heidegger.

218 Philosophy of Education, lect.: 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 is it distinct from training, conditioning and indoctrination? 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 from teaching, and is it possible to identify criteria which a process must satisfy if it is to be considered educational? Is there any conceptual connection between the idea of teaching and that 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 philosophical issues concerning curriculum. For example: It is meaningful/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 educational arguments in favour of a broad curriculum? How are we to assess curriculum goals such as creativity, mental health? An 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 provide good results for the belief in a divine being? Is the concept of God a coherent one? Is the notion of divine activity, for example in creation and miracles, intelligible? Is it possible to have knowledge of a divine being? Do revelations and religious experience reveal more than the mental state of the experience? Are faith and reason alternatives or correlatives? Is the existence of evil and suffering compatible with the existence of a God who is both omnipotent and morally perfect? Does rationality demand that traditional views of the divine be modified, or abandoned? What religious alternatives are there? In considering questions like these the student will encounter many of the issues around which philosophical discussions revolve. He will also gain some acquaintance with 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 paperbacks by W. C. Smith, Ninian Smart, John Hick and Nelson Pike.

230 General History of Philosophy, lect .: and seminar: 2 hrs.; R. H. Vingoe.

The purpose of this class is to help students discover those philosophic traditions which have played a part in moulding western civilisation and still persist in the contemporary world. Since the field of study is large, an attempt will be made toconcentrate upon some of the greatest and most influential of western philosophers. Since a general history is apt to degenerate into vague and inaccurate generalisations, students will be asked to present short papers, outlining and

The main aim of the class is to seek a clarification of the concept of justice and of the relations among justice, law, and morality through a careful reading and discussion of these matters 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 criticisms of existing institutions and their rationale. There is no prerequisite for the class.

This is an introduction to some issues in philosophy through the reading of some important literary works. Much modern literature is heavily influenced by philosophical trends; sometimes, in fact, the reader cannot fully appreciate such works unless he has an understanding of the philosophical issues and traditions involved. The class is designed for two sorts of students: those with literary interests who wish to learn about and discuss some of the more important philosophical influences on modern literature; and those interested in philosophy who would like to investigate literary occurrences of philosophical ideas. In addition to the Regular two hour weekly meeting there will be optional discussion meetings at various times to be announced during the year. Readings will include short works by Dostoyevski, Melville, Kafka, Beckett, Sartre, Camus, Hemingway, Peter Weiss, Brecht, Atwood and Beauvior.

Note: This class is cross-listed as Comparative Literature 270; it may be registered for under that title.

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 medicine, as elsewhere, involves a value component or moral dimension precluding conclusions based entirely on medical facts. In this course, we shall consider the moral problems of health care in the light of ethical investigations by philosophers. Amonast the problems being discussed will be abortion, euthanasia, informed consent, confidentiality, paternalism and coercion, and the allocation of scarce resources.

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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 Philosophy: Thales to Aristotle, Free Press, N.Y., 1966; R. H. Popkin (Ed.) The Philosophy of the 16th and 17th Centuries, Free Press, N.Y., 1966; L. W. White (Ed.) 18th Century Philosophy, Free Press, N.Y., 1966; D. J. O'Connor (ed.), A, Critical History of Western Philosophy, Collier-Macmillan Canada Ltd., Toronto, 1964).

235 Greek Philosophy from Thales to Aristotle, lect. with 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. Braybrooke.

270 Philosophy in Literature, lect. with discussion: 2 hrs.; R. M. Martin, S. A. M. Burns.

280 Ethics and Medicine, lect. with discussion: 2 hrs.; S. Sherwin

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 the social and natural sciences. Among the issues normally 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 induction; other minds and the relation between psychological 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 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, psychological and ethical egoism, Kant's Categorical Imperative, Hume on moral belief and argument, utilitarianism, moral rules, and justice. The class will consider the relation of these topics to some contemporary problems, such as pacifism and the morality of induced abortion.

Prerequisite: Philosophy 100 or 200 or 201 or 202.

315 Problems of Self, seminar: 2 hrs.; S. A. M. Burns and R. Campbell.

A study of issues that are both moral and psychological concerning persons. Discussion for this year will center on the topic of self-deceit and self-love.

Prerequisite: Philosophy 100 or any two other philosophy classes or instructors' permission.

319 Descartes and the Modern Search for Indubitable Knowledge, seminar: 2 hrs.; R. H. Vingoe.

This seminar will highlight one extremely influential line of thought: philosophers have often sought indubitable knowledge. In this search Descartes is quite important because his position marks a radical break with ancient and mediaeval thought 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. Prerequisite: Philosophy 100 or 200 or 201 or 202. Texts: R. M. Eaton (ed.), Descartes, Selections, (Charles Scribner's Sons, 1969); J. R. Weinberg and K. E. Yandell, Theory 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 parallel problems and alternative responses to them in these works. The class will also consider the accounts of some contemporary commentators, and the relevance of these two classics to present philosophical concerns. Prerequisite: Philosophy 100 or 200 or 201 or 202.

336 Ancient Philosophy from its beginnings to the sixth century A.D. (same as classics 336), lect .: 2 hrs.; A. H. Armstrong.

Philosophy 336 (Classics 336) surveys the whole history of ancient Greek philosophical thought from its beginnings in Ionia in the sixth century B.C. to the end of the public teaching of Greek philosophy by non-Christians in the sixth century A.D. Proper attention is paid to the great classical philosophies of Plato and Aristotle studied in their historical context: and much emphasis is laid on the Greek philosophy of the first centuries A.D. and its influence on developing Christian thought.

338 History of Mediaeval Philosophy, lect.: 2 hrs.; R. D. Crouse.

A study is made of the development of philosophy in the formative age of European civilization, with attention given to related political, institutional, literary and theological concerns. 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. Puccetti.

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 physical states, exhausted by descriptions of his behaviour? Or, by descriptions of changes in certain parts of his nervous system? Or does the concept of a person require reference to a 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 personal 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-Identity, by Sydney Shoemaker; recent articles on the problem of personal identity, Mentality and Machines, by Keith Gunderson, Psychological Explanation, by J. Fodor.

347B Freedom and Responsibility, lect. and discussion: 2 hrs.; W. F. Hare.

The purpose of this class is to examine philosophically issues which are significant in many disciplines, such as psychology, law and education. For example, what is meant by saying that a person has a responsibility to do something; and what is a 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 actions?

Readings will include recent articles by such authors as

355A/555A Marxist Theory and Its Upshot in the World Today, Seminar: 2 hrs.; D. Braybrooke. (Not offered 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 Hegel contributed some crucial features of overall framework and inclination. The analytic apparatus developed by classical economists of the British school, especially Ricardo, gave the thought its cutting edge as a critique of standing social arrangements. The class will spend some time identifying each of these influences upon Marxist theory; then consider the classical Marxist analysis of capitalism and various attempts, which have not come to an end, to accommodate it to developments which Marx appears not to have anticipated in some important respects.

355B/555B Marxism as an Alternative Approach in Contemporary Social Science, seminar: 2 hrs.; D. Braybrooke. (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 capitalist culture developed by philosophers associated with the Frankfurt School; and Jean-Paul Sartre's use of Marxism as a methodology for social science.

Prerequisite: 355A or equivalent acquaintance with the works of Marx and their influence.

357B/557B Philosophy of History, seminar: 2 hrs.; D. Braybrooke. (not offered 1975-76).

365A 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 problems treated may include causality and scientific law, the nature of theories and theoretical entities, relativity and changes in the 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: Philosophy 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. Rosenberg.

Prerequisite: Philosophy 100 or 200 or 201 or 202 or 305, or relevant science courses, or permission of the instructor.

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 Prerequisite: Philosophy 100 or 200 or 201 or 202.

390 The Philosophy of J. P. Sartre, seminar: 2 hrs.; I. A. Macl ennan.

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 to, and contrasted with the philosophy of M. Heidegger. Prerequisite: 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 to natural 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 relation to surface structure, meaning and synonomy, context 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: Since Philosophy 406/506 is a course of the formal sort, some previous exposure to a formal discipline is necessary. However since the course will be logically self-contained previous experience in logic is not essential, and an acquaintance with the basic concepts of structural linguistics or abstract algebra will serve equally as well.

4460A/5460A Seminar in Philosophy, Politics, and Economics: Public Goods and Political Choices, seminar: 2 hrs.; D. Braybrooke. (Same as Econ. 448A/548A and Pol. Sci. 448A/548A.)

4461B/546B Seminar in Philosophy, Politics, and Economics: Applied Social Philosophy - The Logic of Questions, Policy Analysis, and Issue-Processing, seminar: 2 hrs., spring term; D. Braybrooke.

(Same as Econ. 449B/549B and Pol. Sci. 449B/549B).

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 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 arrangements 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.

450A 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 will also be discussed (e.g. the analytic/synthetic distinction; synonymy).

Prerequisite: Philosophy 100 or a logic class, and at least one class beyond the 100 level in analytic philosophy; or by permission of the instructor.

Physics

Professors

W. J. Archibald M. G. Calkin E. W. Guptill C. K. Hoyt M. H. Jericho M. J. Keen (Oceanography and Geology) G. F. O. Langstroth

Associate Professors

D. J. W. Geldart R. D. Hyndman (Oceanography) D. B. I. Kiang W. Leiper R. H. March (Chairman) R. Ravindra

Assistant Professors

B. L. Blackford J. G. Cordes D. F. Goble B. E. Paton P. H. Reynolds A. M. Simpson C. G. White

Instructor G. Stroink

Postdoctoral Fellows

C. Blaauw P.L.Li W. A. Roger.

We are surrounded by complex objects. A transistor radio is a typical example; their size and complexity varies enormously but the common element is the partnership of basic science. and technology which has produced them.

We are also surrounded by simple and subtle phenomena not made by man. A rainbow, or the waves on the shore may cause us to look and, perhaps, cause us to wonder.

The science called 'physics' is for those who wonder. The teachers of physics will strive to impart not only basic knowledge. In addition, and often at the same time, students will be helped to develop the skills required to connect seeming unrelated events or observations, and via this connection to come to an understanding of a physical concept.

A physical concept is a powerful weapon for those who wish to mould their wonder and curiosity into a systematic scientific inquiry, whether this inquiry concerns a rainbow or a clinical diagnosis. For example, only a few concepts are required to understand classical mechanics --- the study of force and motion.

Material objects are found to behave predictably; they can be said to obey 'laws'. Waves of various sorts, such as light and sound, also obey laws and a knowledge of these laws will help us to understand the behaviour of an optic or acoustic system, or, more important, to predict the behaviour of an untried system.

Electricity and magnetism form an important part of elementary physics. In several classes the nature of electric and magnetic forces is discussed. This collection of physical phenomena includes such distant cousins as a toy electric motor and an extensive communications network.

In the study of these and related subjects, deductive skills are encouraged and practiced; these skills can then be used to study more subtle physics, or carried over to any discipline which may be the goal of a student.

First Year Classes

There are three first year classes. They give a general introduction to the subject and cover to a varied extent the more modern aspects of physics - relativity, properties of nuclear radiations and quantum mechanics.

Physics 100 is a survey class requiring no previous preparation in physics and offered primarily for students in arts or a pre-professional programme.

Physics 110 is intended for student intending to make a study of engineering or a physical science. Previous background in physics is helpful but not essential.

For second and subsequent years, an important part of the course each year after the first is the laboratory work which establishes a connection between the theoretical and mathematical ideas of the lectures and the world of physical reality. In the third and fourth years the student is encouraged to follow his own interests as much as possible, both by designing and carrying out experiments of his own choosing in the laboratory and by selecting suitable classes from amongst the electives available.

Degree Programmes

General Degree/Major in Physics

Students intending to major in physics should include Physics 110 and Mathematics 100 in their first year programme. Physics 100 and 245 may not be included in a 'Major' and at least one 300-level class must be included. Physics 340 may not count as the only 300-level class.

Students wishing to take a general degree in Physics might be interested to note that P110 and the four non-honours-oriented courses at the 200-level (P221, P222A and 223B, P230 and P250) between them cover essentially all of the major topics in Physics. This 'package' includes: a general introduction to physics, astronomy and cosmology, elementary nuclear physics, introductory quantum mechanics, relativity and atomic physics.

Students interested in both physics and biology may wish to examine the section on 'Combined Honours'. The first three years of the 'Biophysics' combined honours programmes constitute a three-year B.Sc. (General Degree) programme which has been put together by both departments. Again, it should be noted that alternatives are available for specific classes in this programme of study.

B.Sc. Major in Physics (example only, other possibilities exist)

Year I, 110 (Math 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).

B.Sc. with Honours in Physics

All students who intend to take a B.Sc. with Honours in Physics are encouraged, to discuss their programme with staff

members of the department and to consult with the Chairman of the Department at the beginning of the second year.

Year i

- 1. Chemistry 110.
- 2. Mathematics 100.
- Physics 110. Arts or Science elective. 4
- 5. Arts elective.

Year II

6. Science elective. 7-8. Two mathematics' classes. 9-10. Physics 211 and 231.

Year III

11. Arts or Science elective. 12. Class in Mathematics. 13-15. Physics 300 and two other physics classes.

Year IV

16. Arts, science or mathematics elective. 17-20. Four physics classes at the 400 level one of which will normally be Physics 400.

Combined Honours

Physicists study, and try to understand, the fundamental laws of nature. Because of this, physicists find themselves becoming increasingly involved with other sciences where attempts are being made to understand the phenomena as well as to describe them. For example, geologists have mapped the magnetic field of the Earth and are now working with physicists, trying to explain the underlying mechanisms. Biologists and physicists are collaborating on studies of diffusion through cellular membranes, as well as on a variety of other topics.

It is important, therefore, to have scientists with training in more than one subject.

All manner of combined honours physics programmes can be generated. Two cases where details of such programmes have been worked out are combined honours with GEOLOGY and with BIOLOGY. Details of a possible 'Geophysics' programme are included in the Geology section of the Calendar. A possible programme for students wishing to do a 'Biophysics' combined honours programme is outlined below:

Combined Honours Physics and Biology

Yearl Physics 110 Biology 2010A, 2030B Math 100 Philosophy 100 Language or Social Science

Year II Physics 221, 230 Biology 2000 Math 220 Chern 110

Year III (one of) Physics 315 320, 335

Biology 3012A, 3013B

Biology 2020A,

2040B

One Biology (e.g., Biology 3030A/B) or one 300-level **Physics** Physics 3000

Year IV

Chem 230 or 241

Elective

Students contemplating these, or any other combined honours programme may obtain further details from the Department, and should in any case consult the Departments before the beginning of their second year of study.

This is a survey class requiring no previous preparation in physics, and offered primarily for students in arts, premedicine and pre-dentistry. It will not normally be accepted as a prerequisite to advanced classes in physics.

The class surveys physics from its beginnings to the present day. The four major topics are: Newtonian mechanics (motion, force, mass, momentum, energy); electromagnetism (charge, electric and magnetic forces and fields); relativity (space, time, mass, energy); quantum theory (elementary particles, atoms).

The major topics are dealt with mainly in historical sequence. To a large extent the ideas in later topics are built on the ideas presented in earlier topics. In particular, the four major topics mentioned are not at all isolated from each other, but are rather closely inter-related.

Throughout the class, mathematics is used as a language for expressing the basic ideas of physics and also for deductive reasoning from these basic ideas. The mathematics used is not in advance of high school algebra and trigonometry, but some time is spent in the class developing greater facility with high school mathematics. It must be stressed that mathematical formulae are not used simply for "plugging in" numbers; rather, the emphasis is placed on a thorough understanding of the meaning and range of applicability of the formulae.

A large part of the class consists of developing understanding of physical principles through specific problems. For this reason, there is a 3 hour session each week during which students do problems with the assistance, when required, of the lecturer and graduate students. The problems are linked closely to the lecture material, and sometimes extend the subject matter of the lectures. The problem sessions are conducted informally and students are free to discuss the problems with each other as they work. There are no laboratory experiments in this class.

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 position of a projectile after a certain time has elapsed?"

Intuitive reasoning or educated guessing is eliminated. Reasoning of this kind requires more sophisticated mathematics than one normally uses in high school and consequently a considerable fraction of the first few weeks of lectures is used introducing such topics as vector algebra, differential calculus and integral calculus.

One other Biology or **300-level Physics**

Half-class in Biology + Physics 470B Physics 340/Biology 3400/History 310

100 General Physics, (3 sections), lect.: 3 hrs.; problem session: 3 hrs.; C. G. White, R. Ravindra, D. F. Goble.

Text: J. B. Marion, Physics and the Physical Universe, Wiley.

110 General Physics, lect.: 3 hrs. (2 sections); tutorial: 2 hrs.; E. W. Guptill, R. H. March.

Throughout the year students will have an opportunity to assess their progress by the results of fortnightly quizzes which are given during afternoon tutorials. These tutorials replace the conventional laboratory work and give the student ample time to discuss his problem with the tutor. Most of the experimental work is confined to lecture room demonstrations.

Students beginning this class should be familiar with trigonometry, the solution of quadratic equations, binomial expansions and should now be prepared to start vector algebra and differential calculus. Previous work in physics is not essential.

Text: 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 laboratory, i. e. work done in the laboratory periods is included in the grade for both classes.

Prerequisites are also common: Physics 110 and Mathematics 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 110; and with the application of simple integral and differential calculus to the solution of physical problems. -

211 Mechanics

The class is divided into 2 parts: mechanics and wave motion. The first part deals with basic vector mathematics and its application to physics. Newton's laws of motion and the description of motion in unaccelerated reference frames, the two principles of special relativity and their use in describing space and time intervals in unaccelerated reference frames. conservation of energy and momentum from both the classical and relativistic view point. The last topic in the first part of the class is harmonic oscillation, which provides an introduction to the second part, wave motion. In the study of wave motion, examples are taken from many branches of physics: mechanics, electromagnetism, quantum theory. Fourier analysis of wave packets and pulse will be included. Text: Berkeley Physics Course, Vol. 1 Mechanics,

McGraw-Hill, 1965; Berkeley Physics Course, Vol. 3 Waves 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 potential as physical quantities. Next, the motion of charge in conducting materials is discussed leading to the solution of circuit problems involving capacitance and inductance. By considering the electric field of a moving charge in the light of the theory of relativity, the nature of the magnetic field is introduced and its properties discussed. The relationships between electric and magnetic fields are then studied and it is shown how these relationships imply the existence of electromagnetic radiation. Electric and magnetic fields in matter are also discussed

The laboratory work is designed to illustrate the physical principles discussed in the lectures and simultaneously to introduce students to the use of electronic apparatus and to the design of some simple circuits.

Students are expected to have an introductory knowledge of the nature of electric charge, electric field, magnetic field, and of electrical current as developed in Physics 110. Text: Berkeley Physics Course. Vol. 2 Electricity and Magnetism, McGraw-Hill, 1965.

221 Waves and Modern Physics, lect.: 3 hrs.; lab.: 3 hrs.; C. K. Hoyt.

This class is intended mainly for those who do not plan to take honours physics but who wish to learn more about 20th century physics than is possible at the first year level.

Waves are studied first, since their properties and the terminology used in connection with them have an important relationship to much of modern physics. Wave equations are deduced both for mechanical and for light waves, and it is shown how all the various wave properties can be derived and used.

The central role played by light in forcing a revision of 19th 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 of the hydrogen atom, the structure of atoms and molecules. The necessity of using the newer theories will be apparent by the 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 compelling physicists to revise their conception of nature. Prerequisite: Physics 110. Mathematics 100. Students are expected to be familiar with calculus, complex exponential functions, simple harmonic motion, and the simpler aspects of special relativity

Text: H. D. Young, Fundamentals of Optics and Modern Physics, McGraw-Hill, 1968.

222A Radiation and Environmental Physics, lect.: 2 hrs.; lab.: 3 hrs.; W. Leiper.

This 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 Department of a local hospital, where x-ray machines and radioactive sources are used for treatment of patients.

The lectures also cover the instruments used to detect and monitor radiations (geiger counters, cloud chambers, etc.); pollution monitoring; radio-isotopes in agriculture, rockdating 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 will have to seek approval of instructor. Books: Hurst and Turner, Elementary Radiation Physics, Wiley, 1970.

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 the environment are nuclear reactors and H-bombs. Their construction, properties and effects are explained. Prerequisites: P222A 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 reason are unable to take that class. Students may take third year physics classes if they have taken this class and Physics 221. The class will include discussion of the essence of classical mechanics, with an introduction to relativistic mechanics, and the essence of classical electricity and magnetism. Substantial emphasis will be placed upon the important ideas which arise from these fields of physics, and upon their present relevance.

Prerequisite: Physics 110, Mathematics 100. Text: to be announced.

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 and on the scale of the universe. We shall use some of the major findings of geophysics and oceanography to study the Earth as a planet. We shall discuss the contributions made by the space program - for example, the Apollo flights to the Moon and the Mariner flights to Mars. The constitution, age and origin of our solar system will be considered as will the interactions of its component parts (for example, Earth-Moon and Solar-planetary interactions).

The second part of the course will consider stars - their origin, constitution and evolution with time; the structure and age of our Galaxy and the universe of galaxies; pulsars, quasars and other recent interesting developments in optical and radio astronomy; and finally, various cosmological models.

Prerequisite: one first-year science course. Text: Wyatt and Kaler, Principles of Astronomy, Allyn and Bacon, 1974.

250 Astronomy, lect.: 3 hrs.; P. H. Reynolds.

This is a basic course designed primarily for students who may wish to pursue more advanced studies in astronomy or in astrophysics.

I. The Solar System: the Earth, Moon, meteorites and planets; planetary motions and celestial coordinate systems; the origin and age of the system.

II. The Stars: their distances and motions; the motion of the Sun; magnitudes, luminosites, colours and stellar spectra; building stellar models - the Sun as a star; variable stars; binary star systems; clusters of stars; interstellar gas and dust; stellar evolution.

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III. The Galaxies: structural features and dynamics of our Galaxy; particular features of the exterior galaxies.

IV. 'Gee-Whiz' Astronomy: pulsars (neutron stars); black holes; quasi-stellar objects (quasars); an introduction to

Prerequisite: Physics 110 or Physics 100.

Text: Smith and Jacobs, Introductory Astronomy and Astrophysics, Saunders, 1973.

300 Experimental, Physics, lab.: 6 hrs.; lect.: 1 hr.; B. E.

A class in experimental physics designed to give students a chance to do non-set experiments and thereby encounter and solve on their own the problems of experimentation. As the number of experiments is small (four to six), students'should achieve a real understanding of a few physical phenomena. Topics for experimental study cover a wide range of fields such as atomic physics, mathematical physics, solid state physics and electronics. A measurement of one of the fundamental constants such as c, G or e is required, other than this the student is free to choose the field of experimental

Prerequisite: The class is designed for honours students and has Physics 231 as a prerequisite: For physics students, two other physics classes must be taken concurrently. Exceptions have been made.

315 Modern Physics, lect.; 3 hrs.; D. Kiang.

This is an introductory class in quantum physics. The first term deals mainly with basic quantum mechanics. In the second term, selected topics in atomic physics, low temperature physics, nuclear and particle physics; will be discussed. Whenever possible, attention is drawn to the current trends in physics research.

Prerequisite: Mathematics 200 or its equivalent.

Text: Tipler, "Foundations of Modern Physics," Worth Publishers, Inc. (1969). This text will not necessarily be used in

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 of statistical mechanics and the relation that they have to thermodynamics together with the application of these principles to the study of ideal gases and certain physical systems.

Prerequisite: Some knowledge of partial derivatives: Mathematics 200, which may be taken concurrently with the

Text' 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 of solid state devices, the concepts of information and noise and transmission lines and filters.

Topics treated: network reduction, the 4 terminal network and solutions by matrix methods, non-linear systems, modulation, de-modulation and rectification, carrier transport in semi-conductors, properties of diodes and transistors; electro-mechanical analogs and analog computation methods, feedback and control systems, stability criteria, nature of information and noise, properties of distributed constant lines and filters.

Prerequisite: Physics 230 or Physics 231, Mathematics 220 or 228 to be taken concurrently. Text: Ryder, Electronic Fundamentals.

340 History of Science, lect .: 2 hrs.; tutorial: 1 hr.; R. Ravindra (Physics), J. Farley (Biology). (Same as Biology 3400 and History 340. Class description to be found under Biology 3400).

400 Advanced Physics Laboratory, lab.: 6 hrs.; A. Levin, S. T. Nugent.

This is a physics and engineering-physics laboratory class in which students in groups of two work largely on their own initiative. The experimental work covers nuclear disintegration, gamma and beta spectroscopy and absorption measurements, proton spin quantitative measurements and Planck's constant determination; thermionic emission and ionization experiments using a vacuum pumping and instrumentation system; properties of solid state semiconductors and devices; experiments on the spectral noise distribution of transistors and the use of analysis systems; experiments with a Helium-Neon laser, holography, etc. If they wish, students may do experiments in other areas, such as acoustics, optics, fluid dynamics. A report, on a topic to be agreed with the instructor, is required as part of this class. Prerequisite: Fourth-year standing in physics or engineering-physics or permission from the instructor.

402B Special Topics in the History and Philosophy of Science, seminar: 3 hrs.; R. Ravindra

410 Advanced Classical Mechanics and Electrodynamics, lect.: 3 hrs.: M. G. Calkin

In the first term the class will study Lagrangian and Hamiltonian mechanics, covering, for example, the material in Goldstein, Chapters 1, 2, 3, 7, 8, 9; Lagrange's equation, Hamilton's principle, the two body central force problems, Hamilton's equation of motion, transformations, the Hamilton-Jacobi equation.

In the second term the class will study electrodynamics, covering topics such as 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 Mechanics, Addison-Wesley; Jackson, Classical Electrodynamics, Wiley.

411B Special Relativity, lect.: 3 hrs.; M. G. Calkin.

Topics discussed include: experimental basis of the Lorentz transformation relativistic kinematics: space-time; introduction to tensor calculus, relativistic dynamics; relativistic electrodynamics.

Prerequisite: Physics 211, 231 and 315 or the permission of the instructor.

Text: TBA.

415 Quantum Mechanics, lect.: 2 hrs.; W. J. Archibald.

Topics discussed include: concepts and formulation of quantum mechanics, harmonic oscillator, potential well and barrier, angular momentum and the central force problem, perturbation methods, scattering theory.

Prerequisite: Physics 315. Students should be familiar with elementary wave mechanics and with the mathematics necessary to discuss the Schrodinger wave equation. Text: TBA.

416A Mathematical Methods of Physics, lect.: 3 hrs.

Topics discussed include: ordinary differential equations, complex variables, integral transforms, special functions, and partial differential equations.

Prerequisite: Registration requires prior departmental consent

Texts: Arfken, Mathematical Methods for Physicists (2nd ed.), Mathews and Walker, Mathematical Methods of Physics (2nd ed.).

423A Introduction to Solid State Physics, lect.: 3 hrs.; W. Leiper

This class introduces the basic concepts of solid state physics which are related to the periodic nature of the crystalline lattice. Topics will include crystal structure X-ray diffraction, phonons and lattice vibrations, the free electron theory of metals, and energy bands.

Prerequisite: Physics 315. Registration requires prior departmental consent.

Text: Kittel, Introduction to Solid State Physics, 4th ed., Chapters 1-9 Wiley.

433B Materials Science, lect.: 3 hrs.; H. W. King.

This course applies the principles of solid state physics to the study of real materials. Physical properties are shown to have intrinsic symmetry which interacts with the symmetry of the crystal structure of the material, thereby defining the number of coefficients necessary to completely describe the property. The concept of thermodynamic equilibrium, governed by diffusion in the solid state, is discussed as the basis for a description of the microstructure of metals and alloys. Although solid state properties such as electron transport, magnetism, semiconductors, superconductors and the optical properties of dielectrics and semiconductors owe their existence to the quantum properties of electroris, it is shown that in practice, the magnitude of these properties is strongly influenced by micro-structural effects such as solid solution alloying, crystal defects, grain boundaries, textures and plastic deformation.

Prerequisite: Physics 315, preferably Physics 423A, and permission from the instructor. Registration requires prior departmental consent.

Text: Hutchinson and Baird, Physics of Engineering Solids. Wiley 1968.

Reference: Nye, Physical Properties of Crystals, Oxford Univ. Press, 1969.

435A Electronic Techniques for Energy Conversion, lect. 3 hrs.; A. Levin.

This course discusses the properties, efficiency and uses of energy conversion systems based on electronic techniques. Topics discussed include: thermojunction generators and refrigerators, solar generators, thermionic generators, fuel cells and related devices.

Reference: Levine, Selected Papers on New Techniques in Energy Conversion.

440B Optical Electronics, lect.: 3 hrs.; S. T. Nugent.

Topics discussed include: electromagnetic theory, the propagation of rays and optical beams, optical resonators, interaction of radiation and atomic systems, theory of laser oscillations, some specific laser systems, second-harmonic generation, parametric oscillation, electro-optic modulation and optical detectors.

Text: Yariv, Introduction to Optical Electronics.

444A Optics, lect.: 3 hrs.; C. K. Hoyt.

Topics include a detailed study of the radiation from accelerated charges, the statistical properties of the fields from assemblies of radiators, interference, diffraction, with attention to the approximations of the Kirchhoff theory, and the application of Fourier transforms to the structure of images, the resolving power of instruments and the characterization of coherence.

A few topics in geometrical optics may be included to assist in understanding the behaviour of optical instruments and to provide a background for the better appreciation of some of the topics in physical optics.

Prerequisite: Physics 230, or Physics 231, or Physics 221 and Mathematics 220. The students should be familiar with vector analysis, Maxwell's equations and the use of complex exponential functions. Registration requires prior departmental consent.

Text: Stone, Radiation and Optics, McGraw-Hill, 1963.

444B Optics, lect.. 3 hrs.; C. K. Hoyt.

This class is a continuation of Physics 444A and deals with coherence, polarization, scattering by matter, the electromagnetic properties of matter, including crystals, reflection, refraction and double refraction.

Prerequisite: Physics 444A. Registration requires prior departmental consent. Text: Stone, Radiation and Optics, McGraw-Hill, 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 internal structure of the Earth, the geomagnetic field, paleomagnetism - the prehistory of the geomagnetic field. heat flow and the Earth's thermal history, electrical conduction in the Earth, radioactive processes and in the age of the Earth, global geophysics-continental drift and sea-floor spreading.

Taught concurrently with Geology 445.

Prerequisite: Registration requires the prior consent of the Department.

Text: Stacey, Physics of the Earth, Wiley, 1969; Garland, Introduction to Geophysics, Mantle, Core, and Crust, Saunders, 1971.

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 will be required.

Topics include: Convolution of a time series, fast Fourier and Laplace transforms, correlation and covariance, power spectral estimates, deconvolution. Applications to geophysics will be emphasized.

Taught concurrently with Geology 462B. Prerequisite: Interested students should consult with the instructor.

Text: Kanasewich, Time Sequence Analysis in Geophysics, University of Alberta Press, 1973.

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instructor.

Graduate Studies

Physics 470B 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. Topics that will be covered include: Physical methods of determining the sizes and shapes of molecules, X-ray analysis of molecular structures, intramolecular and intermolecular forces, physical properties of membranes as well as questions related 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 and Life, by M. V. Volkenstein.

Prerequisite: A class in basic thermodynamics (such as Physics 320), some background preparation in Modern Physics and Quantum Mechanics, and the permission of the

The Department of Physics provides course of study leading to the advanced degrees of M.Sc. and Ph.D. Areas of research undertaken at Dalhousie include: solid state, geophysics, low energy nuclear physics, low temperature, theoretical physics, and oceanography. Further details are given in the Calendar of the Faculty of Graduate Studies.

Political Science

Professors

J. H. Aitchison J. M. Beck D. Braybrooke K. A. Heard, Chairman M. K. MccGwire

Associate Professors

P. C. Aucoin D. M. Cameron (Director, Public Administration Programmes) A. P. Pross D. W. Stairs (Director, Centre for Foreign Policy Studies)

Assistant Professors

R. Boardman R. L. DIal W. R. Mathie D. J. Munton D. H. Poel T. M. Shaw S. L. Sutherland

Special Lecturers

K. Antoft R.K. Dalev C. J. Gardner T. Rath

Foreign Policy Research Fellows

M. F. Haven W. J. McGrath S. K. Nyamekve

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 essence of politics. It also suggests a large part of what political scientists are constantly trying to find out. Of course, their interests vary, and so do their methods. Some, for example, are interested in the exercise of power within the nation-state. Who are the 'rulers'? Where do they come from? How do they get there? Whose interests do they serve? Under what constraints do they function? In pursuit of answers to questions as fundamental as these, political scientists are drawn to investigate, among other things, the functions and practices of political parties, the attitudes and perceptions of voters, the objectives and tactics of pressure groups, the origins and capacities of legislators, the processes and actions of governments. For many, the principal concern is to deal with these problems, and dozens of others like them, in the context of a single country - Canada, for example, or China, or Tanzania. Others seek to discover patterns of a more general kind, which they try to expose by examining a variety of countries and comparing the political phenomena of each. From this type of research they may hope, for example, to learn why some countries appear to be politically more "stable" than others. Or they may want to know how it happens that in some societies armed forces, exercising their monopoly over the ultimate instruments of brute force, seize control of the government, whereas in others they remain placidly obedient to the commands of politicians. And so also with an almost endless variety of questions of a similar sort.

Other political scientists, although still very much concerned with the play of political forces within the nation-state, focus

their attention somewhat more narrowly on what we might call the "policy machine" — the complex mix of political leaders, bureaucratic administrators, and technical experts whose job it is to decide what the "government" will actually do. The process by which these decisions are made is an intricate one, complicated by the fact that bureaucracies of government, like bureaucracies everywhere, have a political life of their own. To study this process, to assess its implications, to consider the usefulness of various possible remedies (where remedies are required) - these are among the preoccupations in particular of specialists in "Public Administration"

The pursuit of politics is not, of course, confined to the internal affairs of national communities. It extends as well to the world at large, where it can become a raw and brutal game in which the question of "Who Gets What, When, How" is sometimes settled only by the most violent and destructive of means. It is partly the function of political scientists who specialize in International Politics to investigate the origins and conduct of the foreign policies of particular states - to discover, in effect. why they individually behave in the way they do. It is also their function to examine the workings of the international community as a whole - to distinguish, for example, the causes of war from the conditions of peace, and to evaluate the effectiveness of alternative means of securing the maintenance of international stability. In dealing with such questions they are led to examine the principles of nuclear deterrence, the workings of alliance systems, the functioning of the balance of power, the politics of the United Nations. the concept of imperialism, and a host of other diverse, yet inter-related, phenomena.

It will be obvious that the emphasis in these various political science pursuits is on the study of politics as actually practised in the world around us. But many political scientists would agree that this is only a first step, and that we should also address ourselves to questions having to do with how politics ought to be. It is not, after all, simply self-evident that political leaders should be subject to election, or that ignorant men should have the same voting power as educated men, or that we should be allowed to spend our money as we please. or that there is merit in the principle of equality before the law. Issues of this sort have been debated by reflective men for thousands of years, and none of them has found after careful examination that the answers come easily. To consider the very difficult problems raised by these sorts of questions is the principal task of political philosophy. It is a task which lies at the core not merely of political studies, but of political life itself.

Students who are interested in these various fields of inquiry within the discipline of Political Science will find all of them represented in the class offerings and programmes outlined below. Some will wish to specialize, while others may want to pursue interests in a number of different areas. In either case, the members of the Department will be happy to offer whatever advice and assistance they can in the development of any student's personal programme of studies.

Degree Programmes

Students concentrating in Political Science may take a 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 courses from a number of sub-fields of Political Science or a general selection of courses from a number of sub-fields. These sub-fields are noted below

Requirements

A one-year programme will consist of not less than 3 nor more 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 sub-fields under which classes above the first-year level are listed.

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 students.

A two-year programme will consist of a first-year level class and not less than 4 nor more than 8 additional classes in Political Science.

Classes at the second-year level must be drawn from at least. 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 student's classes must be at the third-year level.

An honours programme will normally consist of a first-year level class and not less than 9 nor more than 11 additional classes in Political Science.

It will include,

(i) at least two classes in two sub-fields at the second-year level.

(ii) at least four classes above the second-year level, two of 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 ability to develop a systematic argument with reference to 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 appropriate people in the other departments.

Combined Honours

There are several combined honours programmes: Political Science and Philosophy Political Science and History Political Science and Economics Political Science and Sociology

Students interested in taking any of these combined honours programmes should consult with the Chairman of the Department or his deputy.

Graduate Studies

The Department offers M.A. and Ph.D. programmes in Political Science, details of which are given in the Calendar of the Faculty of Graduate Studies. Programmes leading to the Graduate Diploma in Public Administration and to the Master 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 programme in Political Science. Upon entering the programme a student may indicate a choice of advisor. Normally the advisor will be a faculty member teaching in the student's sub-fields of concentration (if any). The student's choice will be respected unless the member chosen is unable to serve in this capacity. For the student who has no preference, or whose choice cannot be honoured, the Department's Undergraduate Studies Committee will assign an advisor on the basis of the student's apparent interests and the present advisory load of the members of the Department.

programme.

Role of the Advisor: Basically, the advisor is intended to be available to the student throughout the year as a consultant on broad academic matters. The advisor is not, however, a tutor with regard to specific classes. Prior to registration (or, in any 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.

The classes and their descriptions printed below were prepared for publication early in October 1974. It is inevitable that there will be amendments, deletions, and additions prior 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, particularly those entering their second or third year, should consult this supplement or the department before preregistering.

The divisions are:

of Public Administration are also available through the Department.

The Certificate in Public Administration requires the completion of six classes which may be taken on a part-time basis. Further information may be obtained from the Director of the Programmes in Public Administration, Department of Political Science.

The Department offers courses which may contribute towards a B.A. degree in African studies. Further details of this interdisciplinary programme are available in a calendar section above and from the co-ordinator of the programme in African studies.

Undergraduate Advisory System The 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.

Undergraduate Programme in Public Administration

Undergraduate Programme in African Studies

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

Class Offered

The classes are arranged in five divisions and to each class a new four-digit number has been assigned. The first digit on the left indicates the year level and the second from the left the number of the division.
- Introductory
- Canadian Politics and Public Administration
- Comparative Government and Politics
- Political Theory and Methodology 4
- 5. 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 of those which do not may be taken in the first year in addition to a first-year level class.

Fourth-year level classes and most of those at the third-year level 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 requirements for those who do. In general, it is expected that they will produce written and oral work of a quality that reflects their longer academic experience.

The prerequisites listed with each class are intended to show the sort of preparation the instructor anticipates. Admission to classes at and above the third-year level is at the discretion of the instructor who retains the right to judge the suitability of each prospective student's qualifications for the successful completion of the class and his contribution to it.

The new number for the honours essay is 4600.

1. Introductory

1100 (formerly 100):

Section 1, Democratic Government and Politics, lect.: 3 hrs., J. H. Aitchison.

The core of this section of Political Science 100 will be a comparative study of the institutions, processes and problems of government in western democracies. Attention will be paid mainly, but not exclusively, to the political systems of Great Britain, Canada and the United States but with greater emphasis on Canada 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 about the federal democracy of Canada and its problems. The scope of the sections, however, will be sufficiently broad to provide a foundation for those who wish to proceed to higher level classes in Political Science.

Section 2, Democratic Government and Politics, lect.: 3 hrs.; J. M. Beck.

The class is designed not only for the student who desires to continue in political science, but also for the student who will take no other classes in political science. During a short introductory section such questions as the following will be posed: Can there be a genuine science of politics? What approaches may be adopted in a study of political phenomena? This will be followed by an examination of the operative ideals of liberal democracy, fascism and communism, and a discussion of the conditions that are likely to be prerequisite 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, and Canada (with emphasis on Canada) especially designed 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 discussion: 3 hrs. R. Boardman.

Politics is about power and influence. This class will introduce various aspects of politics in Canada, the United States, and the Soviet Union. It can be taken by students who want to do more political science or be used as a basis for more advanced work by those interested in pursuing the study of politics further.

During the year we will explore three major fields of political science: comparative politics, political philosophy, and international relations. The student will be introduced to these fields through a series of topics each of which will be approached with a mixture of lectures, discussions, talks by guest speakers, simulation exercises, and other methods.

The topics chosen vary from year to year but in 1975-76 will cover: (1) the study of Utopias, among them Plato's Republic, and of different political ideals such as conservatism, liberalism, and socialism; (2) the media and politics, and the problem of how we arrive at our judgements about politics; (3) the politics of totalitarianism as in Stalin's Russia, Hitler's Germany, and its more contemporary forms; (4) the causes of war and peace in the modern world, approached by a study of the origins of the Arab-Israeli conflict; (5) political parties and their organization and functions in Canada, the United States, and the Soviet Union; (6) decision making and the structures of government in these three countries; (7) problems of global development and some aspects of the relations between industrialized states such as Canada and the Less Deveoped Countries of the Third World; and (8) the power of the individual to influence political decisions, approached by looking at some problems of Halifax city politics.

The aim, in brief, is to provide the student with a useful and coherent framework with which to analyse political questions whether or not he intends to carry the academic study of political science any further.

One basic textbook covers most of the material needed. There is no formal examination but students will be required to do a variety of assignments, among them papers, research topics, and collaborative projects.

1101 (new) Introduction to International Politics and Foreign Policy, lect. and discussion: 3 hrs. D. W. Stairs.

Intended for students who are especially interested in the play of politics at the international level, the material discussed in this class is divided into four main parts. The first, for background purposes, will be devoted to a general survey of international relations in the modern world with . emphasis on the period since 1945. Among the topics to be considered are the founding of the United Nations, the evolution of the "cold war", the emergence of the so-called "third world", the origins and limitations of détente, the changing role of social, economic, and ecological issues as items on the international agenda, and a number of others. Following this preliminary material, the second part will be concerned with the meaning and significance of certain basic concepts which are commonly found in analytical discussions of international affairs. These will include, for example, the concepts of "power" and "power politics", the idea of the "national interest", and other such fundamental analytical tools.

The third part will be directed more immediately to the making of foreign policy and to the ingredients of statecraft.

What is "foreign policy"? Who makes it? How do they operate? What influences - domestic and foreign - do they take into account? And what instruments and strategems do they deploy in the pursuit of their objectives?

In the final part the emphasis will shift away from the perspective of national actors and their foreign policy and will focus again on the international arena. A variety of interstate patterns of behaviour and relationships will be considered under such headings as alliance systems, balance of power systems, concert systems, and collective security systems.

The class is designed to serve as a general survey for students who plan to take only one class in International Politics as well as a broad introduction for those who intend to take additional higher level classes. It will also be of interest to students who plan to take no other classes in political science.

1102 (new) Introduction to the Observation of Politics, lab, R. L. Dial.

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 political scientists focus on the articulation of interests and the authoritative allocation of values by governing bodies. The political philosopher may ask whether such authoritative allocations of value meet the requirements of justice and 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? Or do they isolate him from it? Political Science 1102 will seek to test the value of a limited catalogue of political science concepts by bringing them to bear directly on the "living" political process at three levels: community (non-governmental) organizations, municipal government, and provincial government. Students will observe, on a regular schedule, the functioning of various community and interest groups, the City Council of Halifax, and the Legislative Assembly of Nova Scotia. The year-long assignment, to consist of a series of reports, will be to catalogue the observations made throughout the year and to express and interpret them in language such as that 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 with 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 flexibility will be built into each student's observation schedule (which will be worked out individually with the instructor) potential time conflicts should be borne in mind before a student signs up for the class.

2. Canadian Politics and Public Administration

2200 (formerly 202) The Canadian Political System, lect. and seminar: 2-3 hrs. P. C. Aucoin, S. L. Sutherland.

There will be two sections of this class. They will have the same central focus with only minor differences in content.

Among the major topics which may be considered are: Canada as a federal political community; Canada as an It takes the form of a seminar class in which the students' papers will explore the background, nature, and significance of current problems in the politics, government and constitution of Canada. The relation of the political culture. and especially environmental, institutional and personal factors to these problems will be examined in detail by posing such questions as: Can participatory democracy be a practicable concept in Canadian federal politics? How valid are the criticisms of consensus politics put forward by Porter and Horowitz? Ought Canada to be viewed as a consociational democray? Is the party leadership convention a useful adjunct of Canadian liberal democracy or a bad American importation? Do the Trudeau reforms permit the executive branch to meet the 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-buggy era? How well do the Canadian mass media and pressure groups perform the functions which liberal democratic theory contemplates? Should a charter of human rights be entrenched in the Canadian constitution? How suited is the Supreme Court of Canada to performing the functions of a constitutional court of last resort? What is and ought to be the competence of the provinces in external affairs? Is the B.N.A. Act good enough or is a completely new written constitution desirable?

3212/5212 (formerly 316/516) The Politics and Government of Nova Scotia, seminar: 2 hrs. J. M. Beck. (Not offered in 1975-76)

This class will deal with the origins, development, and present legal and fiscal positions of various forms of local and regional government in Canada. Special attention will be paid to three problem areas; the territorial extent of local

Independent nátionstate; representative government, political authority and political freedom; and, the structure and processes of parliamentary government. While considerable attention will be given to national politics, the provincial and municipal political arenas will be included in our examinations and discussions. The class will not be concerned exclusively with "government" but will encompass all aspects of politics including "non-governmental" groups and processes such as political parties, pressure groups, the mass media, political socialization, and political participation.

This class is open to students who have completed an introductory political science class or who obtain the approval of the instructor.

3204/5204 (formerly 315/515) The Politics, Government and Constitution of Canada, seminar: 2 hrs. J. M. Beck.

This class is open to those students who have demonstrated competence in Canadian politics and government by attaining at least second-class standing in Political Science 202 or its equivalent and in exceptional circumstances to those students who have obtained high standing in Political Science 100.

3208/5208 (new) Canadian Provincial Politics, lect. and seminar: 3 hrs. D. H. Poel.

The general subject matter of this class will be a crossprovincial analysis of the socio-economic, political and policy traits of the Canadian provinces. For further information consult the instructor.

3216/5216A (formerly 334A/534A) Local and Regional Government and Administration, seminar: 2 hrs. K. Antort.

government, policy formulation in a fractionalized political 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.

3220A/5220A (formerly 313/513) Intergovernmental Relations in Canada, seminar: 2 hrs. D. M. Cameron.

This class will consider a number of topics concerning the territorial division of political power and the relations that have developed between governments. Specific topics will include the nature of Canadian Federalism, federal-provincial fiscal relations, selected functional areas of intergovernmental relations, interprovincial relations, and provincialmunicipal relations.

Undergraduates will be admitted only with the permission of the instructor

Prerequisite: P.S. 2200, or another class in Canadian Government.

3224B/5224B (formerly 330B/530B) Canadian Political Parties, lect. and discussion: 3 hrs. J. M. Beck

The Canadian party system will be viewed as an integral part of the entire political system and, among other things, the following questions will be explored: To what extent have various factors, economic, geographical, regional, ethnic, religious, constitutional and social, determined the character of Canadian parties and the party system? How valid are the findings of Michels, Ostrogorski, Duverger, and R. T. McKenzie with respect to the internal organization of political parties, and do they constitute a serious limiting effect on Canadian democracy? In other words, do the Canadian parties contribute towards genuine participatory democracy? How useful are the theories of Horowitz, Macpherson, Lipset, and Pinard in explaining the rise of third parties in Canada? Does Cairns 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 parties have outlived their usefulness? Is a resort to some 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 staff.

The aim of this class is to explore the interaction between governments and economic organizations, especially businesses, from the viewpoint of political science. Topics include the nature of government regulatory policies and problems related to multinational corporations. Others centre upon the role of government as a stimulus to economic activity, especially in the developmental and technological fields. Finally, discussion will include some evaluation of the impact of ideologies, democratic socialism for instance, upon businesses and the economy as a whole. The implications of these topics for Canadian society will be of prime concern.

3240A/5240A (formerly 314A/514A) The Policy Process in Canada, seminar: 2 hrs. A. P. Pross.

This will be a study of the fashion in which policies are evolved and applied 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 all participants in the process will be examined but with particular attention being paid to the role of administrative structures. Prerequisites: Political Science 2200 ro 3250 or permission of the instructor.

3243B/5243B (formerly 332A/532A) Health Care Policy in Canada, seminar; 2 hrs. P. C. Aucoin.

The 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 of the roles of the health professions and governmental structures in their formulation and administration. Special attention will be given to the process of intergovernmental relations in this policy field and the increasing politicization of health care delivery.

Prerequisites: Political Science 2200 ro 3250 or equivalent classes in Canadian Government and public policy.

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 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 373B/573B) Urban Policy in Canada, seminar: 2 hrs. D. M. Cameron.

The purpose of this class will be twofold: to examine the policy of Canadian governments (federal, provincial, municipal) 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 be 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.

3250 (formerly 311) Introduction to Public Administration, lect. & discussion: 3 hrs., S. L. Sutherland.

This class is designed to introduce students to the basic concepts of organization theory and administrative behaviour within the context of the operation of governments-at the federal and provincial levels. Emphasis will be placed upon the relationship between theory and actual practices. An attempt will be made to give students a general overview of most of the behaviours and techniques they are likely to encounter in more advanced classes or in administrative situations

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 relationship to the political executive will be studied in detail. Prerequisites: Political Science 2200 or 3250 or another class in Canadian Government.

3258B/5258B (formerly 312B/512B) Provincial Government and Administration, seminar: 2 hrs. The staff.

This class will consider the organization of government at the provincial level in Canada. Special attention will be given to those features of provincial government organization and public policy which have distinguished administration at this level from that of the federal government. Several recent reorganizations, including the proposal for Nova Scotia, will be examined in detail.

Prerequisites: P.S. 2200, 3250 or another class in Canadian Government.

3262B/5262B (formerly 319A/519A) The Budgetary Process. seminar: 2 hrs. D. M. Cameron.

This class is designed for students specializing in Canadian government and public administration. While the content of the seminars will remain flexible enough to accommodate the interests of the participants, major attention will be focused upon two areas: the development of the budgetary process in Canada, and the models and techniques for analysis and/or reform of budgetary processes in general.

3266A/5266A (new) Natural Resource Administration in 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 particularly on such policies as they relate to Eastern Canada - such as coastal zone administration and forest resources administration. A major emphasis will be placed upon the administration of these resources and the planning process at the local, provincial, and national levels of government. Prerequisites: Political Science 2200 ro 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 from the Soviet Union to Monaco (368 acres), a comprehensive survey of the politics of all of them will not be attempted in this class. The emphasis in the first term will be on the three major western countries - France, West Germany and Britain. In the second term we will turn to the government and politics of the Soviet Union and selected East European States. The political life of other countries such as Sweden and other Scandinavian countries and Italy and other Mediterranean countries will also be investigated; the choice from among these will depend on the time available and the interests of the students in the class.

The class is designed not only for students specializing in political science who wish to broaden their knowledge of comparative politics but also for those, such as students of one or more European languages, who do not wish to carry out advanced work in political science but who are attracted to the study of Europe for other reasons.

2310 (formerly 208) Comparative Government and Politics 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.

This most general concern of this class is with the questions of how human beings perceive, relate to, and participate in, political systems. Public opinion and voting studies are obvious aspects of micro-politics, as are areas of political socialization, personality and political culture.

2325 (formerly 205) The Theory and Practice of Government in the United States, lect. and discussion: 3 hrs. J. H. Aitchison.

The purpose of this class is to consider the government of the United States not only for its own sake as the government of a great power but also as the most intensively studied of modern democratic governments. With a view to accounting for the provisions of the original Constitution, the political 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 the modifications that have occurred in their political culture 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 great departures from the intentions of the framers and ratifiers of the original Constitution. The significance of the crises of the Nixon Presidency and the near-impeachment of Mr. Nixon will be thoroughly examined.

Despite the diversity of political ideologies, constitutional forms and levels of economic development, national governments perform a limited number of similar activities. This class is concerned with ways of classifying "political systems" and comparing their behaviour.

hrs. The staff.

3340A/5340A (formerly 324A/524A) Problems of Development: The Politics of New States, lect. and discussion: 2 hrs. K. A. Heard. (Not offered in 1975-76)

3345B/5345B (formerly 318B/518B) South Africa: The Dynamics of Political Groups and Group Domination, seminar: 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 of African states themselves. It will concentrate on the domestic 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, that have been adopted in response to these problems, including strategies of political participation on the one hand and political exclusion on the other.

This class is intended for students in African studies as well as for political science students. It is also available to any student with a general interest in Africa.

2320 (formerly 235) Political Behaviour at the Micro- and Micro-Level, lect. and discussion: 2 hrs. D. H. Poel.

3330/5330 (formerly 310/510) Comparative Government, seminar: 2-3 hrs. The staff.

3335B/5335B (new) Comparative Federalism, seminar: 2

For description consult the department's 1975 supplement.

What accounts for continued Afrikaner political domination in South Africa? Why do English-speaking South Africans apparently play such a passive role? Why have the Blacks in South Africa not mounted a revolutionary movement? What are the prospects for "homelands" independence?

These are the types of questions that will be explored in this class, with the object not only of acquiring an understanding of South African politics but with that also of formulating hypotheses concerning the formation, persistence and behaviour of political groups.

This class is intended for students who are interested either in comparative politics, in African studies or, generally, in political behaviour. It can also be used to match Political Science 2315A or 3544A.

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. (Not offered in 1975-76)

3356B/5356B (formerly 326B/526B) Sinology: The Study 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 locate 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 and disutilities in explaining different phenomena. Readings will cover the application of the following models to the Chinese case: communication theory, rural marketing systems, Maoist mobilization theory, organization and bureaucratic concepts, management concepts, radical economic theory, the concepts of political culture, urban sociology, and totalitarianism.

Among the students to whom the class will be of interest are those concentrating on comparative government and those concentrating on international relations with a special interest 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, and morality through a careful reading and discussion of these matters 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 criticisms of existing institutions 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 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: 3 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 political life. Ancient political science was concerned to assess the justice of various claims to rule in the city and to consider the nature of various forms of community that corresponded to those claims. Modern political philosophy is concerned to account for and justify the obligation of individuals to political authority, to establish how government can be based on consent, and to determine the proper relation between "state" and "society". In this class we will explore this transformation in the character of political science especially inasmuch as it can be understood in terms of a changed conception of the political community, or more generally of the political dimension of human existence. Texts that will be considered include Aristotle's Politics and Nicomachean 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 Problem", and Tonnies's Community and Society.

3420/5420 (formerly 342/542) The Political Thought of the Sixteenth and Seventeenth Centures, lect. and seminar: 3 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 Protestant Reformation and in doing so will firstly pay attention to those produced by writers on the continent and in Scotland, especially those by Luther, Calvin, Castellion (the toleration controversy), the adversaries of the French wars of religion, Les Politiques, and Bodin. The post-reformation political thought in England in the 16th and 17th centuries will next be studied with emphasis on the thought of Hooker, the Levellers, Hobbes, Locke, and Harrington. If there is time 17th century continental writers such as Althusius, Grotius. Spinoza, and 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.

3430C/5430C (formerly 341C/541C) The Political Philosophy of Plato, seminar: 2 hrs. W. R. Mathie. (Not offered in 1975-76).

3440A/5440A (formerly 355A/555A) Marxist Theory and Its Upshot in the Modern World, seminar: 2 hrs. D. Bravbrooke (Not offered in 1975-76)

3441B/5441B (formerly 355B/555B) Marxism as an Alternative Approach in Contemporary Social Science, seminar: 2 hrs. D. Bravbrooke.

(Not offered in 1975-76)

3450A/5450A (new) Theories of Federalism, seminar: 2 hrs. W. R. Mathie.

It is the aim of this class to examine carefully the meaning and nature of federalism and the close connection between the 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 well as such contemporary accounts as that of William Riker.

Students of political theory, Canadian government, and comparative government will find this class of interest.

4460A/5460A (formerly 448A/548A) Seminar in Philosophy, Politics, and Economics: Public Goods and Political Choices, seminar: 2 hrs. D. Braybrooke.

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), which will be studied in this class, show. The conception of 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 just mentioned and in the course of exploring the connections between their findings and formal theories of rational choice (to which philosophers have contributed as well as economists and political scientists).

Prerequisites: Students taking the class should ideally have had previous classes in all three subjects; but it will suffice for them to have worked to an advanced undergraduate level in at least one of them. Students taking the class for a credit in philosophy should have had a class in logic (200 or 201 or 202) and one in ethics (310); students taking the class for a credit in Political Science should have had at least one 300-level class in Political Science (315A and 355B are recommended); students taking the class for credit in economics should have had at least one 300-level class in that subject.

4461B/5461B (formerly 449B/549B) Seminar in Philosophy, Politics, and Economics: Applied Social Philosophy — The Logic of Questions, Policy Analysis, and Issue-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 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 arrangements 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 Economics 449B/549B.)

3470B/5470B Futurology and Politics, seminar, 2 hrs.; D. 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-present orientation 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

(2001).

simulation.

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 theories, and 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 Methods and Data Analysis, seminar: 2 hrs., D. J. Munton.

A knowledge of the promises and pitfalls of social science research is as important today to the average citizen as it is to the administrator of researcher. This seminar is intended to be a broad, non-technical introduction to the assumptions, procedures, and problems of empirical investigation in political science. The five major stages common to all such research — theory, research design, data-collection (surveys, simulation, aggregate date, etc.) measurement, and analysis - are explored using substantive readings from various subfields of the discipline.

include not only such recognized futurologists as Herman Kahn and John McHale, but also some popular writers as Alvin Toffler (Future Shock), novelists like George Orwell (1984) and even science fiction writers such as Arthur Clarke.

The seminar will look at a variety of subjects that have attracted forecasters. These may include such topics as: Canadian social and economic trends to 1980, future international politics, municipal organization in Nova Scotia. politics of race in South Africa, innovations in educational technology, changes in human values, Canada-U.S. relations, genetic counselling, and federal government expenditures 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

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.

The major assignment in the course will be a research project of the student's own choice and design. It is not expected that students will have any background in statistics or computer programming, but it is hoped that all are or can become excited by the joys of disciplined discovery.

5. International Politics and Foreign Policy

2500 (formerly 223) World Politics, lect.: 2 hrs., T. M. Shaw.

In analysing the development and future of international politics this class will consider both theories of international relations and the variety of actors in the international system. It will attempt to explain dependence and interdependence, conflict and harmony, and trends in the evolution of world politics. It will focus on problems of world order, especially on

those of inequality and underdevelopment, balance of power and arms races, regional conflict and cooperation, and the impact of international law and organizations. Although the class will examine the evolution of the international system, it will concentrate on contemporary problems such as international stratification, ecological theory, and integration and sovereignty

2505 (formerly 228) Comparative Foreign Policy, lect. and discussion: 2-3 hrs. The staff.

The contemporary politics of a number of countries ----Canada, the United States, the USSR, China, Britain, and the African states — will be analysed in a comparative way with a possible emphasis on the Canadian case. Discussion of a 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 interest groups in the formulation of foreign policy, geographical location, history and economic growth, the demands made by other governments in alliance systems, the parts played by ideology and military capability, governmental bureaucracies, and the roles and personalities of top-level decision makers

Students intending to concentrate either in international Politics or in Comparative Government will find this class of special interest

2510/(new) Canadian External Relations, lect. and discussion: 2 hrs., D. W. Stairs.

(If this class is not offered in 1975-76, the content of Political Science 2505 will be amended to give greater emphasis to Canadian external relations.)

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 subjects as the growth and development of the Departments of External Affairs and National Defence, the evolution of the Canadian foreign service, the current structure of the foreign policy community, and the relationship between the foreign service bureaucracy and such political institutions and agents as the Cabinet, Parliament, the various provincial governments, political parties, and pressure groups. The second part will be concerned with more substantive policy matters. After 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 identify some of the persistent pressures and constraints which Canadian policy makers are forced to take into account as they respond to the demands of their constituents and to the changing conditions of international politics.

Students intending to concentrate in International Politics or in Canadian politics generally will be among those to whom this class will be of interest.

3520/5520 (formerly 320/520) Conceptual Development in the Study of International Politics, lect. and discussion: 2 hrs., T. M. Shaw and others.

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, conceptual frameworks, and theories, that advance our understanding of international politics. It will not deal extensively with methodological techniques employed by various schools; rather its focus will be on the utilities and limitations of a conceptual approach not on the problems of its methodology 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 introductions to different approaches will be given by instructors knowledgeable about a particular school. Although 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 of 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, peace 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. MccGwire

Since 1945 there has been a continuous evolution in the structure, functions, power and influence of the United Nations. Originally conceived as an organization with a strong bias towards international stability and the status quo, it has emerged in recent years as an engine of social change.

This class will trace the evolution of the United Nations from its early concentration on problems of collective security, through the period of preventive diplomacy and anticolonialism, to its present role as a forum for the demands and aspirations of the Less Developed Countries. It will review the shift of power within the UN and the relevance of this shift to the "real" world outside, analyse the substance of United Nations influence, and consider whether there have been significant trends in this area. The class will begin with a historical and theoretical survey of the development on international organizations in the twentieth century with a view to making an assessment of the contribution of the United Nations to international peace and security since 1945. It will then turn to the following issues which have involved the United Nations: colonialism, trade, aid and development, the law of the sea, food and population, energy and resources, and the environment. In each case it will consider the roles played by the UN as an organization and by its individual members

3535B/5535B (formerly 324/524B) Problems of Development: New States in a Stratified International System, seminar: 2 hrs., T. M. Shaw. (Not offered in 1975-76)

3540B/5540B (formerly 317B/517B) Foreign Policies of African States, lect. and seminar: 2 hrs., T. M. Shaw.

The foreign policies of several African states will be reviewed in this class. It will begin with a survey of Africa's inherited problems and ideological responses and an examination of the four levels of international interaction in Africa; its dependence and impact as an international subsystem, the development of an African continental system, patterns of regional conflict and cooperation, and the making of foreign policy in African states. Since new states have produced novel discontinuities in the international system we will be concerned with the diplomatic, developmental, and methodological implications of African participation. A large part of our time will be taken up with case studies of African foreign policies, e.g., those of Tanzania, Ghana and Nigeria, Egypt and Libya, lyory Coast and Senegal, Malawi and Zambia, and Uganda and Kenya; and of regional organizations in Africa such as the East African Community, the Entente, and OCAM.

Students contentrating in International Politics or in African Politics will find that this class fits into their programmes.

3544A/5544A (new) Conflict and Cooperation in Southern Africa, lect. and seminar: 2 hrs., T. M. Shaw.

For its empirical and theoretical significance Southern Africa is a good choice for a case study of regional politics. After a review of the history of Southern Africa the class will examine patterns of dependence and interdependence in the subsystem and the foreign policies of states in the region. Our primary focus will be on regional integration and conflict and in pursuing this 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 of Botswana, Lesotho, Swaziland, and South Africa, and the impact of the UN and OAU systems on political change in the region. See 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 major developments and situations in Canada's post war relations. These historical developments include the framing of the United Nations, Canadian initiatives in the establishment of NATO, participation in the Korean War, the Suez Crisis and Canada's UNEF proposal, the nuclear weapons question, relations with Quebec and France, recognition of China, Nixon-economics and continental inter-dependence.

The second part of the class takes a more analytical approach to the factors that underlie Canadian policy. Using the historical cases as illustrations, the seminar will consider the influence of external factors (for example, the Cold War, the hierarchical nature of the international system, and the policies of other countries) and domestic factors (public opinion, interest groups, Parliament, the federal bureaucracies, leaders' personalities, etc.).

Finally, some policy prescriptive questions will be considered: Is nonalignment appropriate or possible? What should Canada do about American economic domination? Should Canada become a major "foreign aid power"? And so on.

3572/5572 (formerly 322/522) The Foreign Policy of the United States, seminar: 2 hrs. The staff

For description consult the department's 1975 supplement.

3573/5573 (new) The Foreign Policy of the USSR, seminar 2 hrs. The staff.

For description consult the department's 1975 supplement.

This class will focus on various aspects of Chinese foreign affairs, including Chinese motivational factors, decisional processes, diplomatic institutions, and relations with various countries and regions. Our approach however will not be chronological; rather, each week we will discuss some key issue of Chinese behavior. In each case these will be contentious issues (e.g., China does/does not make a practice of fomenting international revolution?; Chinese 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 introducting students to some elemental facts about China's international behavior, the aim of the class is to expose the crucial relationships between personal values (beliefs), conceptual choices (analytical tools) and knowledge (in- , terpretations).

rights

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 facing individuals and nations. Questions of how to preserve or achieve peace and how to prevent or win wars are intimately related.

3574B/5574B (formerly 365B/565B) Chinese Foreign Relations, seminar: 2 hrs., R. L. Dial.

3590/5590 (formerly 362/562) The Politics of the Sea, seminar: 3 hrs.; M. K. MccGwire.

Traditionally the world ocean has been used for the projection of state power, for the conveyance of goods and people, and as a source of food. Although there were disputes over its use, the sea was considered to be an unlimited and self-renewing resource, and maritime activity, largely unregulated, took place within a loose framework of customary law. Since 1945 there has been an exponential growth in the exploitation of the ocean both as a resource and as a sewer. The engine of change is technology which has increased access to the resources of the sea and its bed. It has also generated rising standards of living and exploding populations which combine to increase the pressure on natural resources and the dangers from pollution. There is a new awareness of the fact that the ocean's capacity is not unlimited and that its role in the world's ecological balance can be impaired. All nations are now fully alive to the sea's potential and all are concerned to get their "fair" share, directly or indirectly. Within the general context of negotiations on the Law of the Sea, the argument is about who gets what and who has to forego activities and access. Formerly unrestricted access and exploitation were seen as natural

This class will consider the major issues involved, the differing interests of different countries, the developing legal framework, and the political process of the on-going negotiations. Preference will be given to graduates and mature students with extra-curricular experience; students from other relevant disciplines will be welcomed.

This seminar will therefore be concerned with the problems which underlie both peace and war. It will assess various theories about the causes of inter- and intra-societal

conflicts, analyse different types of war and commonly-held ideas of how they can be prevented, and consider how to provide for social change and the resolution of conflicts without recourse to violence.

Psychology

Professors

W. K. Caird J. C. Fentress (Chairman) G. V. Goddard W. K. Honig P. H. R. James J. A. McNulty (Acting Chairman) S Nakaiima R. S. Rodger

Izaak Walton Killam Research Professor M. Yoon

Associate Professors

J. W. Clark P. J. Dunham B. Earhard V. LoLordo D. E. Mitchell B R. Moore R. L. Rudolph M. Yoon

Assistant Professor

E. O. Boyanowsky K. Bloom M. Cynader R. Klein F. J. Mortenson J. P. Wincze

Research Associates and Postdoctoral fellows

R. Adamec R. Blanchard

I. Golani A. Riley

Men see and hear, get hungry and fall asleep, and for an instant remember in great detail events which have just happened to them. Sometimes they hear but do not listen; often they remember only a fraction of what happened five minutes previously. They make love and play dangerous games solve problems and go mad, drink far more than they need to quench their thirst; and they fight. Animals behave in 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; its purpose is to discover the conditions which control the 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 those who want to find out for themselves than to those who want to be told what to believe. Although it has been the major achievement of psychology in the past two or three decades to discover the remarkable precision with which the behaviour of animals and men is controlled by their internal and external environments, - and as a student you will be expected to master the technology which has made these discoveries possible — this achievement has increased, not diminished, the challenge. We know for certain that there are at least two memory systems in the brains of vertebrates, but we do not know how these systems are linked together; we know (contrary to common sense) that things look larger the further away they seem to be, but no one understands why the moon on the horizon looks larger and closer than it does in the sky; there is reason to believe that at least some of the mental

scot-free.

The 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 only by a sense of compassion for other creatures, will be given the opportunity to use these facilities to the full.

Students enrolled in the general (i.e., three year) degree programme must take at least four and no more than eight classes beyond the introductory level in their areas of concentration. Required and recommended classes for 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 I

Year II mended.

Year III One of Psychology 304, 305, 307, or 313 is required./One of Psychology 308, 309, or 312 is recommended/Psychology 300 is optional.

Programme).

Year I

Year II

Year III

Year IV psychology.

It is possible for students to take an honours degree combining psychology with a related arts or science subject. In such a combined honours programme the student must take eleven classes beyond the 100-level in his two areas of 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) in the area that he elects as his major and in which he takes the majority of his classes. The following programme is based on the assumption that the student is taking the maximum number of classes in psychology. Any student intending to take a combined

diseases are not diseases at all, but forms of behaviour which are learned like habits - yet we do not understand why some people learn these disordered behaviours while other escape

Degree Programmes

General B.A., or B.Sc. in Psychology

Psychology 100.

Psychology 200/Two of 201B, 202A and 203A are recom-

B.A. or B.Sc. with Honours in Psychology (Major

In the major honours programme students must take the nine psychology classes beyond Introductory Psychology that are listed below. All students who intend to take an honours degree in psychology should consult with Dr. Marcia Earhard.

Psychology 100.

Psychology 200; Psychology 357; at least one other 300-level class in psychology.

Psychology 305, Psychology 307; at least one other 300-or 400-level class in psychology. If Psychology 304 was not taken in Year II it must be taken in Year III.

Psychology 465; Psychology 470; one other-class in

Combined Honours

honours degree should consult with the two respective departments to arrange the details of his programme.

Yearl Psychology 100.

Year I

Psychology 100.

Year II

Psychology 200; Psychology 357; at least one other 300-level class in psychology.

Year III

Psychology 304, one of Psychology 305, 307, 308, 309, 312, 313, 358, 450 or 464.

Year IV

Psychology 465; Psychology 470.

Other Programmes

A variety of other programmes are available in co-operation with other departments. These programmes are designed to meet the needs of students whose specific interests may lie in areas other than those covered by the major and honours programmes offered by the department. Interested students should contact Dr. Marcia Earhard for further information.

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Junior Research Assistantships

A number of Junior Research Assistantships will be available, during both the academic term and the summer vacation, to students who are taking an honours degree in psychology. Details of these assistantships, and of the stipends attached to them may be obtained from Dr. B. Earhard.

Classes Offered

100 Introduction to Psychology, lect.: 3 hrs.; tutorials, demonstrations, films and labs may be arranged as required. J. W. Clark/and other members of the department.

Experimental sections also offered which substitute individual tutorials 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 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 understanding of the ways in which an individual's environment, his past experience and his heredity control the working of his brain and the choices and decisions which he makes.

The class will be taught in a number of sections. Each section will have a number of instructors who will deal with topics basic to an understanding of psychology. The topics vary from year to year 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.

1. The evolution and development of behaviour

The idea that the behaviour of animals is controlled by instincts, and the behaviour of man by innate intelligence, is dead. So is the contending idea that man's behaviour is solely determined by his environment. We now have a clear understanding of the fact that the behaviour of man and animals depends upon both heredity and environment in much the same way as the area of a room depends upon both its length and its width. Our intelligence, for example, is a product of a complex and continuous interaction between our genetic endowment and the environments in which we exist from conception to death.

Like that of all other species, the genetic endowment of man has been shaped by biological evolution. Unlike other species, man has progressively modified his environment. Thus we are creatures both of biological evolution and of our cultural heritage. A proper understanding of the nature of our aggression, sexual behaviour, intelligence, and other characteristics must take into account our evolutionary history, our cultural history, and the often subtle interactions between heredity and environment in the course of our development.

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 the measure many of them with great accuracy. This part of the class will give you an understanding of how two fundamental forms of learning have been isolated and studied, as well as provide you with a knowledge of the laws which govern these two kinds of learning. We will also study the motivational conditions - the 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 asked to think about some of the problems in this area which are still unsolved: for instance, how do we learn to avoid (as opposed to escape from) pain, does punishment erase learning or simply suppress it, is learning a gradual process, or an all-or-none one?

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 from this world in the form of coded messages transmitted through sensory systems. Psychologists are concerned not 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 even though we view them with two eyes, psychologists have developed theories about the means used by the nervous system to signal information. These theories have often been successful in predicting which conditions affect perception.

Detailed attention will also be given to the way experience influences perception. Do animals reared without the opportunity of pattern vision tumble over 'cliffs' when first permitted to see; are normally sighted people able to avoid obstacles in the dark as easily as blind people; why do young children often confuse "b" and "d"? Questions like these have been studied experimentally, partly because of their practical implications but also to satisfy man's curiosity about the way we know the world about us.

4. Human Performance

This part of the class is concerned with the general characteristics of human proformance in a variety of situations. The discussion will hinge mainly on the idea that the mind (or the brain) acts as a device which processes and stores information. A memory is not, in any sense, a literal picture of what actually happened; it is the end product of number of complex steps in which the evidence of our senses 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 his nervous system, the limitations of his ability to attend and remember, and his past experience all force him to select and process only part of what he hears. How he does so, and how he manages to construct for himself an intuitive understanding of the grammatical rules of his native language, will serve as one of the examples in this class of the interplay of heredity,

perception and learning.

Finally, some emphasis will be given to the practical implications of the research discussed in this section for education and teaching, industrial design, and the adaptations of men to new environments.

200 Problems in Experimental Psychology, lect.: 2 hrs.; lab.: 2 hrs.; P. Dunham/and other members of the department.

This 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 content of that business which we call experimental psychhlogy.

The class is divided into two major components which are to some extent independent in the sense that: (a) there is little attempt to coordinate the topics which are covered from week to week 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 material.

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 you some orientation to the apparatus and procedures you will 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 journal reading, two textbooks are used in the class. One is Robert Plutchik's Foundations of Experimental Research, the other is Statistical Concepts by McCollough and Van Atta.

The lecture section of the class will be devoted to a discussion of experimental psychology in general. This includes reference to the specialized methodologies which have been developed by experimental psychologists and the research problems which are though to be important in contemporary experimental psychology.

Prerequisites: Psychology 100; restricted to major and honours students, but other students will be admitted with the consent of the instructor.

201B Applied Psychology: Behaviour Modification, lect.: 3 hrs.; J. P. Wincze.

The class will examine behaviour therapy procedures applied to the modification of problems in human behaviour. The emphasis of the class will not be on abnormal behaviour but rather on techniques derived from the principles of learning theory which may be used to modify problem behaviour. Discussion will cover the historical roots of behaviour therapy 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.

Boyanowsky.

The class on social issues will survey research findings of social psychology directly applicable to everyday life. The social performance involved in human interaction will be examined — that is, how we create an image for others with our mannerisms, speech, dress and the use of such nonverbal cues as posture, eye contact, and expressions. How the environment affects human relations in diverse settings ranging from abortion clinics, convents and taverns to airports will be discussed, as well as such social behaviours as, aggression, learning and altruism. Topics will vary according to current issues and may include social psychological analyses of pornography and drugs. religion and other supernatural phenomena. Prerequisite: Psychology 100.

After some of the abstract properties of measurement systems are described (e.g., representation theorems, uniqueness theorems, meaningfulness, admissible scale transformations, scale types, fundamental and derived measurement), aspects of psycho-physical measurement will be discussed. Further elaboration of measurement procedures in Psychology requires a knowledge of statistical theory. The required amount of this theory is given and then used in the context of signal detection theory and the analysis of data from paired comparison experiments. The course ends with consideration of mental test technology (especially with cognitive tests of the multiple choice type), including item analysis. reliability and validity. Class notes have been prepared by the instructor. Exercises are scheduled regularly for students to do out of class. A knowledge of higher mathematics is not necessary to understand the material in this course: a knowledge of high school arithmetic and algebra is generally a sufficient background.

Prerequisite: Psychology 100.

202A Applied Psychology: Social Issues, lect.: 3 Hrs.; E. O.

203A Applied Psychology: Psychological Measurement, lect.: 3 hrs.; R. S. Rodger.

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 experience is an issue that has occupied scientists for centuries. Recent advances have stressed the importance of documenting the developmental relationships between both genetic and experimental factors at precise periods in the animal's lifetime.

Comparative material will be presented for many different species from insects to man: and for many different behavioral systems including sensory, motor, motivational; and social. Students will be expected to seek general principles in behavioral development while also demonstrating knowledge of the diversity of developmental processes that affect behaviour in nature as well as in the laboratory.

300 Selected Research in Modern Psychology, seminar and lab.: 4 hrs.; R. L. Rudolph.

This class is designed primarily for students who wish to gain further experience and understanding of contemporary psychological research. A student who enrolls in the class chooses a member of staff who will serve as his class advisor throughout the academic year. The student will be expected to conduct independent research of his own under the

supervision of his class advisor.

Prerequisites: Previous or concurrent enrollment in two other 300-level classes; and may be registered for only with the prior consent of the instructor.

304 Learning and Motivation, lect.: 2 hrs.; lab.: 2 hrs.; R. L. Rudolph, N. Innis.

Psychology 304 deals with the fundamental principles of learning derived from research with animal and human subjects. Since most of these principles have been discovered and investigated in experiments using animal subjects, 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 thinking - in addition to more general phenomena such as transfer and forgetting. Motivation is not studied as a separate topic but is discussed in terms of its effect on learning and performance.

Laboratory sessions involve (a) experiments with animals and human subjects, (b) discussion of the applicability of learning principles to everyday behavior, and (c) an occasional film. Prerequisite: Psychology 100 (honours students); Psychology 200 or two 201A, 202B, 203A (general students).

305 Perception, lect.: 2 hrs., Lab.: 3 hrs.; D. E. Mitchell, M. Cynader.

Psychology 305 considers the way in which information about the world is provided by the senses and how we use this information in our behaviour. The material covered in the class falls into four sections:

1. The methodological and theoretical problems peculiar to the study of sensation and perception;

2. The transformation of physical stimulus energy into neural energy, and the processing of this information achieved by the nervous system:

3. The psychological analysis of sensations and their relation to the known facts of sensory physiology;

4. The effects of higher processes, such as recognition, attention, and memory, on the way in which sensations determine how we perceive the world.

The majority of the class will be devoted to vision and hearing in human beings.

The experimental work to be presented has been selected for its importance in the theoretical understanding of perceptual processes, and the student will be expected to organize his work around theoretical rather than factual questions

The lab work will consist of a general introduction to the apparatus and methods used in perceptual research, followed by experimental studies designed and carried out by each student individually.

Prerequisite: Psychology 100 (honours students); Psychology 200 or two of 201A, 202B, 203A (general students).

307 Physiological Psychology, lect.: 2 hrs.; lab.: 3 hrs.; S. Nakajima.

Physiological psychology is an attempt to explain behaviour from a biological point of view. The class begins with a review of the structures and functions of the central nervous system.

and of the sensory and motor systems. It continues with an analysis of anatomical, physiological, and biochemical mechanisms underlying perception, motivation, and learning.

Two types of background knowledge are necessary to understand physiological psychology. First, students should have general knowledge in biology, which can be obtained by taking Biology 1000. Second they should be familiar with the concepts and methods of experimental psychology.

Psychology 307 is recommended for anyone planning to do graduate study in psychology, and for students intending to study biology and medicine.

Prerequisite: Psychology 200 and at least one class in Biology.

308 Social Psychology, lect.: 2 hrs.; lab.: 1 hrs.; E. O. Boyanowsky.

This class concerns the study of individual behaviour as a function of social stimuli with emphasis on extensive student research projects and class presentations. The class develops from discussion of research designs and methods to the study of basic processes such as person perception, social comparison, and social influence, including behaviour within groups and the relations between them. What determines the impressions, how others influence our beliefs and opinions, how decisions are made, and why people discriminate against members of other ethnic groups are all topics which will be considered.

Prerequisites: Psychology 100 (honours students); Psychology 200 or two of 201A, 202B, 203A (general 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 importance in child rearing, education and guidance, but the interest of the psychologist is directed first at determining the conditions under which behaviour begins and the conditions under which changes take place. This leads some psychologists to basic studies about activity and quiescence, attentiveness, and indifference, and reactions to positive and negative consequences.

It leads others to questions about the development of intelligence, what sensory experiences influence perception, and how the child acquires such immensely complicated behaviours as those involved in speech and concept formation.

The class is experimentally oriented. Throughout, the emphasis is on learning and transfer operations with less stress on physiological and maturational processes. Because the class is intended for students with some background in experimental psychology, it deals in depth with such topics as paired associate learning, imagery, selective attention, transfer, and behaviour modification in addition to more traditional topics such as language acquisition, preceptual and social processes.

Prerequisites: Psychology 100 (honours students); Psychology 200 or two of 201A, 202B, 203A (general students)

312 Experimental Analysis of Behaviour Disorders, lect.: 2 hrs.; tutorial: 2 hrs.; W. K. Caird, J. P. Wincze.

Psychology 312 is concerned with an examination of neurotic and psychotic disorders from an experimental psychological point of view. The general purpose of the class is to present to the students current psychological thinking regarding behaviour disorders; what the major problems are and the ways in which attempts are being made to solve them. It is primarily intended for honours students and those intending to do advanced work in psychology.

This class is largely descriptive and of a fairly broad nature. The concern is with topics such as: the hypothesized biological and psychological bases of neurosis and psychosis and the various models for the study of these; the rationale and utility of diagnosis and classification; expermental methods of research into behaviour disorders; behavioural and the psychological concepts used in understanding and explaining these patterns of behaviour.

There are detailed discussions of the manipulative aspects of abnormal psychology - by drugs and various types of reinforcers. The major interest is the modification of behaviour by the use of learning theory principles, such as: operant conditioning techniques with schizophrenic patients; desensitization with phobic patients; aversion-type procedures with obsessive-compulsive 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 of ideas, each tutorial session will be limited to 10 students.

Students intending to enrol in Psychology 312 should have a clear understanding of some of the fundamental concepts of psychology and human physiology. In particular, they should be familiar with the basic notions of conditioning and learning, motivation and perception.

They should also understand the fundamentals of autonomic and central nervous system processes. In short, a thorough knowledge of a good introductory psychology text (e.g., G. A. Kimble and N. Garmezy: Principles of General Psychology, 3rd ed. 1968) is necessary if the student is to derive benefit 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 or language - with only the requirement that certain basic needs be satisfied. Within two years, a child has a well-developed memory for people, events, and words, as well as the capacity to communicate verbally with others. Cognitive psychology is not concerned with providing a description of the developmental process, but rather with ascertaining the character of mechanisms that must underly such human abilities. Cognitive psychologists ask such questions as: How does an individual recognize an object when it is in different contexts or orientations, when each shift in position or orientation produces a different contexts or

orientation, when each shift in position or orientation, produces a different pattern of stimulation on the eye? How much of daily experience is committed to permanent memory, and by what processes is it memorized? How is information stored in memory, and how is information lost from memory? In general, it can be said that cognitive psychology is concerned with developing explanations and mechanisms to account for

K. Caird.

This course will provide an introduction to psychological testing. The major emphasis will be on the assessment of intelligence.

In addition to discussing the validity, reliability and general usefulness of intelligence tests, the student will be expected to become proficient in the administration, scoring and interpretation of the Wechsler Adult Intelligence Scale, The Wechsler Intelligence Scale for Children, and the Stanford-Binet.

This course will examine the natural and, to a lesser extent, the laboratory behaviour of several intensively-studied species. Foraging and feeding, aggression and sex, predation and defence will be studied as they occur in such organisms as the honeybee, blowfly and noctuid moth, pigeon, rat and chimpanzee.

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 breadth of the subject matter, Psychology 356 is taught as a seminar dealing with selected topics in the area of advanced motivation. In addition to these special topics discussed in class, outside readings are assigned to familiarize the student with the various classic issues which have persisted in the history of thought about motivation. Prerequisite: This class is primarily intended for honours students, but other students will be admitted with the consent of the instructor.

The object of this class is to familiarize the student with the logic and application of the descriptive and inductive statistical methods that are commonly used in the analysis of data in experimental psychology. The material covered begins with the topic of frequency distributions and their characteristics, and progresses through parametric and non-parametric tests of significance, correlation and regres-

thought and language in the human organism. Prerequisite: Psychology 100 (honours students); Psychology 200 or two of 201B, 202A, 203A (general students).

315A Psychological Testing and Evaluation, lect.: 3 hrs.; W.

Restricted to honours students.

316B Behaviour of Organisms, lect.: 3 hrs.; B. R. Moore.

353B Philosophy of Science and Experimental Psychology, seminar: 2 hrs.; W. K. Honig, A. Rosenberg.

An examination of methodological and conceptual issues in experimental psychology. Topics treated include the character of explanations, general statements, theories and theoretical entities in empirical psychology, as well as particular issues in current research programmes: conceptformation in non-humans; perception studies; computersimulation. Readings from the works of contemporary psychologists and philosophers.

Prerequisites: One full course in Philosophy or Psychology beyond the 100 level, or consent of instructor.

357 Statistical Methods in Psychology, lect.: 2 hrs.; lab.: 2 hrs.; M. Earhard.

sion techniques, analysis of variance and covariance. The general approach is to introduce each of a variety of statistical methods by reasoning through the ideas underlying the topic under consideration, then discussing the general method of attacking the questions asked of the data and finally working through specific problems in class. The classes are conducted as a combination of lectures and labs, and students are encouraged to participate actively and question often.

Psychology 357 is required for honours psychology students and qualifying graduate students. Other students may be admitted with the consent of the instructor. Although mathematical sophistication beyond the principles of elementary algebra is not required for successful completion of this class, students who are weak in arithmetic and basic algebra are encouraged to consult the instructor during the summer preceding their enrolment for assistance in preparing for the class.

Prerequisite: This class is primarily intended for honours students, but other students will be admitted with the consent of the instructor.

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 been of central concern throughout the history of psychology: 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 development of perception, the causes of abnormal behaviour, etc. Speculation on such issues is traced from antiquity to the emergence of experimental psychology in the nineteenth century, and their development is examined in the work of the major psychologists. Structuralism, functionalism, behaviourism, Freudianism, Gestalt psychology - the systematic viewpoints of psychology's first century - are also examined in the writings of their proponents. Prerequisite: This class is intended for honours students, but other students will be admitted with the consent of the instructor.

450A Functions and Structures of the Nervous Systems, lect.: 3 hrs.; M. G. Yoon.

Introduction to research problems in neuro-sciences with electrophysiological methods. Prerequisites: 450A and consent of instructor.

450B Neurophysiological Laboratory, lab.: 4 hrs.; M. G. Yoon.

Introduction to research problems in neuro-sciences with electrophysiological methods. Prerequisites: 450A and consent of instructor.

464 Ethology, lect.: 2 hrs.; lab/field work: 3 hrs.; F. J. Mortenson.

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 evaluate some of the theoretical formulations.

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. Prerequisite: This class is primarily intended for honours students, but other students will be admitted with the consent of the instructor.

465 Honours Thesis, Members of the Department.

Psychology 465 is designed to acquaint the student with current experimental problems and research procedures in experimental psychology. Each student is assigned to a staff member who advises the student about research in his major area of interest, and closely supervises an original research project which is carried out by the student. Each student is required to submit a formal report of the completed research before the first of May. The final grade is based upon the originality and skill displayed by the student in designing his project and upon the submitted report. Prerequisite: Restricted to honours students in their graduation year.

470 Honours Seminars. (2 hrs.).

These are advanced level seminars designed to provide the series student with both the breadth and depth of knowledge necessary for understanding recent research in various areas of psychology. The actual times of the seminars are to be arranged in the Fall. Topics typically offered include:

(1) A. Motivation, P. Dunham

- (2) A. Human Performance, R. Klein
- (3) A. Animal Learning, R. Moore
- (4) B. Perceptual Processes, M. Cynader
- (5) B. Conditions and Learning, V. LoLordo

Other topics 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 staff member. The student is 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 requirements for admission to graduate study may be found in the Calendar of the Faculty of Graduate Studies.

Religion

Professor Wilfred Cantwell Smith (Chairman)

Associate Professor 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 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, which includes the 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 would enhance human self-consciousness at perhaps its most 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 ancient Near East; and the Judaic, Christian, and Islamic traditions.

200 Hindu and Islamic instances of faith: the Bhagavad Gita and Ghazzali's Autobiography. Reading and discussion, 2 hrs. W.C. Smith.

Prerequisite: 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 in 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 his times and for his enduring contribution to Islamic culture.

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 thinkers such as Kepler, Pascal, Newton, Goethe and Einstein, each of whom combined scientific commitment and spiritual sensibility to a very high degree and has an enormous influence on intellectual history.

Prerequisite: One class in Religion or one class in Science (preferably both)

400 Faith and Belief: A Comparative Study, seminar: 2 hrs.; W.C. Smith.

A consideration of the possibility of a generic concept "faith" as intellectualizing an apparently universal human quality. Faith as conceptualized classically in Buddhist, Hindu, Islamic, Jewish and Christian instances will be explored, and religious belief as conceptualized there and in modern Western thought. Through comparisons and contrasts the possibility will be explored of perhaps understanding

faith as a multiform human (or religious) constant. Limited enrolment. Prerequisite: knowledge of at least one classical scriptural language (Hebrew, Greek, Arabic, Sanskrit, Chinese, etc.), and preferably two; some philosophy or history of religion, preferably both.

Russian

Teaching Staff Irene Coffin Nicholas Maloff Natan Nevo

It is most evident that Russia's outstanding achievements in the liberal arts and sciences are of world-wide significance. 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 such as Mussorgsky, Tchaikovsky, Stravinsky and Shostakovich and whose scientists have gained many firsts in space exploration, research in environmental pollution, medicine, geology, oceanography and in all other walks of life.

Moreover, man's very existence will be possible only through mutual cooperation, exchange of knowledge and the pooling of each other's resources. Here is where Canadians must play a leading role in furthering a better understanding of the Soviet people. Interestingly enough, the most widely studied foreign 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. 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 vocabulary and a basis of grammatical concepts. In addition to participation in small conversation groups and tutorials, students may obtain additional help by contacting the Department. Late afternoon classes are offered in some courses to accommodate students who are unable to attend lectures in the day-time. Various extra-curricular activities such as plays, folk dancing and singing, guest speakers and films provide ample opportunities for broadening 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 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 — 19th Century Russian Literature; Russian 303 - Russian Drama; Russian 305 - 20th Century Russian Literature; Russian 306A - Dostoevsky and Russian 306B-Tolstoy; Russian 403 - Russian Masterpieces of Literature, Criticism and Thought.

Degree Programmes

(1) Russian may be taken as a foreign language in a General B.A. Degree.

- (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 Department.

Classes Offered

100 Elementary Russian, lect.: 3 hrs.: Irene Coffin/Nicholas Maloff/Natan Nevo. No prerequisites.

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.

200 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: Russian 100 or equivalent.

This course is a continuation of Russian 100. It is designed to develop translating skills with a continuing study of grammatical concepts through the study of original Russian scientific texts and other related materials.

204 Russian Culture and Civilization, lect.: 2 hrs.; Nicholas Maloff.

Conducted in English. No prerequisites.

This course traces the development of Russian culture and civilization from their earliest origins to the present day and their influence on literature, drama, art, architecture and music. Numerous masterpieces of the Russian arts will be illustrated with slides, film strips and recordings.

205 Survey of Russian Literature, lect.: 2 hrs.; Nicholas Maloff. Conducted in English No prerequisites.

When the literary masterpieces of Turgenev, Gogol, Dostoevsky and Tolstoy made their appearance in the second half of the nineteenth century, the Western world was caught totally 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 instructor.

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 topics on present day Russian social, political and scientific life.

301 Russian Area Studies, seminar; Irene Coffin.

Conducted in Russian. Prerequisites: Russian 200 or 201, or by arrangement with the instructor.

This seminar traces Russia's past through a study of its history, geography, and culture. Students present reports on various topics concerning Russian life - past and present.

302 Nineteenth Century Russian Literature - The Golden Age, seminar: 2 hrs.; Natan Nevo.

Conducted in Russian. Prerequisite: Russian 200 or 201 or by arrangement with the 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 original Russian language. Seminar discussions will be based on individual research and reports on such writers as Pushkin, Lermotov, Gogol, Turgenev, Dostoevsky, Tolstoy and others.

303 Russian Drama, lect.: 2 hrs.; Nicholas Maloff/Natan Nevo.

Conducted in English. No prerequisites.

The immense wealth of the Russian dramaturgical heritage has become an object of universal recognition. One of the world's most celebrated theatre of our time, The Moscow Art Theatre, has not only served as the stage for many spectacular premières, 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, Ostrovsky, Chekhov, Gorky, Mayakovsky and, most recently, Solzhenitsyn, is deeply rooted in the ancient Russian national folklore. Although this school constantly strove to retain its characteristically Russian national image, it evolved under the strong influence of Shakespeare, Molière, Racine and others, and has, therefore, created a unique synthesis of the best Russian 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 20th centuries.

305 Twentieth Century Russian Literature, lect.: 2 hrs.;

Nicholas Maloff Not offered in 1975-76. Conducted in English. No prerequisites.

A study is made of selected works representing the contributions to 20th century world literature by such writers as Chekhov, Tolstoy, Gorky, Bulgakov, Ehrenburg, Mayakovsky, Esenin, Pasternak, Solzhenitsyn and others.

No prerequisites.

Open to students in all departments. This course is designed to give the student an insight into Dostoevsky's creative work 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. I occupy myself with this mystery, because I want to be a man." From 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 of psycho-analysts, Dostoevsky analysed the depths of the subconscious. Yet psychology for him was not an end but a means. He remarked: "I am called a psychologist; this is not true, for I am a realist in the highest sense, i.e. I depict all the depths of the human soul."

last Resurection"

Conducted in English. No prerequisites.

Tolstoy and Dostoevsky are the two great columns, standing apart in the propylaeum of the Russian literature "Golden Age" temple. It seems Tolstoy has been given to the world for the purpose of being "constrasted with Dostoevsky", said D. S. Mirsky. Indeed Dostoevsky is considered the "surgeon of the human soul" and Tolstoy a "doctor of humanity"

Tolstoy's talents and genius enabled him to capture the search for identity in 19th century Russia and to interpret it through his own solipsism — a sense of being the great world he writes about. For him self-awareness among all people should be based on "reason, that is, good"

instructor.

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306A Dostoevsky, lect.: 2 hrs.; Nicholas Maloff. Conducted in English.

The existence of God has also "tormented" his entire life and he foresaw history in the light of the Apocalypse to be culminated in the transfiguration of the world by the "new and

306B Tolstoy, lect.: 2 hrs.; Natan Nevo.

Open to students in all departments. This course is designed for students wishing to become acquainted with Tolstoy's thoughts and ideas through an analysis of his major works.

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 required to do translations and exercises in syntax, and to perfect Russian stylistics in their oral conversations and written essays on various subjects. The history of Russian grammar and the literary language will also be studied.

403 Russian Masterpieces of Literature, Criticism and Thought, seminar: 2 hrs.; Nicholas Maloff. Not offered in 1975-76.

Conducted in Russian. Prerequisite: Russian 300 or by arrangement with the

This course is an in-depth study of representative masterpieces in the original from the Ancient Kievan era to the present dealing with literature, literary criticism and thought.

499 Russian Special Topics, staff. Prerequisite: Russian 300 or equivalent.

This course is designed to offer the student an opportunity to work with an advisor and to research subjects which are not regularly offered by the Department. These may include literary, linguistic or other topics related to Russian studies. Students who wish to register for a specific programme should consult the chairman of the Department.

Sociology / Anthropology Sociology

Professors T. Bottomore J. J. Mangalam

Associate Professors

- D. F. Campbell (Chairman) D H. Clairmont D. H. Elliott J. L. Elliott H. V. Gamberg J. G. Morgan
- V. Thiessen

Assistant Professors

R. Apostle G. D. Bouma P. Butler P. G. Clark

J. D. Stolzman M. Waters

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 conformity and nonconformity, and social problems such as 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 include research in government, industry, 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 discussion in small tutorials. Students with high school Sociology may be permitted to take selected 200 level classes without having taken Sociology 100. 200-level classes include all the classes normally taken by students concentrating in sociology. 300-level classes are structured primarily as seminar courses and ordinarily presume a fair degree of familiarity with the discipline. 400-level classes are restricted to honours students and qualifying graduate students.

Degree Programmes

Sociology and anthropology are both approved fields for concentration. In addition, the department offers honours programmes in sociology and anthropology. An honours degree is recommended, and frequently required, preparation for most advanced work in sociology and anthropology. Interested students are invited to contact the Undergraduate Advising Committee (sociology) and anthropologists on staff (anthropology) for detailed advice on application and requirements for both programmes. Normally, an application for honours study is made on the basis of the results of the second year, i.e. towards the end of your fourth semester. Study space and limited financial support are available for honours students.

B.A. with Honours in Sociology

The nine sociology classes above the introductory level

degree.

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 concentration. Recommended classes for students who intend to major in sociology are listed below.

Yearl

Year II

Year III

A supplement to this list of classes containing additions 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 the Department or at the registration desk.

Stolzman

Sociology 100 is designed to provide both a general introduction to the discipline of sociology as well as a foundation for more specialized study in the field. Emphasis in this class will be placed on basic sociological concepts, the nature of the sociological perspective, the logic of social inquiry, and recurrent theoretical and methodological problems of the discipline. In addition, some of the more important areas in sociology will be surveyed. In particular, this would include the study of family and kinship relationships, deviant behaviour, political and religious institutions, bureaucracies

required for the honours degree should include statistics (301), research methods (310), two classes in theory (401A, 405A/B), and the honours seminar 450. The seminar paper produced in 450 will be examined as an honours thesis, to be presented in an open meeting. This will fulfill the university requirement that a student pass a comprehensive examination covering his honours work in order to receive an honours

Combined and Unconcentrated Honours.

The combined honours programme can be taken with economics, political science, philosophy, anthropology, and

General B.A. in Sociology

1. Sociology 100

At least one of Anthropology 100, Economics 100, Political Science 100, or Psychology 100.

3-5. Three classes chosen from fields other than sociology.

6. Either Sociology 201 or 224.

7-8. Two other classes in sociology.

9-10. Two classes chosen from fields other than sociology.

11-13. 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. For this programme as well as the unconcentrated honours programme (cf. p. 12), an early consultation of instructors and the Undergraduate Advisor is essential.

Canadian Studies Programme

The Department is cooperating with several other Departments in offering a Canadian Studies Programme. Interested students should contact Professor P. G. Clark.

Sociology Classes Offered

100 Introduction of Sociology, lect.: 2 hrs.; tutorial: 1 hr.; G. D. Bouma, P. G. Clark, J. L. Elliott, J. J. Mangalam, J. D.

and complex organizations, ethnic and minority group relations, population trends, social stratification, and urbanization

201 Figuring Out Society, lect .: 2 hrs.; tutorial: 1 hr.; D. H. Elliott.

This course is designed for students who for reasons of curiosity or practicality wish to acquire the skills used by sociologists to analyze social phenomena, but find themselves intimidated by statistical tables and mathematical symbols. A variety of quantitative and qualitative methods will be introduced which will enable the student to understand and evaluate both fact-finding and problem-solving studies of social phenomena which are routinely carried out not only by academic sociologists, but also by practitioners in such fields as business, government, social work, public health, and education. Emphasis will be placed on the progressive refinement of a research project of the student's choice.

202 Comparative Sociology, (not offered in 1975-76)

203 Deviance and Social Control, lect .: 2 hrs.; tutorial: 1 hr.; D. F. Campbell.

Groups make formal and informal rules in an attempt to regulate and make predictable the behaviour of their members. Violations of these rules occur in many different ways and stem from various causes. The purpose of the class is to examine both the processes by which groups make rules and the reasons why these rules are violated. Specific issues such as crime, delinquency, narcotic addiction, alcholism, prostitution, suicide, and minority group relations are discussed in this context.

204 Social Stratification, lect.: 2 hrs.; discussion: 1 hr.; R. 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 considered.

Questions of the distribution of power and wealth in society, the existence of power elites or governing classes, the impact of bureaucracy on class relations, the extent to which major economic inequalities have been reduced in this century, problems of the mobility of individuals and the groups through the stratification system and the impact on social structure are dealt with. Theoretical discussions in the class are largely concerned with the ideas of Karl Marx and Max Weber, but attention is also paid to contemporary theoretical approaches to stratification.

205 Sociology of Religion, lect .: 2 hrs.; tutorial: 1 hr.; G. D. Bouma.

This class analyzes the relations between religious beliefs and human behavior and social structure. Major themes include: the impact of social structure on the development of belief systems; the question of whether beliefs guide and direct human behavior; the formal organization of the religious institution, social psychological considerations of religious behavior. The primary focus is on current religious movements in Canada.

206B Social Change and Modernization, lect.: 2 hrs.; tutorial 1 hr.; H. V. Gamberg

This class is primarily concerned with the social and economic

problems of underdevelopment in the Third World, with emphasis on the political and economic relations between industrially advanced and backward countries, and the forms which these relations have taken since political independence. An attempt is made to identify the economic and social causes of underdevelopment in this relationship. Critical attention is also paid to the traditional nature of pre-industrial societies and values as obstacles to industrialization and social change.

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207 Socialization, lect.: 3 hrs.; W. N. Stephens

Comparative materials on childhood and adolescence in a variety of societies will be presented. Interpretation of youth problems as resulting from special features of modern society will be reviewed. Effects of age-segregation, prolonged schooling, and delayed opportunities for work will receive special emphasis.

Socialization into teenage peer groups will be considered, as will professional socialization within selected university programmes in medical training. The students will participate in a research project which will include fieldwork on student life, and questionnaire, interview, and autobiographical material.

207A Socialization, lect.: 2 hrs.; seminar 1 hr.

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, initiation rites, re-socialization of adults, conformity, internalization of norms, and expectation formation. Although theoretical issues will be examined, primary emphasis is placed on empirical research findings in the areas of experimental social psychology and symbolic interactionism. An empirical research project is required.

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 features of natural communities as the ecology, neighborhood social networks, the power structure, and behavior in public settings. Both the rural village and the metropolis is dealt with, in addition to such sub-communities as ethnic ghettos, slums, suburbia, and bohemia. Emphasis in the second term is on intentional communities such as utopian colonies, communes, company towns, and religious communities. Students are expected to design a model of an intentional community.

211 Canadian Society, lect. 3 hrs.; M. Waters.

An analysis of selected aspects of Canadian society employing theoretical perspectives and empirical materials. The aim of the course is to develop a composite view of the society as a whole through an understanding of the interrelationships between its parts. Major foci will include the integration and survival of Canadian society, structural change, and the management and consequences of inequality. Prospects for the future of Canada will be discussed in terms of these characteristics.

212 Minority Groups, lect.: 2 hrs.; tutorial: 1 hr.; J. L. Elliott.

The social status of minority groups will be examined in the light of contemporary theories of prejudice and discrimination. The societal consequences of discrimination will be considered with respect to their effect on both minority and majority groups. Special emphasis will be placed upon an analysis of Canadian minorities.

213A Complex Organizations, lect.: 2 hrs.; tutorial: 1 hr.; M. Waters.

This class makes a critical study, from the comparative point of view, of theoretical models for the analysis of complex organizations. Students will examine the classical, structuralfunctionalist, and management science approaches to organizations. The class will entail a systematic survey of the sociological literature on this subject, with special concentration on organizational structure, strategy and decisionmaking.

214B Industrial Sociology, (not offered in 1975-76)

215 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. D. Stolzman.

This course is designed to introduce students to the major concepts and theories which inform the sociological study of politics. In addition to this general orientation particular attention will be devoted to the role of power and ideology in Western society, the interplay between economy and polity in contemporary North America, and political transformation as a social process.

220 Sociology of the Family, lect .: - 2 hrs.; tutorial: 1 hr.; P. Butler

Family in one form or another is an aspect of all societies. It is the most important agent of early socialization and personality formation. The first part of the course will be devoted to a consideration of some of the cross-societal characteristics of family in general, and of the extended family as found in traditional societies in particular. The second term will be devoted to a consideration of family characteristics in urban-industrial societies, concentrating on the nuclear family. An attempt will be made to understand the processes by which family's structures and functions have changed through time as societies evolved from a traditional to an urban-industrial social organization.

222 Social Psychology, lect.: 2 hrs.; tutorials: 1 hr.; V. Thiessen.

An intensive consideration of selected problems concerning how individuals relate to groups. Theoretical and methodological issues will be equally stressed in an integrated fashion.

224 Sociological Theory - An Introduction, lect.: 2 hrs., tutorials: 1 hr.; J. G. Morgan

The class provides a systematic introduction into major topics in sociological theory. During the first term classical theorists up to 1920 are treated (Saint-Simon, Marx, Weber, Durkheim, Pareto, etc.). During the second term, more recent theoretical developments within the field are dealt with.

301 Statistics, lect.: 3 hrs.; V. Thiessen.

This class is designed to give the student some experience at an elementary level with those branches of statistics which are most frequently used in the social sciences. In particular the student will learn when and how to use non-parametric tests. He will also be given a general introduction to factor analysis.

303 Social Problems and Social Policy, seminar: 3 hrs & D. H. Clairmont.

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The class will treat change, modernization, and development as distinct but related notions. Beyond examining the meanings and implications of these terms, an attempt will be made to outline some of the complex processes involved in planning for national development of traditional societies. For purposes of concrete illustrations, the class will focus on the problems of South Asia.

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 conflict in contemporary society, with special reference to patterns of conflict and change in Canada. The course requirements will likely include submission of term paper.

313A Sociology of Health and Illness, seminar: 3 hrs. (not offered in 1975-76)

This seminar focuses on the policy implication of research into various social problems. It addresses the issue of moving from delineation of a social problem, to doing the necessary research, to the development of policy relevant to the problem and considers issues in problems of implementation of policy.

306A Modernization and Development, lect .: 2 hrs.; seminar 1 hr.; T. Bottomore.

309 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 of the three major components of demographic change: fertility, morality, and migration, with emphasis on their social, economic, and political causes and consequences.

310 Research Methods, 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 include the construction of theory, the formulation of research problems, research designs, measurement, methods of data collection, and analytic theory testing. Special attention is given to the sample survey as one of the main methods of social science research. Practical experience in survey methods is proved through a class project.

311 Sociology of Leisure, lect., 3 hrs. (not offered in 1975-76)

312B Social Conflict, seminar 3 hrs.; J. D. Stolzman.

316 Sociology of Education, seminar. 3 hrs. See Education 401

318A Issues in the Theory of Society, seminar: 3 hrs. (not offered in 1975-76)

319 Social Movements, seminar: 3 hrs.; D. F. Campbell

This seminar examines both conventional (formal) and contemporary (action) approaches to social movements ---viewed as efforts by individuals and groups to challenge culture-values, social institutions and/or a political order. Focus is upon participant observation, with particular attention to developments in Nova Scotia and the Atlantic region.

320 Social Change and the Canadian Society, seminar: 3 hrs. (not offered in 1975-76)

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 adulthood. Theories of careerdecision and vocational maturity will be reviewed; the student will contribute to a class research project on university career-choice problems. Also treated will be the changing occupational structure and its effects on youth's opportunities; and recruitment and career lines in selected occupations.

331 Time and Society, seminar; 3 hrs.; D. H. Elliott.

This class will deal with the way man organizes and budgets time. Of particular interest will be the dichotomy in Western society between work time and leisure time. In particular, the class will deal with the historical and cultural origin of leisure time as a major social phenomenon, with factors affecting variations in amount and use of leisure time among individuals in Western society.

401B History of Sociological Thought, seminar: 3 hrs.; M. J. Waters.

An examination of the development of classical sociological theory. Major theorists will be compared with special reference to their discussions of the development and structure of modern society and their contributions to contemporary sociology. Those contributors under discussion will include the British empiricists, Spencer, Marx, Durkheim and Weber.

405 Contempory Sociological Theory, seminar: 3 hrs.; T. Bottomore.

In this class a number of recent theoretical developments in sociology will be critically examined. The choice of specific theoretical topics will be left up to the instructor

450 Honours Seminar in Sociology, 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 individual student's honours programmes.

451A Readings in Sociology

451B Readings in Sociology

452B Readings in Sociology

In a reading class the student is assigned to a member of staff for regular meetings to discuss readings in a selected area. Papers and research projects will be expected.

Anthropology

Professors L. Kasdan W. N. Stephens

Assistant Professors

J. H. Barkow R. R. Larsen V. Miller

Lecturer B. Preston (Part-time)

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, anthropological 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 topics include language structure and classification, and techniques for analyzing languages not previously studied. Physical anthropology is concerned with the biological evolution of our own and related species and the distribution of physical characteristics of mankind in living populations. Social/cultural anthropology is the study of culture and social organization.

A background in anthropology provides a broad view of the human animal, his diverse cultures and his biological background. Such an orientation is an antidote to provincialism and an invaluable perspective for interests and studies in the other social sciences, the humanities, psychology, and the biological, medical, and legal disciplines.

The anthropology programme has affinities with several other social science disciplines, including economics, history, political science and sociology. Formerly, anthropologists 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 theoretical persepctives to such diverse areas as mental institutions, 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 Anthropology 100, the student will be introduced to all of the subfields of the discipline, while higher level offerings will permit him to concentrate on his specific concerns.

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 supervision, of an honours thesis. The thesis must be acceptable to at least two members of the anthropology staff. Applicants to the programme are asked to contact 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 accordance with University regulations, a student must pass a comprehensive examination covering his honours work in order to receive an honours degree.

100 Introductory Anthropology, lect.: 3 hrs.; Staff.

This class will be restricted to approximately 20 students and will be held at the Nova Scotia Museum on Thursday afternoons from 3:30 p.m. to 5:00 p.m. during the second term. Additional meetings may be arranged during the term. The following topics will be covered: archaeology and its relationship to history and prehistory; the origins and growth of the discipline of archaeology; the application of archaeological techniques in the field of prehistory; the excavation of a site; the establishment of a chronological framework; the reconstruction of the prehistoric past; an outline of the reconstruction of the prehistoric past; an outline of the prehistory of Eastern North America; the prehistory of Nova Scotia. The course will also involve practical work 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.

B.A. with Combined Honours

Students may take a combined Honours programme in Anthropology and either Psychology or Sociology, provided they consult early with the appropriate departments. Combined Honours with Anthropology and other disciplines may also be possible, if the departments concerned agree.

African Studies Programme

The Department is cooperating with several other Departments in offering an African Studies Programme. Interested students should contact Professor J. H. Barkow.

Anthropology Classes Offered

As a general rule, most classes above the 100 level require either Anthropology 100 or permission of the Instructor as a prerequisite. Because Anthropology at Dalhousie is a relatively new programme, you will find that for most classes permission is given more or less automatically.

A supplement containing additions to and deletions from this list of classes will be issued by the Department. Students in their second and subsequent years are urged to pick up a copy of the mimeo "Anthropology Classes for 1975-76," available beginning March, 1975, from any anthropology professor or in Rms. 415B and 322 Forest, and at registration.

If you are deeply interested in an aspect of anthropology for which no class is offered, you are invited to discuss the possibility of a reading or experimental class with the faculty.

This class is intended to introduce students to all subfields of Anthropology. Topics will include man's evolutionary past, his relationship to other species of primate, his physical structure, and some of the biological factors involved in his social behaviour. The second term will treat the varieties of human societies in terms of levels of social and cultural integration ---from isolated hunting groups through bands, kingdoms, etc. Various modes of analysis will be used, e.g., ecological, evolutionary, etc., 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.

200B An Introduction to Archaeology: B. Preston.

210 Cultural Ecology, lect.: 3 hrs.; R. Larsen.

The focus of this class will be the contributions ecological

factors make to variations in cultures and patterns of social organization. The relationship between subsistence patterns 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 emergence 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 seminar, and two term papers are required.

This class will be offered either as a full class or as a "B" class in 1975-76. Consult the mimeo, "Anthropology Classes," or the time schedule, before registering.

Prerequisite: Anthropology 100 or permission of instructor.

220A Social Anthropology, lect.: 3 hrs.; L. Kasdan.

An examination of alternative ways of analysing culture and society. Illustrative case studies will be used which represent a variety of geographical areas, types of society (i.e., from simple band or urban industrial) and theoretical perspectives. Since different theoretical perspectives have been applied to specific institutions (economic, political, religious, kinship, etc.), such institutions will be examined where appropriate. Consult the mimeo, "Anthropology Classes," to see if offered in 1975-76.

Prerequisite: Anthropology 100 or permission of instructor.

222 Psychological Anthropology, lect.: 3 hrs., Staff.

This class deals with the areas of overlap between psychology and anthropology. Topics to be covered include: culture and personality; methodology; culture and mental health; ethnopsychiatry; culture change and mental health; evolution of psychocultural capacity; and biosocial psychological anthropology. A paper will be required. Not offered in 1975-76. Prerequisite: Anthropology 100 or permission of instructor.

226A Culture and Political Behaviour, lect.: 3 hrs.; L. Kasdan,

Political systems examined comparatively. Relation between political 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, such as sociolinguistics, ethnoscience, and language change, will be examined. The relation of language to culture will be considered, drawing on examples from primitive and complex societies. Students will also learn to record sounds phonetically, and to analyze the sounds and words of a language into meaningful units for the speakers of that language.

Prerequisite: Anthropology 100 or consent of the instructor.

229B Anthropological Study of Religion, lect.: 3 hrs., J. Barkow.

This class introduces the student to the study of non-Western

belief systems. Emphasis will be on the religion of small-scale societies, treated from the perspective of religion as a system of symbols giving meaning to the universe and one's place in it. Topics will include religion as a biological phenomenon, the nature of ritual, religion and healing, religion and altered states of consciousness, sorcery and witchcraft, religion and culture change. Consult mimeo "Anthropology classes" to see if offered in 1975-76.

Prerequisite: Willingness to write a term paper and to participate in class discussion.

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) A review of the North American culture areas: Eskimo, Canadian Indians Eastern Woodlands, Northwest Coast, California, Basin-Plateau, Southwest, and Plains; (3) Modern Indian problems. The class grade will be based on several quizzes, and on two term papers.

Prerequisite: 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 distinguish peasant from other types of societies are dealt with. Various models for describing and analyzing the behaviour of peasants (economic, political, religious, psychological, etc.) are examined. Their applicability to traditional Canadian fishing communities, and to French Canada, are examined. The role of peasants in modern social change is a major focus. Consult the mimeo, "Anthropology Classes," to see if offered 1975-76.

Prerequisite: Anthropology 100 or permission of instructor.

306A The Social Organization of Pre-Literate Societies, lecture, 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 participation in modern markets (e.g. Maritime fisherman, etc.). Not offered in 1975-76.

Prerequisite: Anthropology 100 or permission of instructor.

307 Biosocial Anthropology, lect.: 3 hrs., J. Barkow/R. Larsen

The theme of this class is that many human characteristics, both individual and social, are species traits and are the product of biological evolution. (Anthrop 307 stresses the theoretical basis of biosocial anthropology, while Anthrop 308 emphasizes empirical biosocial research.) Topics to be discussed include the synthetic theory of evolution, the nature of sociocultural 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 1975-76.

Prerequisite: Anthropology 100 or some background in biology or psychology.

308 Biosocial Research, lect.: 3 hrs., R. Larsen/J. Barkow.

or psychology, or permission of instructor.

316 Africa: 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 subject areas rather than ethnic units or geographic regions. Topics to be discussed during the autumn session will include general background, family and social organization, economics and livelihood, politics and government, and personality and socialization. During the spring session our focus will be on contemporary, rather than colonial or pre-colonial Africa. The major topic will be the influence of modernization on urban and rural life. A paper will be required. Students in Dalhousie's African Studies Program are cordially invited to register for this class.

320A, 320B Readings in Anthropology. (not offered in 1975-76.

This class is intended for students who wish to delve deeply into a subject for which no appropriate advanced class is offered. The student and professor jointly decide on the requirements for the course.

Prerequisite: Written permission of instructor.

325 History and Theory of Anthropology, lect.: 3 hrs.; V. P.

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. Prerequisite: Anthropology 100 or consent of the instructor.

330 The Family and Socialization in Crosscultural Perspective. (Not offered in 1975-76.)

331 Cross-Cultural Study of Socialization, lect.: 3 hrs., Staff. (Not offered in 1975-76.)

332B Ethnohistorical Method, sem.: 3 hrs.; V. Miller. (Not 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 of geographical areas and societal types. We will examine the problems of integration in the new states of the Third World as well as the resurgence of ethnicity as a political factor in old states (e.g. Canada, Spain, Belgium, etc.). We will examine various explanatory models for these problems (e.g., class, plural society, etc.). Not offered in 1975-76.

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451 Proseminar in Anthropology: Staff.

Intensive examination of major issues in anthropology. The first part of the class is devoted to a survey of major issues current in the field. During the second part, the student will present to the seminar his formulation and analysis of a particular problem.

452 Supervised Readings in Anthropological Theory and Method, tutorials: Staff.

Prerequisite: One of the following: a course in Sociology or Anthropology, Political Science or History.

The student should secure written permission of the instruction before registering for this class. The student and his instructor will plan a programme of readings appropriate to the former's interests and background.

453 Readings in Ethnology, tutorials: Staff.

The student should secure written permission of the instructor before registering for this class. The student and his instructor will plan a programme of readings essentially dealing with a geographic area (or areas).

459 Honours Thesis, tutorials: Staff.

This class carries two credits. The student writes an honours thesis under the supervision of his principal advisor.

Spanish

Associate Professors S. F. Jones, Chairman A. Ruiz Salvador

Assistant Professor I. A. Luraschi

Lecturer

H. Williams

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 emerging nations struggle for independence and a new political identity. Students of political science, economics, commerce, sociology-anthropology, psychology, literature, history, and other academic disciplines will feel increasingly interested in Latin American studies as new solutions are adopted by these nations to modern-day problems.

Knowledge of the Spanish language will be useful to all Canadians seeking careers as diplomats, members of the foregin service, bankers, politicians, businessmen, interpreters, translators, teachers, professors, critics, editors, journalists, and many others.

It goes without saying, of course, that a knowledge of Spanish would be of great benefit to anyone planning to travel or live in Spanish-speaking countries. Our beginning language course especially emphasizes conversational Spanish, and our Department awards some travel grants to outstanding students so that they may spend the summer living with Spanish-speaking families abroad. In this way we hope to acquaint students with the culture of the countries they are studying, as well as help them to acquire some measure of fluency in the language.

It is also a widely recognized fact that some of the best novels and poetry are coming out of Latin America today, providing stimulating and challenging material for many of our literature classes.

If your tastes and abilities lie in the direction of Spanish studies, you should consider the possibility of taking a Bachelor's degree with Honours in Spanish, or with Honours in Spanish and another subject combined. Those who wish to do so, or to take Spanish as an area of concentration in a General Bachelor's degree course, are encouraged to discuss the matter at any time (but the earlier the better) with a member of the Department. An Honours degree is usually required for or facilitates access to graduate studies.

Spanish Degree Programmes

General Bachelor's Degree

Course should include: Spanish 102, 202, and either 230 or 240.

Two or more classes from the 300 or 400 level (two must be conducted in Spanish).

Bachelor of Arts with Honours in Spanish

Course should include:

Yearl

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. Chairman for variations on this programme.

Year II

- 6-8. Spanish 202, 230 240.9. Class in the minor subject.
- 10. Elective.

Year III

- 11-13. Spanish 304, 336, 341.
- 14. Class in the minor subject.
- 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. Two electives.

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.

Programmes may be arranged by consultation (as early as possible) with the departments concerned. Students planning a combined Honours course should consider, however, that the number of classes taken in either subject might be insufficient for admission to many graduate programmes without at least an extra year's work.

Notes:

(1) The "other" classes chosen as electives in the programmes outlined above must satisfy general degree requirements.

(2) Combinations of classes other than those set forth above should not be chosen to fulfill degree requirements without the 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 of prior knowledge of the language. Such a student, however, (except as he may be granted transfer credits in the usual way), must normally take the same total number of classes as other students in the same course.

Classes Offered

102 Beginning Spanish, lect.: 3 hrs.; Language lab.: 2 hrs. per week

For students with no knowledge or only a slight knowledge of Spanish.

This course is designed for students wishing to achieve proficiency in spoken and written Spanish. Class sections are limited to fifteen 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 controversial subjects that young people in Spanish-speaking countries are likely to discuss: the pros and cons of going to college, the 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.: as needed.

This class continues and completes the work begun in Spanish 102. *Prerequisite:* Spanish 102.

230 Introduction to Spanish Literature, lect.: 3 hrs.

Introduction 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 literature 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 disillusionment, appearance and reality, chivalrous love and wordly love. All truth is 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 superior to that of all the "sensible" people who judged him to be mad.

304 Composition, lect.: 3 hrs.

Training towards accuracy in reading and writing Spanish. Exercises in translation from Spanish to English and from English to Spanish; grammar, vocabulary building, free composition.

Prerequisite: Spanish 202.

336 Spanish Prose of the 20th Century, lect.: 3 hrs. *Prerequisite:* Spanish 202 (Spanish 304, which may be taken at the same time, is strongly recommended).

341 Latin-American Prose of the 20th Century, lect.: 3 hrs. *Prerequisite:* Spanish 202 (Spanish 304, which may be taken at the same time, is strongly recommended).

400 Introduction to Spanish Linguistics, lect.: 3 hrs

Students will study new methods of linguistic analysis and increase their competence in Spanish through a series of practical exercises based on the theoretical approach taken in class.

Prerequisites: 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 Reading Course for Honours Students.



Theatre

Faculty

Alan Andrews Gordon Gordey Lionel Lawrence, Chairman **Robert Merritt** Arthur Murphy, Visiting Professor **David Overton** Peter Perina, Scenographer Pat Richards Graham Whitehead

Special Instructors

David Dague, joint appointment Neptune Theatre (Properties) Robert Doyle (Design, costumes) Anne Hardcastle (Voice & Speech) David Mardon (Technical Director) David Renton (Makeup) Pam Ritchie (Costumes) Ian Thomson (Construction) Vladimir Vit (Perspectives)

Theatre is a performing art. It is rich, complicated and involves refined creative work in many different fields. The Dalhousie theatre programme is a concentrated one, runs for four years, allows for choice by the individual student, and has certain 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 of 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 it.

The theatre programme demands certain firm requirements and at times allows for choice by the student. The intention is to 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 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 their studies can, in most cases, adjust their direction.

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-professional companies is encouraged.

Students who wish to study the theatre should draw up a plan of studies for a four-year programme. Each student should consult with the department chairman to make sure that the appropriate prerequisities are met and that the proposed programme falls within the university requirements for a dearee.

The department is located in the theatre wing of the Dalhousie Arts Centre. The theatre wing is a self-sufficient unit involving one theatre, two studios, a roof theatre, and supporting workshops.

The department is developing close collaboration in certain theatre work with the Neptune Theatre. There are also opportunities to participate with other theatre groups who perform in the city of Halifax

Some theatre classes by the nature of the work involved have a restricted enrolment. All students wishing to take any class in theatre should therefore first consult with the department.

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 are open to anyone who is interested in the topic

How to Plan Your Programme

Step 1. Read the faculty regulations for: a) first-year requirements (5.1.1), and b) honours programmes (5.3 and 5.3.51). Make sure you understand these.

Step 2. Read the descriptions of the theatre classes. Understand that of the nine theatre classes you will take after first year there are two particular theatre classes you must 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 vear.

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 recommendations and Theatre 399 description.)

Year 3: Five classes. Three in theatre; three third-year theatre classes (again see our programme recommendations 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 classes.

Recommended Options in the Theatre Programme

Theatre students pursuing an honours theatre degree can arrange their theatre classes in several ways. The department recommends three particular arrangements:

No. 1 The general one.

- Year 2: Theatre 201, 270 and 280.
- 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: Theatre 201, 202, 280,
- Year 3 Theatre 380, choice of two third-year classes.
- Year 4: Theatre 490, plus choice of two fourth-year classes.

No. 3. The scenography stream.

Year 2: Theatre 201, 270 and choice of one second-year class.

Year 3: Theatre 371 and choice of two third-year classes. Year 4: Theatre 490, plus choice of two fourth-year classes.

Each year offerings are being strengthened and in certain areas further professional training opportunities are introduced. Before registering for 1975-76 students should contact the department for information on recent developments.

Combined Honours

Combined honours programmes of study in which theatre is related to some other discipline studied at Dalhousie also exist. Interested students should apply to the department for further information.

Classes Offered

Year 1

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 what the theatre reveals about societies. Important plays, in script, 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 to appreciate and enjoy the theatre

Theatre 150: An Introduction to Theatre Studies, 6 hrs.

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 participate in evening production work, and should not enrol in night classes.

Year 2

Theatre 201: The, History of the Theatre, 3 hrs. lect., discussion, demonstration.

This class is designed to provide the student with a basic and comprehensive understanding of the development of theatre and drama. Emphasis will fall on the crucial phases of that development, the classical theatre of Greece, the theatre in the medieval period and in the Renaissance, and the evolution of the modern theatre.

Theatre 202: Modern Dance, 6 hrs.

This basic dance class is designed to introduce the student to the theories and techniques of modern dance; the use of space, rhythm, dynamics, kinesthetic; and aesthetic awareness and composition. The development of personal expression through the medium of dance will also be encouraged within the class.

Theatre 220: Creative Drama, Second summer session 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 personal development and to heighten learning ability. The class considers how best to adapt creative drama to school situations. Improvisations, theatre games and dramatizations of social issues make up part of the class; various approaches to drama in education are considered. Regular practice runs through the class and each student taking it will work out a detailed syllabus for subsequent use.

the instructor.

Theatre 280: Acting 1, 6 hrs.

Year 3

prepared.

Part of this class involves an examination of the history of art from the theatrical point of view; part of it includes the basis for technical drawing and theatre construction; and part of it involves directed work in the various technical phases of stagecraft.

Theatre 380: Acting 2, 6 hrs.

vear.

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 approved theatre work under faculty direction, either in cast or crew. Students will normally accumulate eight separate pieces of work for this credit. A student can enrol in this class in his third year, only if he has completed five approved pieces; the three remaining pieces of work will be specifically assigned. Grading will be on a pass/fail basis.

Year 4

programme.

Theatre 270: Scenography 1, 6 hrs.

This class examines two-dimensional design, colour composition, perspective, and three-dimensional design. Students will undertake considerable drawing and basic design practice. Before enrolling in this class each student must consult with

This class involves work in movement, improvisation, role playing, voice and speech, and scene study.

Theatre 301: Introduction to Film, 3 hrs.

This is an introductory class for students with no background in film. Each week a film is screened and analysed. The class also involves an examination of film history, genre, and techniques, and requires extensive viewing of films outside those shown in classes. This is not a class in film production.

Theatre 360: The Playwright in the Theatre, 6 hrs.

Prerequisite: Completion of second-year honours theatre

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 for a theatrical event, a structural analysis of existing scripts and practical explorations of the ways in which a script can be

Theatre 371: Scenography 2, 6 hrs.

Prerequisite: Theatre 270.

Prerequisite: Theatre 280

This is an advanced class in acting involving movement, role playing, character study, and scene work.

Theatre 399: Production

Prerequisite: Only available to third-year honours theatre students who have planned to take this class from their first

Theatre 450: The Modern Theatre, 3 hrs.

The modern theatre has been characterized by successive bursts of creative energy and experiment. This class gives students an opportunity to study these developments in detail and to examine several important theatrical theories. Their implementation in particular plays and in theatrical practice will also be examined.

Theatre 460: Directing, 4 hrs.

Prerequisites: Theatre 360 or 380

The procedures that lead to theatrical events are analysed in this class. Specific and directorial theories are explored and tested. The work in the class involves directing scenes and at least one production.

Theatre 470: Special Topics

Prerequisite: Only available to fourth-year concentrated honours theatre students.

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 out to tackle that problem as far as the theatre is concerned. It looks at the various hypotheses and critical strategies that have been devised hitherto, and attempts to judge their present worth. It also asks what critical values are necessary for the survival and future growth of the theatre. Practical work will form a part of the work of the group when it becomes necessary to test theories in practice.

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 at other universities.

