Calendar 1996-1997

Your Future is Here

Nova Scotia Agricultural College

A.S. Payne
Chemistry & Soils

Serving Atlantic Canada

Your Future is Here

Nova Scotia Agricultural College

Ninety-first Annual Calendar

1996-1997

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MISSION STATEMENT

The Nova Scotia Agricultural College takes a leading role in providing education, research and public service in the agricultural and food industries and related disciplines. The College is dedicated to helping people acquire the skills, wisdom and independence needed for a lifetime of learning and contribution to the well-being of Atlantic Canada and other regions, both Canadian and international.

STATEMENT OF VALUES

In support of their mission, the faculty and staff of the College espouse the following values:

Excellence
We seek to achieve excellence in all we do. Our evaluation of ourselves and our students should reflect this high standard. We seek continuous improvement in our teaching, research and service and expect from our students, faculty and staff a dedication and commitment to these pursuits.

Leadership
We provide leadership in the pursuit of truth, innovation and solutions to problems encountered by the agriculture and food industry and rural communities. We seek to provide our students with opportunities to develop leadership skills, wisdom and independence.

Cooperation
We seek cooperation and partnership with industry representatives, government agencies and other universities and colleges in Canada and around the world.

Accessibility
We strive to make our programs accessible to all.

Community
We are responsible for ensuring a safe, healthy, motivating environment for the entire College community. We also have a commitment to the wider human community to act with equity, charity and responsibility both as an institution and as individuals comprising the institution.

Accountability
We cherish the ideals of academic freedom and individual rights while recognizing the importance of personal and professional integrity and accountability for our actions. We operate in a fiscally responsible manner with all funding groups.

Environmental Responsibility
We seek to act respectfully and responsibly towards the environment and to provide leadership in soil and water conservation.

Respect and Fairness
We are dedicated to our students and to their pursuit of skills and knowledge. We respect all persons without prejudice or discrimination. We respect the opinions of others and encourage open debate. We strive to deal fairly with all people.

SCHEDULE OF DATES - 1996-97

September 5 & 6, 1996	Fall Registration
September 9, 1996	Fall Semester classes begin
September 16, 1996	Last day for those expecting to receive graduate degrees in October to submit approved unbound copies of thesis to Faculty of Graduate Studies, Dalhousie
September 20, 1996	Last day to register for a course
October 14, 1996	Thanksgiving. No classes
October 25, 1996	Last day to drop a course without penalty
October 30, 1996	Autumn Assembly
November 11, 1996	Remembrance Day. No classes
November 22, 1996	Last day to apply for Dropped Failure Status
November 29, 1996	Last day of classes - Fall Semester
December 2, 1996	Fall Semester examinations begin
December 15, 1996	Application to Graduate in following May due
December 20, 1996	Last day to submit graduate thesis for those registered in the fall term only
1 to Feb. 29, 1996	Applications to Animal Health Technology due
January 6, 1997	Winter Registration
January 7, 1997	Winter Semester classes begin
January 20, 1997	Last day to register for a course
February 21, 1997	Last day to drop a course without penalty
February 24 - March 2, 1997	Mid-semester break for Individual study
March 21, 1997	Last day to apply for Dropped Failure Status

March 28, 1997	Good Friday - No classes
April 4, 1997	Last day of classes - Winter Semester
April 7, 1997	Winter semester examinations begin.
April 14, 1997	Last day for those expecting to receive graduate degrees in May to submit approved unbound copies of thesis to Faculty of Graduate Studies, Dalhousie
May 2, 1997	Convocation
June 1, 1997	Last day to cancel residence application - returning students
June 2, 1997	Deadline for Supplemental Examination Fee
June 9, 1997	Deadline for refund of Supplemental Examination Fee (Registrar's Office must be informed in writing)
June 30, 1997	Last day to cancel applications and receive refund Last day to cancel residence application - new students

ADMISSIONS INFORMATION

Admission Procedures
It is the responsibility of each applicant to ensure that the application file is complete. The following must be submitted by each applicant to the Office of the Registrar:

(a) a completed application form; forms not properly completed will delay processing,
(b) the application fee of $25,
(c) an official record of high school work,
(d) an official transcript for work done at previous post secondary institutions (if applicable),
(e) evidence of competency in English for applications whose native language is not English (see below),
(f) supplementary information as required for specific programs.

Response to Applications
NSAC will respond to your application as promptly as possible and will advise you of any documentation still required.

When documentation is complete, applications are placed in the hands of the appropriate admissions committee. Although every effort is made to have decisions made quickly, there will be some delay at times, particularly in programs where competition for places is keen.

As soon as decisions are made, whether admission, deferral or rejection, applicants will be advised.

Please note that admission to many programs is limited. Therefore, possession of minimum requirements does not guarantee admission.

Early Acceptance
Applicants currently attending high school, who have good grades, i.e., a strong average, may be given early acceptance, conditional on satisfactory completion of work for which they are currently enrolled.

Final Acceptance
Applicants must successfully complete high school classes in the required subjects or leave their current post secondary institution in good standing.

Mature Admission
Students who are at least 23 years of age and who have been out of high school at least 5 years may be considered for admission on a mature student basis. Such applicants are considered individually. A resume outlining past academic achievements and employment background is required.

English Language Tests
NSAC accepts minimum TOEFL results of 580.

Application deadlines for **ALL** programs for fall semester is **JUNE 30** with the following exception:

Animal Health Technology - February 29

January Admissions
The deadline for application for January is November 15.

ADMISSION REQUIREMENTS FOR UNDERGRADUATE DEGREE PROGRAMS (INCLUDING ENGINEERING AND PRE-VETERINARY MEDICINE)

All candidates for admission to the program leading to a B.Sc.(Agr.) and the Pre-Vet program must present high school graduation certificates showing an average of at least 60%, with no mark below 50%, in Grade XII (Nova Scotia 441, New Brunswick 121 or 122, Prince Edward Island university preparatory),

English, Mathematics (70% in Math 442 acceptable), Chemistry, Biology or Physics, plus one additional subject. Students who are accepted but who have not successfully completed Physics at the Grade XII university preparatory level must take Physics MP90, a non-credit course, in their first year at NSAC. **Possession of the minimum entrance requirements does not guarantee admission.**

All candidates for admission to the Engineering program must present high school graduation certificates showing an average of at least 60%, with no mark below 50%, in Grade XII (Nova Scotia 441, New Brunswick 121 or 122, Prince Edward Island university preparatory), English, Mathematics (70% in Math 442 acceptable), Chemistry, Physics, and one other subject, preferably Biology. **Possession of the minimum entrance requirements does not guarantee admission.**

Graduates of Newfoundland Grade XII will be considered for direct entry if their average is 60% or higher in University Preparatory English, Mathematics, Chemistry, Biology or Physics, and one other subject. The Grade XII level courses for Mathematics and English must be the third full year of high school study in these subjects, and for Chemistry and Biology or Physics the second full year. **Possession of the minimum entrance requirements does not guarantee admission.**

ADMISSION REQUIREMENTS FOR PRE-TECH SEMESTER

All candidates for admission must:
(a) be 18 years of age on or before the opening day of the College year;
(b) present themselves for a selection interview if required.

Candidates of mature age and from varied academic backgrounds may apply and request to have their academic records evaluated for admission.

Applicants will be considered on an individual basis.

ADMISSION REQUIREMENTS FOR TECHNICIAN PROGRAMS INCLUDING AGRICULTURAL BUSINESS, AGRICULTURAL ENGINEERING, ANIMAL SCIENCE AND PLANT SCIENCE

High school graduation with three university preparatory courses in English, two in Mathematics, one in Biology and one in Chemistry, or satisfactory completion of the Pre-Tech semester, is required.

ADMISSION REQUIREMENTS FOR TECHNOLOGY PROGRAMS

Animal Health Technology

High School Graduation Certificate with pass marks and an average of at least 60% in Biology, Chemistry, English, Mathematics and one other course all at the following provincial levels: New Brunswick 121 or 122; Newfoundland Academic 3; Nova Scotia 441 or 442; Prince Edward Island Academic XII. The selection process includes a full day of inteviews and orientation.

Applications will be accepted between January 1 and February 29.

Biology Technology

High School Graduation Certificate with pass marks and an average of at least 60% in Biology, Chemistry, English, Mathematics, and one other course, all at the following provincial levels: New Brunswick 121 or 122; Newfoundland Academic 3; Nova Scotia 441 or 442 (if 442, 70% required in Math); Prince Edward Island Academic XII.

Chemistry Laboratory Technology
High School Graduation Certificate with pass marks and an average of at least 60% in Biology, Chemistry, English, Mathematics, and one other course, all at the following provincial levels: New Brunswick 121 or 122; Newfoundland Academic 3; Nova Scotia 441 or 442 (if 442, 70% required in Math); Prince Edward Island Academic XII.

Food Quality Technology
High School Graduation Certificate with pass marks and an average of at least 60% in Biology, Chemistry, English, Mathematics and one other course all at the following provincial levels: New Brunswick 121 or 122; Newfoundland Academic 3; Nova Scotia 441 or 442; Prince Edward Island Academic XII.

Landscape Horticulture Technology
High School Graduation Certificate with pass marks and an average of at least 60% in Biology, English, Mathematics, and two other courses, all at the following provincial levels: New Brunswick 121 or 122; Newfoundland Academic 3; Nova Scotia 441 or 442; Prince Edward Island Academic XII. Additionally, the applicant must have passed one senior high school Chemistry course. Applicants may be required to attend a selection interview.

Possession of the minimum entrance requirements does not guarantee admission.

TECHNOLOGY PROGRAMS ENTERED FROM TECHNICIAN PROGRAMS

Agricultural Technology
A person with an NSAC Technician Diploma or equivalent may apply to continue studies which would lead to a Diploma of Technology in Agricultural Technology. Courses and projects will be selected to help prepare for the chosen field of agricultural endeavour.

Farming Technology
Satisfactory completion of the first year of Agricultural Business, Agricultural Engineering, Animal Science, or Plant Science Technician program and a satisfactory selection interview.

SCHEDULE OF FEES

You will be billed in September for the full year. Payment may be made by instalments with the first instalment due on September 11, 1996 and the second instalment on January 3, 1997. A late payment fee results from non payment of fees by the designated dates.

TUITION FEES (Canadian Citizens and Permanent Residents)

The following rates are those in effect until April 30, 1997.

Program	Price per Course
Degree	$305
Technician and Technology	$160
Audit Degree	$75
Audit Technician and Technology	$75

For information on Graduate Program Fees, conctact the Research & Graduate Studies Office.

TUITION FEES (Non-Canadian Citizens)

Program	Price per Course
Degree	$610*
Technician and Technology	$610*

*Students who registered prior to 1996-97 - $475/course.

OTHER UNIVERSITY FEES

These fees are applicable to students registered in three or more courses in a semester. They are compulsory and non-refundable.

Athletics	$50
Caution and Laboratory Deposit	$55
Medical Insurance[1]	$650
Student Union	$85
Key Deposit	$25

[1] For non-Canadian students only. Not necessary upon giving proof of equivalent coverage.

Students may be required to pay specific program related fees not shown in the calendar. These may include fees for items such as laboratory coats, steel-toed boots, hard hats, etc.

Caution and Laboratory Deposit

Every student, at the time of registration, must make a cash deposit of $55 to cover breakage.

Damage to floors, walls, doors, windows, lighting, the sprinkler system, or furniture in any bedroom will be charged to the occupants of the room in equal shares, and damage to the common parts of the College and residences will be charged to the entire student body if the offender is not charged.

All caution deposits are subject to a general levy through the office of the Dean of Student Services for breakage and damage to buildings and equipment that cannot be traced. This fee, less deductions, will be refunded before the beginning of the next College year.

Full-time students in the Animal Health Technology program are charged an additional Materials and Service Fee of $75.00 per semester. This fee is payable at registration.

For a complete list of supplies and services that are provided to Animal Health Technology students in return for this fee, contact the Department of Animal Science.

SPECIAL UNIVERSITY FEES

Graduation Fee

Students intending to graduate in May **must** submit an "Application to Graduate" to the Registrar by the previous December 15th. Applications to graduate which are submitted after December 15th must be accompanied by a $50 late fee.

Registration Deposit $200

In the letter that offers acceptance the student is asked to forward to the Registrar's Office a

$200 program deposit. The receipt of the $200 confirms the student's acceptance of the offer of admission and assures the student a place in the program.

The full amount of the program deposit will be refunded when students cancel their application before June 30. After this date, there is no refund of the $200 deposit.

Deposits are subtracted from the total payments due in September.

The student must have early, conditional or final acceptance before submitting a deposit.

Students who intend to finance their education with Canada Student Loan funds but who have not received their Certificate of Eligibility (Schedule 1 form) before registration must pay the required fee at registration time.

Transcript Fee - each copy $3
An additional $5 will be charged for faxing a transcript.

Supplemental Examination
Each exam $100
($50 will be refunded if the student passes.)

RESIDENCE AND MEAL PLAN FEES
The following rates were in effect in 1995-96. The fee schedule will be issued as soon as it is available from Student Services.

Plan	**Price**
Shared room and 19 meals	$4,095
Shared room and 14 meals	$4,021
Private room and 19 meals	$4,464
Private room and 14 meals	$4,390
Large private and 19 meals	$4,832
Large private and 14 meals	$4,758

Please note that students may choose either 19 meals or 14 meals per week. Once the option has been selected no plan changes during the semester are permitted. A change of plan can be made at the end of the fall semester for the winter semester.

House Fee	$30
Laundry Fee	$40
Residence Deposit	$190

In the letter that offers acceptance the student is asked to forward to the Registrar's office a $200 program deposit and for students who want a place in residence, a $190 room deposit. The $200 program deposit must be received before the room deposit.

The residence deposit will be refunded up to but not after June 1 for returning students and up to but not after June 30 for new students. (Residence deposits received from students accepted after June 30 are non-refundable.) Those who reserve a room in residence and subsequently wish to cancel their reservation must notify (in writing) Student Services. Failure to cancel a room reservation by August 30 will result in a charge of not less than 25% of the room fee for the semester.

Students who wish to arrive before the official opening date for residence must request permission from the Dean of Student Services.

Deposits are subtracted from the total payments due in September.

TUITION REFUNDS
Refunds for students who withdraw from the College will be as follows:

Until the end of 5th class day	100%
Until end of 10th class day	80%
Until Oct. 10/Feb. 10	50%
Until Oct. 20/Feb. 20	25%
Beyond Oct. 20/Feb. 20	No refund

Room fees are charged from the first day residences officially open. Students who

accept a place in residence and fail to cancel their application prior to August 31 or who withdraw from residence will be charged room fees as follows:

1st week (or any part thereof) residences are open $300
2nd week (or any part thereof) residences are open $650
3rd week (or any part thereof) residences are open $1200

From the end of the 3rd week 100% of the room fee for the semester will be charged.

Meal fees are charged on a per week basis for each week or part week prior to the student's official withdrawal from residence.

Note: Withdrawal from the College and/or residence is not effective until the student has completed the appropriate documentation as specified in the Calendar and Residence Handbook and has returned their ID Card to Student Services.

Student Union fees will be refunded to students who withdraw during the first week of the academic year. After the first week there will be no refund except for a withdrawal for health or other compelling compassionate reasons.

NON PAYMENT OF FEES

If fees are owing, you must see the Dean of Student Services or the Vice-Principal Administration before registering.

CANADA STUDENT LOANS PROGRAM

Eligible students enrolled in the degree and technical programs can apply for Government of Canada loans and bursaries. Application for a Certificate of Eligibility must be made to the issuing authority of the applicant's province of residence.

Application forms are available as follows:

Nova Scotia:

Department of Education & Culture
Box 2290
Halifax Central
Halifax, NS B3J 3C8

New Brunswick:

Department of Advanced Education and Labour
Box 6000
Fredericton, NB E3B 5H1

Prince Edward Island:

Department of Education
Box 2000
Charlottetown, PE C1A 7N8

Newfoundland:

Department of Education
Student Aid Division
St. John's, NF A1C 5R9

The application should be completed and filed with the issuing authority during the early summer, so that an eligibility form can be issued before Registration Day. The applicant then presents the Certificate of Eligibility at registration. Once it is signed by the Registrar, the student may take it to his or her bank to arrange for funds.

CHANGES IN FEE SCHEDULE

The College reserves the right to make changes without notice in its published scale of charges for tuition, accommodations and meals, and other fees.

ACADEMIC ADVISING

The College is committed to providing the student with ready access to qualified academic advisors. Every student will be assigned an advisor in their area of interest. **The final responsibility for a student's program rests with the student.** The academic advisor is available to assist students in making choices.

REGULATIONS AND PROCEDURES

All students are under the charge of the Principal and are responsible to him at all times for their conduct. The Principal is authorized to make any additional regulations found necessary for the discipline of the College and to impose fines or other penalties for any infraction of rules and regulations. The Principal has delegated responsibility for student discipline to the Dean of Student Services. College rules with respect to student behaviour and the process for dealing with student discipline are contained in the Community Standards section of the NSAC Student Handbook.

Every student is expected to show, both within and outside the College, such respect for order, morality, and the rights of others, and such sense of personal honour, as is demanded of good citizens. Students found guilty of immoral, dishonest, or improper conduct, violation of rules, or failure to make satisfactory progress shall be liable to College discipline. Students should make themselves familiar with detailed regulations and procedures, which are published in the *NSAC Student Handbook Community Standards and Residence Handbook*.

Students are encouraged to participate in approved College orientation activities. Hazing as a part of initiation is forbidden.

ACADEMIC STANDING

Technical Program

All students are assessed at the end of each semester. The passing grade for individual courses is 50% unless otherwise specified. Those students with failing averages (less than 50%) or with failures in half or more of the courses in which they are registered *may* be required to terminate their studies.

Undergraduate Degree Program

All students are assessed at the end of each semester. The passing grade for individual courses is 50% unless otherwise specified. Those students with failing averages (less than 50%) or with failures in half or more of the courses in which they are registered *may* be required to terminate their studies.

Full-time students who have cumulative grade averages below the following levels, and who are not required to withdraw, will be on Academic Probation:

Courses Completed	Required Cumulative Grade Average (%)
1-5	50.0
6-10	52.5
11-15	55.0
16-20	57.5
21-40	60.0

The Cumulative Grade Average is calculated using only one grade for each course taken at NSAC. The grade used in the calculation will be the latest grade earned for the course.

A student on Academic Probation, who, in the semester following, does not raise his/her cumulative average (CGA) to the minimum level or does not achieve a semester grade average (SGA) of 60 or above, *will* be required to withdraw.

Students returning to studies following a period of a Required to Withdraw Status are automatically on Academic Probation.

Students on Academic Probation are not permitted to register for more than five courses.

REQUIRED TO WITHDRAW - APPEAL POLICY

A. Grounds for Appeal

The following are the only grounds that a student may use for appealing their required to withdraw status:

1. Medically documented/supported personal illness, injury or trauma.

2. Documented/supported severe traumatic circumstances such as death or serious illness.

B. Appeal Process Procedures and Deadlines

1. Students must submit a letter requesting their status be appealed to the Chairperson of the Standards and Admissions Committee. The letter should clearly demonstrate that the appeal is in accordance with the Grounds for Appeal in Section A, above. Documentation supporting any claims made must also be included. All information contained in the letter will be kept confidential within the committee.

2. Appeals relating to Fall Semester performance must be received by 4:30 p.m. of the 2nd day of classes in the following Winter Semester. The committee will meet the following day to consider appeals.

3. Appeals relating to Winter Semester performancr must be received by 4:30 p.m. on June 15th. The committee will meet during the following week to consider appeals.

4. Students will be informed of the Committee's decision by letter only. All decisions of the Committee are final.

ACADEMIC RESPONSIBILITY

NSAC students are expected to display self-discipline and maturity throughout their period of study at the College. At times there may be considerable pressure to achieve high grades. Some students may be tempted to obtain grades in a dishonest manner. Practices such as cheating, plagiarism and other misrepresentation relating to academic work, compromise the integrity of the College and the degrees and diplomas that the College awards.

The College does not condone these nor other forms of academic misconduct under any circumstances and will take appropriate disciplinary action.

ADVANCED STANDING

Students who have completed courses at other post-secondary institutions may be eligible to receive credit for work done on the following basis:

1. The course (or courses) must be at the same academic level as the one it is replacing.
2. The course (or courses) must satisfy a requirement of the student's academic program.
3. Students enrolled in a four year degree program must complete a minimum of 15 courses at NSAC to graduate.
4. Students enrolled in a technical diploma program must complete a minimum of one-half of the required courses at NSAC to graduate.

ATHLETICS

All students are eligible to play for teams representing the College, subject to conditions

established by NSAC, the Nova Scotia College Athletic Association and the Canadian Colleges Athletic Association.

All teams or groups that go to any community or institution to participate in athletic activities must be accompanied by a member of the College staff.

ATTENDANCE IN CLASS

All students are expected to attend all lectures and laboratory periods in the courses for which they are registered.

At the discretion of the instructor attendance records may be kept. Instructors may include class attendance in determining the mark for the course. This must be stated at the outset of the class.

Specific courses have mandatory attendance requirements. In these courses, attendance requirements will be stated at the outset of the course. Absence from scheduled activities may be considered grounds for automatic failure.

Students wishing to absent themselves from classes for compassionate reasons must obtain permission from the Registrar or, in his absence, from the Dean of Student Services.

A student who arrives late for class may be refused admission.

AUDITING COURSES

A student may, at the discretion of the Instructor, be permitted to audit a course. The privilege may be withdrawn by the Instructor at any time while the course is in progress. Students who are granted auditing privileges are not permitted to write tests, examinations, or to be otherwise evaluated in the course audited.

CHALLENGE FOR CREDIT

Students who have acquired competence in material covered by an NSAC course may obtain credit for the course by means of a course challenge.

Procedures

Application for Challenge for Credit is made to the Registrar.

Details regarding the application procedures for Challenge for Credit can be obtained from the Registrar's Office.

The Department that is responsible for the course in question must be satisfied that there is a reasonable basis for requesting a Challenge for Credit, such as previous work experience or educational experience for which a credit cannot be obtained directly. The Department may designate courses that cannot be challenged. The academic basis of the Department's decision is final and cannot be appealed.

The Challenge for Credit will normally be in the form of a comprehensive examination, but for a course with an accompanying laboratory or project(s) the Department may require the demonstration of appropriate skills as a prerequisite to, or as a part of, the Challenge for Credit examination. A Challenge for Credit examination is given at the discretion of, and is administered by, the Department.

The Department and Instructor concerned will determine the content and format of the Challenge for Credit examination.

A Challenge for Credit examination will be given at a time arranged by the Department, but must be completed and the grade submitted prior to the last date for adding a course for the term in which the particular course is offered.

Challenge for Credit examinations will be graded as either Pass or Fail. This grade is final and cannot be appealed. If the Challenge for Credit examination is passed, the course will appear on the student's transcript indicating a "P" for pass. Challenge for Credit examination failures will not be recorded on the student's transcript.

No student may Challenge for Credit a course in which the student has been registered. This includes courses assigned a Drop Fail (DF) or Audit status, and includes courses offered at NSAC or courses attempted elsewhere for which a credit would normally have been granted by NSAC. The latter information can be obtained from the Registrar's Office.

A student currently on Academic Probation or with a Required to Withdraw status may not Challenge for Credit.

A student may not Challenge for Credit more than once in any course.

A maximum of six courses may be accumulated by Challenge for Credit.

The fee schedule for Challenge for Credit may be obtained from the Registrar's Office.

FULL-TIME STATUS

Undergraduate Degree Program
Students in the B.Sc.(Agr.), B.Sc.(Pre-Vet), and Engineering programs are considered full-time students if they are enrolled in 3 or more credit courses per semester.

Technical Program
Students in a Technician or Technology Diploma program are considered full-time students if they are enrolled in 4 or more courses per semester.

Scholarship students are normally required to be enrolled in 4 or more courses per semester.

PRINCIPAL'S LIST

Students who have achieved a session average of 80% or better in the fall term will be included on the Principal's List. These students must have been enrolled in 4 or more courses and must have no failures (including Drop Failures).

DROPPING COURSES

Deadline to Drop a Course Without Penalty
The last day to drop a course without academic penalty is 4:30 p.m. on the Friday of the 7th week of classes.

Drop Failure
A Drop Failure in a course is a grade assigned when a student drops the course at the Registrar's Office after "the last day for dropping a course without academic penalty" and not later than the last day permitted for a Drop Failure. A Drop Failure is counted as a failed subject when determining student standings. When determining averages a Drop Failure is not counted as a course (mark). It is recorded on the transcript as a "DF". Courses with "DF" will not be included in determining full-time status.

Deadline for Drop Failure Status
The last day to declare a Drop Failure Status for a course is 4:30 p.m. on the Friday of the 11th week of classes.

If a student is registered for a course after the deadline date indicated for a Drop Failure, the mark earned will be entered on the record regardless of whether or not the examination is written.

EXAMINATIONS

Examination Regulations

1. No student may leave the examination room until one-half hour after the beginning of the examination.

2. No student may be admitted to the examination room after one-half hour of the time allotted for the examination has passed.

3. Foreign language dictionaries, reported to and approved by the examiner, may be used by students whose native language is not English.

4. A student must not communicate with any other student in any manner whatsoever during the examination period.

5. All texts, handbooks, notes, tables, and other printed or written and loose paper must be deposited with the supervisor in charge of the examination, before the student takes his/her seat, unless provision has been made by the examiner for reference books and materials to be allowed.

6. A student who is found guilty of cheating in any manner by the Faculty Council Judicial Committee may receive zero for the course. The Judicial Committee may apply additional penalties including fines, suspensions and/or a permanent notice of academic discipline on the student's transcript.

Rereading of an Examination

A student may consult with the Instructor for information on and interpretation of the evaluation of his/her examination paper. If the student is not satisfied after consultation, he/she may apply to the Registrar's Office for a reread. The application must be submitted within 30 days of the release of the original mark and be accompanied by a $100 fee. The fee will be returned if the mark is raised, but will be forfeited if it is not. The reread is to be made by an appropriate person outside the Institution and arranged by the Head of the Department concerned.

Supplemental Examination Privilege

A student may write one supplemental examination in each failed subject in which the mark is 40% to 49%. The supplemental examination (or examinations) are written in the June supplemental examination period immediately following the failure. A student in the final year may write one supplemental examination in a Fall semester course, if passing that examination and all final semester examinations makes the student eligible for graduation.

No student in any degree or technical program is permitted to write more than six supplemental examinations during the course of the program.

Students who are eligible for a supplemental examination are responsible for contacting the Instructor for information about the method of evaluation and scope of course content to be covered by the examination or other evaluating exercise.

Students must apply in writing to the Registrar's office to write a supplemental examination and must include the fee of $100 for each supplemental examination by June 2nd. A passing grade in the supplemental examination will result in a $50 refund.

No supplemental examination is to be written until the required fee has been paid. If an applicant does not write a supplemental examination, the fee is forfeited. Should a candidate for a supplemental examination not give written notice or pay the required fee on time, but arrive to write an examination, permission to write may be granted at the discretion of the Registrar and the instructor,

and upon payment of $100 per examination. There is no refund for this case.

Under no circumstances is a candidate to write a supplemental examination before paying the fee. The supplemental fee will be reimbursed only if the student notifies the Registrar's Office of the decision not to write by June 9th.

Special Supplemental Examination
A student in a final year may write one supplemental examination during the week of the winter mid-semester break if the passing of the examination would make the student eligible for graduation. With the exception of the special supplemental examinations for potential graduates, all supplemental examinations are written in June.

Deferred Examinations
A deferred examination is only permitted on extreme compassionate grounds and requires proper certification. Unless the student presents a further certification, each deferred examination must be written within two weeks of the day the regular examination in that course was scheduled. Permission to defer an exam and arrangements for the specific time and place of writing are to be made by the Registrar in conjunction with the Instructor involved.

EXCHANGE PROGRAMS
Students may complete a portion of their program at another institution. Permission to participate in an exchange program is given by the Department Head. Courses to be submitted for credit at NSAC must have the prior approval of the Registrar.

GRADES

Basis of Marking
The evaluation of a course may be based on tests, laboratory exercises, other assignments and examinations and attendance. Instructors will take into consideration in determining a final mark the total work of the course. The evaluation used by one Instructor will not necessarily be the one used by another.

At the beginning of each course, professors are required to indicate to students, in writing, the work load for the course, together with the appropriate dates and values of tests, term papers, quizzes, and other assignments, attendance requirements, and the value of final examinations. No credit is given for a course unless all requirements for it have been completed.

Release of Final Grades
Official records of grades, transcripts, degrees or diplomas will be withheld pending full payment of all outstanding balances owing to the College.

GRADUATION

Application for Graduation
Students intending to graduate in May **MUST** submit an "Application to Graduate" to the Registrar by the previous December 15th. Applications are available at the Registrar's Office.

Late Application for Graduation Fee
Applications to graduate which are submitted after December 15th must be accompanied by a $50 Late Fee.

Graduation Requirements
Graduands may opt to fulfill the program requirements in place at the time they entered the program or those in place at the time of graduation. The graduand must completely satisfy the syllabus he/she chooses.

In the event that courses are no longer offered, the College will prescribe appropriate substitutes.

ACADEMIC RESIDENCY REQUIREMENTS

B.Sc.(Agr.)
Students intending to graduate must successfully complete a minimum of 15 semester courses at NSAC including 6 of the last 10 required courses.

Engineering Diploma
Students intending to graduate with an Engineering Diploma must successfully complete a minimum of 11 courses at NSAC including 6 of the last 10 required courses.

Environmental Engineering
Environmental Engineering is an option of specialized study within the Agricultural Engineering program administered jointly by TUNS and NSAC. This cooperative program consists of five academic semesters at NSAC followed by four at TUNS.

Technical Diploma
Students intending to graduate with a technical diploma must sucessfully complete a minimum of one-half of the total required courses at NSAC including 7 of the last 12.

Standing on Graduation
With High Honours:
Cumulative Average of 80% or higher

With Honours:
Cumulative Average of 75-79%

Second Diploma
The minimum requirement for a second Technical Diploma is 12 additional courses that include all the required courses of the syllabus.

HEALTH INSURANCE REQUIREMENTS

Each candidate who is accepted will be sent a medical form. At registration, new students must have their completed forms with them. If required, students must submit to further medical examinations.

Students *not* covered by a Canadian Provincial Health Insurance plan (those who are not Canadian citizen/landed immigrants) are required to arrange for a health insurance policy acceptable to the College. Details and application forms are available from Health Services.

Students who wish to participate in varsity athletics must have health and accident insurance coverage acceptable to the College. Details and application forms are available from the Athletic Department.

Specific programs of study may require additional heath and accident coverage.

It is the students' responsibility to ensure they have adequate Health and Accident insurance. The College does not accept any responsibility for costs related to accident or sickness for students participating in programs of study, athletic or College related events.

The College strongly recommends *all* students obtain additional health and accident insurance above and beyond that available through Provincial Health Plans.

LETTERS OF PERMISSION

Students wishing to take a course at another institution for transfer of credit to NSAC must obtain permission in writing from the Registrar in advance.

No courses will be credited towards a student's program which are taken without a letter of permission.

Forms are available at the Registrar's Office.

PLAGIARISM

Copying someone else's work without giving him/her credit is plagiarizing.

The most common form of plagiarism is simply to copy word for word, from a book or article, omitting quotation marks and any mention of the original author.

A slightly more subtle form of plagiarism occurs when a writer's *ideas* are used by someone trying to pass them off as their own. Admittedly, in this second case, *exact words* used by the original writer may not be copied, but the *essence* of what the original writer wrote is. Therefore, it is plagiarism.

The fact that one is not copying from printed, published sources does not absolve one from the charge of plagiarism. One may be justly accused and convicted of it by copying unpublished term papers, essays, assignments, reports (including laboratory reports), and collections.

READMISSION

Former students of NSAC must complete an Application for Admission to be readmitted.

Students who have been required to withdraw from NSAC must apply to the Registrar for readmission. The application for readmission will be considered on an individual basis.

REGISTRATION

Returning Students

Returning students will register for fall and winter courses in March. Registration must be confirmed by payment of a $200 registration deposit by June 1st. This fee is applied against the student's fall tuition and will be refunded if the student submits a written notice of withdrawal by July 31.

New Students

New students will receive notice of admission along with a registration package. This package will instruct the student how to register in courses. The registration process is completed by payment of a $200 registration fee which is applied against fall tuition fees. The $200 fee will be reimbursed if written notice of withdrawal is forwarded to the Registry by July 31st.

Course Registrations

It is the responsibility of the student to ensure that he/she is properly registered in courses. Students will only receive credit for courses in which they are registered by the deadline to add courses. Conversely, a student who does not properly withdraw from a course will receive a mark of "0" for that course.

Deadlines for adding and dropping courses are strictly enforced.

RESIDENCE

Residence Regulations are to be found in the *NSAC Student Handbook Community Standards and Residence Handbook,* which is distributed to all students.

TRANSCRIPTS

The following regulations, with regard to transcripts of records, will be in effect:

1. No transcript will be sent to any other institution, business, etc., without the student's authorization in writing.

2. A fee of $3 per copy will be charged for all transcripts requested.

3. An additional fee of $5 is charged for faxing a transcript.

PERMISSION TO TAKE COURSES ELSEWHERE

NSAC students wishing to enrol in courses at other institutions for credit in an NSAC program must obtain, in advance, a "Letter of Permission" from the Registrar.

No courses will be credited towards a student's program which are taken without a Letter of Permission.

"Letter of Permission" forms are at the office of the Registrar.

WITHDRAWAL

Students who withdraw from the College must notify the Registrar's Office in writing.

Late Withdrawal

Students who withdraw from the College after the last date for declaring a Drop Failure, unless due to illness or other compelling compassionate reasons, will not be admitted the following semester.

STUDENT SAFETY

Students must comply with all safety requirements of the College. This includes safety rules specific to programs and courses.

EXPLANATION OF TERMS AND CODES

Each course is described by a five character code which consists of two alpha and three numeric characters. The two character prefix identifies the department offering the course. The three digits following the prefix describe the level of the course.

Examples:
1) AE230 refers to course 230 (Dynamics) offered by the Agricultural Engineering Department.
2) H010 refers to course 010 (Technical Writing) offered by the Humanities Department.

Courses numbered 100 or higher are taken for degree credit courses. Numbers 001 to 099 are offered in Technical programs or as non-degree requirements. Numbers 500+ are offered in the Graduate Program.

Program Codes

D	Degree
E	Engineering
M	Masters
TN	Technician
TY	Technology

Program: Degree (D)		Majors
	AB	Agricultural Business
	AC	Agricultural Chemistry
	AM	Agricultural Mechanization
	AQ	Aquaculture
	AS	Animal Science
	EB	Agricultural Economics
	EV	Environmental Biology
	PM	Pest Management
	PS	Plant Science
	PV	Pre-Veterinary
	SO	Soil Science
	NP	No program, University

Minors	
AB	Agricultural Business
AC	Agricultural Chemistry
AG	Agrifood Products
AM	Agricultural Mechanization
EB	Agricultural Economics
EV	Environmental Biology
PM	Pest Management
PS	Plant Science
RS	Rural Studies
SO	Soil Science

Engineering (E)	Majors
E	Engineering
EE	Environmental Engineering

Technician (TN)

	Majors
AB	Agricultural Business
AS	Animal Science
ET	Agricultural Engineering
PS	Plant Science
PT	Pre-Tech
NP	No program, Technician

Minors

AB	Agricultural Business
AE	Agricultural Engineering
AG	Agronomy
AS	Animal Science
H	Horticulture
OH	Ornamental Horticulture
PS	Plant Science

Technology (TY)

	Majors
AH	Animal Health
AT	Agricultural Technology
BT	Biology Technology
CL	Chemistry Laboratory
FL	Food Quality
FT	Farming Technology
LH	Landscape Horticulture

UNDERGRADUATE DEGREE PROGRAMS

The Nova Scotia Agricultural College in association with Dalhousie University offers a four-year program leading to a degree in Agricultural Science, B.Sc.(Agr.). The first two years of a five-year program in various engineering disciplines, and a two-year pre-veterinary program are also offered.

Students in Engineering at NSAC who successfully complete the prescribed 22 courses and have the required cumulative grade average are granted an Engineering Diploma.

Engineering students who complete the two-year Engineering Diploma program are admitted to the third year in the engineering discipline of their choice at the Technical University of Nova Scotia (TUNS). Those who elect the Agricultural Engineering discipline at TUNS enter the co-op program, which is sponsored jointly by TUNS and NSAC.

The Pre-Vet program also serves as the first two years of the B.Sc.(Agr.) program, Animal Science option. Transfer to other options of the B.Sc.(Agr.) program is possible, but it may take three more years to complete the B.Sc.(Agr.) program.

NSAC students in the Agricultural Sciences who successfully complete the prescribed courses and number of credits, and who make a cumulative average at or above the minimum required, and who are in good standing will be granted the degree of Bachelor of Science in Agriculture, B.Sc.(Agr.).

NSAC students who complete the first year of the B.Sc. (Agr.), Engineering, or Pre-Veterinary Medicine programs, may begin to specialize in Environmental Engineering in their second year. This is a co-op program, administered jointly by NSAC and TUNS. Students who complete the first five semesters at NSAC are admitted to TUNS where they complete their Professional Engineering Degree with speciality in Environmental Engineering in the Department of Agricultural Engineering.

A high honours diploma will be awarded to all graduates of degree programs who have taken 20 or more courses at NSAC and have achieved a cumulative average of 80% or better. An honours diploma will be awarded to graduates achieving a cumulative average of between 75% and 80%.

Professional Organizations for Agrologists and Engineers

Agrology is "the profession of applying science and scientific principles to the business and art of agriculture". University graduates who are skilled in the science and business of agriculture are encouraged to join their provincial Institute of Agrologists. Provincial Institutes offer the opportunity to get to know and exchange ideas with other professional agrologists in the province and other parts of Canada through membership in the Agricultural Institute of Canada. Membership in the Institute of Agrologists provides an element of fellowship in the profession and the opportunity to attend scientific conferences and educational tours, and to receive newsletters and technical publications. Membership in an Institute is required by provincial statute to practice agrology in most provinces.

The practice of engineering in Canada is governed by independent and autonomous provincial and territorial associations of Professional Engineers, which serve as licensing bodies for the profession. Each association has been established under a Professional Engineering Act adopted by its provincial or territorial legislature. The Canadian Council of Professional Engineers (CCPE) is the national federation of those

associations of Professional Engineers and assists them in coordinating and standardizing their work. One such standardization is the accreditation of all Canadian Engineering Programs to ensure the academic content and teaching facilities are acceptable to allow graduates admission into all provincial and territorial associations.

BACHELOR OF SCIENCE IN AGRICULTURE - B.Sc.(Agr.)

The B.Sc.(Agr.) is a four-year program, designed to provide a sound education in the science of agriculture. Graduates of this program meet the formal educational requirements for Professional Agrologists in the provincial Institutes of Agrologists in the Atlantic provinces.

The first academic year (two semesters) of this program is the same for all Majors. Normally, students select a Major before the commencement of the third semester and continue in that field of study until they graduate. Students may also select a Minor to complement the Major, or students can customize their programs by selecting electives that meet personal goals and interests.

All candidates for admission to the program leading to a B.Sc.(Agr.) and the Pre-Vet program must present high school graduation certificates showing an average of at least 60%, with no mark below 50%, in Grade XII (Nova Scotia 441, New Brunswick 121 or 122, Prince Edward Island university preparatory), English, Mathematics (70% in Math 442 acceptable), Chemistry, Biology or Physics, plus one additional subject. Students who are accepted but who have not successfully completed Physics at the Grade XII university preparatory level must take Physics MP90, a non-credit course, in their first year at NSAC. **Possession of the minimum entrance requirements does not guarantee admission.**

Majors offered at NSAC are:

Agribiology: Environmental Biology
Agribiology: Pest Management
Agricultural Business
Agricultural Chemistry
Agricultural Economics
Agricultural Mechanization
Animal Science
Aquaculture
Plant Science
Soil Science

Minors offered at NSAC are:

Agribiology: Environmental Biology
Agribiology: Pest Management
Agricultural Business
Agricultural Chemistry
Agricultural Economics
Agricultural Mechanization
Agrifood Products
Animal Science
Plant Science
Rural Studies
Soil Science

SYLLABUS

ALL PROGRAMS

Year I

Semester I

B100 Botany
CS100 Chemical Principles
EB110* Agricultural Economics (A)
IN100 Agricultural Ecosystems (A)
MP100 Calculus & Analytical Geometry I

Semester II

B110 Zoology
CS110 Organic Chemistry
EB110* Agricultural Economics (A)
IN101 Food Security (A)
MP105 Calculus & Analytical Geometry II

and one of:

H101	The English and American Novel
H102	Nature in English and American Literature
H160	Introductory Sociology
H170	Introductory Human Geography

*EB110: Agricultural Economics is offered in both semesters, and should be alternated with the choice of H101, or H102, or H160 or H170.

College Core Past the First Year (required of all students):

CS200**	Biochemistry I
MP130***	Physics for Life Sciences I
MP210	Introduction to Statistics
MP222	Computer Methods
XX449****	Project-Seminar I (A)
XX450****	Project-Seminar II (A)

plus two Humanities electives at the 300 or 400 level.

**CS200 is not required for Agricultural Business, Agricultural Economics or Agricultural Mechanization majors.

***MP130 is not required for Agricultural Business or Agricultural Economics majors.

****XX449 and XX450 represents the Project-Seminar courses, including EB425. Students may take their Project-Seminar courses from any Department, but the research topic must be approved by the Head of the Department responsible for the major in which they are registered.

Students must complete 12 'A' courses to be awarded the B.Sc.(Agr.). There are five ('A') courses in the College Core (including first year).

Minors must include at least four courses in addition to those required to complete a major. No course can be used to complete the requirements of both a major and a minor, or a minor and a College Core requirement.

AGRIBIOLOGY: ENVIRONMENTAL BIOLOGY

In addition to the College Core, students must take the following courses to meet the requirements of this program:

MAJOR

B200	Cell Biology
B225	Microbiology
B330	Ecology
B350	Ecological Methods
B360	Environmental Analysis
B365	Environmental Impact
B385	Principles of Pest Management (A)
B400	Soil Microbiology (A)
B430	Ecology of Agriculture (A)
CS205	Biochemistry II
CS220	Introduction to Soil Science (A)
MP211	Statistics: Planned Studies, Surveys and Experiments

Electives must include three 'A' courses.

MINOR*

B225	Microbiology
B330	Ecology
CS220	Introduction to Soil Science (A)
B360	Environmental Analysis
	or
CS305	Instrumental Analytical Chemistry

and two of the following:

B350	Ecological Methods
B365	Environmental Impact
B385	Principles of Pest Management (A)
B400	Soil Microbiology (A)
B430	Ecology of Agriculture (A)
CS457	The Science of Composting and Its Application (A)

*Courses that are already required for a particular major must be replaced with additional courses from the above minor list.

RECOMMENDED SYLLABUS FOR A MAJOR IN AGRIBIOLOGY: ENVIRONMENTAL BIOLOGY

Year 2

Semester III

B200	Cell Biology
B330	Ecology
CS200	Biochemistry I
CS220	Introduction to Soil Science (A)
MP* or *Elective*	

Semester IV

B225	Microbiology
CS205	Biochemistry II
MP* or *Elective*	
MP* or *Elective*	
MP* or *Elective*	

Year 3

Semester V

B350	Ecological Methods
B360	Environmental Analysis
B385	Principles of Pest Management (A)
MP211	Statistics: Planned Studies, Surveys and Experiments
	Elective

Semester VI

B365	Environmental Impact
	Elective
	Elective
	Elective
	Elective

Year 4

Semester VII

B400	Soil Microbiology (A)
B449	Project-Seminar I (A)
	Elective
	Elective
	Elective

Semester VIII

B430	Ecology of Agriculture (A)
B450	Project Seminar II (A)
	Elective
	Elective
	Elective

MP* - MP130, MP210 and MP222 should be completed in semesters III or IV. MP210 is a prerequisite to MP211.

Electives must include two 300 or 400 level Humanities courses, and three 'A' courses.

AGRIBIOLOGY: PEST MANAGEMENT

In addition to the College Core, students must take the following courses to meet the requirements of this program:

MAJOR

B200	Cell Biology
B225	Microbiology
B300	Principles of Plant Pathology (A)
B320	General Entomology
B330	Ecology
B335	Weed Science (A)
B406	Economic Plant Pathology (A)
B425	Economic Entomology (A)
B445	Applied Weed Science (A)
CS205	Biochemistry II
CS220	Introduction to Soil Science (A)
MP211	Statistics: Planned Studies, Surveys and Experiments

Electives must include one 'A' course.

MINOR*

B225 Microbiology

and two of the following pairs of courses (a total of four courses):

B300 Principles of Plant Pathology (A) ***and***
B406 Economic Plant Pathology (A)

B320 General Entomology ***and***
B425 Economic Entomology (A)

B335 Weed Science (A) ***and***
B445 Applied Weed Science (A)

*Courses that are already required for a particular major must be replaced with additional courses from the above minor list.

RECOMMENDED SYLLABUS FOR A MAJOR IN AGRIBIOLOGY: PEST MANAGEMENT

Year 2

Semester III

B200	Cell Biology
B330	Ecology
CS200	Biochemistry I
CS220	Introduction to Soil Science (A)
MP* or *Elective*	

Semester IV

B225	Microbiology
CS205	Biochemistry II
MP* or *Elective*	
MP* or *Elective*	
MP* or *Elective*	

Year 3

Semester V

B300	Principles of Plant Pathology (A)
B320	General Entomology
B335	Weed Science (A)
MP211	Statistics: Planned Studies, Surveys and Experiments
	Elective

Semester VI

B406	Economic Plant Pathology (A)
B425	Economic Entomology (A)
B445	Applied Weed Science (A)
	Elective
	Elective

Year 4

Semester VII

B449	Project-Seminar I (A)
	Elective
	Elective
	Elective
	Elective

Semester VIII

B450	Project-Seminar II (A)
	Elective
	Elective
	Elective
	Elective

MP* - MP130, MP210 and MP222 should be completed in semester III or IV. MP210 is a prerequisite to MP211.
Electives must include two 300 or 400 level Humanities courses and one 'A' course.

AGRICULTURAL BUSINESS (subject to availability of funding)

In addition to the College Core, students must take the following courses to meet the requirements of this program:

MAJOR

EB200	Microeconomics I
EB210	Financial Accounting I
EB215	Financial Accounting II
EB255	Macroeconomics I
EB260	Mathematical Economics
EB315	Management Accounting
EB320	Agricultural and Food Policy (A)
EB325	Operations Research
EB335	Business Marketing
EB340	Farm Management I (A)
EB410	Strategic Management in Agri-Business (A)
EB445	Agri-Business Entrepreneurship (A)
EB205	Microeconomics II
	or
EB220	Production Economics (A)
MP211	Statistics: Planned Studies, Surveys and Experiments

Electives must include three 'A' courses (or two 'A' courses if EB220 is selected instead of EB205).

MINOR*

EB210	Financial Accounting I
EB355	Business Marketing
EB340	Farm Management I (A)

and three of:

EB215	Financial Accounting II
EB255	Macroeconomics I
EB310	Cost Accounting
EB410	Strategic Management in Agri-Business (A)
EB415	Business Law
EB430	International Marketing
EB435	Consumer Behaviour and Food Marketing (A)
EB440	Farm Management II (A)
EB445	Agri-Business Entrepreneurship (A)

*Courses that are already required for a particular major must be replaced with additional courses from the above minor list.

RECOMMENDED SYLLABUS FOR A MAJOR IN AGRICULTURAL BUSINESS

Year 2

Semester III

EB200 Microeconomics I
EB210 Financial Accounting I
EB260 Mathematical Economics
MP* or *Elective*
MP* or *Elective*

Semester IV

EB205 Microeconomics II *or*
EB220 Production Economics (A)
EB215 Financial Accounting II
EB255 Macroceconomics I
MP* or *Elective*
MP* or *Elective*

Year 3

Semester V

EB315 Management Accounting (A)
EB335 Business Marketing (A)
EB340 Farm Management I (A)
MP211 Statistics: Planned Studies, Surveys & Experiments
Elective

Semester VI

EB320 Agricultural & Food Policy I
EB325 Operations Research
Elective
Elective
Elective

Year 4

Semester VII

EB410 Strategic Management in Agri-Business (A)
EB425 Research Methods (A)
Elective
Elective
Elective

Semester VIII

EB445 Agri-Business Entrepreneur-ship (A)
EB450 Project-Seminar (A)
Elective
Elective
Elective

MP* - MP210 and MP222 should be completed in semesters III or IV.
Electives must include two 300 or 400 level Humanities courses, and three 'A' courses (two 'A' courses if EB220 is selected instead of EB205).

AGRICULTURAL CHEMISTRY

In addition to the College Core, students must take the following courses to meet the requirements of this program:

MAJOR

B225	Microbiology
CS205	Biochemistry
CS210	Advanced General Chemistry
CS215	Advanced Organic Chemistry
CS220	Introduction to Soil Science (A)
CS225	Quantitative Analytical Chemistry
CS300	Physical Chemistry
CS305	Instrumental Analytical Chemistry
CS350	Food Chemistry (A)
CS370	Intstrumental Food Analysis
CS440	Environmental Soil Chemistry

Electives must include five 'A' courses.

MINOR

CS200*	Biochemistry I
CS210*	Advanced General Chemistry ***or*** CS215*Advanced Organic Chemistry

and any three of the following not required as part of a major:

B225	Microbiology
CS205	Biochemistry II
CS210	Advanced General Chemistry
CS215	Advanced Organic Chemistry
CS225	Quantitative Analytical Chemistry
CS300	Physical Chemistry
CS305	Instrumental Analytical Chemistry
CS310	Radiotracers in Agriculture (A)
CS350	Food Chemistry (A)
CS351	Food Chemistry (A)
CS370	Instrumental Food Analysis
CS415**	Special Topics in Chemistry and Soil Science I (A)
CS425**	Special Topics in Chemistry and Soil Science II (A)

*If not required as part of a major.
**The course content must be in the area of agricultural chemistry.

RECOMMENDED SYLLABUS FOR A MAJOR IN AGRICULTURAL CHEMISTRY

Year 2

Semester III

CS200 Biochemistry I
CS210[1] Advanced General Chemistry ***or***
CS215[1] Advanced Organic Chemistry
CS220 Introduction to Soil Science (A)
MP* or *Elective*
MP* or *Elective*

Semester IV

CS205 Biochemistry
CS225 Quantitative Analytical Chemistry
MP* or *Elective*
MP* or *Elective*
MP* or *Elective*

Year 3

Semester V

CS210[1] Advanced General Chemistry ***or***
CS215[1] Advanced Organic Chemistry
CS300[1] Physical Chemistry ***or***
Elective
CS305 Instrumental Analytical Chemistry
Elective
Elective

Semester VI

B225 Microbiology
CS350 Food Chemistry (A)
CS440 Environmental Soil Chemistry
or Elective
Elective
Elective

Year 4

Semester VII

CS300[1] Physical Chemistry ***or***
Elective
CS449 Project-Seminar I (A)
Elective
Elective
Elective

Semester VIII

CS370 Instrumental Food Analysis
CS440[1] Environmental Soil Chemistry
or Elective
CS450 Project-Seminar II (A)
Elective
Elective

[1]These courses are offered in alternate years.

MP* - MP130, MP210 and MP222 should be completed in semester III or IV.
Electives must include two Humanities at the 300 or 400 level, and five 'A' courses.

AGRICULTURAL ECONOMICS

In addition to the College Core, students must take the following courses to meet the requirements of this program:

MAJOR

EB200	Microeconomics I
EB205	Microeconomics II
EB210	Financial Accounting I
EB255	Macroeconomics I
EB260	Mathematical Economics
EB305	Macroeconomics II
EB320	Agricultural and Food Policy I (A)
EB325	Operations Research
EB330	Agricultural Markets and Prices (A)
EB335	Business Marketing
EB340	Farm Management I (A)
EB360	Econometrics
EB420	Agricultural and Food Policy II

Electives must include four 'A' courses.

MINOR*

EB200	Microeconomics I
EB205	Microeconomics II
EB260	Mathematical Economics

and three of the following:

EB255	Macroeconomics I
EB305	Macroeconomics II
EB320	Agricultural and Food Policy I (A)
EB325	Operations Research
EB330	Agricultural Markets and Prices (A)
EB340	Farm Management I (A)
EB360	Econometrics
EB400	Resource and Environmental Economics
EB440	Farm Management II (A)

*Courses that are already required for a particular major must be replaced with additional courses from the above minor list.

RECOMMENDED SYLLABUS FOR A MAJOR IN AGRICULTURAL ECONOMICS

Year 2

Semester III

EB200 Microeconomics I
EB210 Financial Accounting I
EB260 Mathematical Economics
MP* or *Elective*
MP* or *Elective*

Semester IV

EB205 Microeconomics II
EB255 Macroeconomics I
MP* or *Elective*
MP* or *Elective*
Elective

Year 3

Semester V

EB340 Farm Management I (A)
EB335 Business Marketing
EB360 Econometrics
Elective
Elective

Semester VI

EB305 Macroeconomics II
EB320 Agricultural and Food Policy I (A)
EB325 Operations Research
EB330 Agricultural Markets & Prices (A)
Elective

Year 4

Semester VII

EB420 Agricultural and Food Policy II
EB425 Research Methods (A)
Elective
Elective
Elective

Semester VIII

EB450 Project-Seminar (A)
Elective
Elective
Elective
Elective

MP* - MP210 and MP222 should be completed in semester III or IV. MP210 is a prerequisite to EB360.

Electives must include two 300 or 400 level Humanities courses, and four 'A' courses.

AGRICULTURAL MECHANIZATION

In addition to the College Core, students must take the following courses to meet the requirements of this program:

MAJOR

AE101	Computer Aided Graphics and Projection
AE120	Properties and Mechanics of Materials
AE135	Fundamentals of Food Processing (A)
AE305	Engineering Measurements and Controls
AE320	Structures and Their Environment (A)
AE335	Materials Handling and Processing (A)
AE340	Soil and Water (A)
AE355	Principles of Agricultural Machinery (A)
AE405	Environmental Impacts and Resource Management (A)
AE410	Water and Water Quality Management (A)
AE420	Management of Mechanized Agricultural Systems (A)
EB210	Financial Accounting I
EB340	Farm Management I (A)

MINOR

A minimum of four courses consisting of:

AE120	Properties and Mechanics of Materials

and at least one of:

AE320	Structures and Their Environment (A)
AE340	Soil and Water (A)
AE355	Principles of Agricultural Machinery (A)

and other electives from the following as required:

AE101	Computer Aided Graphics and Projection
AE135	Fundamentals of Food Processing (A)
AE215	Aquatic Environment (A)
AE305	Engineering Measurements and Controls
AE335	Materials Handling and Processing (A)
AE360	Aquatic Engineering (A)
AE405	Environmental Impacts and Resource Managment (A)
AE410	Water and Water Quality Management (A)
AE420	Management of Mechanized Agricultural Systems (A)

RECOMMENDED SYLLABUS FOR A MAJOR IN AGRICULTURAL MECHANIZATION

Year 2

Semester III

AE101 Computer Aided Graphics and Projection
EB210 Financial Accounting I
MP* or *Elective*
MP* or *Elective*
MP* or *Elective*

Semester IV

AE120 Properties and Mechanics of Materials
MP* or *Elective*
MP* or *Elective*
MP* or *Elective*
Elective

Year 3

Semester V

AE320 Structures and Their Environment (A)
AE335 Materials Handling and Processing (A)
AE340 Soil and Water (A)
AE355 Principles of Agricultural
Elective

Semester VI

AE135 Fundamentals of Food Processing (A)
AE305 Engineering Measurements and Controls
AE449 Project-Seminar (A)
Elective
Elective

Year 4

Semester VII

AE405 Environmental Impacts and Resource Management (A)
AE450 Project-Seminar II (A)
EB340 Farm Management I (A)
Elective
Elective

Semester VIII

AE410 Water and Water Quality Management
AE420 Management of Mechanized Agricultural Systems (A)
Elective
Elective
Elective

MP* - MP130, MP210 and MP222 should be completed in semester III or IV.
Electives must include two 300 or 400 level Humanities courses.

AGRIFOOD PRODUCTS

MINOR*

B225	Microbiology
B355	Food Microbiology
CS200	Biochemistry I
CS351	Food Chemistry (A) ***or***
CS350	Food Chemistry (A)
CS380	Food Quality Assurance
EB335	Business Marketing

*Courses that are already required for a particular major must be replaced with additional courses from the following list:

AE135	Fundamentals of Food Engineering (A)
AS345	Eggs and Dairy Products (A)
AS350	Meat Science (A)
EB320	Agriculture and Food Policy I (A)
EB430	International Marketing
EB435	Consumer Behaviour and Food Marketing (A)
PS200	Vegetable Crops (A)
PS210	Principles of Organic Horticultural Crop Production (A)
PS305	Grain Production (A)
PS315	Tree Fruit Crops (A)
PS320	Small Fruit Crops (A)
PS325	Potato Production (A)

ANIMAL SCIENCE

In addition to the College core, students must take the following courses to meet the requirements of this program:

AS200	Animal Agriculture I (A)
AS201	Animal Agriculture II (A)
AS230	Farm Animal Physiology
AS305	Animal Nutrition
AS310	Animal Breeding (A)
AS330	Growth, Reproduction, Lactation (A)
B240	Genetics I

plus

Two Animal Science courses at the 300 or 400 level
One Animal Science course at the 400 level (AS449 and AS450 cannot be used)
(Three of these must be 'A' courses)

MINOR

Any six courses approved by the Animal Science Department. The content of the minor will be decided on a student-by-student basis.

RECOMMENDED SYLLABUS FOR A MAJOR IN ANIMAL SCIENCE

Year 2

Semester III		*Semester IV*	
AS200	Animal Agriculture I (A)	AS201	Animal Agriculture II (A)
B240	Genetics I	AS230	Farm Animal Physiology
CS200	Biochemistry I	MP222	Computer Methods
MP* or *Elective*		**MP* or** *Elective*	
	Elective	**MP* or** *Elective*	

Year 3

Semester V		*Semester VI*
AS305	Animal Nutrition	*Elective*
AS310	Animal Breeding (A)	*Elective*
AS330	Growth, Reproduction & Lactation (A)	*Elective*
	Elective	*Elective*
	Elective	*Elective*

Year 4

Semester VII

AS449	Project-Seminar I (A)
	Elective
	Elective
	Elective
	Elective

Semester VIII

AS450	Project-Seminar II (A)
	Elective
	Elective
	Elective
	Elective

MP* - MP130, MP210 and MP222 should be completed in semester III or IV.
Electives must include two 300 or 400 level Humanities courses, two 300 or 400 level Animal Science courses and one 400 level Animal Science course (three of these must be 'A' courses).

AQUACULTURE

In addition to the College Core, students must take the following courses to meet the requirements of this program:

MAJOR

AE215	Aquatic Environment (A)
AE360	Aquatic Engineering (A)
AS210	Introduction to Aquaculture (A)
AS305	Animal Nutrition
AS310	Animal Breeding (A)
AS375	Aquatic Ecology
AS380	Physiology of Aquatic Animals (A)
B225	Microbiology
B240	Genetics I
EB340	Farm Management (A)

and one of:

EB210	Financial Accounting
EB335	Business Marketing
EB440	Farm Management II (A)

Electives must include one 'A' course, none if EB440 is taken.

RECOMMENDED SYLLABUS FOR A MAJOR IN AQUACULTURE

Year 2

Semester III

AS210	Introduction to Aquaculture (A)
B240	Genetics I
CS200	Biochemistry I
MP* or Elective	
MP* or Elective	

Semester IV

AE215	Aquatic Environment (A)
B225	Microbiology
MP* or Elective	
MP* or Elective	
MP* or Elective	

Year 3

Semester V

AS305	Animal Nutrition
AS310	Animal Breeding (A)
AS380	Physiology of Aquatic Animals (A)
EB340	Farm Management I (A)
	Elective

Semester VI

AS375	Aquatic Ecology
AE360	Aquatic Engineering (A)
	Elective
	Elective
	Elective

Year 4

Semester VII

AS449	Project-Seminar (A)
	Elective
	Elective
	Elective
	Elective

Semester VIII

AS450	Project-Seminar (A)
	Elective
	Elective
	Elective
	Elective

MP* - MP130, MP210 and MP222 should be completed in semester III or IV.
Electives must include two 300 or 400 level Humanities courses, and one additional 'A' course unless EB440 is taken and one of EB210, EB335 or EB440.

PLANT SCIENCE

In addition to the College Core, students must take the following courses to meet the requirements of this program:

MAJOR

B240	Genetics I
B260	Plant Physiology
B265	Systematic Botany
B300	Principles of Plant Pathology (A)
B320	General Entomology
B335	Weed Science (A)
CS220	Introduction to Soil Science (A)
PS415	Crop Adaptation (A)

plus

Two Plant Science Production Courses
One Plant Science (PS) Elective Course
One of PS405 Agronomy (A) or PS410 Horticulture (A)
Electives must include two 'A' courses.

MINOR

Any **five** Plant Science Courses*

* Plant Science courses required for a given major cannot also be counted towards the Plant Science minor; a major in Plant Science cannot be combined with a minor in Plant Science.

RECOMMENDED SYLLABUS

Year 2

Semester III

B240	Genetics I
B265	Systematic Botany
CS200	Biochemistry I
CS220	Introduction to Soil Science (A)
MP* or *Elective*	

Semester IV

B260	Plant Physiology
MP* or *Elective*	
MP* or *Elective*	
MP* or *Elective*	
	Elective

Year 3

Semester V

B300	Principles of Plant Pathology (A)
B320	General Entomology
B335	Weed Science (A)
	Elective
	Elective

Semester VI

PS449	Project-Seminar (A)
	Elective
	Elective
	Elective
	Elective

Year 4

Semester VII

PS415	Crop Adaptation (A)
PS450	Project-Seminar II (A)
	Elective
	Elective
	Elective

Semester VIII

PS405	Agronomy (A) **or**
PS410	Horticulture (A)
	Elective
	Elective
	Elective
	Elective

MP* - MP130, MP210 and MP222 should be completed in semester III or IV.
Electives must include two 300 or 400 level Humanities courses, two Plant Science Production courses and one additional Plant Science course. (Two of the electives must be 'A' courses)

RURAL STUDIES

MINOR*

Any four of the following:

H300	History of Agriculture
H305	History of Scientific and Agricultural Thought
H320	Extension Education in the Rural Community
H325	Technology in Agricultural Communications
H350	Environmental and Agricultural Ethics
H360	Rural Sociology
H370	Rural Geography
H401	Humanities Research Seminar I
H402	Humanities Research Seminar II

* Courses chosen cannot be counted towards both this minor and the College Core, which requires two Humanities courses at the 300 or 400 level.

SOIL SCIENCE

In addition to the College Core, students must take the following courses to meet the requirements of this program:

MAJOR

AE340	Soil and Water (A)
B225	Microbiology
B260	Plant Physiology
B400	Soil Microbiology (A)
CS220	Introduction to Soil Science (A)
CS225	Quantitative Analytical Chemistry
CS230	Introduction to Geology
CS320	Soil Fertility (A)
CS325	Soil Genesis and Classification (A)
CS335	Soil Physics (A)
CS345	Soil Conservation in Agriculture (A) ***or***
CS430	Soil Survey and Land Evaluation (A)
CS440	Environmental Soil Chemistry

No additional 'A' courses are required.

MINOR

CS220*	Introduction to Soil Science (A)

and any four of the following not required as part of a major:

AE340	Soil and Water (A)
B400	Soil Microbiology (A)
CS320	Soil Fertility (A)
CS325	Soil Genesis and Classification (A)
CS335	Soil Physics (A)
CS345	Soil Conservation in Agriculture (A)
CS415	Special Topics in Chemistry and Soil Science I (A)
CS430	Soil Survey and Land Evaluation (A)
CS440	Environmental Soil Chemistry

or any other Soil Science course approved by the Chemistry and Soil Science Department.

*If not required as part of a major.

RECOMMENDED SYLLABUS FOR A MAJOR IN SOIL SCIENCE

Year 2

Semester III

CS200 Biochemistry I
CS220 Introduction to Soil Science (A)
MP130 Physics for Life Sciences I
MP* or *Elective*
MP* or *Elective*

Semester IV

B225 Microbiology
B260 Plant Physiology
CS225 Quantitative Analytical Chemistry
MP* or *Elective*
MP* or *Elective*

Year 3

Semester V

AE340 Soil and Water (A)
CS325[1] Soil Genesis and Classification *or Elective*
CS345 Soil Conservation in Agriculture (A) *or*
CS430 Soil Survey and Land Evaluation (A)
Elective
Elective

Semester VI

CS230 Introduction to Geology
CS320 Soil Fertility (A)
CS335[1] Soil Physics (A) *or*
CS440[1] Environmental Soil Chemistry
Elective
Elective

Year 4

Semester VII

B400 Soil Microbiology (A)
CS325[1] Soil Genesis and Classification (A) *or Elective*
CS449 Project-Seminar I *(A)*
Elective
Elective

Semester VIII

CS335[1] Soil Physics (A) *or*
CS440[1] Environmental Soil Chemistry
CS450 Project-Seminar II (A)
Elective
Elective
Elective

[1]These courses are offered in alternate years.

MP* - MP210 and MP222 should be completed in semester III or IV.
Electives must include two 300 or 400 level Humanities courses.

AGRICULTURAL ENGINEERING IN ATLANTIC CANADA - B.ENG.

Agricultural Engineering is one of the engineering disciplines offered at the Technical University of Nova Scotia (TUNS). An agreement between TUNS and NSAC is in place whereby the Agricultural Engineering program is taught jointly by the two institutions. This cooperative program, with its three work terms and five academic semesters (following completion of the Associated University program) has Semester X taught at NSAC, while all other academic terms are completed at TUNS.

ENVIRONMENTAL ENGINEERING

Environmental Engineering is an option of specialized study within the Agricultural Engineering program administered jointly by TUNS and NSAC. This cooperative program consists of five academic semesters at NSAC followed by four at TUNS.

ENGINEERING DIPLOMA

The engineering diploma program is the 22-course Associate Universities program given in conjunction with the Technical University of Nova Scotia. Students who successfully complete this program at NSAC receive an Engineering Diploma.

As TUNS and the Associated Universities form a unified system of engineering education, all diploma graduates from the Associated Universities are guaranteed admission to TUNS. It is not possible, however, for TUNS to guarantee that students will gain entry to the department of their choice since all departments are subject to a known maximum number of annual admissions. Thus students are required to specify their choice of at least three departments, in preferential order, and at a predetermined date departments will select students for admission, the basis for selection being the academic performance of the applicants.

This B.Eng. program leads to recognition by the provincial Associations of Professional Engineers.

Requirements

The academic requirements for the Engineering Diploma are successful completion of:
(a) all courses specified in the syllabus of courses
(b) at least 22 semester courses
(c) at least 11 courses at NSAC and registration in the final year at NSAC

The minimum level of academic achievement to graduate is a cumulative average of 60%.

SYLLABUS

Year I

Semester I

AE101 Computer Aided Graphics & Projection
CS100 Chemical Principles I
H102 Nature in English and American Literature
MP100 Calculus and Analytic Geometry I
MP130 Physics for Life Sciences I

Semester II

AE110 Statics
CS110 Organic Chemistry
MP105 Calculus and Analytic Geometry II
MP135 Physics for Life Sciences II
EB220 Production Economics[1]

Year 2

Semester III

AE230 Dynamics
AE300 Electric Circuits
AE310 Thermodynamics
MP220 Computer Science
MP230 Multivariable Calculus
H 140 Personnel Management[1]

Semester IV

AE205 Graphics and Design
AE315 Strength of Materials
AE325 Digital Logic
AE350 Fluid Mechanics
H150 Agriculture Today[1]
MP235 Differential Equations and Linear Algebra

[1]*May substitute H140, H 170, H 320, H325, H350, H360, or H370 if timetable permits.*

ENVIRONMENTAL ENGINEERING OPTION

This cooperative program is administered jointly by the Technical University of Nova Scotia and NSAC. Students begin their studies at NSAC and continue uninterrupted at TUNS beginning in the winter semester of their third year.

Graduates of the B.Eng. will meet the formal education requirements for admission to the provincial Associations of Professional Engineers and the provincial Institutes of Agrologists.

SYLLABUS (semester numbers include work semesters)

Year 1

Semesters I and II

Completion of first year of Agricultural Science, Engineering, or Pre-Vet program.

Semester III

Summer no requirements

Year 2

Semester IV at NSAC

B100 Botany[1]
CS200 Biochemistry I
MP220 Computer Science
MP230 Multivariable Calculus
Humanities Elective
Elective[1]

Semester V at NSAC

AE205 Graphics and Design
B110 Zoology[2]
B225 Microbiology
Humanities Elective
Elective
Elective

Semester VI

Work term 1*

Semester VII at NSAC

AE230 Dynamics
AE310 Thermodynamics
B330 Ecology
B360 Environmental Analysis
CS220 Introduction to Soil Science

Semester VIII at TUNS

AE0801 Applied Thermodynamics
AE0805 Electric Circuits and Electronics
AE0806 Energy and Environment
AE1240 Biological Waste Management
IE0718 Engineering Economics
Technical Elective

Semester IX

Work term 2*

Semester X at TUNS

AE1001 Thermodynamics
AM3011 Differential Equations and Linear Algebra
AM3030 Applied Probability and Statistics
CP0023 Engineering Law and Contract
Technical Elective
Technical Elective

Semester XI at TUNS

AE0700 Measurement and Control
AE0810 Heat and Mass Transfer
AE1200 Engineering Systems
AE1201 Technical Communications
AM3652 Applied Numerical Methods
AM4931 Mathematical Statistics

Semester XII

Work term 3*

Semester XIII

Work term 4*

Semester XIV at TUNS

AE1230 Environmental Control
AE1420 Soil and Water Conservation
AE1440 Biological Wastes Disposal and Utilization
AE1480 Design Project
Technical Elective
Technical Elective

**Three work terms are required.*

[1] AE101 and MP130 required by students who have completed B100 & Elective

[2] AE110 required by students who have completed B110

Recommended Electives at NSAC:

Fall Semester

AS300 Animal Physiology
H160 Introductory Sociology
H370 Rural Geography

Winter Semester

B260 Plant Physiology
CS230 Introduction to Geology
CS310 Radiotracers in Agriculture
CS335 Soil Physics
CS440 Environmental Soil Chemistry
H140 Personnel Management
H170 Introductory Human Geography
H325 Technology in Agricultural Communications
H350 Environmental and Agricultural Ethics
H360 Rural Sociology

PRE-VETERINARY MEDICINE

Students prepare to enter the program leading to Doctor of Veterinary Medicine at the University of Prince Edward Island by completing a two-year program at NSAC.

Requirements

The following is the minimum academic requirement for admission to the Atlantic Veterinary College. It is the student's responsibility to ensure the requirements are met. Students should consult the latest University of Prince Edward Island calendar to make sure that there have been no changes. Twenty-one semester courses or equivalent are required. These include:

Mathematics: two courses including statistics;
Biology: four courses including Genetics and Microbiology;
Chemistry: three courses including Organic Chemistry;
Physics: one course;
English: two courses including one with emphasis on writing;
Humanities and Social Sciences: three courses;
Electives: five from any discipline.

Science courses will normally have a laboratory component.

RECOMMENDED SYLLABUS

Year 1

Semester I

B100	Botany
CS100	Chemical Principles
IN100	Agriculture and Food I (A) ***or***
	Elective
H102	Nature in English and
	American Literature
MP100	Calculus and Analytic Geometry I

Semester II

B110	Zoology
CS110	Organic Chemistry
IN101	Agriculture and Food II (A) ***or***
	Elective
EB110	Agricultural Economics
MP210	Statistics

Year 2

Semester III

B240	Genetics I
CS200	Biochemistry I
AS200	Animal Agriculture I ***or***
	Elective
	Humanities Elective
	Humanities Elective

Semester IV

B225	Microbiology
MP130	Physics for Life Sciences
MP222	Computer Methods ***or***
	Elective
AS230	Farm Animal Physiology ***or***
	Elective
	Humanities Elective

Electives must include at least two Humanities and Social Sciences courses. Two of H101, H102, H205 are required.

In Semesters III and IV electives should be considered on the basis of future academic options.

Recommended Electives

Fall Semester

B200 Cell Biology
H140 Personnel Management
EB335 Business Marketing
MP105 Calculus and Analytic Geometry II

Winter Semester

CS205 Biochemistry II
H130 Introductory French
H140 Personnel Management
H150 Agriculture Today

GRADUATE PROGRAM

Master of Science in Agriculture

Formally approved in the Spring of 1993, the Master of Science in Agriculture represents a unique co-operative agreement between Dalhousie University and the Nova Scotia Agricultural College to provide post-graduate education in agriculture in the Atlantic Region. The Master of Science degree is granted by Dalhousie University in association with the Nova Scotia Agricultural College, the only educational institution in the Atlantic Region with the faculty and facilities capable of providing such a program of study.

Graduate students attend classes at the Nova Scotia Agricultural College and, on occasion, supplement their program with courses at Dalhousie University or other recognized institutions. Students may choose to concentrate their studies in any of the following disciplines and interdisciplines:

Agribiology:
Ecology
Environmental Microbiology
Pest Management
Sexual Reproduction of Angiosperms
Waste Management

Agricultural Chemistry:
Agricultural Chemistry
Food Science

Animal Science:
Animal Behaviour
Animal Management
Animal Product Technology
Genetics and Breeding
Nutrition
Physiology

Plant Science:
Crop Breeding
Crop Management
Crop Physiology
Plant Biotechnology

Soil Science:
Geology
Nutrient Management
Soil Chemistry
Soil Fertility
Soil Physics

Faculty and resources are also available in Mathematics and Physics, Agricultural Engineering, Agricultural Economics and Rural Sociology.

Admission Requirements

Candidates must hold a Bachelor's Degree from a university of recognized standing with: (a) honours or the equivalent of honours standing as granted by Dalhousie University, in the area in which graduate work is to be done. This standing usually results in a one-year residency. (b) at least four (4) undergraduate classes, or their equivalent, in the year in which graduate work is to be done, with a GPA of 3.0 or 70%, or (B) average. This standing usually results in a two-year residency.

The program also offers part-time study. Details can be obtained from:

NSAC Research & Graduate Studies Office
Nova Scotia Agricultural College
P.O. Box 550
Truro, Nova Scotia Canada
B2N 5E3
Phone: (902) 893-6502
Fax: (902) 897-9399
EMail: Spatriquin@cadmin.nsac.ns.ca

Start Dates

Students may choose to begin their Master of Science in Agriculture Program in the Fall (September 1) or Spring (May 1) session. The usual start date is **September 1.**

Application Dates

The final date for the receipt of applications for studies commencing:

September 1 ..... June 1
(Non-Canadian students ..... April 1)
May 1 ..... December 1
(Non-Canadian students ..... September 1)

Application deadlines reflect the realistic time constraints for the processing of all relevant student documentation.

Curriculum

All M.Sc. students are required to complete the Communication Skills course (AG570) and the Graduate Module course (AG571), where the student is encouraged to initiate modules in specific areas. A satisfactory thesis embodying contributions to independent research must be presented and defended successfully in a public oral examination. Students are also required to assist in the teaching of at least one undergraduate course (See Graduate Course Descriptions).

Credits Required for Graduation

M.Sc. (1 year residency program)
Ten graduate credits are required.
- All graduate classes are full credit courses.
- A minimum grade requirement of 70%.
- The thesis may count for a maximum of six credits.

M.Sc. (2 year residency program)
- In addition to the requirements for a M.Sc. (1 year), students must complete at least five credits related to their thesis work with a grade of 70% or better. These additional credits may be at the undergraduate or graduate level.

Graduate Program Policies - Procedures:
Documented Graduate Policies & Procedures are available from the Research & Graduate Studies Office. The Policies and Procedures Manual (PPM) is intended to offer very specific and detailed information on the program's requirements. The PPM is automatically circulated to all successful applicants, however, you may request this document anytime after application to the program.

TECHNICIAN PROGRAMS

To satisfy the needs of the farm and farm-related businesses and services, the Nova Scotia Agricultural College offers a broad program of studies leading to Technician Diplomas.

PRE-TECH SEMESTER

The Nova Scotia Agricultural College offers a Winter Semester program designed to prepare high school graduates for entrance to the technician programs. May not be offered in any year based on enrollment.

Candidates may be considered who lack specific subject entrance requirements for the technician programs in up to three subjects. The following is the syllabus of courses for the Pre-Tech semester:

B01 Pre-Tech Biology
CS01 Pre-Tech Chemistry
EB01 The Agricultural Industry
H01 Language Development
MP01 Pre-Tech Mathematics

All students accepted for this Pre-Tech semester must take at least four of these courses.

Upon satisfactory completion of the semester, a student **may** be granted acceptance into one of the programs leading to a Technician Diploma.

Admission Requirements for Technician Programs Including Agricultural Business, Agricultural Engineering, Animal Science and Plant Science

High school graduation with three university preparatory courses in English, two in Mathematics, one in Biology and one in Chemistry, or satisfactory completion of the Pre-Tech semester, is required.

Academic Standing

All students are assessed at the end of each semester. Those with failing averages (less than 50%) or failures in half or more of the courses in which they are registered may be required to terminate their studies.

Students who satisfactorily complete all the program requirements will be awarded Technician Diplomas, and thus become Associates of the Nova Scotia Agricultural College".

A high honours diploma will be awarded to a student who has attained an average of at least 80%, and an honours diploma will be awarded to one who has attained an average of at least 75%.

It is the student's responsibility to see that the requirements for a diploma are fulfilled.

AGRICULTURAL COLLEGES EXCHANGE PROGRAM

This program provides an opportunity for technical students in several of the programs to enroll in another Canadian college for one semester of their second academic year. In this way they broaden their study program.

Other colleges participating with NSAC in this program are:

- The Ontario Agricultural College, University of Guelph, Guelph, Ontario
- Olds College, Olds, Alberta
- Lakeland College, Vermilion Campus, Vermilion, Alberta

Arrangements may also be made for students who wish to complete a semester of study in Britain.

For more detailed information contact the Registrar at NSAC.

AGRICULTURAL BUSINESS

This two-year program prepares students for careers on the farm as business managers or as managers and supervisors in farm-related business firms.

A student who has successfully completed the first year of this program with a good study record may apply for acceptance into a two-year program in Farming Technology. A student who has successfully completed the two years with a good study record may apply for acceptance into a one-year program in Agricultural Technology.

SYLLABUS

Agricultural Business with a minor in Animal Science
Year I

Semester I

CS12	Principles of Soil Science
CS14	Agricultural Chemistry
EB10	Accounting
EB12	Macroeconomics
H10	Technical Writing
PS36	Field Crops

Semester II

CS13	Soil Management
EB11	Applied Accounting and Taxation
EB13	Microeconomics
EB41	Business Law
MP14	Computational Methods
PS37	Field Crop Management

An additional course, AS12 Farm Workplace I, is optional for all students.

Year II

Semester III

AS16	Farm Animal Production I
AS18	Farm Animal Biology I
EB40	Marketing Practices
EB65	Business Project
EB340	Farm Management I
AS12	Farm Workplace *(Optional)*

Semester IV

AS66	Farm Animal Production II
AS68	Farm Animal Biology II
EB42	Applied Farm Management
EB220	Production Economics
EB65	Project
	Humanities Elective

Agricultural Business with a minor in Plant Science

Year I

Semester I

CS12 Principles of Soil Science
CS14 Agricultural Chemistry
EB10 Accounting
EB12 Macroeconomics
H10 Technical Writing
PS36 Field Crops

Semester II

CS13 Soil Management
EB11 Applied Accounting and Taxation
EB13 Microeconomics
EB41 Business Law
MP14 Computational Methods
PS37 Field Crop Management

An additional course, AS12 Farm Workplace I is optional for all students.

Year 2

Semester III

AS16 Farm Animal Production I
B43 Entomology
EB40 Marketing Practices
EB65 Business Project
EB340 Farm Management I
PS200 Vegetable Production[1]
Humanities Elective

Semester IV

B40 Plant Pathology
EB42 Applied Farm Management
EB65 Business Project
EB220 Production Economics
PS49 Potato Production[1]
PS76 Plant Products Physiology

[2]*May substitute PS43 or PS44 if timetable permits.*

Agricultural Business with a minor in Agricultural Engineering

Year 1

Semester I

AE12 Drafting
CS12 Principles of Soil Science
CS14 Agricultural Chemistry
EB10 Accounting
EB12 Macroeconomics
H10 Technical Writing

Semester II

CS13 Soil Management
EB11 Applied Accounting and Taxation
EB13 Microeconomics
EB41 Business Law
MP14 Computational Methods
Humanities Elective

An additional course, AS12 Farm Workplace I is optional for all students.

Year 2

Semester III

AE30 Farm Machinery[1]
AS16 Farm Animal Production I
EB40 Marketing Practices
EB65 Business Project
EB340 Farm Management I
MP15 Introductory Physics
PS36 Field Crops

Semester IV

AE38 Horticultural Engineering
AE64 Tractor Power[1]
EB42 Applied Farm Management
EB65 Business Project
EB220 Production Economics
PS37 Field Crop Management

[1]*May substitute AE32 or AS36 if timetable permits.*

AGRICULTURAL ENGINEERING

The Nova Scotia Agricultural College offers a two-year program to prepare students for careers on farms or in farm-related firms with specialization in the efficient use and maintenance of land, structures, and machinery.

A student who has successfully completed the first year of this program with a good study record may apply for acceptance into a two-year program in Farming Technology. A student who has successfully completed the two years of the program with a good study record may apply for acceptance into a one-year program in Agricultural Technology.

SYLLABUS

Year 1

Semester I

AE12 Drafting
AE13 Shopwork
AE14 Surveying
CS12 Principles of Soil Science
H10 Technical Writing
MP15 Introductory Physics

Semester II

AE19 Technical Drawing
AE20 Shopwork Practices
AE27 Welding
MP14 Computational Methods
PS37 Field Crop Management
Elective

Year 2

Semester III

AE30 Farm Machinery
AE32 Farm Buildings
AE45 Soil and Water Management
AE49 Electrical Systems
AS16 Farm Animal Production I
EB10 Acounting

Semester IV

AE36 Controls and Processing
AE65 Project-Seminar
AE63 Tractor Power
Humanities Elective
Elective
Elective

At least one of the electives must be an Agricultural Engineering course.

ANIMAL SCIENCE

The Nova Scotia Agricultural College offers a two-year program in Animal Science to prepare students for careers on farms as animal husbandry specialists or as animal science technicians in agricultural services and industries.

A student who has successfully completed the first year of this program with a good study record may apply for acceptance into a two-year program in Farming Technology. A student who has successfully completed the two years with a good study record may apply for acceptance into a one-year program in Agricultural Technology.

Animal Science

SYLLABUS[1]

Year 1

Semester I

AS12 The Farm Workplace I
AS16 Farm Animal Production I
AS17 Farm Animal Production I Practicum
AS18 Farm Animal Biology I
AS19 Farm Animal Biology I Practicum
AS20 Farm Animal Breeding
CS12 Principles of Soil Science
H10 Technical Writing

Semester II

AS22 The Farm Workplace II
AS65 Project-Seminar
AS66 Farm Animal Production II
AS67 Farm Animal Production II Practicum
AS68 Farm Animal Biology II
AS69 Farm Animal Biology II Practicum
CS13 Soil Management
MP14 Computational Methods

Year 2

Semester III

AS76 Farm Animal Production III
AS77 Farm Animal Production III Practicum
PS36 Field Crops
Economics Elective[2]
Elective[3]

Semester IV

AS86 Farm Animal Production IV
AS87 Farm Animal Production IV Practicum
PS37 Field Crop Management
Economics Elective[2]
Elective[3]

[1] Animal Science Technician students take required courses in the listed sequence, and in the listed semesters. Deviations from this will require written permission from the Head of the Animal Science Department.

[2] Students may choose one of EB10 or EB340 in the fall semester, and one of EB41 or EB11 in the winter semester.

[3] Students may choose electives from other departments or from degree courses, if the timetable and prerequisites permit. Courses from other institutions and from NSAC Continuing Education programs may be recognized as electives.

PLANT SCIENCE

The Nova Scotia Agricultural College offers a two-year program in Plant Science to prepare students for careers on farms as plant specialists or as plant science technicians in agronomy, horticulture, or ornamental horticulture services and industries.

A student who has successfully completed the first year with a good study record may apply for acceptance into a two-year program in Farming Technology. A student who has successfully completed the two years with a good study record may apply for acceptance into a one-year program in Agricultural Technology.

Plant Science with specialization in Agronomy

SYLLABUS

Year 1

Semester I

AS16	Farm Animal Production I
B43	Entomology
CS12	Principles of Soil Science
EB10	Accounting
H10	Technical Writing
PS30	Introduction to Plant Science

Semester II

AS66	Farm Animal Production II
B41	Plant Physiology
B46	Weed Science
CS13	Soil Management
MP14	Computational Methods
PS49	Potato Production

Year 2

Semester III

AE30	Farm Machinery
AS12	Farm Workplace I
EB340	Farm Machinery I
MP15	Introductory Physics
PS36	Field Crops
	Plant Science Elective

Semester IV

AE63	Tractor Power
B40	Plant Pathology
EB41	Business Law
PS37	Field Crop Management
PS65	Plant Science Project[1]
	Plant Science Elective
	Humanities Elective

[1] *May substitute PS38 or PS44 if timetable permits.*

Plant Science with specialization in Horticulture

Year 1

Semester I

B43	Entomology
CS12	Principles of Soil Science
EB10	Accounting
H10	Technical Writing
PS30	Introduction to Plant Science
	Plant Science Elective

Semester II

AE38	Horticultural Engineering
B41	Plant Physiology
B46	Weed Science
CS13	Soil Management
MP14	Computational Methods
PS49	Potato Production

Year 2

Semester III

MP15	Introductory Physics
PS39	Greenhouse Crop Management
PS36	Field Crops
PS43	Small Fruit Crops
PS47	Turfgrass Production and Management[1]
PS200	Vegetable Crops[1]

Semester IV

B40	Plant Pathology
PS38	Nursery Crop Production
PS37	Field Crop Management
PS44	Tree Fruit Crops
PS76	Plant Product Physiology
	Humanities Elective

[1]*May substitute PS65, PS147 or PS210 if timetable permits.*

Plant Science with specialization in Ornamental Horticulture

Year 1

Semester I

B43	Entomology
CS12	Principles of Soil Science
EB10	Accounting
H10	Technical Writing
PS30	Introduction to Plant Science
PS55	Plant Propagation

Semester II

AE38	Horticultural Engineering
B41	Plant Physiology
B46	Weed Science
CS13	Soil Management
MP14	Computational Methods
PS38	Nursery Crop Production

Year 2

Semester III

PS39	Greenhouse Crop Management
PS43	Small Fruit Crops
PS47	Turfgrass Production and Management[1]
PS50	Landscape Horticulture I
PS200	Vegetable Crops[1]
PS60	Landscape Plant Materials I

Semester IV

B40	Plant Pathology
H140	Personnel Management
PS44	Tree Fruit Crops
PS76	Plant Products Physiology
PS61	Landscape Plant Materials II
PS72	Landscape Maintenance

[1] *May substitute PS65, PS147 or PS210 if timetable permits.*

TECHNOLOGY PROGRAMS

The Nova Scotia Agricultural College offers specialized two-year and three-year programs to prepare students for careers associated with laboratory techniques in Animal Health, Biology, Chemistry, and Food Quality, and with the practice of Landscape Horticulture. These studies lead to a Diploma of Technology in each of these areas.

A candidate for these programs may qualify for admission with high school completion or equivalent. See syllabus of each program for specific admission requirements. Accepted students are asked to complete and submit medical information on the form provided.

Each candidate must be available for an interview if requested.

Students who successfully complete all the requirements will be granted a Diploma of Technology. A high honours diploma will be awarded to a student who has attained an average of at least 80% and an honours diploma will be awarded to one who has attained an average of at least 75%.

It is the student's responsibility to see that the requirements for the diploma are fulfilled.

ANIMAL HEALTH TECHNOLOGY

The Animal Health Technology (AHT) program is designed to prepare students with the skills and knowledge required to function as technical assistants to practicing veterinarians, researchers, and other persons who deal with animals especially in a context of medicine or science.

ADMISSION REQUIREMENTS

High School Graduation Certificate with pass marks and an average of at least 60% in Biology, Chemistry, English, Mathematics and one other course all at the following provincial levels: New Brunswick 121 or 122; Newfoundland Academic 3; Nova Scotia 441 or 442; Prince Edward Island Academic XII. The selection process includes a full day of inteviews and orientation. Applications will be accepted between January 1 and February 29.

SYLLABUS

Year 1

Semester I

AS10	Orientation to Animal Health
AS16	Farm Animal Production I
AS18	Farm Animal Biology I
B15	Animal Anatomy
CS14	Agricultural Chemistry
H10	Technical Writing

Semester II

AS11	Animal Handling
AS48	Animal Behaviour
AS66	Farm Animal Production II
AS68	Farm Animal Biology II
B225	Microbiology
MP14	Computational Methods

Year 2

Semester III

AS24	Principles of Disease
AS25	Animal Nursing and Clinical Procedures I
AS37	Laboratory Animal Care I
AS39	Veterinary Lab Techniques I
AS47	Animal Health

Semester IV

AS36	Principles of Pharmacology
AS46	Animal Nursing and Clinical Procedures II
AS49	Veterinary Lab Techniques II
AS40	Support Services in Veterinary Practice
H45	Technical Communications

Spring (May-June)

AS80	Externship (AVC)

Year 3

Semester V (Summer-Fall)

AS81	Externship-Vet Practice
AS82	Externship-Institutional

Semester VI

AS59	Veterinary Laboratory Techniques III
AS71	Laboratory Animal Care II
AS75	Animal Nursing and Clinical Procedures III
AS95	Animal Health Technology Project

BIOLOGY TECHNOLOGY

The Nova Scotia Agricultural College offers this program to prepare students for work as:

- laboratory assistants and demonstrators in academic institutions
- research assistants in university and government laboratories
- natural history curatorial assistants
- technologists trained to acquire data for environmental impact studies
- selected industrial quality control laboratory technologists
- technologists trained to acquire data in integrated pest management programs
- technologists to assist with data acquisition of forestry or silviculture-related programs
- technologists trained to work in the life sciences and related fields

ADMISSION REQUIREMENTS

High School Graduation Certificate with pass marks in Biology, Chemistry, English, and Mathematics, at the following provincial levels: New Brunswick 121 or 122; Newfoundland Academic 3; Nova Scotia 441 or 442; Prince Edward Island Academic XII.

SYLLABUS

Year 1

Semester I

B100	Botany
CS42	Organic Chemistry
CS68	Introductory Laboratory Techniques
H10	Technical Writing
MP15	Introductory Physics

Semester II

B25	Histological Techniques
B110	Zoology
B225	Microbiology
CS43	Bio-Organic Chemistry
CS69	Introductory Instrumentation

Year 2

Semester III

AS18	Farm Animal Biology I
B200	Cell Biology
B265	Systematic Botany
CS12	Principles of Soil Science
CS30	Chemical Calculations

Semester IV

B40	Plant Pathology
B41	Plant Physiology
B355	Food Microbiology
MP70	Basic Statistics –
MP222	Computer Methods

Year 3

Semester V

AS37	Laboratory Animal Care
B43	Entomology
B45	Biology Practicum I
B330	Ecology
	Elective

Semester VI

B46	Weed Science
B48	Plant Tissue Culture
B60	Biology Practicum II
B75	Biological Photography
	Elective

CHEMISTRY LABORATORY TECHNOLOGY

The Nova Scotia Agricultural College offers this program to help students prepare for work as chemistry laboratory technologists with agricultural and chemical research agencies, university chemistry departments, food processing and distribution companies, environmental control services, quality control and analysis services, or with product development programs.

ADMISSION REQUIREMENTS

High School Graduation Certificate with pass marks and an average of at least 60% in Biology, Chemistry, English, Mathematics, and one other course, all at the following provincial levels: New Brunswick 121 or 122; Newfoundland Academic 3; Nova Scotia 441 or 442 (if 442, 70% required in Math); Prince Edward Island Academic XII.

SYLLABUS

Year 1

Semester I

CS30 Chemical Calculations
CS42 Organic Chemistry
CS68 Introductory Laboratory Techniques
CS100 Chemical Principles (Lectures only)
H10 Technical Writing
MP100 Calculus and Analytic Geometry I

Semester II

B225 Microbiology
CS43 Bio-Organic Chemistry
CS225 Quantitative Analytical Chemistry
MP70 Basic Statistics
MP222 Computer Methods ***or***
Elective
Elective

Year 2

Semester III

CS50 Introduction to Physical Chemistry
CS75 Basic Food Chemistry
CS79 Project Organization
CS220 Introduction to Soil Science
CS305 Instrumental Analytical Chemistry
MP222 Computer Methods ***or***
Elective

Semester IV

CS73 Laboratory Organization and Management
CS80 Project Implementation
CS310 Radiotracers in Agriculture
CS350 Food Chemistry
CS370 Instrumental Food Analysis
Elective

FOOD QUALITY

The Nova Scotia Agricultural College offers this program to prepare students for employment as:

- technologists trained to work in food processing and analysis services
- quality control laboratory technologists in the food industry
- research assistants in government and university laboratories
- laboratory assistants and demonstrators in academic institutions involved in food-related fields
- technologists trained to assist with food product development

ADMISSION REQUIREMENTS

High School Graduation Certificate with pass marks and an average of at least 60% in Biology, Chemistry, English, Mathematics and one other course all at the following provincial levels: New Brunswick 121 or 122; Newfoundland Academic 3; Nova Scotia 441 or 442; Prince Edward Island Academic XII.

SYLLABUS

Year 1

Semester I

CS42	Organic Chemistry
CS68	Introductory Laboratory Techniques
CS100	Chemical Principles (lectures only)
H10	Technical Writing
MP15	Introductory Physics

Semester II

B225	Microbiology
CS40	Food Laboratory Methods
CS43	Bio-Organic Chemistry
MP70	Basic Statistics
MP222	Computer Methods *or* *Elective*

Year 2

Semester III

AS345	Eggs and Dairy Products
CS30	Chemical Calculations
CS75	Basic Food Chemistry
CS305	Instrumental Analytical Chemistry
MP222	Computer Methods *or* *Elective*

Semester IV

AE135	Fundamentals of Food Processing
B355	Food Microbiology
CS225	Quantitative Analytical Chemistry
CS350	Food Chemistry
CS370	Instrumental Food Analysis

Year 3

Semester V

CS85	Food Laboratory Practicum

Semester VI

AS350	Meat Science
B41	Plant Physiology
CS73	Laboratory Organization and Management
CS380	Food Quality Assurance
PS76	Plant Products Physiology

LANDSCAPE HORTICULTURE

The Nova Scotia Agricultural College offers this two-year program to help prepare students for careers with landscaping firms, planning agencies, recreational parks, institutions, or in self-employed roles as landscape horticultural technologists.

ADMISSION REQUIREMENTS

High School Graduation Certificate with pass marks and an average of at least 60% in Biology, English, Mathematics, and two other courses, all at the following provincial levels: New Brunswick 121 or 122; Newfoundland Academic 3; Nova Scotia 441 or 442; Prince Edward Island Academic XII. Additionally, the applicant must have passed one senior high school Chemistry course. Applicants may be required to attend a selection interview.

SYLLABUS

Year 1

Semester I

AE12	Drafting
CS12	Principles of Soil Science
PS47	Turfgrass Production and Management
PS50	Landscape Horticulture I
PS55	Plant Propagation
PS60	Landscape Plant Materials I

Semester II

AE38	Horticultural Engineering
B40	Plant Pathology
B41	Plant Physiology
CS13	Soil Management
PS51	Residential Landscape Design and Construction
PS61	Landscape Plant Materials II

Spring Session

PS70	Landscape Techniques - 12 weeks

Year 2

Semester III

AE14	Surveying
B43	Entomology
EB10	Accounting
MP222	Computer Methods
PS39	Greenhouse Crop Management
PS71	Arboriculture
PS73	Landscape Horticulture II

Semester IV

B46	Weed Science
H60	Communication Techniques
H140	Personnel Management
PS38	Nursery Crop Production
PS72	Landscape Maintenance
PS74	Landscape Design and Construction

TECHNOLOGY PROGRAMS ENTERED FROM TECHNICIAN PROGRAMS

The College offers programs leading to a Diploma of Technology in Agricultural Technology and Farming Technology. See the syllabus of each program for specific admission requirements.

Students who successfully complete all the requirements will be granted a Diploma of Technology.

A high honours diploma will be awarded to a student who has attained an average of at least 80%, and an honours diploma will be awarded to one who has attained an average of at least 75%. For a Diploma in Agricultural Technology to be awarded, the student's mark in the Farm Project must also be at or above the minimum average mark required for honours and high honours diplomas.

It is the student's responsibility to see that the requirements for the awarding of the diploma are fulfilled.

AGRICULTURAL TECHNOLOGY

A person with an NSAC Technician Diploma or with equivalent standing may apply to continue studies which would lead to a Diploma of Technology in Agricultural Technology. A Diploma of Technology will be awarded to the student who satisfactorily completes 12 approved courses, including a Technology Project, and who earns an average of at least 60%. A diploma with honours is awarded if an average of at least 75% is attained and a mark of at least 75% is attained on the Technology Project. A diploma with high honours is awarded if an average of at least 80% is attained and a mark of at least 80% is attained on the Technology Project.

The program of study including a Technology Project course (AE90, AS90, EB90, or PS90) must first be approved by the corresponding department. In doing so, the department will consider the appropriateness and feasibility of the specific project idea, as well as the student's ability to pursue an independent project, based on performance in the previous technician or equivalent program. Other courses may include those normally taken by other technical or degree students, providing all prerequisites are met.

FARMING TECHNOLOGY

The Nova Scotia Agricultural College offers this program to help students prepare for a career as a farmer on a self-employed basis, or as a manager on a commercial farm.

Students wishing to pursue studies leading to a Diploma of Technology in Farming register for the first year of the Agricultural Business, Animal Science, Plant Science, or Agricultural Engineering Technician program. After successful completion of the first year, their applications are considered for the Farming Technology program. Students with equivalent prerequisites from other College programs can also be considered. If accepted, the student's program of studies includes a minimum of three semesters of prescribed courses, four months of approved farm experience, and seven months of on-farm training under the direction of a farming instructor.

In order to satisfactorily complete the requirements for a Diploma of Technology in Farming, a student must complete all required courses, the on-farm training, and 13 of the approved electives, and must fulfil the experience requirement.

A high honours diploma will be awarded to a student who has attained an average of at least 80% and an honours diploma will be awarded to one who has attained an average of at least 75%. For an honours or high honours diploma to be awarded, the student's mark in the Farm Project must be at or above the minimum average mark requirement for honours or high honours.

SYLLABUS

Four months of approved farm experience is to be completed before Semester I.

Year 1

Semester I

AS12 Farm Workplace I
CS12 Principles of Soil Science
CS14 Agricultural Chemistry
EB10 Accounting
EB40 Marketing Practices
EB340 Farm Management I
H10 Technical Writing
MP15 Introductory Physics
PS36 Field Crops

Semester II

AE63 Tractor Power
CS13 Soil Management
EB11 Applied Accounting and Taxation
EB220 Production Economics
MP14 Computational Methods
PS37 Field Crop Production

Semester III

EB70 On-farm training, a seven-month contract, is developed between the College, the student, and a training farmer, following the first year of the program.

Year 2

Semester IV

EB42 Applied Farm Management
EB72 Farm Project
13 Electives

Recommended Electives:

Semester I

AE12 Drafting
AE13 Shopwork
AE14 Surveying
AE30 Farm Machinery
AE32 Farm Buildings
AE45 Soil and Water Management
AS16 Farm Animal Production I
AS18 Farm Animal Biology I
AS76 Farm Animal Production III
B43 Entomology
EB12 Macroeconomics
PS39 Greenhouse Crop Management
PS43 Small Fruit Crops
PS55 Plant Propagation
PS147 Farm Woodlot Management
PS200 Vegetable Crops
PS210 Principles of Organic Horticultural Crop Production
Humanities Course

Semester II or IV

AE15 Oil Hydraulics
AE20 Shopwork Practices
AE27 Welding
AE36 Controls and Processing
AE38 Horticultural Engineering
AE39 Tractor Overhaul
AS66 Farm Animal Production II
AS68 Farm Animal Biology II
AS87 Farm Animal Production IV
B40 Plant Pathology
B41 Plant Physiology
B46 Weed Science
EB13 Microeconomics
EB41 Business Law
PS30 Introduction to Plant Science
PS38 Nursery Crop Production
PS44 Tree Fruit Crops
PS49 Potato Production
PS76 Plant Production Physiology

DESCRIPTION OF COURSES - UNDERGRADUATE AND TECHNICAL

The course descriptions are grouped according to discipline and are in alphabetical and numerical order.

The faculty reserves the right to make any necessary revisions or additions.

AGRICULTURAL ENGINEERING

AE12: Drafting
Instructor: **Mr. Canning**
Designed to help the student become proficient in this field. This is accomplished by practice printing, the use of instruments, and freehand sketches or orthographic, oblique, and isometric drawings. Blueprint reading and CAD are also introduced.

Fall semester - 1 lec and 4 labs per week.

AE13: Shopwork
Instructors: **Messrs. Hampton and Bhola**
The selection, operation, and maintenance of workshop tools in the modern metal and woodworking shop are studied. In addition special topics in metallurgy, welding and cabinetry are covered in lecture and lab format. Students are required to develop plans for a future shop project.

Fall semester - 2 lecs and 4 labs per week.
Text - Burke and Wakeman, *Modern Agricultural Mechanics*.

AE14: Surveying
Instructor: **Mr. Hampton**
An introduction to surveying principles and recording techniques. Students are given lectures and assignments to assist in understanding the principles employed in surveying, and they practice these during the labs by conducting various surveying exercises. Practice is gained in the proper use of surveying instruments tape, level, and transit through exercises involving measurements of horizontal and vertical distances and angles. These include chaining, stadia, benchmark, profile and contour levelling, triangulation and traverse exercises, and construction surveying, with emphasis on their application to farm construction projects.

Fall semester - 2 lecs and 4 labs per week.

AE15: Oil Hydraulics
Instructor: **Prof. Rifai**
Introduction to pressure and flow concepts of oil as applied to hydraulic systems. Pressure and flow theory and principles of pump, actuator, and valve operations are discussed. Open-centred, closed-centred, and pilot-operated hydraulic systems, hydrostatic transmission, power steering, hydraulic motors, and other accessories found on farm machinery are studied. Selection, maintenance, and repair procedures and standards are introduced.

Winter semester - 3 lecs and 2 labs per week.

AE19: Technical Drawing
Instructor: **Mr. Canning**
Prerequisite: AE12
Includes pictorial drawings and sketches, both architectural and mechanical. Practice is obtained in drawing sections, developing irregular shapes, preparing construction drawings for farm buildings. Students use both drafting machines and CAD. Throughout the course, students are encouraged to develop their own style, building on basics gained in drafting. They also make their own blueprints to determine the effect of varying line weights and drafting aids.

Winter semester - 1 lec and 4 labs per week.

AE20: Shopwork Practices
Instructors: **Messrs. Bhola and Hampton**
Prerequisite: AE13
Practices in various types of shops are investigated such as cabinetry, body, jobber, and automated manufacturing. Special topics include plumbing, masonry, fibreglass, and CNC lathe. Students construct individual projects in lab period with emphasis on project planning and practices in the shop.

Winter semester - 2 lecs and 4 labs per week.
Text - Burke and Wakeman, *Modern Agricultural Mechanics*.

AE27: Welding
Instructor: **Mr. Roode**
Prerequisite: AE13
Principles and practices of oxyacetylene welding, cutting and brazing, and electric arc welding of steel in flat, vertical, and overhead position are included. Welding of cast iron and aluminum, and metal-inert-gas (MIG) techniques are presented. Safety precautions, and necessary metal machining procedures, are emphasized. Lab fabrication project and seminar presentation are included.

Winter semester - 2 lecs and 4 labs per week.
Text - Pender, *Welding* (3rd edition).

AE30: Farm Machinery
Instructor: **Prof. Adsett**
Prerequisite: MP14 or MP15
Operating principles of the basic types of farm machinery for soil preparation, planting, chemical and fertilizer application, and harvest, are studied. Machine operations are also discussed with respect to work rates, material flow rates, and power requirements. Laboratory sessions emphasize safety, as well as proper maintenance, adjustment and calibration of the machinery.

Fall semester - 2 lecs and 4 labs per week.

AE32: Farm Buildings
Instructor: **TBA**
Prerequisites: AE12, MP15
Deals with construction and layout of farm buildings and includes the study of construction techniques and design considerations. Included are such topics as materials, space requirements and building layout, structural requirements, and insulation and ventilation. Students are required to prepare drawings of building features and components, as well as material lists from construction drawings, and to become familiar with standards of all classes of farm buildings through use of codes of recommended building practice.

Fall semester - 2 lecs and 4 labs per week.

AE36: Controls and Processing
Instructor: **Prof. Adsett**
Prerequisite: MP15
Preparatory: AE12
Basic AC electrical theory is examined and applied to farmstead wiring and process control. Electric heaters, switches, single-phase and three-phase motors, and motor controllers are covered, as well as electrical distribution panels. Low voltage control circuits are included, and electronic components and software are introduced as they apply to farm materials-handling systems. Laboratory assignments deal with electrical circuits and components, plus various types of conveyors, water and feed supply systems, and milking systems.

Winter semester - 2 lecs and 4 labs per week.

AE38: Horticultural Engineering
Instructor: **Prof. Sibley**
Small gasoline engine structure and operating theory are studied, with emphasis on engine maintenance and trouble-shooting. This course includes basic hydraulic theory, emphasizing the operation of common systems in use today.

A wide range of horticultural machinery is studied, as well as the principles of mixing, placing, and curing concrete, fence making, and chain saw operation.

Winter semester - 2 lecs and 4 labs per week.

AE39: Tractor Overhaul
Instructors: **Prof. Sibley and Mr. Terry**
Prerequisite: AE63
Preparatory: AE20
Complete diagnosis, cost estimating, and overhaul of tractor engines and power trains. The theory and knowledge gained in previous courses are used along with overhaul techniques introduced.

Winter semester - 1 lec and 6 labs per week.

AE40: Field Equipment Overhaul
Instructors: **Prof. Adsett and Mr. Hampton**
Prerequisite: AE30
Preparatory: AE20
Experience in overhauling of farm equipment is gained in a process which includes inspection of equipment, estimation of parts and repairs required, cost prediction, and completion of overhaul work. Students work in teams, and appropriate records are kept. The classroom component of the course includes study and seminar presentation of a topic related to the understanding of field equipment design and function.

Winter semester - 1 lec and 6 labs per week.

AE45: Soil and Water Management
Instructor: **Prof. Madani**
Prerequisite: AE14
Fundamentals of soil and water engineering with application to agricultural and recreational lands. The course deals with rudimentary hydrology, soil erosion, drainage systems, irrigation systems, marshland improvement, and other associated topics. The concept of water table management is introduced. Laboratory periods cover design problems, project field labs, and tours.

Fall semester - 2 lecs and 4 labs per week.

AE49: Electrical Systems
Instructor: **Prof. Sibley**
Prerequisite: MP15
Basic principles of electricity and electrical circuits are studied. Particular emphasis is placed on the function, description, and principles of operation of tractor electrical systems and components. Methods of diagnosis of faulty systems and components are covered.

Fall semester - 2 lecs and 4 labs per week.
Text - John Deere, FOS: *Electrical Systems*.

AE63: Tractor Power
Instructor: **Prof. Rifai**
Prerequisite: MP15
The theory and types of diesel and gasoline engines and the principles and theory of power development and transmission in farm tractors are studied. Small engines are included. Test equipment is used during the lab work.

Winter semester - 2 lecs and 4 labs per week.
Text - John Deere, FOS: *Engines, FOS Power Trains*.

AE65: Project-Seminar
Coordinator: **TBA**
Presentation of a seminar and written report on an approved agricultural mechanization or farm equipment topic. Lectures review method of presentation and preparation of selected topics. Projects are under the supervision of selected staff members.

Winter semester - 1 lec per week and labs to be arranged.

AE90: Technology Project
Coordinator: **Prof. Sibley**
This project provides an opportunity for the students to study in detail an Agricultural Engineering topic of special interest. This must be a new topic, but may build on other aspects of the study program. The student pursues studies under a project supervisor. The project plan developed with the advisor must include the purpose of the study, the procedures and materials used, a time schedule for the work involved, the method in which the information will be collected, the way in which the comparisons and conclusions will be developed, and the format for the final report. Both a written and oral report will be required. The mark is normally reported in the student's final semester, but studies should commence early in the first semester.

Time to be announced.

AE101: Computer Aided Graphics and Projection
Instructor: **Prof. Cunningham**
Freehand sketching, instrument, and electronic drawing are used to explore the fundamental principles of projection and to apply these to the solution of problems of orthographic projection in descriptive geometry as required by the design process. Emphasis is placed on the application of graphical techniques to the solution of engineering problems, while developing skills of drafting using computer drafting facilities.

Fall semester - 2 lecs and 4 labs per week.
Text - Earle, *Engineering Design Graphics*.

AE110: Statics
Instructor: **Prof. Havard**
A one-semester course in applied mechanics covering the topic of the static equilibrium of particles, rigid bodies, machine elements, and structures under the action of forces. Emphasis is placed on the understanding of the fundamental principles of mechanics and their application to the solution of real problems in both two and three dimensions. Vector analysis and free body diagrams are used extensively throughout the course. Specific topics include the equilibrium of particles and rigid bodies, forces in a plane and in space, equivalent force systems, equilibrium of rigid bodies in two and three dimensions, analysis of structures and machine elements, and friction. Additional topics such as distributed forces, centroids, centres of gravity, and moments of inertia will be covered as time allows.

Winter semester - 3 lecs and 4 labs per week.
Text - Hibbeler, *Engineering Mechanics*.

AE120: Properties and Mechanics of Materials
Instructor: **TBA**
This course covers the properties of construction materials and machine parts and how these properties affect the performance of the materials in service. This course will also include information on force equilibrium, material stress, and modes of failure. The labs will offer both analytical and shopwork experiences. Load/ deformation data for materials will be demonstrated as well as destructive testing. Cutting, fitting, and welding of metals will be practised.

Winter semester - 3 lecs and 3 labs per week

AE135: Fundamentals of Food Processing (A)
Instructor: **Prof. Blanchard**
The theory and application of food processing equipment is discussed. Theory includes fluid mechanics, heat transfer thermodynamics, and measurement applied to food material. Equipment such as pumps, fans, size reducers, conveyors, driers, refrigeration, and heaters are examined. Process conditions and methods as applied to various food products will be covered. Field trips will supplement lectures and labs.

Winter semester - 2 lecs and 4 labs per week.

AE205: Graphics and Design
Instructor: **Prof. Cunningham**
Prerequisite: AE101
Graphical techniques are applied to vector analysis of design problems and to the presentation of design data. Design practices are investigated and used in student projects aimed at developing creativity in the design process.

Winter semester - 1 lec and 4 labs per week.
Text - Earle, *Engineering Design Graphics*.

AE215 Aquatic Environment (A)
Instructor: **Prof. Blanchard**
Engineering principles are studied in context of requirements for environmental management of intensive aquaculture of finfish, molluscs, crustaceans, and marine plants of commercial importance. Topics in water habitat management will be emphasized including: water properties in both fresh and salt water systems, water quality and water purification, fluid dynamics and statics, and control of the aquatic environment.

Winter semester - 3 lecs and 3 labs per week.

AE230: Dynamics
Instructor: **Prof. Rifai**
Prerequisites: MP105, MP130
The dynamics course represents the second class in the study of engineering mechanics. Topics include kinematics, kinetics, work and energy, linear and angular impulse momenta of a single particle and of rigid bodies in planar motion. There will be some computer applications wherever appropriate.

Fall semester - 3 lecs and 3 labs per week.

AE260: Surveying
Instructor: **Prof. Havard**
Prerequisite: MP100
Preparatory: MP105
An introduction to the use of surveying instruments and practices. Distance measurements; differential, profile, and cross-sectional levelling; transit traverses and construction surveying are covered. Error calculating is introduced, and principles of surveying for construction are developed.

Time - 2 weeks following winter semester.

AE300: Electric Circuits
Instructor: **Prof. Havard**
Prerequisite: MP135
Includes theory of circuits and power engineering; DC circuits; AC currents and voltages, phasors and complex algebra; AC circuits; current-voltage; power; frequency response; polyphase circuits; transients; magnetic circuits; si phase transformers; electrical machinery; DC machines; alternators; induction and synchronous motors.

Fall semester - 3 lecs and 2 labs per week.

AE305: Engineering Measurements and Controls (A)
Instructor: **Prof. Havard**
Prerequisite: MP130
The course examines the fundamentals for measurement of environmental parameters such as temperature, pressure, humidity, stress, and strain. The use of electronic instruments and micro-computers are demonstrated through laboratory exercises. Several methods of control are investigated.

Winter semester - 3 lecs and 3 labs per week.

AE310: Thermodynamics
Instructor: **TBA**
Prerequisite: MP130
Thermodynamics is a study of energy and energy transfers in the form of work and heat, and the effect these transfers have on the properties of selected substances. First and second law analyses are covered including entropy, availability, and efficiencies.

Fall semester - 3 lecs and 3 labs per week.
Text - Moran and Shaaro, *Fundamentals of Engineering Thermodynamics*.

AE315: Strength of Materials
Instructor: **TBA**
Prerequisites: AE110, MP105, MP130
This course presents an introduction to the basic principles of stress, strain, and stability and the response of engineering materials to the application of force and force-induced effects. Topics include definition of stress-strain, stress-strain diagrams for ductile and brittle materials, axially loaded members, torsion, shear force and bending moment, stability and buckling, and biaxial stress and strain.

Winter semester - 3 lecs and 2 labs per week.
Text - Hibbeler, *Mechanics of Materials*.

AE320: Structures and Their Environment (A)
Instructor: **TBA**
This is a general agricultural structures course covering topics of building materials and introduction to design process. Ventilation principles are presented. Functional layouts of storage and production buildings are considered. Field trips supplement the lecture material. A term paper is required.

Fall semester - 3 lecs and 3 labs per week.
Text - Agriculture Canada, *Canadian Farm Buildings Handbook*.

AE325: Digital Logic
Instructor: **Prof. Havard**
Prerequisite: MP135
This course covers counting principles, set theory, docular arithmetic, Boolean algebra, Karnaugh maps, encoders, decoders, shift registers, counters, asynchronous and synchronous circuits, and finite state machines. Logic gates will be introduced.

Winter semester - 3 lecs and 3 labs per week.

AE335: Materials Handling and Processing (A)
Instructor: **Prof. Adsett**
Prerequisite: MP105
Preparatory: MP130
Basic operations in on-farm materials handling and processing are covered. Operations are described mathematically and discussed in relation to material flow rates and energy requirements. Electric power is discussed with respect to on-farm distribution, demand sizing, controls and safety. Laboratory topics include electric circuits, motors, pumps, grain drying, solid materials conveyors, and milking systems.

Fall semester - 3 lecs and 3 labs per week.
Text - Agriculture Canada, *Agricultural Materials Handling Manual*.

AE340: Soil and Water (A)
Instructor: **Prof. Madani**
Prerequisite: MP105
This course covers the hydrologic cycle and its components; basic soil-water-plant relationships, drainage theory and design; irrigation systems and design including crop water requirements, water supply and quality, water conveyance, and salinity control. The concept of water table management and its application in the Maritime region is also covered. Special problems inherent in Atlantic agriculture are studied such as marsh reclamation, erosion control practices, and stream bank stabilization. Laboratory periods

cover design problems, measurements of soil moisture and soil moisture related properties, flow measurement, and field trips.

Fall semester - 3 lecs and 4 labs per week.
Text - Schwab et al., *Soil and Water Conservation Engineering*.

AE350: Fluid Mechanics
Instructor: **Prof. Madani**
Prerequisite: AE220
A study of physical properties of liquids and gases, fluid statics, and fluid flow including pressure, manometry, hydrostatic forces, stream lines and tubes, continuity, momentum, Bernoulli equation, energy equation, flow measurement, viscous flow, and dimensionless numbers.

Winter semester - 3 lecs and 2 labs per week.
Text - Robertson and Crowe, *Engineering Fluid Mechanics* (4th edition).

AE355: Principles of Agricultural Machinery (A)
Instructor: **Prof. Sibley**
The objectives of this course are: to discuss the methods and equipment used to accomplish the various operations employed in agricultural production; to present agricultural machines as a system of sub-components performing different functions; and to present the engineering principles governing the operation of machines used in agricultural production. Emphasis is placed on crop production machinery-tillage, planting, chemical and fertilizer applications, and different harvesting systems.

Fall semester - 3 lecs and 3 labs per week.
Text - Svivastava, Goering and Rohrback, *Engineering Principles of Agricultural Machines*.

AE360: Aquatic Engineering (A)
Instructor: **Prof. Blanchard**
Support facilities, equipment and systems for aquaculture operations will be examined. Topics studied will include: selection of component materials and structures suitable for confinement, protection, and support of aquaculture species; selection and application of mechanical/electrical support equipment such as pumps, motors, feeders, aerators, water heating systems, waste management systems and monitoring equipment; and engineering aspects of facilities for harvesting, handling, processing, packaging, and preservation of aquatic production.

Winter semester - 3 lecs and 3 labs per week.

AE405: Environmental Impacts & Resource Management (A)
Instructor: **Prof. Blanchard**
Prerequisites: B100, CS110
This course addresses the issues associated with the safe and ecologically appropriate handling, processing, storage, and utilization of the by products of agricultural and bioresource production systems. Physical, chemical, and biological treatment process for solid and liquid wastes will be reviewed. Reduction of air and water impacts will be considered. Structural, energy, and climatic limitations on waste management techniques will be included. Labs will include visits to treatment and storage sites.

Fall semester - 3 lecs and 3 labs per week

AE410: Water & Water Quality Management (A)
Instructor: **Prof. Madani**
Principles of soil and water management including control of the plant-soil-water environment, monitoring and evaluation of principles and structures applied to irrigation and drainage, and methods of controlling non-point source pollution in agriculture are

discussed. Water table management models and their evaluations for Atlantic Canada conditions are also discussed.

Winter semester - 3 lecs and 3 labs per week.

AE415: Directed Studies in Agricultural Engineering (A)
Instructor: **TBA**
Independent studies are developed through literature review, laboratory or field research on topics pertinent to agricultural engineering.

AE420: Management of Mechanized Agricultural Systems (A)
Instructor: **Prof. Adsett**
Prerequisite: MP105 or MP130
Preparatory: EB340
Principles of engineering economics are applied to agricultural investment alternatives, primarily as related to mechanized systems. Field operations from soil tillage to crop harvest are examined with respect to machine performance, power requirement, timeliness, and machinery selection. Effects of soil and climate are included. Laboratory sessions include problem tutorials and visits to selected farms. A term project applies the techniques presented in the course to the solution of a practical mechanization problem of the student's interest.

Winter semester - 2 lecs and 4 labs per week.
Offered in alternate years. Next offered in 1997-98.

AE449: Project-Seminar I (A)
Coordinator: **Prof. Cunningham**
Prerequisite: Agricultural Mechanization student in third year or consent of the coordinator.
A specific project in Agricultural Mechanization will be studied and researched by the student. Each student will present periodic written and oral reports on the subject of investigation. Other written and seminar topics will be assigned. The research project and faculty advisor will be chosen, in consultation with the course coordinator, during Semester VI; this will enable students to work on their projects during the summer preceding their final year, if necessary.

Winter semester - 1 scheduled seminar session per week.

AE450: Project-Seminar II (A)
Coordinator: **Prof. Blanchard**
Prerequisite: AE449
Restricted to Agricultural Mechanization students in their final year.
Students will continue with their projects and seminars as assigned by their advisor. The course will culminate with a written report and an oral presentation of their scientific report.

Fall semester - 4 labs per week.

ANIMAL SCIENCE

AS10: Orientation to Animal Health

Instructor: **Prof. Ramsay**

This course is designed to introduce the AHT student to the field of Animal Health and to begin training in the animal care duties associated with cats and dogs. The history and use of AHTs and their equivalents is followed by an examination of the principles of sanitation and disease control in the animal facility. Application of these principles is practised in assigned periods of duty in the College's facilities. The topics of credentials and legislation are introduced, especially as these relate to the AHT. The routines followed in animal hospitals, research institutions, and other places where AHTs are employed are examined with special reference to the duties and responsibilities of the technical assistant. Routes of drug administration are defined and demonstrated, and specific dose rate calculations are performed. In practical sessions the student learns to operate and maintain specified items of clinical equipment.

Winter semester - 4 lecs and 1 lab per week.

AS11: Animal Handling

Instructor: **Prof. Ramsay**

Prerequisites: AS10, B15

Corequisites: AS30, AS48

Students are presented with various species or classes of domestic animal. A single classroom period is followed by a three-hour animal-contact laboratory period. Equipment associated with animal handling procedures is also dealt with. Animal handling enables the student to restrain and manage various types of animal in clinical and other situations and to recognize warning signs which signal potential danger to themselves and other personnel.

Winter semester - 1 lec and 3 labs per week.

AS12: The Farm Workplace I

Instructors: **Animal Science Staff**

Coordinator: **Prof. Campbell**

Diverse apspects of the farm workplace will be covered, with the major emphasis on occupational health and safety, proper attention to protocols and standard operating procedures, relevant legal aspects, and workplace issues and relationships. Specific skills instruction will cover equipment calibration, the use of selected tools, safe equipment and machinery operation, and the fundamentals of farm operations. Troubleshooting and decision making as relevant to safety and maintenance will also be emphasized. The skills may be learned on the campus, on approved farms, or at other institutions pending approval by the Animal Science Department.

Fall semester - 1 lec and 4 labs per week

AS16: Farm Animal Production I

Instructors: **Animal Science Faculty**

Coordinator: **Prof. Patterson**

A study of farm animals with the major emphasis on anatomy, growth, lactation, egg production, fur production and livestock housing as related to the life cycle of farm animals and the principles of farm animal production. The course will enable students to discuss livestock production and apply biological principles relevant to livestock production. Lab topics will emphasize lievestock handling, safety around livestock, stockmanship and management skills, livestock measurements and evaluation, data collection, livestock records, and environmenal monitoring. Diverse aspects of farm animal production will be covered, but the focus will be on providing a general background, rather than on specific disciplines or on specific types of livestock production.

Fall semester - 3 lecs and 2 labs per week.

AS17: Farm Animal Production I Practicum
Instructor: **Animal Science Staff**
Coordinator: **Prof. Campbell**
Corequisites: AS16, AS19
This course will require Animal Science Technician students to expand on the concepts covered in Farm Animal Production I, to relate these concepts to the producing animal, and to develop competency in the husbandry skills necessary for working on livestock farms. The course will emphasize detailed lab instruction in daily farm routines, management skills, lievestock measurements and evaluation, observations and environmental monitoring. Diverse aspects of Animal Production will be covered, but the focus will be on providing an all round background rather than on specific types of livestock production.

Fall semester - 6 labs per week.

AS18: Farm Animal Biology I
Instructors: **Animal Science Faculty**
Coordinator: **Prof. Patterson**
A study of Farm Animal Biology with the major emphasis on the fundamental principles of anatomy, physiology, genetics, and nutrition. The course will enable students to describe the biological life cycles of farm animals and to relate the principles of biology to farm animal production. Diverse aspects of Animal Biology will be covered, but the focus will be on providing a general background, rather than on specific disciplines or on specific types of livestock production.

Fall Semester - 3 lecs and 2 labs per week.

AS19: Farm Animal Biology I Practicum
Instructors: **Animal Science Staff**
Coordinator: **Prof. Campbell**
Coorequisites: AS17, AS18
The course will require Animal Science Technician students to expand on the biological concepts covered in Farm Animal Biology I, to relate these concepts to the producing animal, and develop competency in the skills necessary for the application of biological principles to livestock management practises. The course will emphasize detailed lab instruction in anatomy and structure, biological features of the productive animal, livestock measurements and evaluation, observations and environmental monitoring. Diverse aspects of Animal Biology will be covered, but the focus will be on providing a general background in biology, rather than on specific disciplines or on specific types of livestock production.

Fall semester - 6 labs per week.

AS22 : The Farm Workplace II
Instructors: **Animal Science Staff**
Coordinator: **Prof. Campbell**
Prerequisite: AS12
Diverse aspects of the livestock farm as a workplace will be covered with the major emphasis on occupational health and safety, workplace ethics, proper attention to protocols and SOP's, relevant legal aspects and workplace issues. Specific skills instruction will cover fundamental tool, equipment and machinery operation and maintenance in the following areas: safety around electrical systems, livestock water supply, manure handling and storage, weather maintenance, feeding equipment maintenance, and building sanitation. Students will be expected to achieve competence in these skills, as well as in troubleshooting and decision making as relevant to safety and maintenance. The skills may be learned on campus, on approved farms, or at other institutions pending approval by the Animal Science Department.

Winter semester - 1 lec and 4 labs per week.

AS24: Principles of Disease
Instructor: **Prof. Prowse**
Prerequisites: AS10, B15, B225
Corequisite: AS47
This classroom course is intended to lay a base for the student to continue to learn about disease in animals throughout the program and after graduation. The principles of pathology and pathophysiology are covered, and samples of diseases are used to demonstrate how AHTs should approach the study of diseases encountered in other courses and later in their careers. The terminology used in describing disease states is stressed.

Fall semester - 3 lecs per week.

AS25: Animal Nursing and Clinical Procedures I
Instructor: **Prof. Ramsay**
Prerequisite: AS10
Corequisite: AS24
This combined classroom and clinical course outlines the principles and methods associated with drug administration, anaesthesiology, surgical preparation, sample collection, and radiography in addition to the application of simple bandages and splints. The major animal types used are the dog and cat, but certain clinical periods will deal with procedures performed on livestock. Student performance should demonstrate observance of principles and good manual skills.

Fall semester - 4 lecs and 5 labs per week.

AS36: Principles of Pharmacology
Instructor: **TBA**
Prerequisite: AS25
In this classroom course the student learns about the major classes of drugs based on therapeutic activity. A base is built so that learning can continue whenever medications are encountered later in the program or in the AHT's career. Methods of drug action, metabolism and excretion, biological variability, and drug reactions are studied and pertinent legislation emphasized. Dispensing instructions are reviewed, and principles of maintaining drug inventories are examined. Various costing formulae used in veterinary practices are outlined and their application is simulated.

Winter semester - 3 lecs per week.

AS37: Laboratory Animal Care I
Instructor: **Prof. Ramsay**
Designed to instruct the student in the proper care and handling of the laboratory animal. Characteristics and requirements of relevant species are reviewed. Additional techniques learned are those regularly used in research and teaching.

Fall semester - 2 lecs and 2 labs per week.

AS39: Veterinary Laboratory Techniques I
Coordinator: **Prof. Ramsay**
Prerequisite: B225, CS42 or CS14
Corequisite: AS24
In classroom and lab practical sessions this course covers a variety of techniques commonly required of the AHT in the veterinary hospital laboratory. Operation and maintenance of the microscope is reviewed; the skills required in the clinical laboratory pertinent to microbiology, parasitology, urinalysis, and certain aspects of blood analysis are practised. In the classroom various aspects of microbes and parasites significant in animal disease are dealt with. Performance in laboratory techniques should demonstrate observance of principles and good manual skills.

Fall semester - 4 lecs and 6 labs per week.

AS40: Support Services in Veterinary Practice

Instructor: **Prof. Ramsay**

Prerequisites: AS10, MP14

This course examines various aspects of veterinary practice especially as they affect the animal health technologist. The business, organizational, legislative, ethical, and economic aspects of veterinary practice are detailed. Support Services in Veterinary Practice enables the animal health technologist to perform vital non-clinical and non-laboratory functions. The animal health technologist gains an understanding of the economic, ethical, and legal basis for veterinary practice in Canada.

Winter semester - 4 lecs per week.

AS46: Animal Nursing and Clinical Procedures II

Instructor: **Animal Science Staff**

Prerequisites: AS24, AS25, AS37

This course re-examines similar topics to those covered in Animal Nursing and Clinical Procedures I with emphasis on more advanced AHT involvement and problem solving in both classroom and clinical periods. Physical assessment of the small animal and livestock patient is also dealt with, and intensive-care practices are included with special attention to administration of fluids, the EKG, and resuscitative measures. The student is expected to perform with minor supervision and should demonstrate observance of principles and good manual skills.

Winter semester - 4 lecs and 5 labs per week.

AS47: Animal Health

Instructor: **Animal Science Staff**

Teaches the student about organismal and other causes of disease, how to recognize health and ill-health, and how to understand the principles of disease prevention and treatment.

Fall semester - 2 lecs and 2 labs per week.
Last offered 1996-97.

AS48: Animal Behaviour

Instructor: **Prof. Tennessen**

Students are introduced to the basic characteristics of animal behaviour. Topics covered will include: ethology as a diagnostic tool, techniques for handling animals, aggression and fear, animal welfare, feeding and drinking, and animal behaviour counselling. The relationship between behaviour and housing will also be emphasized.

Winter semester - 2 lecs and 1 lab per week.

AS49: Veterinary Laboratory Techniques II

Coordinator: **Prof. Ramsay**

Prerequisites: AS39, AS24

Corequisite: AS46

This course continues the general format of Laboratory Procedures I concentrating on haematology, urine cytology, and certain serum chemistry techniques. Part of the classroom component is devoted to the changes in blood and urine values and cytology in disease. The skills dealt with in Laboratory Procedures I continue to be practised and evaluated in the lab component of this course. Terminal performance in laboratory techniques should demonstrate observance of principles and good manual skills.

Winter semester - 4 lecs and 5 labs per week.

AS50: Dairy Production

Instructor: **Prof. Fredeen**

Prerequisites: AS20, AS34

Deals with management of dairy animals, and the production of dairy products. Lectures and laboratories cover breeding, feeding, housing, marketing, processing, and economics.

Winter semester - 3 lecs and 2 labs per week.
Last offered 1996-97.

AS51: Beef and Sheep Production
Instructors: **Profs. Farid and Lirette**
Prerequisites: AS20, AS34
Deals with the objectives and methods of producing beef cattle and sheep, both from an industry viewpoint and (at greater length) from the viewpoint of the individual producer. There is practical emphasis with visits to outside herds as well as use of the College animals.

Winter semester - 3 lecs and 2 labs per week.
Last offered 1996-97.

AS52: Swine Production
Instructor: **Prof. Anderson**
Prerequisites: AS20, AS34
A study of swine production, both as an industry and as a major farm enterprise. The economic swine production unit is the framework for the course, with studies in the practical aspects of reproduction, feeding, breeding, and management integrated to maximize the operation of the swine enterprise as a whole.

Winter semester - 2 lecs and 4 labs per week.
Text - *Alberta Swine Production Home Study Course,* Alberta Agriculture.
Last offered 1996-97.

AS53: Poultry Production
Instructor: **Prof. Crober**
Prerequisites: AS20, AS34
This course covers the principles and procedures relating to the production and marketing of poultry meat and eggs, including operation and management. Practical aspects are emphasized.

Fall semester - 2 lecs and 4 labs per week.

AS55: Fur Production
Coordinator: **Prof. Rouvinen**
Prerequisites: AS20, AS34
Covers the principles and procedures relating to the production and marketing of fur, including the operation and management of fur ranches in the Atlantic region. Emphasis is on practical aspects.

Fall semester - 2 lecs and 2 labs per week.
Last offered 1996-97.

AS59: Veterinary Laboratory Techniques III
Coordinator: **Prof. Ramsay**
Prerequisites: AS49, AS81
This course provides the opportunity for final refinement and evaluation of clinical laboratory skills. The techniques learned elsewhere in the program are re-evaluated, and students are expected to have reached graduate level performance upon completion of this course.

Winter semester - 3 lecs and 3 labs per week.

AS65: Project-Seminar
Coordinator: **Prof. Firth**
Provides an opportunity to examine, in detail, specific agricultural topics of interest to the students. Projects are organized and carried out by the students under the supervision of various staff members. Students are required to start their projects at the beginning of the fall semester.

Winter semester - 2 labs per week.

AS66: Farm Animal Production II
Instructors: **Animal Science Faculty**
Coordinator: **Prof. Patterson**
Prerequisite: AS16
A study of farm animals with the major emphasis on lievestock feeds and feeding technology, farm animal reproduction, farm animal breeds and breeding systems, and animal health as related to the life cycle of farm animals and the principles of farm animal

production. The course will enable students to discuss livestock production and to apply biological principles relevant to livestock production. Diverse aspects of farm animal production will be covered, but the focus will be on providing a general background, rather than on specific disciplines or on specific types of livestock production.

Winter semester - 3 lecs and 2 labs per week.

AS67: Farm Animal Production II Practicum
Instructors: **Animal Science Staff**
Coordinator: **Prof. Campbell**
Prerequisites: AS17, AS19
Corequisites: AS66, AS69
This course will require Animal Science Technician students to expand on the concepts covered in Farm Animal Production II, and to further develop their livestock management skills. Coverage of topics will emphasize competence in stockmanship and management skills, livestock measurements and evaluation, data collection and recording, observation, and facilities maintenance. Diverse aspects of Animal Production will be covered, but the focus will be on providing a general background in Animal Production, rather than on specific disciplines or on specific types of livestock production.

Winter semester - 6 labs per week.

AS68: Farm Animal Biology II
Instructors: **Animal Science Faculty**
Coordinator: **Prof. Patterson**
Prerequisite: AS18
A study of Farm Animal Biology with the major emphasis on the fundamental principles of animal nutrition and digestive physiology, farm animal genetics, reproductive physiology and animal health. The course will enable students to describe the biological life cycles of farm animals and to apply biological principles to farm animal production. Diverse aspects of animal biology will be covered, but the focus will be on providing a general background, rather than on specific disciplines or on specific types of livestock production.

Winter semester - 3 lecs and 2 labs per week.

AS69: Farm Animal Biology II Practicum
Instructors: **Animal Science Staff**
Coordinator: **Prof. Campbell**
Prerequisites: AS17, AS19
Corequisites: AS67, AS68
This course will require Animal Science Technician students to expand on the biological concepts covered in Farm Animal Biology II, to relate these concepts to the producing animal, and to develop competency in the skills necessary for an application of biological principles to livestock management practises. Lab topics will emphasize detailed instruction in anatomy and structure, biological features of the productive animal, livestock measurements and evaluation, observations and environmental monitoring. Diverse aspects of animal biology will be covered, but the focus will be on providing a general background in biology, rather than on specific disciplines or on specific types of livestock production.

Winter semester - 6 labs per week.

AS71: Laboratory Animal Care II
Coordinator: **Prof. Ramsay**
Prerequisites: AS37, AS15, AS46
This course is designed to prepare Animal Health Technology (AHT) students to successfully complete the Canadian Association for Laboratory Animal Science provisional registration examination. The student will be instructed in special procedures involved in the maintenance and operation of an animal care facility. This will include: environmental control, monitoring animal health, maintaining animal and facility records, and procurement of feeds, supplies, and animals. Students are required to complete assigned periods of duty in the College's

animal facility. Introductory techniques in laboratory animal anaesthesia and surgery are covered. This course stresses compliance with the Canadian Council on Animal Care Guidelines.

Winter semester - 2 lecs and 4 labs per week.

AS75: Animal Nursing and Clinical Procedures III
Instructor: **Prof. Ramsay**
Prerequisites: AS80, AS81, AS82
Under overall guidance of the clinical instructor, final-year students will supervise second-year students in their clinical periods. Exercises in the operation of computer management systems for veterinary practices are performed by students on phantom practices in the computer laboratory. Successful completion of this course implies graduate level competence in all pertinent skills.

Winter semester - 4 lecs and 4 labs per week.

AS76: Farm Animal Production III
Instructors: **Animal Science Faculty**
Coordinator: **Prof. Campbell**
Prerequisites: AS16, AS18, AS66, AS68
A detailed study of selected areas in farm animal production, with the major emphais on the principles and theory underlying current management practices. Students will be expected to achieve competence in selected managerial, learning, and problem solving skills, and to develop an understanding of the application of biological and management princples to livestock production practises. Management of specific classes of livestock management will be studied in the context of reproduction and breeding, animal genetics, feeding and applied animal nutrition, housing and environmental physiology, animal health, livestock products, processing and sales, and production costs. The relationships among these subject areas and the integration of the farm as a whole will also be covered, with emphasis on how the enterprise fits into the Atlantic Canadian agricultural industry.

Fall semester - 6 lecs and 2 tutorials per week. First offered 1997-98.

AS77: Farm Animal Production III Practicum
Instructors: **Animal Science Staff**
Coordinator: **Prof. Campbell**
Prerequisites: AS12, AS17, AS19, AS22 AS67, AS69
Corequisites: AS76
A detailed study of selected areas in farm animal production, with the major emphasis on production and farm operation skills. Students will be expected to achieve competence in the skills, farm operations and routines associated with reproduction and breeding, animal genetics, feeding and applied animal nutrition, housing and environmental physiology, animal health and livestock marketing. The course will cover individual subject areas as they coincide chronologically with the normal management activities on the college farm. The subject areas will also represent the divisions important in commercial production systems.

Winter semester - 16 labs per week. First offered 1997-98.

AS80: Externship AVC
Coordinator: **Prof. Ramsay**
Prerequisite: AS36, AS46, AS49 or recommendation of the Department of Animal Science.
This course is conducted at and by the Atlantic Veterinary College (AVC) at the University of Prince Edward Island.
Students are given training in clinical and non-clinical areas at AVC. Precise scheduling may vary from year to year. A rotation through the Diagnostics Division and various parts of the Veterinary Teaching Hospital (VTH) is followed. This typically includes such

assignments as: Small Animal and Large Animal Medicine, Surgery and Anaesthesiology; Theriogenology, Pharmacy, Central Supply Room, and the Ambulatory Clinic.

Students work with and learn from AHTs and other para-professional staff at AVC. Accommodation and special clothing is provided by the College, but other expenses are the responsibility of the student. A percent mark is assigned.

Spring semester of Year II - April to June (8 weeks).

AS81: Externship-Veterinary Practice
Coordinator: **Prof. Ramsay**
Prerequisites: AS36, AS46, AS49, AS80
Externship experiences are arranged through the College at approved private veterinary practices. Students and externship locations are matched through a process similar to employment applications. During the course the student gains experience on a variety of clinical and relevant administrative procedures related to the provision of Animal Health services. The student-trainee normally works for a salary. A credit for satisfactory performance is assigned.

Summer or Fall of Year III - July to Sept or Sept to Dec (8 weeks)

AS82: Externship-Institutional
Coordinator: **Prof. Ramsay**
Prerequisites: AS36, AS46, AS49, AS80
Externship experiences are arranged through the College at approved institutions that deal with animals in health, science, research, teaching, or medicine. Students and externship locations are matched through a process similar to employment applications. During the course the student gains experience on a variety of animal research procedures, or institutional procedures related to the provision of Animal Health services.

Typical locations for this externship include: universities and colleges, research establishments, veterinary pathology laboratories, pharmaceutical companies, humane societies, and pounds. The AHT student is expected to perform technical tasks on the job and function in general as an employed AHT.

The student-trainee normally works for a salary. A credit for satisfactory performance is assigned.

Summer or Fall of Year III - July to Sept or Sept to Dec (8 weeks).

AS86: Farm Animal Production IV
Instructors: **Animal Science Faculty**
Coordinator: **Prof. Campbell**
Prerequisites: AS16, AS18, AS66, AS68
A detailed study of selected areas in farm animal production, with the major emphasis on the principles and theory underlying current management practises. Students will be expected to achieve competence in selected managerial, learning and problem solving skills, and to apply biological and management principles to livestock production practises. Management of specific classes of livestock will be studied in the context of reproduction and breeding, animal genetics, feeding and applied animal nutrition, housing and environmental physiology, animal health, livestock products, processing and sales, and production costs. The relationships among these subject areas and the integration of the farm as a whole will also be covered, with emphasis on how the enterprise fits into the Atlantic Canadian agricultural industry.

Fall semester - 6 lecs and 2 tutorials per week.
First offered 1997-98.

AS87: Farm Animal Production IV Practicum
Instructors: **Animal Science Staff**
Coordinator: **Prof. Campbell**
Prerequisites: AS12, AS 17, AS 19, AS22, AS67, AS69
Corequisite: AS86
A detailed study of selected areas in farm animal production, with the major emphasis on production and farm operation skills. Students will be expected to achieve competence in the skills, farm operations and routines associated with reproduction and breeding, animal genetics, feeding and applied animal nutrition, housing and environmental physiology, animal health and lievestock marketing. The course will cover individual subject areas as they coincide chronologically with the normal management activites on the college farm. The subject areas will also represent the divisions important in commercial production systems.

Winter semester - 16 labs per week. First offered 1997-98.

AS90: Technology Project
Coordinator: **Prof. Anderson**
This project provides an opportunity for the students to study in detail an Animal Science topic of special interest. This must be a new topic, but may build on other aspects of the study program. The student pursues studies under a project supervisor. The project plan developed with the advisor must include the purpose of study, the procedures and materials used, a time schedule for the work involved, the method in which the information will be collected, the way in which comparisons and conclusions will be developed, and the format for the final report. Both a written and an oral report will be required. The mark is normally reported in the student's final semester, but studies should commence early in the first semester.

Time to be announced.

AS95: Animal Health Technology Project
Coordinator: **Prof. Ramsay**
Corequisite: Enrolment in the final semester of AHT Program, eligible to graduate if all courses passed in this semester.
This project is intended to be of a technical and/or minor research nature and allow the student to demonstrate skills, planning ability, and the attention to detail required in project work. The details are worked out with faculty in the program, but essentially the semester's work in this course is intended to result in a paper of suitable quality for presentation to other AHT students. A product from the project is expected which is to be of value as a teaching or informational aid. The project may be shared, in which case students who collaborate must show clearly defined duties within the group working on the project.

Winter semester - 1 lec and 4 labs per week.

AS200: Animal Agriculture I (A)
Instructors: **Department of Animal Science Faculty**
Prerequisite: IN101
An introductory course dealing with the major animal industries and production systems in animal agriculture today, with emphasis on systems relevant to Atlantic Canada. A key objective of this course is to let students see how real farms and real agribusinesses work. Emphasis will be placed on management and production of beef cattle, sheep and swine. Additional animal industries that are particularly seasonal in nature, eg., fur growth and pelting, will also be introduced as is appropriate.

Fall semester - 3 lecs and 3 labs per week. First offered 1997-98.

AS201: Animal Agriculture II (A)
Instructors: **Department of Animal Science Faculty**
Prerequisite: IN101
Recommended: AS200
A continuation of Animal Agriculture I, emphasizing the management and production of poultry, dairy cattle, fur and alternative species.

Winter semester - 3 lecs and 3 labs per week.
First offered 1997-98.

AS205: Introductory Animal Production (A)
Instructor: **Prof. Lirette**
Prerequisites: IN100, IN101
A study of the principles and systems of efficient production from agricultural species, with emphasis on those of particular importance to the Atlantic Region. This is not a credit course for students majoring in Animal Science.

Fall semester - 3 lecs and 3 labs per week.
Last offered in 1996-97.

AS210: Introduction to Aquaculture (A)
Instructor: **TBA**
Prerequisites: IN100, IN101
The history and current status of world aquaculture production is discussed, with emphasis on species with potential in Atlantic Canada. Advances in fresh water or marine fish culture are considered. The course includes field trips to fish hatcheries, commercial mollusc production units, fish processing facilities, and other industrial facilities. A review of aquatic resource regulations is included.

Fall semester - 3 lecs and 3 labs per week.

AS230: Physiological Systems of Farm Animals
Instructor: **Prof. Lirette**
Prerequisites: B110, CS200
Suggested corequisite: B200
An introduction to the body systems and how they function. The student should develop a basic understanding of physiological processes and how they are regulated and integrated by the nervous and endocrine systems. Topics covered include cardiovascular, renal, gastrointestinal, reproductive, metabolic and respiratory physiology.

Winter semester - 3 lecs and 3 labs per week.
First offered 1997-98.

AS240: The Horse: Its Biology and Use (A)
Instructor: **Prof. Tennessen**
Prerequisite: Second-year standing or equivalent
This course is an introduction to the behaviour, anatomy, nutrition, and history of horses. What behaviour principles underlie horse training? How is their performance influenced by their conformation? What is unique about their digestive system? How did horses evolve? We will discuss sources and treatment of illness and disabilities, and the biology and control of common parasites. We will have demonstrations of English and Western riding but you will not be taught to ride. We will visit the Truro Raceway. We will study the importance of shoeing to the working horse, and be exposed to the use of horses as draft animals.

Fall semester - 2 lecs and 2 labs per week.

AS300: Animal Physiology (A)
Instructor: **Prof. MacLaren**
Prerequisites: B110, IN100, IN101
Preparatory: CS205
The systems within the body and the functioning of these systems are studied. Through this course, the student should develop a fundamental understanding of the

integrated physiological processes responsible for normal body function.

Fall semester - 3 lecs and 3 labs per week.
Last offered 1997-98.

AS305: Animal Nutrition
Instructors: **Profs. Firth and Anderson**
Prerequisite: CS200
Preparatory: CS205
A study of the principles of nutrition, including the digestion, absorption, and metabolism of nutrients by domestic animals. Functions of protein, lipids, carbohydrates, vitamins, and minerals are studied.

Fall semester - 3 lecs and 2 labs per week.
Text - Maynard, Loosli, Hintz, Warner, *Animal Nutrition*.

AS310: Animal Breeding (A)
Instructor: **Prof. Patterson**
Prerequisites: B240, MP210
The course covers variation in animal performance and the techniques whereby genetic superiority can be recognized and improved. Goals and programs of improvement are discussed with reference to commercial farm species. The emphasis is on programs in current use but applications of new technologies are included. Laboratories deal primarily with data collection, analysis, and computer applications.

Fall semester - 3 lecs and 2 labs per week.

AS315: Reproductive Physiology (A)
Instructor: **Prof. MacLaren**
Prerequisite: AS300
A study of the physiology of reproductive processes in animals and birds. Areas discussed include endocrinology, gamete production, reproductive cycles, control mechanisms, reproductive behaviour, artificial insemination, modification of reproduction, embryo transfer, and subertility.

Winter semester - 3 lecs and 2 labs per week.
Last offered in 1997-98.

AS320: Animal Health (A)
Instructor: **Dr. Semple**
Prerequisites: B225, IN100, IN101
Preparatory: CS205
Seeks to impart an understanding of animal health and its importance in livestock production enterprises. Students are taught to recognize signs of health and ill-health and to understand the principles and practices of disease prevention and treatment. Conditions of disease and ill-health common in Atlantic Canada are studied. The need for veterinary collaboration is emphasized, and the circumstances in which this should be sought are discussed.

Winter semester - 2 lecs and 2 labs per week.

AS325: Applied Animal Nutrition (A)
Instructors: **Profs. Firth and Anderson**
Prerequisite: AS305
Feedstuff classification, characteristics, and regulations governing their use are described. Methodology for evaluating the relative merits of typical feedstuffs is discussed. The principles of nutrition are applied in the formulation of rations for monogastric, avian, and ruminant species.

Winter semester - 3 lecs and 2 labs per week.
Text - Church, *Livestock Feeds and Feeding*.

AS330: Growth, Reproduction and Lactation (A)
Instructor: **Prof. MacLaren**
Prerequisite: AS230
A continuation of AS230, emphasizing physiological systems relevant to animal production. Major topics include growth and development as it applies to meat and brood animal production, and the physiology and

management of reproduction and lactation in domestic species.

Fall semester - 3 lecs and 2 labs per week.
First offered 1998-99.

AS335: Environmental Physiology (A)
Instructor: **Prof. Tennessen**
Prerequisite: AS300
A study of animals in relation to their environment. The influence of environmental factors on body processes and their relationship to productive efficiency in intensive production systems are examined. Major topics include temperature regulation and body homeostasis, biological rhythms, photoperiodism, and environmental and hormonal interrelationships.

Winter semester - 2 lecs and 2 labs per week.

AS341: Domestic Animal Behaviour (A)
Instructor: **Prof. Tennessen**
Corequisite: AS300
A study of the behaviour of farm animals, including poultry. Topics covered include domestication, learning and conditioned response, animal communication, agonistic and social behaviour, reproductive and maternal behaviour, behaviour modification, development of behaviour, genetics of behaviour, the influence of management systems and practices on behavioural characteristics, and the relationship between behaviour and performance.

Fall semester - 3 lecs and 2 labs per week.

AS345: Eggs and Dairy Products (A)
Instructor: **Prof. Firth**
Prerequisites: B225, CS200, IN100 and IN101, or consent of the Instructor
The nature and composition of eggs and milk and their products such as cheese and yogurt. Hygiene, processing, and storage.

Fall semester - 2 lecs and 2 labs per week.

AS350: Meat Science (A)
Instructor: **Prof. Firth**
Prerequisites: CS200, B225, IN100 and IN101, or consent of the Instructor
Growth of meat animals and the nature of muscle, bone, and fat. Conversion of muscle to meat. Quality and grading of fresh meat; hygiene and storage. Meat processing, meat products, and byproducts.

Winter semester - 2 lecs and 2 labs per week.

AS365: Fish Nutrition (A)
Instructor: **Prof. Anderson**
Prerequisite: AS305
Nutrients required by finfish, shellfish, crustaceans, and molluscs are discussed in context with current and future sources of these nutrients. Digestive physiology and specific feeding problems of aquatic species are addressed. Diet formulations and feeding strategies for maintenance, growth, and reproductive performance of fish are covered.

Winter semester - 3 lecs and 2 labs per week.

AS370: Fish Health (A)
Instructor: **Prof. Duston**
Prerequisite: AS380
This course outlines concepts of disease with special reference to fish. Diseases of various etiological types are considered, with emphasis on those in the aquaculture environment. The relationships of management and economics to disease in cultured fish are detailed and public health concerns are addressed. Diagnostic, prophylactic, and treatment methods are outlined and practised.

Winter semester - 3 lecs and 3 labs per week.

AS375: Aquatic Ecology
Instructor: **Prof. Enright**
Prerequisite: AS215
The biology of aquatic species in marine and fresh water environments is discussed. Biological systems involving farmed species are emphasized. Organism interdependencies and interactions are examined. An introduction to the principles of ecology at the community and ecosystem level of integration is included.

Winter semester - 3 lecs and 3 labs per week.

AS380: Physiology of Aquatic Animals (A)
Instructor: **Prof. Duston**
Prerequisite: B110
The form, function, physiological integration, and behaviour of major types of aquatic animals is considered. Emphasis is placed on Classes of organisms, using commercially important species as primary examples.

Fall semester - 3 lecs and 3 labs per week.

AS400 to AS430: These courses deal with application of the sciences of genetics, physiology, nutrition, and behaviour to farm animals. Management systems that apply and integrate these sciences for maximum production and economic return are examined. Courses include studies of the individual species industries in the Atlantic Provinces, Canada, and the world. The resources for production and marketing, and the efficiency of animals as producers of human food, are examined and compared.
Prerequisites: AS300, AS305, AS310

AS400: Dairy Production (A)
Instructor: **Prof. Fredeen**
Fall semester - 3 ldcs and 2 labs per week.
Text - Schmidt and Van Vleck, Principles of Dairy Science.

Last offered 1996-97.

AS405: Swine Production (A)
Instructor: **Prof. Anderson**
Fall semester - 3 lecs and 3 labs per week.
Text - English, Fowler, Baxter and Smith, Growing Finishing Pig Improving Efficiency

Last offered 1996-97.

AS415: Beef Production (A)
Instructor: **Prof. Lirette**
Winter semester - 3 lecs and 3 labs per week.

Last offered 1996-97.

AS420: Sheep Production (A)
Instructor: **Prof. Farid**
Fall semester - 3 lecs and 2 labs per week.

Last offered 1996-97.

AS425: Poultry Production (A)
Instructor: **Prof. Crober**
Winter semester - 3 lecs and 3 labs per week.
Last offered 1996-97.

AS430: Fur Animal Production (A)
Instructor: **Prof. Rouvinen**
Winter semester - 2 lecs and 2 labs per week.
Last offered 1996-97.

AS440: Finfish Production
Instructor: **Prof. Duston**
Prerequisites: AS365, AS370, AS380
Aspects of breeding and genetics, fish management, financial management, economics, marketing, housing systems, and water management are presented in an integrated approach to provide a sound understanding of this aspect of aquaculture. Management of finfish throughout the life cycle is presented. Fish farm structure, fish processing, and environmental impact are also discussed.

Fall semester - 3 lecs and 3 labs per week.

AS445: Shellfish Production
Instructor: **Prof. Enright**
Prerequisites: AS365, AS370, AS380
Factors affecting profitable production of shellfish are discussed in the context of developing a sound industry with potential to address future opportunities. A survey of culture techniques used in shellfish production is undertaken.

Winter semester - 3 lecs and 3 labs per week.

AS449: Project-Seminar I (A)
Instructors: **Department of Animal Science Faculty**
Coordinator: **Prof. Pattterson**
Prerequisite: Animal Science major in final year or consent of the instructor.
Animal Science majors in their final year select, in consultation with a faculty advisor, a research topic. This topic is investigated and reported orally and in a written report. Other topics of current interest are also presented and discussed in the weekly seminar period.

Fall semester - 2 labs per week.

AS450: Project-Seminar II (A)
Instructors: **Department of Animal Science Faculty**
Coordinator: **Prof. Pattterson**
Prerequisite: AS449

Winter semester - 2 labs per week.

AS460: Avian Biology
Instructor: **Prof. Crober**
Prerequisites: CS200, B200, B240, IN100, IN101
This course is a study of topics in biology of special relevance to the commercial use of avian species. Physiological, biochemical, and genetic control and manipulation of such processes as reproduction, growth and development, and immunity are examined.

Fall semester - 3 lecs and 2 labs per week.

AS465: Molecular Applications to Animal Production
Instructors: **Profs. MacLaren and Farid**
Prerequisites: CS200, B240
Corequisite: B420
This upper-level course is designed for students interested in the molecular and cellular techniques that are being applied to animal production systems and research. Topics include molecular techniques used in research, DNA fingerprinting, marker-assisted selection, embryo IVF/sexing/ nuclear transfer, recombinant protein production, the use of recombinant microbes in ruminants, stem cell and transgenic animal production.

Fall semester - 3 lecs and one three-period lab or tutorial per week. First offered in 1998-99.

AS475: Ruminant Digestive Physiology & Metabolism
Instructors: **Profs. Fredeen and Lirette**
Prerequisites: AS300, AS305, CS360
This course is designed to provide an intensive study of food intake and digestion, and nutrient absorption and metabolism, in the ruminant animal. The course details current knowledge and focuses on aspects of future research interest. Students are expected to contribute to discussions and present reviews to the class on various aspects of the subject.

Fall semester - 3 lecs and 2 labs per week. Offered in alternate years. Next offered in 1996-97.

AS480: Animal Product Design and Marketing
Coordinator: **Prof. Firth**
Prerequisites: AS305, AS310, AS330
This course is offered with the co-operation of the Marketing Branch of the Nova Scotia Department of Agriculture and Marketing. It looks at the connection between the technology

of animal products (meat, fish, milk, eggs) and meeting the desires of the market.

Fall semester - 3 lecs and 2 labs per week. First offered 1999/2000.

AS485: Sustainable Animal Systems Design (A)
Instructors: **Profs. Fredeen and Crober**
Prerequisites: AS200, AS201, AS305, AS310, AS330
In this course, students will study animal production from a systems perspective, examining the current and future niches of animals in the agrifood industry. Emphasis will be placed on the design of a sustainable production system, including economic, environmental and social aspects of sustainability. Nutrient and energy flows in the designed systems will be modelled, and partial economic analyses will be conducted. The resiliency of the system will be determined by examining the effects of internal (e.g. change in family structure or system productivity) and external change (e.g. policy or climatic change), and the strengths and weaknesses of the systems, will be examined. Students will design a sustainable system of their choice, with the objective of producing a marketable animal product. Model output will be verified using data collected on farms.

Winter semester - 3 lecs and 3 labs per week. First offered in 1998-99.

AS490: Topics in Animal Production I (A)
Instructors: **Department of Animal Science Faculty**
Prerequisites: AS305, AS310, AS330
Students will select three consecutive four-week modules on applied topics in animal production. These modules will focus on the application of the sciences of genetics, physiology, nutrition and/or behaviour to animal production in the Atlantic Provinces. Examples are: "Grazing management", "Fur growth and pelting", and "Meat animal breeding". Students may combine modules to concentrate on a particular species or animal science discipline that they are interested in. At least two modules will be offered during any four-week period. *Students are to see their Animal Science advisor in the winter semester prior to taking AS490 for selection and availability of modules.* Some modules may have restricted enrolment.

Fall semester - 3 lecs and 3 labs per week. First offered in 1997-98.

AS492: Topics in Animal Production II (A)
Instructors: **Department of Animal Science Faculty**
Prerequisite: AS490
More modules in applied animal production, using the same course format as AS490. *Students are to consult their Animal Science advisor in the fall semester prior to taking AS492 for selection and availability of modules.*

Winter semester - 3 lecs and 3 labs per week. First offered 1997-98.

AS494: Topics in Animal Production III (A)
Instructors: **Department of Animal Science Faculty**
Prerequisite: AS492
This course number will not be timetabled any differently than AS490 or AS492, but recognizes that it is possible for students to take a further set of three modules each in both semester 6 and semester 8 from AS492, or in semester 7 and semester 9 from AS490 (should they choose to use semester 6 as a work/exchange module and return for a 9th semester). If all six of the selected modules are different, students may receive credit for the second set of modules under this course number and name.

Fall or Winter semester - 3 lecs and 3 labs per week. First offered 1997-98.

BIOLOGY

B01: Pre-Tech Biology

Instructor: **Mr. Fergus**

An introduction to the basic principles of plant and animal biology that are most important to agriculture. Topics include plant structure and function, growth and reproduction, plant nutrition, animal anatomy and function, animal systems, animal nutrition, photosynthesis, introductory genetics, and introductory ecology.

Winter semester - 3 lecs and 4 labs per week.

B15: Animal Anatomy

Instructor: **Prof. Crosby**

A study of vertebrate anatomy, with emphasis on laboratory, farm, and companion species. The clinical significance of anatomical structures will be stressed.

Fall semester - 2 lecs and 4 labs per week.

B25: Histological Techniques

Instructor: **Prof. Crosby**

An introduction to slide preparation. Laboratory work will include temporary and permanent slide preparation; preparation of smears, squashes, whole mounts, and sections; introduction to paraffin and plastic embedding techniques; use of microtome and ultramicrotome; and an introduction to various staining techniques.

Winter semester - 2 lecs and 5 labs per week.

B40: Plant Pathology

Instructor: **Prof. Gray**

An introductory course dealing with the nature, cause, and control of plant diseases due to infectious and noninfectious agents. Labs deal with basic techniques used in plant pathology, including fungal and bacterial isolation, identification and inoculation.

Winter semester - 2 lecs and 3 labs per week.

B41: Plant Physiology

Instructor: **TBA**

Deals with plant structure and function, as well as plant growth, development, and reproduction. Various plant processes, such as photosynthesis, respiration, absorption and nutrition, water movement, transpiration, and growth, are studied. Topics of importance to agriculture, such as growth regulators, photoperiodism, and dormancy, are also considered.

Winter semester - 3 lecs and 3 labs per week.

B43: Entomology

Instructor: **Prof. Le Blanc**

An introduction to the study of the phylum Arthropoda, with particular reference to the class Hexapoda (Insecta), emphasizing insect pests of the North-East. Anatomy, physiology, taxonomy, behaviour, and ecology of insects are considered during lectures and laboratory work. Discussions on the relation of insects to humans, basics of insect control methods, and pesticide safety are included.

Fall semester - 2 lecs and 2 labs per week.
Text - Romsoser and Stoffolanee, *The Science of Entomology (3rd edition)*.

B45: Biology Practicum I

Instructor: **Biology Faculty**
Coordinator: **Prof. Crosby**

This course is available only to Biology Technology students. This course is designed to provide an opportunity for Biology Technology students to develop a basic understanding of, and practical experience in, selected techniques in laboratory and field biology. Techniques will include soil sampling, quadrat sampling for plants, capture-recapture

techniques for animals, and disease rating for crops.

Fall semester - 6 labs per week.

B46: Weed Science
Instructor: **Prof. Sampson**
Deals with the principles of weed science. Included are discussions on weed recognition and chemical and non-chemical approaches to controlling weeds in various agricultural crops as well as in lawns and non-crop areas. Selection, safe use, handling, and storage of herbicides are stressed.

Winter semester - 3 lecs and 3 labs per week.

B48: Plant Tissue Culture
Instructor: **Prof. Olson**
This course has limited enrolment.
An introduction to the basic methods of initiation and maintenance of plant tissues in sterile culture. *In vitro* propagation, callus formation, and cell suspensions are among the general topics to be discussed. In addition, the course will provide a basic understanding of the structure and organization of plant cells, tissues, and organs.

Winter semester - 3 lecs and 3 labs per week.

B60: Biology Practicum II
Instructor: **Biology Faculty**
Coordinator: **Prof. Crosby**
This course is available only to Biology Technology students. Biology Practicum II is a continuation of Biology Practicum I. It is designed to provide an opportunity for Biology Technology students to develop a basic understanding of, and practical experience in, selected techniques in laboratory and field biology. Techniques will include media preparation, maintaining biological cultures, museum techniques, and preparation of bioplastic mounts.

Winter semester - 6 labs per week.

B75: Biological Photography
Instructor: **Prof. Le Blanc**
This subject has limited enrolment.
A practical introduction to the production of publication-grade still photographs for use in technical books, articles, and reports. Basic black-and-white photography from processing to mounting, photomacro- and photomicrography, as well as darkroom management are considered. This course requires the preparation of a final portfolio and includes a theoretical midterm examination.

Winter semester - 2 lecs and 4 labs per week.
Texts - Birnbaum, *Black-and-White Dark Room Techniques*, Kodak Publication KW-15, New York, 1986; White, *Close-up Photography*, Kodak Publication KW-22, New York, 1984.

B100: Botany
Instructor: **Prof. Olson**
An introductory course in plant biology. Topics discussed include procaryotic and eucaryotic cells, cell division, alternation of generations, and classification. The diversity of plants in the kingdoms Monera, Protista, Fungi, and Plantae is stressed.

Fall semester - 3 lecs and 4 labs per week.

B110: Zoology
Instructor: **Prof. Crosby**
A general introduction to zoology. Topics include animal cells and tissues, animal form and function, reproduction and development, evolution, and the diversity of both the Animalia and Protista.

Winter semester - 3 lecs and 4 labs per week.

B200: Cell Biology
Instructor: **Prof. Crosby**
An introduction to cell biology. Topics include cell metabolism, the structure and function of organelles of the eucaryotic cell, cell growth, cell movement, and the procaryotic cell. Specialized cell functions will also be discussed.

Fall semester - 3 lecs per week.

B225: Microbiology
Instructor: **Prof. Stratton**
Preparatories: B100, B110
A general introduction to microbiology. Topics include history, morphology, structure, cultivation, reproduction, metabolism, genetics, classification, and control of microorganisms. The importance of microorganisms to soil productivity, foods, industry, veterinary science, public health, and sanitation is discussed. Students are required to have a laboratory coat.

Winter semester - 3 lecs and 3 labs per week.

B240: Genetics I
Instructor: **Prof. Atlin**
Study of heredity and variation in plants and animals, including man; the relationships of genetics to evolution and breeding practices.

Fall semester - 3 lecs and 2 labs per week.

B260: Plant Physiology
Instructor: **TBA**
A study of the different functions of the plant, including growth, photosynthesis, mineral nutrition, water relations and translocation of solutes, and plant orientation, development, and reproduction.

Winter semester - 3 lecs and 3 labs per week.

B265: Systematic Botany
Instructor: **Prof. Olson**
Preparatory: B100 or equivalent
The general principles and concepts of vascular plant systematics with emphasis on the angiosperms are examined. Botanical nomenclature, methods used in plant identification, classification schemes, sources of taxonomic evidence, and the evolution of major taxa are among the topics presented in the lectures. The laboratory focuses on the recognition of certain local taxa and provides experience in the collection, identification, and preparation of herbarium specimens from the local flora. Students planning to enrol in this course are expected to make a collection of pressed plants during the preceding summer.

Fall semester - 3 lecs and 3 labs per week.

B270: Structural Botany
Instructor: **Prof. Olson**
The basic morphology and anatomy of the seed plants are presented from a developmental perspective. The structural aspects of the various modes of plant reproduction are also included. The emphasis of the course is placed on obtaining an understanding of plant structure that will complement crop physiology, weed biology, and plant pathology.

Winter semester - 3 lecs and 3 labs per week.

B300: Principles of Plant Pathology (A)
Instructor: **Prof. Gray**
Deals with the principles of plant pathology and the control of diseases caused by bacteria, fungi, mycoplasma-like organisms, viruses, and nematodes. Labs deal with basic techniques used in plant pathology, such as fungal, bacterial, and nemotode isolation, identification, and inoculation.

Fall semester - 3 lecs and 3 labs per week.

B310: Mycology
Instructor: **Prof. Gray**
Prerequisite: B100
An introductory course dealing with the morphology, taxonomy, ecology, and physiology of the members of the Fungus kingdom.

Fall semester - 3 lecs and 3 labs per week.

B320: General Entomology
Instructor: **Prof. Le Blanc**
Preparatory: B110
An introduction to the science of entomology from an agricultural perspective. Insect anatomy, physiology, and taxonomy are considered; also included are discussions on insect behaviour, reproduction, life cycles, and population ecology. Basics of monitoring techniques and population dynamics are illustrated.

Fall semester - 3 lecs and 3 labs per week.
Text - Borror et al., *Introduction to the Study of Insects* (6th edition).

B330: Ecology
Instructor: **Prof. Nams**
Prerequisites: B100, B110
An introduction to the principles and general concepts of ecosystem structure and function is presented. The dynamics of populations and community interactions are considered in relation to various biotic and abiotic environmental influences. The laboratory reinforces topics covered in the lectures and readings by emphasizing the importance of field observation and interpretation.

Fall semester - 3 lecs and 3 labs per week.

B335: Weed Science (A)
Instructor: **Prof. Sampson**
Prerequisite: B100
Preparatory: B260
Deals with the principles of weed science. Included are discussions on weed recognition, chemical and non-chemical approaches to controlling weeds in various agricultural crops as well as in lawns and non-crop areas. The selection, safe use, handling, and storage of herbicides are stressed, along with the environmental impact of the different methods of weed control.

Fall semester - 3 lecs and 3 labs per week.

B340: Comparative Vertebrate Anatomy
Instructor: **Prof. Crosby**
Prerequisite: B110
An introduction to comparative anatomy. Emphasis is placed on analyzing vertebrate structure. Comparisons of form and function within the Vertebrata are discussed with an evolutionary perspective. This is supplemented in the laboratory by detailed dissections of representative vertebrates.

Fall semester - 3 lecs and 4 labs per week.

B350: Ecological Methods
Instructor: **Prof. Nams**
Prerequisite: a statistics course
Corequisites: B330
Ecological methods are statistical sampling methods applied to ecology. The course is arranged around daily problem sets which use a combination of ecological computer programs and hand calculations and field labs to give hands-on experience in sampling. Topics include capture-recapture population estimates, spatial distributions, quadrat sampling, sampling design, and experimental design.

Fall semester - 3 lecs and 4 labs per week.

B355: Food Microbiology
Instructor: **TBA**
Prerequisites: B225
A study of microorganisms involved in the production and processing of food products.

Topics will include the use of microorganisms for food production and processing, food spoilage and potential for food poisoning, as well as sanitation procedures, including government regulations and standards for the food industry. The use of conventional plating as well as rapid assay techniques will be discussed.

Winter semeter - 3 lecs and 3 labs per week.

B360: Environmental Analysis
Instructor: **Prof. Stratton**
Prerequisite: B225
A study of the analytical techniques and instrumentation used to measure and quantify biological processes in the environment. These will include techniques such as gas chromatography, high performance liquid chromatography, electrophoresis, and genetic engineering.

Fall semester - 3 lecs and 4 labs per week.

B365: Environmental Impact
Instructor: **Prof. Stratton**
Prerequisite: B360 or CS205
An introduction to the study of environmental toxicity and ecotoxicology as they are used to predict the environmental impact of agricultural, industrial, and other xenobiotics and associated processes. The laboratory portion of the course will deal primarily with bioassay techniques.

Winter semester - 3 lecs and 4 labs per week.

B370: An Introduction to Molecular Genetics
Instructor: **Prof. Atlin**
Prerequisites: Introductory Genetics and one course in biochemistry
The objective of this course is to provide students with a general foundation in molecular genetics and recombinant DNA technology. Replication, transcription, protein synthesis, recombinant DNA, and the regulation of gene expression in prokaryotes and eukaryotes will be studied in detail. Ethical and legal issues related to the production, testing, and ownership of genetically-engineered organisms will be discussed. In the laboratory, students will be exposed to a range of molecular genetic techniques, including isolation and restriction site mapping of bacterial plasmids, bacterial transformation, isolation and restriction enzyme digestion of genomic DNA, and PCR amplification. Students completing this course will be able to read original research papers in the molecular genetic literature, and will be prepared for advanced training in molecular biology, plant breeding, or animal breeding.

Winter semester - 3 lecs and 3 labs per week. Offered in alternate years. Next offered in 1996-97.

B375: Population and Quantitative Genetics
Instructor: **Prof. Atlin**
An introduction to population and quantitative genetics, with particular emphasis on the forces causing genetic change in populations. Contemporary ideas about evolution at the molecular and organismal levels will be explored. Theory underlying modern breeding methods will be introduced. Students completing this course will be prepared for advanced training in plant breeding, animal breeding, and evolutionary biology. Extensive use will be made of computer simulations to model populations under natural and artificial selection.

Winter semester - 3 lecs and 3 labs per week. Offered in alternate years. Next offered in 1997-98.

B385: Principles of Pest Management (A)
Instructor: **Prof. Sampson**
Prerequisites: B100, B110
An investigation of the philosophy of pest management. Topics will include the study of

different approaches to pest management and an assessment of the use of single versus integrated pest control options. Costs of pest control from economic, social, and environmental perspectives will be discussed. This course cannot be taken for credit by students in the Pest Management major or Plant Science option.

Fall semester - 3 lecs and 3 seminar periods per week.

B400: Soil Microbiology (A)
Instructor: **Prof. Stratton**
Prerequisites: B225, CS220
A study of the biology of the various classes of microorganisms in soil, including bacteria, blue-green algae, fungi, algae, protozoa, and viruses. This course includes details of biochemical transformation of carbon, nitrogen, sulfur, and phosphorous, as well as pesticides and wastes in the environment.

Fall semester - 3 lecs and 4 labs per week.

B405: Pesticides in Agriculture (A)
Coordinator: **Prof. Sampson**
Preparatories: B300, B320, B335
A course dealing with various aspects of pesticides used in agriculture. The course will look at pesticides from their origin and development to their registration, sale, distribution, and use. Also included are discussions of safety and toxicology.

Winter semester - 3 lecs and 3 discussion periods per week.

B406: Economic Plant Pathology (A)
Instructor: **Prof. Gray**
Prerequisite: B300
An in-depth study of the important plant diseases representative of the major groups of pathogens with particular attention to diseases affecting field crops, fruit and vegetable crops, turfgrasses, and greenhouse crops. Labs deal with advanced techniques used in plant pathology, such as photomicroscopy, DIBA for virus identification, ELISA for fungal identification, and advanced mycological techniques.

Winter semester - 2 lecs and 4 labs per week.

B421: Special Topics in Agribiology I (A)
Instructors: **Department of Biology Faculty**
Prerequisite: 20 degree credits
An opportunity to study a special topic defined by an individual student, group of students or faculty. The course is conducted by tutorials, assigned readings, assignments and/or other appropriate activities. Special topics must be supervised by a faculty member and approved by the Department Head.

Fall or Winter semester - as arranged.

B422: Special Topics in Agribiology II (A)
Instructors: **Department of Biology Faculty**
Prerequisites: 20 Degree Credits
A second special topics course provides additional opportunity for students to individualize their programs with in-depth study of an approved topic. Although the second topic selected may be in a similar area of interest to that studied in B421, it must be sufficiently distinct to warrant additional study. Special topics must be supervised by a faculty member and approved by the Department Head.

Fall or winter semester - as arranged.

B425: Economic Entomology (A)
Instructor: **Prof. Le Blanc**
Prerequisite: B320
Preparatory: B110
An introduction to the study of economic entomology from an agricultural perspective. Principles of insect control natural, mechanical, physical, cultural, biological, and legal are covered. Includes chemical and

biochemical control, and insecticide development, formulation, and application. This course stresses the theory of integrated pest management (IPM).

Winter semester - 3 lecs and 3 labs per week.

B430: Ecology of Agriculture (A)
Instructor: **Prof. Nams**
Prerequisite: B330
Agricultural production systems are examined from an ecological perspective. Students acquire an understanding of the interactions and dynamics of the major components of agroecosystems. The possible modification and application of ecological principles to problem solving in local and global food production are emphasized.

Winter semester - 3 lecs and 3 labs per week.

B445: Applied Weed Science (A)
Instructor: **Prof. Sampson**
Prerequisite: B335
Deals with principles of weed science from an ecological perspective. Included are discussions on ecology and management of weeds in traditional agroecosystems as well as in low-input sustainable agricultural systems. The role of biological, cultural, and chemical control in these systems will be stressed.

Winter semester - 3 lecs and 3 labs per week.

B449: Project-Seminar I (A)
Instructors: **Department of Biology Faculty**
Coordinator: **Prof. Nams**
An introduction to independent research and effective communication for final year students in Agribiology: Environmental Biology and Agribiology: Pest Management. Students will acquire skills in written and oral scientific communication, library use, and information retrieval. Each student will design and implement an individual research project, including data acquisition and analysis, and will begin the process of communicating results in both oral and written form. The research topic and advisor(s) are chosen by the student in cooperation with the course coordinator.

Fall semester - 2 lecs and 4 labs in three two-period blocks.
Text - Day, *How to Write and Publish a Scientific Paper*-CBE Style Manual.

B450: Project-Seminar II (A)
Instructors: **Department of Biology Faculty**
Coordinator: **Prof. Nams**
A continuation of B449. Students will prepare and perform an oral presentation on a biology topic of their choice early in the semester. They will conclude their projects and represent their findings near the semester in three formats: poster presentation, scientific seminar, and written paper.

Winter semester - 2 lecs and 4 labs in three two-period blocks.

CHEMISTRY AND SOIL SCIENCE

CS01: Pre-Tech Chemistry

Instructor: **Prof. Payne**

An introductory course emphasizing measurement in chemistry, matter and energy, atomic structure, electronic arrangement of the atom, and chemical bonding. The periodic table is studied, and considerable emphasis is placed on the use of symbols, formulae, equations, and reactions. Some time is also spent on chemical kinetics, problem solving, solutions and electrolysis, and acid-base reaction.

Winter semester - 3 lecs and 3 labs per week.

CS12: Principles of Soil Science

Instructor: **Prof. Miller**

Designed to form a basis for the understanding of soil productivity. The course investigates the physical, chemical, and biological properties of soil. Laboratory exercises, using soils from the Atlantic region, are designed to illustrate the lecture material and introduce methods of soil analysis.

Fall semester - 3 lecs and 2 labs per week.

CS13: Soil Management

Instructor: **Prof. Miller**

Prerequisite: CS12

A study of the chemical, physical, and biological properties of soil as they relate to crop production. Soil fertility and fertilizer use, tillage and water management, and biological husbandry are discussed. Labs take the form of problem-solving tutorials in soil management.

Winter semester - 3 lecs and 2 labs per week.

CS14: Agricultural Chemistry

Instructor: **Prof. Miller**

Stresses the application of basic chemistry to the agricultural industry. Topics include chemical arithmetic; protection chemicals; sewage disposal; explosives; energy; iron; useful materials from the earth, sea, and air; chemurgy; water; metallurgy; nuclear chemistry; and chemical hazards. Students are also introduced to organic chemistry and applied biochemistry and are taught to identify carbohydrates, proteins, fats, oils, and the vitamins, enzymes, hormones, and nucleic acids.

Fall semester - 3 lecs and 2 labs per week.
Text - Jones et al., *Chemistry and Society* (5th edition).

CS30: Chemical Calculations

Instructor: **Prof. Robinson**

A course designed to provide the skills needed to carry out chemical calculations associated with chemistry laboratory techniques. Specific topics include: moles, percentages, concentration of solutions, dilutions, stoichiometry, pH, weak acids and bases, buffers, and recovery experiments.

Fall semester - 3 lecs per week.

CS40: Food Laboratory Methods

Instructor: **Prof. Crowe**

This course will familiarize students with sampling techniques, sample preparation and analyses commonly used in the food industry. Students will also gain experience with some of the basic sensory methods used in the food industry.

Winter semester - 3 lecs and 4 labs per week.

CS42: Organic Chemistry

Instructor: **Prof. Payne**

An introductory course designed to familiarize the student with the theories and principles of organic chemistry as they apply to certain basic classes of organic compounds, including alkanes, alkenes, alkynes, polyolefins,

aromatic hydrocarbons, alcohols, and mercaptans. The nomenclature of these classes of compounds and their application to plant and animal life are stressed. Laboratory procedures are correlated with lecture material; modern procedures and techniques are employed to illustrate the preparation, extraction, purification, and properties and reactions of various organic compounds discussed.

Fall semester - 3 lecs and 4 labs per week.

CS43: Bio-Organic Chemistry
Instructor: **Prof. Payne**
Prerequisite: CS42
A continuation of the introduction to the basic classes of organic compounds. Aldehydes, ketones, amines, carboxylic acids, and their derivatives are studied. The student is also introduced to biochemistry through a preliminary study of carbohydrates, lipids, proteins, nucleic acids, vitamins, hormones, and enzymes. Laboratory exercises closely parallel the topics presented in lecture and are designed to make the student aware of the properties and reactions characteristic of the organic and biochemical compounds studied.

Winter semester - 3 lecs and 4 labs per week.

CS50: Introduction to Physical Chemistry
Instructor: **Prof. Merrin**
Prerequisites: CS100, MP100
An introductory course which includes a study of gas laws, kinetic theory of gases, thermodynamics, the liquid and solid states, phase changes, chemical equilibrium, nonelectrolyte solutions, colloids, electrochemical cells, chemical kinetics, and photochemistry.

Fall semester - 3 lecs and 4 labs per week.

CS68: Introductory Laboratory Techniques
Instructor: **Prof. Payne**
An introduction to general laboratory techniques, safety, and chemical calculations and to problems associated with solution and classical chemical analysis. Techniques include: massing, pipetting, titrimetry, extracting, digesting, colorimetry, and T.L.C.

Fall semester - 3 lecs and 4 labs per week.
Texts - Shuger et al., *Chemical Technicians Ready Reference Handbook* (3rd edition); American Chemical Society, *Safety in Academic Chemistry Laboratories* (6th edition).

CS69: Introductory Instrumentation
Instructor: **Prof. Brewster**
Prerequisite: CS68
An introduction to the practical basic skills of the more commonly used instrumental methods of analysis and the chemical calculations and problems involved in these analyses. The areas covered are: chromatography, radioisotopes, atomic absorption, and flame photometry.

Winter semester - 2 lecs and 4 labs per week.

CS73: Laboratory Organization and Management
Instructor: **Prof. Merrin**
Students are instructed in lab design and operation, ordering of supplies, organizing data and records, supervising staff, and WHMIS safety regulations. Students are challenged to apply their technical knowledge to the workplace and to gain an understanding for their role as lab technologists.

Winter semester - 2 lecs and 4 labs per week.

CS75: Basic Food Chemistry
Instructor: **A. Havard**
Prerequisites: CS42, CS43
A study of the chemistry and technology of carbohydrates, fats, and proteins. Attention is

directed towards the basic principles involved in their determination in foods and feeds. The laboratory deals with the qualitative and quantitative physical and chemical techniques used in the analysis of foods and feeds.

Fall semester - 3 lecs and 4 labs per week.
Text - Meyer, *Food Chemistry*.

CS79: Project Organization
Coordinator: **Prof. Payne**
A chemistry project organized on an individual basis with each student.

Fall semester - 6 to 8 labs per week as assigned.

CS80: Project Implementation
Coordinator: **Prof. Payne**
A seminar program with subject matter related to material covered in CS79 project.

Winter semester - 6 to 8 labs per week as assigned.

CS85: Food Laboratory Practicum
Coordinator: **Prof. Crowe**
This Food Lab Practicum is designed to provide the students with hands-on experience and instruction in a typical workplace setting. In their third year of the Food Lab Technology program, students will spend September to December in this practicum. Wherever possible, students will be placed with cooperating food industries most closely in line with their interests. Prospective employers of the Food Lab Technology students could include dairies, wineries, breweries, product development and quality control laboratories, as well as firms involved in the processing of meat, fish, vegetables, fruits, and cereals. In addition to this practicum, students are encouraged to pursue summer employment within the food industry.

Fall semester

CS100: Chemical Principles
Instructor: **Prof. Merrin**
Prerequisite: University Preparation Grade XII Chemistry (N.S.441 or 442, N.B.121 or 122)
A study of atomic theory, periodicity, chemical reactions, thermochemistry, geometrical forms of molecules, chemical equilibrium, and oxidation-reduction reactions. Also included is an extensive study of the chemistry of solutions of weak electrolytes.

Fall semester - 3 lecs and 4 labs per week.

CS110: Organic Chemistry
Instructor: **Prof. Hoyle**
Prerequisite: CS100
A study of basic classes of organic compounds, including alkanes, alkynes, petroleum and petrochemicals, aromatic compounds, alcohols, aldehydes, ketones, alkyl halides, monocarboxylic acids, acid anhydrides, salts, amides, ethers, and amines.

Winter semester - 2 lec, 1 tutorial, and 4 labs per week.

CS200: Biochemistry I
Instructor: **Prof. Robinson**
Prerequisite: CS110
This course consists of a study of biological elements, buffers, amino acids and peptides, proteins, lipids, membrane structures, carbohydrates, nucleic acids, and enzymes.

Fall semester - 3 lecs and 4 labs per week.
Text - Leninger, *Principles of Biochemistry*.

CS205: Biochemistry II
Instructor: **Prof. Merrin**
Prerequisite: CS200
Includes a study of enzyme kinetics, mechanisms of enzyme action, vitamins and coenzymes, digestion and absorption, bioenergetics, catabolism of carbohydrates,

lipids and nitrogen compounds, selected biosyntheses, nitrogen fixation, and metabolism control mechanisms.

Winter semester - 3 lecs and 4 labs per week.
Text - Leninger, *Principles of Biochemistry*.

CS210: Advanced General Chemistry
Instructor: **Prof. Hoyle**
Prerequisite: CS100
This course covers several concepts of chemistry at an advanced level: these include theories of the chemical bond, the solid and liquid state, energy changes, chemical kinetics, electrochemistry, complex compounds, periodic trends for the elements and representative compounds. The laboratory portion of the course will include qualitative analysis.

Fall Semester - 3 lecs and 4 labs per week.
Offered in alternate years. Next offered in 1996-97.

CS215: Advanced Organic Chemistry
Instructor: **Prof. Hoyle**
Prerequisite: CS110
This course will cover advanced topics in organic chemistry. These will include an in-depth study of organic reaction mechanisms, reactions of heterocyclic compounds and the pathways of decomposition of organic compounds. Other advanced organic chemical topics such as nuclear magnetic resonance spectroscopy, mass spectrometry and the use of isotopes in organic chemistry will be covered depending upon the interests of students enroled in the course.

Fall semester - 3 lecs and 4 labs per week.
Offered in alternate years. Next offered in 1997-98.

CS220: Introduction to Soil Science (A)
Instructor: **Prof. Brewster**
Prerequisite: CS100
General principles of soil science relating to the origin, development, and classification of soils; the biological, physical, and chemical properties of soils and their relation to proper soil and crop management, land use, and soil conservation.

Fall semester - 3 lecs and 4 labs per week.

CS225: Quantitative Analytical Chemistry
Instructor: **Prof. Merrin**
Prerequisite: CS100
This course includes evaluation of analytical data; preparation of samples for analysis; wet chemistry methods; UV-visible spectrophotometry; and the use of an autoanalyzer.

Winter semester - 3 lecs and 4 labs per week.

Text - Underwood and Day, *Quantitative Analysis*

CS230: Introduction to Geology
Instructor: **Prof. Brewster**
Topics of this course are: materials of the earth, structure of the earth and plate tectonics, and landscape development. Geological factors important in soil formation will be stressed. Labs include mineral and rock identification, topographic map interpretation, and a field trip.

Winter semester - 3 lecs and 3 labs per week.
Text - Thompson and Turk, *Modern Physical Geology*.

CS300: Physical Chemistry I
Instructor: **Prof. Merrin**
Prerequisite: CS210
General principles of physical chemistry will be studied. These will include chemical kinetics and equilibrium, classical and

statistical thermodynamics, diffraction methods, introductory quantum theory and photochemistry. In addition, there will be a strong emphasis on the use of computers to solve physical chemical problems.

Fall semester - 3 lecs and 4 labs per week.

CS305: Instrumental Analytical Chemistry
Instructor: **Prof. Crowe**
Prerequisites: Recommend CS225, and either CS110 or CS42.
Introduction to the basic theory underlying important techniques in instrumentation chemistry. Design of instruments, operation, and applications will be studied. Laboratory work will include experiments in soils, plant and biological tissue, food, drugs, and vitamins. Instruments in the field of absorption and emission spectrophotometry, chromatography, and electrochemistry will be studied.

Fall semester - 3 lecs and 4 labs per week.

CS310: Radiotracers in Agriculture (A)
Instructor: **Prof. Robinson**
Prerequisites: CS200 or CS43, and MP100
This course has limited enrolment.
Intended to set forth the concepts of radioactivity necessary for the practical use of radiotracers in agriculture, the course covers radiation theory; radiation counting; sample preparation techniques for counting; applied tracer techniques in soil, plant, and animal studies; isolation and identification of isotope label; and localization of label in a molecular structure.

Winter semester - 3 lecs and 4 labs per week.
Text - Wang, Willis, Loveland, *Radiotrace Methods in the Biological, Environmental and Physical Sciences*.

CS320: Soil Fertility (A)
Instructor: **Prof. Warman**
Prerequisites: CS220
Preparatory: B260
Includes essential plant nutrients in the soil, influence of soil chemical and physical properties on nutrient absorption and plant growth, methods of evaluating soil fertility and composition, and use of organic and inorganic sources of nutrients.

Winter semester - 3 lecs and 4 labs per week.
Text - Tisdale, Nelson, Beaton and Harlin, *Soil Fertility and Fertilizers* (5th edition).

CS325: Soil Genesis and Classification (A)
Instructor: **Prof. Brewster**
Prerequisites: IN100, IN101
Examination of the theories and principles of soil formation with emphasis on the environmental forces of climate, vegetation, parent material, time, and man upon soil development. A study of soil properties important in the characterization, genesis, and classification of soils. A detailed examination of classification principles and systems presently in use with particular emphasis upon the Canadian system and its relationship to other systems now in use. There is a mandatory field component.

Fall semester - 3 lecs and 4 labs per week.
Offered in alternate years. Next offered in 1997-98.

CS335: Soil Physics (A)
Instructor: **Prof. Miller**
Prerequisites: IN100, IN101, MP105
Corequisite: MP220 or MP222
A study of the physical properties of soil and the physical processes taking place in soil. This course will investigate the solid, liquid, and gaseous phases of soil, their interrelationships, and their effects on plant growth. The major portion of the course will deal with the mechanisms, measurement, and

mathematical description of the storage and movement of water in soil.

Winter semester - 3 lecs and 4 labs per week. Offered in alternate years. Next offered in 1996-97.

CS345: Soil Conservation in Agriculture (A)
Instructor: **Prof. Miller**
Prerequisites: IN100, IN101
A study of the processes of soil degradation and its prevention or amelioration. A major part of the course concerns the erosion of agricultural soils and its control. Other topics include soil compaction and soil acidification, soil reclamation, use of soil in waste recycling, and the role of soil in water conservation. Lab periods may be used for field trips, tutorials, or seminars.

Fall semester - 3 lecs and 3 labs per week.

CS350: Food Chemistry (A)
Instructor: **A. Havard**
Prerequisites: CS225, CS305, and either CS200 or CS75
A study of the functions of the basic group compounds found in foods. The subject matter includes the functions of water, carbohydrates, lipids, proteins, enzymes, vitamins, minerals, and food additives in foods and their relationship to food characteristics and quality. An introduction to food preservation methods is also included. The laboratory section of the course will involve the use of instrumentation for the analytical determination of various food constituents. This course cannot be taken for credit by students who have a credit in CS351.

Winter semester - 3 lecs and 4 labs per week.
Text - Fennema, *Food Chemistry* (2nd edition).

CS351: Food Chemistry (A)
Instructor: **A. Havard**
Prerequisite: CS200
A study of the functions of the basic group compounds found in foods. The subject matter includes the functions of water, carbohydrates, lipids, proteins, enzymes, vitamins, minerals, and food additives in food and their relationship to food characteristics and quality. An introduction to food preservation methods is also included. This cannot be taken for credit by Agricultural Chemistry majors or by students who have a credit in CS350.

Winter semester - 3 lecs per week.
Text - Fennema, *Food Chemistry* (2nd edition).

CS360: Mammalian Biochemistry
Instructor: **Prof. Robinson**
Prerequisites: CS205, AS300
A study of how basic biochemical principles are applied to gain insight into the molecular functions of the diverse mammalian organ systems. The subject matter is divided into three parts: (1) Body Fluids and Their Constituents, which includes such subjects as blood coagulation, the complement system, the immune system, and their control; (2) Specialized Tissues, such as connective tissue, nervous tissue, and muscle tissues; and (3) Biochemistry of the Endocrine System, with the focus on the principles of endocrine biochemistry and the mechanisms of hormone action. The topics covered include general principles and mechanisms of hormone action, prostaglandins, the thyroid gland, the gonads, as well as the hypothalamus, hypophysis, and adrenals.

Winter semester - 3 lecs per week.
Text - Smith et al., *Principles of Biochemistry: Mammalian Biochemistry* (7th edition).

CS370: Instrumental Food Analysis
Instructor: **Prof. Crowe**
Prerequisites: CS305, and CS110 or CS42
Corequisite: CS350
This course, which complements CS305 and CS350, emphasizes use of instrumental techniques to analyze food constituents and residues. Included are the flavour, colour, and texture of foods. The chemical and nutritional safety of foods will also be discussed. The laboratory section will incorporate types of instrumental analysis not studied in CS305 or CS350.

Winter semester - 3 lecs and 4 labs per week.

CS380: Food Quality Assurance
Instructor: **TBA**
Prerequisites: CS110, MP100
The various quality philosophies (QC, QA, TQM) will be studied with respect to their industrial application. The course will center on the use of control charts to monitor processes and toevaluate the quality of both in-coming raw materials and the finished product. Students will gain first hand experience in the design and implementation of ISO 9000 and HACCP systems in the commerical food industry. The application of these principles to other manufacturing processes and/or data acquisition will be discussed. Consideration will also be given to recognizing the quality criteria required by some international customers.

Winter semeter - 3 lecs and 3 labs per week.

CS415: Special Topics in Chemistry and Soil Science I (A)
Coordinator: **Prof. Hoyle**
An optional course for Agricultural Chemistry and Soil Science students who want to study a special topic. Course material will be arranged with Chemistry and Soil Science faculty. The course will be conducted by special tutorials, assigned readings and independent lab work where appropriate. This course will normally be taken by students in their final year.

Fall or winter semester - as arranged.

CS420: Organic Environmental Analysis
Instructor: **Prof. Hoyle**
Prerequisite: CS205
This course has limited enrolment and is offered in alternate years. The course will involve the study of the analytical chemical techniques used in the analysis of environmental samples obtained from the atmosphere, hydrosphere and lithosphere. Included in this study will be sampling methods used for air, water, soil, food and wastes, and modelling of environmental contamination. In addition, government regulations, hazard assessment and public awareness of these issues will be discussed.

Fall semester - 2 lecs and 4 labs.
Offered in alternate years. Next offered in 1996-97.

CS425: Special Topics in Chemistry and Soil Science II (A)
Coordinator: **Prof. Hoyle**
Prerequisite or corequisite: CS415
An optional course for Agricultural Chemistry and Soil Science students who want to do a second in-depth study of a special topic in their final year. The topic selected by a student may be in a similar area of interest to that studied in CS415 but must pertain to a distinctly different aspect of that field of Chemistry or Soil Science. Course material will be arranged with Chemistry and Soil Science faculty. This course will involve special tutorials, assigned readings and independent lab work where appropriate.

CS430: Soil Survey and Land Evaluation (A)
Instructor: **Prof. Brewster**
Principles of the field study and mapping of soils as well as the more general land

evaluation techniques including land classification based on inherent characteristics, present land use/land cover, and land capabilities for alternative uses. Preparation of soil, land use, and other interpretive maps in association with the interpretation of aerial photographs and methods of soil cartography. There is a mandatory field component.

Fall semester - 3 lecs and 4 labs per week. Offered in alternate years. Next offered in 1996-97.

CS440: Environmental Soil Chemistry
Instructor: **Prof. Warman**
Prerequisites: CS220
Chemical composition of soils (soil acidity, oxidation-reduction, ion exchange, adsorption-desorption reactions, clay mineralogy and organic matter transformations) in the context of environmental soil chemistry. Labs and seminars-discussions integrate basic soil chemical principles with problems in waste disposal, metal contamination, nutrient leaching, pesticide degradation, etc.

Winter semester - 3 lecs and 4 labs per week. Offered in alternate years. Next offered in 1997-98.

CS449: Project-Seminar I (A)
Coordinator: **Prof. Warman**
A required course for all Agricultural Chemistry and Soil Science students. Each student will be assigned a research project requiring library and laboratory investigative procedures. Each student will present periodic oral reports and a written report on the subject of investigation. Other written and seminar topics may be assigned.

Fall semester - 1 scheduled seminar session per week.

CS450: Project-Seminar II (A)
Coordinator: **Prof. Warman**
A continuation of CS449. Students will continue with their projects and will present an undergraduate thesis as well as a final conference-style seminar presentation. Other assignments may be given.

Winter semester - 1 scheduled seminar session per week.

CS457: The Science of Composting and Its Application (A)
Instructor: **Prof. Warman**
Principles of compost production - to include the following factors: feedstocks, C:N, biological reactions, moisture, aeration, temperature, etc. Laboratory analysis of feedstocks and composts produced commercially and by the participants; evaluation of the process and bioavailability of nutrients in composts using growth room potting studies; environmental concerns - odour, organic and inorganic contaminants, pathogens and heavy metals.

Fall semester - 3 lecs and 3 labs per week. Offered in alternate years. Next offered in 1997-98.

ECONOMICS AND BUSINESS

EB01: The Agricultural Industry

Coordinator: **C. Crewe**

Major emphasis is placed on information about the agricultural industry, rather than on specific agricultural topics or skills. The course is organized into 4 majors (segments): Animal Science, Plant Science, Agricultural Business, Agricultural Mechanization.

Winter semester - 2 lecs and 4 labs per week.

EB10: Accounting

Instructor: **TBA**

An introduction to accounting topics useful to managers. Topics include recording transactions, forms of business organization, cash and accrual basis of accounting, financial statements, internal control, payrolls, bank reconciliation, and types of accounting systems with an introduction to microcomputer applications.

Fall semester - 3 lecs per week.

EB11: Applied Accounting and Taxation

Instructor: **TBA**

Prerequisite: EB10

The basic principles and procedures relevant to the accounting function of a business. Topics discussed include recording business transactions, year-end adjustments, and preparation of financial statements. Considerable time will be spent on Canadian income tax and a computerized acounting project.

Winter semester - 3 lecs and 2 labs per week.

EB12: Macroeconomics

Instructor: **Prof. Tait**

An introduction to the study of macroeconomics in a Canadian context. Topics covered include national accounts, public finance, money and banking, and international trade. Current problems in the Canadian economy are examined to emphasize the theory.

Fall semester - 3 lecs per week.

EB13: Microeconomics

Instructor: **Prof. Russell**

An introduction to the theory of the firm. The course examines the theory of demand and supply, distribution of income, forms of business organizations in Canada, and the levels of competition in the agricultural industry. Application of the various theories to explain the agricultural industry is stressed.

Winter semester - 3 lecs per week.

EB40: Marketing Practices

Instructor: **Prof. Russell**

Preparatory: EB13

Current practices involved in marketing farm products produced in the Atlantic Provinces are studied. The conditions affecting these practices and the groups of people that can bring about changes are identified. Special attention is paid to consumer behaviour, supplier behaviour, market structures, price determination, marketing boards, and marketing commissions.

Fall semester - 2 lecs and 3 labs per week.

EB41: Business Law

Instructor: **TBA**

Introduces several legal topics relevant to the management of a business. Topics discussed are: legal structure in Canada, Law of Torts, contracts, sale of goods, consumer protection legislation, creditors, employment, forms of business organization, insurance, and real estate.

Winter semester - 3 lecs per week.

EB42: Applied Farm Management
Instructor: **Prof. Tait**
Prerequisite: EB340
Designed to transfer classroom teaching to real farm situations. Students have an opportunity to apply the principles of farm management on production farms. Some of the requirements involve analyzing farm records, credit analysis, developing farm plans, and evaluating machinery, livestock, and crop decisions, based on actual farm cases.

Winter semester - 2 lecs and 4 labs per week.

EB65: Business Project
Coordinator: **Prof. Tait**
An opportunity to examine, in detail, specific agricultural topics of interest. Projects are organized and carried out by the students under the supervision of various staff members.

Fall semester - 5 labs per week.

EB70: On-Farm Training
Coordinator: **Prof. Tait**
The 7-month training takes place on a commercial production unit, where the student is under the direct supervision of the farmer. Emphasis is placed on having the student involved in all facets of the operation, with particular attention to financial management. Each student is expected to take part in selecting his/her training farm. Whenever possible the farm will be in the province chosen by the student. The final grade in the course is based on the student's performance in several topic areas (financial, production and specific skills) as determined by both the farmer and the coordinator.

May to November at the end of the first year of the Farm Technology program.

EB72: Farm Project
Coordinator: **Prof. Tait**
The farm project relates the course program to the on-farm training. It stresses the application of information to a specific farm situation. For this project, the farm may be the home farm or any other farm. An intimate knowledge of the farm is necessary. The student, therefore, must have access to the farm and to detailed information about it.

The prepared project consists of three sections: an analysis of the present farm operation, including a detailed inventory of land, buildings, machinery, and all other farm resources; an outline of the student's objectives and projected plans for the farm; and a practical step-by-step (year-by-year) program for the changes necessary to reach these goals.

The farm project is introduced in the first technology year, before the beginning of the seven months of on-farm training. All the required data for the farm inventory are collected during the on-farm training period. The final work on the prepared project is done in the last college semester. Though most of the work is done outside of the scheduled class time, one afternoon per week is scheduled for special instruction and for presentations. Each student is required to present a minimum of one seminar on his or her farm plan to the project class and the instructor committee.

Winter semester - 5 labs per week.

EB90: Technology Project
Coordinator: **Prof. Tait**
This project provides an opportunity for the students to study in detail an Economics and Business topic of special interest. This must be a new topic, but may build on other aspects of the study program. The student pursues studies under a project supervisor. The project plan developed with the advisor must include the

purpose of the study, the procedures and materials used, a time schedule for the work involved, the method in which the information will be collected, the way in which comparisons and conclusions will be developed, and the format for the final report. Both a written and an oral report will be required. The mark is normally reported in the student's final semester, but studies should commence early in the first semester.

Time to be announced.

EB110: Agricultural Economics (A)
Instructor: **Prof. Dunlop**
This course is designed to introduce students to the structure and organization of agriculture and economic theory as it applies to agriculture. The course strives to make the agricultural reality more understandable for all students, regardless of major, and provides the necessary background for more advanced agricultural economics, agri-business and economics courses.

Fall and Winter semesters - 3 lecs per week.

EB200: Microeconomics I
Instructor: **Prof. Stackhouse**
Prerequisites: EB110, MP100
Introduces the principles of neoclassical microeconomic theory using graphical and mathematical analysis. Areas of emphasis include: the competitive market model, measurement and interpretation of elasticities, the theory of consumer preferences, and the theory of production.

Fall semester 3 lecs and 2 labs per week.

EB205: Microeconomics II
Instructor: **Prof. Stackhouse**
Prerequisites: EB200, EB260
A continuation of the principles presented in Microeconomics I. This course examines the theory of the firm under perfect and imperfect market conditions, and general equilibrium of production and exchange. These principles are presented using graphical and mathematical analysis.

Winter semester - 3 lecs and 2 labs per week.

EB210: Financial Accounting I
Instructor: **TBA**
A study of the basic principles and procedures relevant to the accounting function of a business firm. Topics discussed include recording transactions, adjusting entries and preparing financial statements, accounting for a merchandising concern, computerized accounting software, accounting for cash, credit sales and accounts receivable, inventories and cost of goods sold, plant and equipment.

Fall semester - 3 lecs and 2 labs per week.

EB215: Financial Accounting II
Instructor: **TBA**
Prerequisite: EB210
Continues the study of financial accounting with emphasis on special topics and reporting of accounting information. Includes a brief introduction to income tax.

Winter semester - 3 lecs and 2 labs per week.

EB220: Production Economics (A)
Instructor: **Prof. Tait**
An introduction to the study of economic principles used to analyze production and resource use in agriculture. Areas of emphasis include economic examination of the factor-factor, factor-product, and product-product relationships of the farm production system. Practical examples and lab exercises are used to illustrate and reinforce the concepts presented in the classroom.

Winter semester - 2 lecs and 4 labs per week.

EB255: Macroeconomics I
Instructor: **Prof. Clark**
An introduction to the study of macroeconomics. The course is designed to acquaint the student with the main elements of macroeconomic theory. Emphasis is placed on the application of theories to current Canadian economic problems. Topics covered include national income analysis, monetary policy, and fiscal policy.

Winter semester - 3 lecs and 1 tutorial per week.

EB260: Mathematical Economics
Instructor: **Prof. Stackhouse**
Prerequisite: MP100
Introduction to the frequently used mathematical methods of economic analysis. The course provides the student with the basics required in more advanced economics courses. Areas of concentration include: elements of mathematical economics models, linear models and matrix algebra, applications of calculus to economic problems, and optimization theory.

Fall semester - 3 lecs, 1 tutorial and 2 labs per week.

EB305: Macroeconomics II
Instructor: **Prof. Grant**
Prerequisite: EB255
Development of an integrated aggregate model of the Canadian economy, which includes consideration of money, product, and labour markets, and aggregate demand and supply.

Winter semester - 3 lecs per week.

EB315: Management Accounting
Instructor: **Prof. Russell**
Prerequisite: EB210 or permission of the instructor.
An introduction to the uses of accounting data for managers. Areas of emphasis include planning, control, and decision making.

or

This course introduces students to the use of accounting information in making effective management decisions. Topics include cost control and analysis, cost-volume-profit analysis, breakeven, differential analysis and capital investment analysis.

Fall semester - 3 lecs and 1 tutorial per week.
or
3 lecs and 2 labs per week.

EB320: Agricultural and Food Policy I (A)
Instructor: **Prof. Dunlop**
Prerequisites: EB110 and 20 Degree courses.
This course introduces students to the structure of the agri-food industry and the process of policy and implementation. A critical assessment of the institutions (organizations, programs, and policies) in agriculture is the main focus of the course. Through guest speakers, students' presentations, interactive class discussions and lectures, students will learn how policies are developed and who is involved in the policy development process. An historical appreciation for agricultural policy in Canada will be pursued with a critical assessment of these policies. In reviewing policy problems affecting the agri-food industry students will examine possible solutions to these issues. Topics covered include: reasons for Government intervention; historical development of agri-food policy in Canada; the policy process; players in agriculture and food policy; structure of provincial, federal, and cost-shared programs; consumers and food policy; resource and environmental policy; international agricultural and food policies; trade agreements; agri-business involvement in agriculture and food policy.

Winter semester - 3 lecs and 2 labs per week.

EB325: Operations Research
Instructor: **Prof. Stackhouse**
Prerequisite: EB260
An introduction to mathematical programming. Major emphasis is placed on linear programming and the role of matrix algebra in determining linear programming solutions. The information requirements, organization, and skills of model building are also developed.

Winter semester - 4 lecs and 1 lab per week.

EB330: Agricultural Markets and Prices (A)
Instructor: **Prof. Grant**
Prerequisite: EB205
Designed to introduce students to agricultural market and price analysis. In general, course topics include econometric estimation of supply and demand relationships for agricultural commodities, applications of price theory, and discussion of pricing institutions in the agricultural industry.

Winter semester - 3 lecs and 2 labs per week.

EB335: Business Marketing
Instructor: **Prof. Whalen**
Designed to introduce basic marketing principles and their application to marketing problems. Topics such as promotion, pricing, distribution, and marketing research are examined. The case method of instruction is used extensively. Class participation is a vital component of this course.

Fall semester - 3 lecs and 2 labs per week.

EB340: Farm Management I (A)
Instructor: **Prof. Tait**
Principles and methods of organizing and analyzing farm businesses are examined. Practical problems associated with financial analysis, planning, capital budgeting, resource use, and credit acquisition are included. The role of the farm manager is identified throughout.

Fall semester - 2 lecs and 4 labs per week.

EB360: Econometrics
Instructor: **Prof. Clark**
Prerequisites: EB260, MP200
An applied course in statistics and economic theory using the classical linear regression model. Topics covered include a review of probability theory, estimation and specification of single and simultaneous equation models, violations of the assumptions of the classical linear model, hypothesis testing, and tests of significance. Exercises illustrating the statistical concepts developed in the lectures and applications of econometric techniques to agricultural economics problems and economic theory are provided and fully explained in the labs.

Fall semester - 3 lecs and 2 labs per week.

EB400: Resource and Environmental Economics
Instructor: **Prof. Clark**
Prerequisite: EB205
Advanced microeconomics applied to issues of environmental quality and resource use. Topics include welfare economics, market failure, externalities, pricing of renewable and non-renewable resources, and cost-benefit analysis.

Fall semester - 3 lecs per week.

EB410: Strategic Management in Agri-Business (A)
Instructor: **Prof. Whalen**
Prerequisites: Students will normally be Agricultural Business majors who have successfully completed the first three years of the program. Other students may seek permission of the instructor.

This is a capstone course that will integrate all the business disciplines (marketing, finance, accounting, etc.) and prepare the student to formulate and implement strategy in an agri-business setting. Students will be expected to gain a full understanding of the complexity and interrelationships of modern managerial decision making and apply this knowledge to real managerial problems. Lectures, case studies, projects and guest speakers will be utilized.

Fall semester - 3 lecs per week.

EB415: Business Law
Instructor: **TBA**
An introduction to general principles of law relating to the management of a business. Major areas studied are torts and contracts. Specialized topics include forms of business organizations, sale of goods, conditional sales, real property, mortgages, insurance, and wills.

Fall semester - 3 lecs per week.

EB419: Agri-Food Policy Analysis (A)
Instructor: **Prof. Dunlop**
Prerequisites: EB320, EB325, EB330, EB360
This course will focus on the economic analysis of agricultural and trade policy. This course is a capstone drawing on the different areas of study in agricultural economics. Students will learn how to synthesize economic theory with quantitative tools to solve agricultural and food policy problems. Use of the formal analytical methods of policy analysis is the main emphasis of the course. Students will read literature pertaining to policy problems and analysis; will attempt their own analysis on policy issues; and critique the existing literature. Topics covered include: influential doctrines in agricultural policy; fundamentals of welfare theory; partial equilibrium analysis of agricultural and trade policy; social choice theory; basics of trade theory;export and import protection; and the political economy of agricultural and trade policy.

Fall semester - 3 lecs and 2 labs per week.

EB421: Special Topics in Agricultural Economics and Business I (A)
Instructors: **Department of Economics and Business Faculty**
Prerequisite: 30 Degree courses
An opportunity to study a special topic defined by an individual student, group of students or faculty. The course is conducted by tutorials, assigned readings, assignments and/or other appropriate activities. Special topics must be supervised by a faculty member and approved by the Department Head.

Summer, Fall or Winter semester - as arranged.

EB422: Special Topics in Agricultural Economics and Business II (A)
Instructors: **Department of Economics and Business Faculty**
Prerequisite: 30 Degree courses
A second special topics course provides additional opportunity for students to individualize their program with in-depth study of an approved topic. Although the second topic selected may be in a similar area of interest to that studied in EB421, it must be sufficiently distinct to warrant additional study. Special topics must be supervised by a faculty member and approved by the Department Head.

Summer, Fall or Winter - as arranged.

EB425: Research Methods (A)
Instructor: **Prof. Grant**
Prerequisites: EB325, EB360
The lectures cover general methodological issues within economics, specific analytical methods utilized by agricultural economists, as well as principles and guidelines for researching and writing fourth-year projects. It

is required that progress on the fourth-year project (to be completed in EB450) include a precise statement of the topic, a literature review, a detailed outline, a well-defined methodology, and demonstration of data availability.

Fall semester - 2 lecs and 2 labs per week.

EB430: International Marketing
Instructor: **Prof. Whalen**
Prerequisites: EB335 or permission of the Instructor
This course provides an introduction to international marketing and the international trading system. Students will be exposed to the unique aspects of international market research, selection, entry, pricing, and communications which differentiate them from their domestic equivalents. In addition the international trading system will be examined with an emphasis on institutions, such as the WTO, the IMF, and international commodity agreements, which directly impact the movement of goods and services. Cases are used extensively in the course and class participation is vital.

Winter semester - 3 lecs per week.

EB435: Consumer Behaviour and Food Marketing (A)
Instructor: **Prof. Whalen**
Prerequisite: EB335 or permission of the Instructor
The course introduces the student to the basics of consumer behaviour and then applies this knowledge to the food marketing system. Topics covered include external influences on consumer behaviour, motivation, perception, learning, and decision making. Historic and recent trends in product marketing, pricing, and advertising also form part of the course. Cases are used extensively and class participation is vital.

Fall semester - 3 lecs per week.

EB440: Farm Management II (A)
Instructor: **Prof. Russell**
Prerequisites: EB325, EB340
An applied course intended to utilize the farm management principles developed in Farm Management I. Students are introduced to computerized farm planning models and are required to apply these methods to actual farm problems.

Winter semester - 2 lecs and 3 labs per week.

EB445: Agri-Business Entrepreneurship (A)
Instructor: **Prof. Russell**
Prerequisites: EB340, EB335 and 20 Degree courses.
This course will apply the concepts of entrepreneurship to creating and managing a small business. Students will investigate opportunities for new agri-businesses and develop business plans which consider management structure, financing, produc-tion, marketing and taxation. Lectures, case studies, guest speakers and project assignments will be utilized.

Winter semester - 3 lecs and 3 labs per week.

EB450: Project-Seminar (A)
Instructors: **Department of Economics and Business Faculty**
Coordinator: **Prof. Grant**
Prerequisite: EB425
Under the supervision of faculty, students complete the research projects begun in EB425. The student is required to submit the first draft for evaluation by faculty. The student presents a final report and participates in peer evaluation of the presentations of the other students.

Winter semester - 2 seminars per week.

H01: Language Development
Instructor: **TBA**
Designed to ensure that pretechnical students have an adequate grounding in grammar, spelling, and punctuation to meet the requirements for admission to H10 Technical Writing; that they get exercise in technical communication; and that they have the opportunity to read and write about Canadian history and literature. The course consists of classroom instruction in grammar, spelling, and punctuation. There is heavy emphasis on the writing of tool and machine descriptions, notetaking, letter writing, and essays. At least one Canadian novel is studied. There is one major term paper and a final examination.

H01 is not equivalent to H10.

Winter semester - 3 lecs per week.

H10: Technical Writing
Instructor: **Prof. Sanderson**
Objective is to provide instruction in basic scientific report and review paper writing; in grammar and spelling; in business letter writing with specific reference to the employment application letter and resume; and in the cultural, social, and historical background of agriculture and its related trades. Students must write a major term paper.

H10 is not equivalent to any H100 level course.

Fall semester - 3 lecs per week.

H45: Technical Communications
Instructor: **Prof. Sanderson**
This course will focus on improving interpersonal communication skills. It will be designed specifically for students planning careers where contact with the public is essential. This course will deal with such topics as listening and interviewing skills, group dynamics, conflict management, meeting management, and basic teaching skills. Evaluation for the course will be based primarily on projects.

This course would be open to all technicians with a maximum of 20 students registered. This course is required for students in the Animal Health Technology program.

Winter semester - 1 lec and 2 labs per week.

H50: Core Language Skills
Instructor: **Prof. Sanger**
The objective of the course is to provide basic instruction in writing and reading. Emphasis is placed upon spelling, correct grammar, sentence and paragraph structure, and analysis of methods of presentation and argument. The course is entered by means of an evaluation test administered in H100 during the first week of classes. Instruction is individualized. Students meet the instructor privately by appointment.

This is a non-credit course which does not appear on student transcripts. Those students placed in the course must pass it before being able to take an H300 level course.

H60: Communication Techniques
Instructor: **Prof. Sanderson**

This course has limited enrolment.

The purpose of this course is to encourage the development of students' communication skills. The course will concentrate on improving students' speaking skill plus incorporating audio-visual materials. Creative presentation of ideas through exhibits, slide presentations, and video will be a focus of a number of the sessions. Guest speakers in the area of advertising and marketing will be

invited. Evaluation for the course will be based primarily on a number of projects such as a slide-tape presentation.

Winter semester - 3 labs per week.

H101: The English and American Novel
Instructor: **TBA**
This course examines four or five English and American novels, considering in both as literature and as reflections of the cultural situation of their age. Novels, for example, by Defoe, Samuel Johnson, Mary Shelley, Dickens, Melville, Emily Bronte, James Joyce, Willa Cather or Nathanael West may be among those chosen. Students must write a major term paper based upon thorough library research.

Course enrolment is limited to 85.
Winter semester - 3 lecs per week.

H102: Nature in English and American Literature
Instructor: **Prof. Sanger**
This course discusses the role of nature in various philosophies of nature in English and American literature. Poems, novels, autobiographical works, and essays by authors such as, for example, Izaak Walton, Gilbert White, William and Dorothy Wordsworth, Coleridge, Emerson, Thoreau, Whitman, John Muir, Hopkins, Thomas Hardy, D.H. Lawrence, Edward Thomas, E.B. White, Wendell Berry, John Haines, Barry Lopez, or Annie Dillard may be among those chosen for study. Students must write a major term paper based upon thorough library research.

Course enrolment is limited to 85.
Fall semester - 3 lecs per week.

H130: Introductory French
Instructor: **TBA**
Prerequisite: Grade 12 High School French or permission of the Instructor and Head of Department
This course is designed to provide the student with opportunities to actively use the language through various socio-cultural settings and language functions. As part of a communicative approach, a video production component centred on publicity will be integrated in the program.

A variety of culturally relevant authentic materials such as video recordings, audio-cassettes, guest speakers, and literature will be used to supplement the text book and to facilitate learning through reading, writing, and listening skills. This course is designed for anglophone students or for students whose French is being learned as a foreign language.

Winter semester - 3 lecs per week.

H135: Basic Spanish I
Instructor: **TBA**
This course is designed to offer an initial competency in spoken and written Spanish. Comprehension, reading, writing, and conversation are encouraged throughout the course. An introduction to basic grammar is offered. Anglophone, francophone, and international students are encouraged to take this course. Students whose first language is Spanish will not be eligible.
This course will be offered subject to sufficient enrolment.
Fall semester - 3 lecs per week.
Text Jarvis, A&C; Lebredo, R and Mena, F. 1990. *Cómo se dice?* (4th edition), Student edition, with cassette. Workbook/ Laboratory Manual.

H136: Basic Spanish II
Instructor: **TBA**
Prerequisite: Basic Spanish I
This course is designed for anglophone, francophone and international students. It is a continuation of Basic Spanish I with emphasis on comprehension, conversation, reading and

writing.
This course will be offered subject to sufficient enrolment.

Winter semester - 3 lecs per week.
Text - Jarvis, A&C; Lebredo, R and Mena, F. 1990. *Cómo se dice?* (4th edition), Student edition, with cassette. Workbook/ Laboratory Manual.

H140: Personnel Management
Instructor: **TBA**
An introduction to the human side of business organizations. The course focuses on the challenges of motivation, recruitment and selection, performance evaluation, compensation, and labour-management relations.

Winter semester - 3 lecs per week.

H150: Agriculture Today
Instructor: **TBA**
The course offers a basic overview of the agricultural industry in the Atlantic Provinces. Production trends and limiting factors, agricultural research, farm organizations, and government role in the industry are studied to provide an awareness and appreciation of Atlantic agriculture, the major things happening in it, and the new technology associated with it. The progress of the local industry and current issues are followed up through weekly reading assignments and class presentations. Commodity updates are presented through student seminars. This is a discussion-based course requiring class participation.

Winter semester - 3 lecs per week.

H160: Introductory Sociology
Instructor: **Prof. Beesley**
An introduction to the field of modern sociology. Themes addressed in the course are sociological theory and method, social process, social organization, social institutions, social differentiation, and social change. Discussion will include social issues, e.g., rural-urban conflict, an aging society, and family changes. Some emphasis will be given to rural social problems.

Fall semester - 3 lecs per week.

H170: Introductory Human Geography
Instructor: **Prof. Beesley**
This course is an introduction to the field of Human Geography. The objectives of the course are to present the spatial point of view on human-land interactions. Lectures, readings, and assignments consider geographical patterns, processes and problems in rural and urban settings. Some emphasis will be given to the Canadian and Atlantic region contexts.

Winter semester - 3 lecs per week.

H205: Canadian Studies
Instructor: **Prof. Sanger**
Objectives of this course are to provide a general survey of Canadian literature from colonial times to the present and to examine specifically four or five twentieth-century Canadian novels. Books by Callaghan, MacLennan, Ringuet, Aquin, O'Hagan, Atwood, Buckler, Ethel Wilson, and Davies have been used. Students must write a major term paper. All tests, exams, and written assignments in this course may be carried out in French. Required texts, when available in that language, may be read in French.

Winter semester 3 lecs per week.

H230: Nature's Image: A Survey of Landscape Art
Instructor: **Ms. Klee-Atlin**
Prerequisites: H10 or any H100 level course or by permission of Head of Humanities Department.

This course will provide an introduction to the history of artforms depicting landscape with the major focus being on landscape painting. The course will consist of both art history lectures and a studio component in which drawing techniques, collage, and colour theory will be explored. Students will develop skills in composition and will gain an increased appreciation for landscape art traditions.

Fall semester - 3-hour lecture/studio, once per week.

H300: History of Agriculture
Instructor: **Prof. Sanger**
Objective of this course is to examine the development of agriculture from the seventeenth to the mid-twentieth centuries. Particular emphasis is placed upon North American changes. Students are encouraged to carry out local historical field work. The course may involve work with the NSAC Archival and Historic Collections. Students must write a major term paper. This paper is the course's only source of evaluation.

Winter semester - Individual supervision; times arranged by the instructor and student.

H305: History of Scientific and Agricultural Thought
Instructor: **Prof. Sanger**
The objective of this course is to examine some of the key texts which have influenced the course of science and agriculture. Emphasis is placed upon the close reading of primary sources, beginning with the classical world of Greece and Rome and extending to the modern world. Among the areas to be examined may be the work of the Pre-Socratics, Plato, Aristotle, Cato, the place of nature and agriculture in medieval society, and the development of biology and physics from the 16th to 20th centuries. One of the main themes of the course will be the nature of scientific discovery and cognition. Another will be the place of humankind in nature. In addition to a final exam, students must either write one major term paper or submit an acceptable journal of natural observations.

Fall semester - 3 seminars per week.

H320: Extension Education in the Rural Community
Instructor: **Prof. Sanderson**
Prerequisite: 20 degree subjects or approval of the instructor.
The aim of this course is to provide students with a basic understanding of the principles and theories of extension education in rural society. The first part of the course will discuss trends in the rural community which affect the extension education process. Principles and procedures in conducting extension programs will be examined in the second part of the course. Through the utilization of guest lectures and class presentations, past and present extension efforts in the Maritimes will be analyzed in the final section of the course. Students will be required to prepare a major class presentation.

Fall semester - 3 lecs per week.

H325: Technology in Agricultural Communications
Instructor: **Prof. Sanderson**
Prerequisite: 20 degree subjects, or 12 technical subjects. Technician students require H10.
This course is designed to provide students with an understanding of the basic concepts involved in communicating ideas in an agricultural setting. The adult as a learner is featured in a discussion of the basic concepts involved in planning adult programs. Emphasis is placed on gaining practical experience in the use of media. Various types of media, such as radio, newspapers, television, and film, are examined. Assignments include: preparing advertising or publicity, using photography,

and developing scripts. The term project requires the student to produce an audio-visual presentation with integrated sound track.

Winter semester - 3 lecs and 2 labs per week.

H350: Environmental and Agricultural Ethics
Instructor: **Prof. Kernohan**
Prerequisite: Limited to third and fourth year degree students or by permission of Instructor and the Head of the Humanities Department.
This course offers a general introduction to environmental ethics with emphasis upon agricultural issues. Students will be introduced to modern ethical theory, and to techniques of philosophical reasoning and will be provided with a general context for overall discussion by examining the origins of the modern world view (the rise of modern science, market economics, and liberalism). Evaluation will be based upon class participation and a series of short weekly essays based upon directed readings and field experience. Essay-style midterm and final exams are required.

Winter semester - 1 seminar, 2 hours per week.

H360: Rural Sociology
Instructor: **Prof. Beesley**
Prerequisites: H160 and H101 or 102, or permission of the instructor.
This course provides a focus on rural sociological themes, particularly in the Canadian and Atlantic region context. Themes addressed include the theory and nature of rural social change, rural communities and response to forces of change, problems and issues in rural society (e.g. crime, aging, health care), environmental issues and their links to society, and the social implications of economic and political change for rural Canada.

Winter semester - 3 hour seminar per week.

H370: Rural Geography
Instructor: **Prof. Beesley**
Prerequisites: H170 and H101 or 102, or permission of the instructor.
This course focuses on rural geographic problems in Canada and the Atlantic region. Discussion will include, for example, rural land use issues, settlement dynamics, rural resource problems, urban-rural interaction, agricultural change, rural-well being, and rural planning. The geographic perspective emphasizes spatial variability and human-land interactions.

Fall semester - 3 seminar hours per week.

H401: Humanities Research Seminar I
Instructor: **Humanities Faculty, as appropriate to research topics**
Prerequisites: At least 30 degree-course credits
This course is designed to serve as an opportunity for senior students with interests in Humanities related subjects to explore particular research topics in some depth. Research projects will emphasize one or more of the following themes: Rural Life in Literature, Rural and Agricultural History, Agricultural and Environmental Philosophy, Agricultural and Rural Environmental Issues. The course will require seminar presentation(s), and written work (e.g. an annotated bibliography and a literature review paper). The literature review must be a substantial paper able to stand alone as a research document, and will comprise a major component of the course evaluation. Students will work under the supervision of individual Humanities Department faculty, but will present their seminars to a wider audience.

Fall Semester - Meeting schedule to be arranged.

H402: Humanities Research Seminar II
Instructor: **Humanities Faculty, as appropriate to research topics**
Prerequisite: H401

This course is designed as a sequel to H401 for senior students with major interests in Humanities related subjects. Research projects, as for H401, will emphasize one or more of the following themes: Rural Life in Literature, Rural and Agricultural History, Agricultural and Environmental Philosophy, Agricultural and Rural Extension Education, Rural Sociology, Rural Geography, Rural Environmental Issues. The second (winter) semester will require seminar presentations(s), and written work (e.g., a substantial research paper). The research paper will be an original contribution to the selected area of research, developed from the work initiated in H401. Students will work under the supervision of individual Humanities Department faculty, but will present their seminars to a wider audience.

Winter semester - Meeting schedule to be arranged.

IN100: Agricultural Ecosystems (A)
Coordinator: **Prof. Martin**
This course is an introduction to agriculture and food systems. The principles of agricultural production as studied in the disciplines of animal science, plant science, agricultural engineering and soil science will be integrated to give a comprehensive view of agricultural ecosystems. Course work will include lectures, laboratories, problem solving exercises, and small group work. The course will expose students to issues and raise questions to be considered during the remainder of their undergraduate career.

Along with the goal of providing the students with a knowledge of the application of science to agriculture, this course will assist students to understand the integrated nature of agriculture and food systems in both regional and global contexts. Associated course goals are to develop communication and independent learning skills and the ability to function effectively in team situations, and to stimulate students to think critically, logically and quantitatively while respecting the values and ideas of others.

Fall semester - 3 lecs, 2 labs and/or tutorials per week.

IN101: Food Security (A)
Coordinator: **Prof. Fredeen**
This course is structured similarly to IN100. The emphasis will be on food security and recycling resources. Topics will include global population, food production and distribution; globalization of agricultural trade; agricultural ethics; and rural sustainability. Course work will include lectures, laboratories, problem solving exercises, and small group work. The course will expose students to issues and raise questions for students to answer during the remainder of their undergraduate career.

Along with the goal of providing the students with a knowledge of the application of science to agriculture, this course will assist students to understand the integrated nature of agriculture and food systems in both regional and global contexts. Associated course goals are to develop communication and independent learning skills and the ability to function effectively in team situations, and to stimulate students to think critically, logically and quantitatively while respecting the values and ideas of others.

Winter semester - 3 lecs, 2 labs and/or tutorials per week.

IN400: Issues in Agriculture
Coordinators: **TBA**
Prerequisite: 3rd- or 4th-year standing, or permission of coordinators. This course will have a limited enrolment (20).
This course allows senior students in all disciplines to discuss current topics of interest to agricultural professionals. These topics could include: soil degradation, integrated pest management, antibiotics in feed, uses of biotechnology, the occupation of farming, animal welfare, etc. Students will be given weekly required readings.

Fall semester - 3-period seminar weekly. Offered in alternate years. Next offered in 1996-97.

IN475: Biotechnology in Agriculture (A)
Instructor: **Prof. Nowak**
Overview of current developments in the application of biotechnology techniques to agriculture and related fields and their impact or potential impact on plant and animal production, food and feed quality, and bioresource and waste management will be the main focus of this course. Seminars and class discussions will address socio-economic,

environmental and ethical considerations. Each student will give two seminars and write and essay on an assigned topic.

Winter semester - 2 lecs and 3 seminars per week. Offered in alternated years. Next offered in 1997-98.

MATHEMATICS AND PHYSICS

MP01: Pre-Tech Mathematics
Instructor: **Mrs. D. Robinson**
Mathematical concepts are applied to problems in agriculture. Topics are mathematical operations, percentage, linear and simultaneous equations, quadratic equations, exponents, logarithms, math of finance, ratio, proportion, and variation. The SI system of units is used.

Winter semester - 2 lecs and 2 labs per week.

MP14: Computational Methods
Instructor: **Prof. Farmer**
A course to develop problem-solving and decision-making abilities and computational skills. The course is based around the computer. The problems are of a scientific and managerial nature, emphasizing agricultural applications. The arithmetic and algebraic skills needed for the course are developed as the need arises through self-instructional modules.

Winter semester - 3 lecs and 2 labs per week.

MP15: Introductory Physics
Instructor: **Prof. Pearson**
A survey course in classical physics, designed to provide technicians with the principles of physics important to the study and practice of agriculture. Content and instruction are at the Grade 12 level. The major areas of study include: measurement, dynamics, statics, materials, heat and optics. The laboratory sessions consist of student-performed experiments and problems tutorials.

Fall semester - 3 lecs, 2 labs, and 1 tutorial per week.

Text: Any general or technical physics text written at the Grade 12 level

MP70: Basic Statistics
Instructor: **TBA**
Producing, summarizing and displaying data, linear regression and correlation, sampling distributions, confidence intervals and test of hypotheses, and some discussions of analysis of variance.

Winter semester - 3 lecs and 1 tutorial per week.

MP80: Transition Mathematics
Instructor: **Mrs. D. Robinson**
This is a review of high school mathematics. Topics include manipulation of algebraic expressions, equation solving, linear and quadratic functions, trigonometric functions, graphing, inverse functions and specifically logarithmic and exponential functions, sequences, and series. This course will be conducted on a lecture/tutorial basis. A non-credit course.

Fall semester - 3 lecs and 1 tutorial per week.

MP90: Introductory Physics
Instructor: **TBA**
An introductory course for entering students who do not have the equivalent of Nova Scotia Grade XII Physics. Course topics include dynamic, statics, fluids, and heat. A non-credit course.

Winter semester - 2 lecs and 2 tutorials per week.

MP100: Calculus and Analytic Geometry I
Instructors: **Profs. Madigan and Georgallas**
Prerequisite: University Preparation Grade XII Mathematics (N.S. 441, N.B. 121 or 122 or MP80).
A study of limit and the derivative, with maxima and minima, velocity and acceleration, and differentiation of the trigonometric, exponential, and logarithmic functions. Topics from analytic geometry are covered at

appropriate stages throughout the course. Students are required to confirm their eligibility for admission to this course by means of a mathematic diagnostic test, to be taken the day following registration. Students not admitted must take MP80.

Fall and Winter semesters - 3 lecs and 1 tutorial per week.

MP105: Calculus and Analytic Geometry II
Instructors: **Profs. Madigan and Georgallas**
Prerequisite: MP100
A continuation of MP100 dealing mainly with the integral calculus. Both definite and indefinite integrals are studied, with application to areas, volumes, hydrostatic pressure, and work. As in the case of MP100, topics from analytic geometry are covered at appropriate stages of the course.

Fall and Winter semesters - 3 lecs and 1 tutorial per week.

MP130: Physics for Life Sciences I
Instructor: **Prof. Pearson**
Prerequisite: University Preparation Grade XII Physics (N.S. 441, N.B. 121 or 122) or NSAC MP90.
Fundamental physical principles which are necessary for the understanding of the agricultural sciences form the core material of the course. Classical physics topics include vector analysis, dynamics, statics, fluid mechanics, acoustics and heat. Concepts derived from modern physics are added in order to complete the classical theories. Weekly student laboratory sessions allow for direct investigation of the theories studied in the course.

Both semesters - 3 lecs and 2 labs per week, 1 optional tutorial per week
Text - Haliday, Resnick, Fundamentals of Physics, 4th Edition, Volume 1.

MP135: Physics for Life Sciences II
Instructor: **Prof. Pearson**
Prerequisite: MP130
A continuation of Physics MP130. The majority of the course deals with electromagnetic theory including such topics as: electric charge, fields, potential, magnetic theory, induction and Maxwell's Equations. Fundamental wave theory and optics are also studied together with an introduction to nuclear physics. The laboratory provides an opportunity to investigate the theories in a 'hands-on' environment.

Winter semester - 3 lecs and 3 labs per week.
Text - Haliday, Resnick, Fundamentals of Physics 4th Edition, Volume 2, Extended.

MP210: Introduction to Statistics
Instructor: **Prof. Astatkie**
An introduction to the basic statistical concepts of data summarization, probability, random variables, estimation and hypothesis testing of parameters from discrete and continuous probability distributions. These concepts will be applied to problems from agricultural, biological and environmental research.

Fall and Winter semesters - 3 lecs, 1 tutorial and 1 computer lab per week.

MP211: Introduction to Planned Studies: Surveys and Experiments
Instructor: **Prof. Astatkie**
Prerequisite: MP210
This course is a continuation to MP210. Topics covered include sampling techniques, simple and multiple linear regression, analysis of variance for completely randomized and randomized blocks designs, nonparametric tests and introduction to categorical data analysis and quality control.

Fall semester - 3 lecs, 1 tutorial and 1 computer lab per week.

MP220: Computer Science
Instructor: **Prof. Bishop**
Introduction to problem-solving methods and algorithm development. Emphasis is on designing, coding, debugging, and documenting programs, using FORTRAN.

Fall semester - 3 lecs and 2 labs per week.

MP222: Computer Methods
Instructor: **Prof. Farmer**
A course to develop problem-solving and decision-making abilities and computational skills using computer software. Problems of a scientific and managerial nature will be chosen from a variety of agricultural fields. Topics to be covered consist of word processing, spreadsheets, database, programming, statistics, communications, graphics, and process control. Industry- leading software will be used.

Fall and Winter semesters - 3 lecs and 2 labs per week.

MP230: Multivariable Calculus
Instructor: **Prof. Madigan**
Prerequisites: MP100, MP105
Covers vectors, differential calculus of several variables, multiple integration.

Fall semester - 4 lecs and 2 labs per week.

MP235: Differential Equations and Linear Algebra
Instructor: **Prof. Madigan**
Prerequisites: MP100, MP105
Course covers elementary differential equations, first-order equations, types of second-order equations and solutions, applications to physical problems, vectors and vector products, differentiation, integration, matrices, linear transformations, and eigenvalues.

Winter semester - 4 lecs and 2 labs per week.

MP330: Agrometeorology
Instructor: **TBA**
Prerequisite: MP130
Introduction to the weather and climate of the Atlantic region. The course will cover the basics of the surface weather systems, the energy balance of crops, and the factors determining the climate of the region. The final phase will look at how weather information is used to predict crop maturity, yield, disease severity, and insect pest levels.

Winter semester - 3 lecs and 2 labs per week. Offered in alternate years. Next offered in 1997-98.

MP420: Intermediate Statistical Methods
Instructor: **Prof. Astatkie**
Prerequisite: MP210
Analysis of single-factor experiments, randomized blocks, latin squares, factorial and two-level fractional factorial designs.

Fall semester - 3 lecs and 1 computer lab per week.

MP460: Agricultural Modelling
Instructor: **Prof. Georgallas**
The aim of the course is to teach agricultural students when and how to attempt to express their ideas mathematically, how to solve the resulting mathematical model and compare its predictions to experimental data. Topics include techniques of creating a model, techniques of solving models, testing and evaluating models, growth models and a directed study project of an example of a model used in the agricultural sciences.

Winter semester - 3 lecs and 1 tutorial per week. Offered in alternate years. Next offered in 1996-97.

PLANT SCIENCE

PS30: Introduction to Plant Science
Instructor: **Prof. Goodyear**
A survey course to introduce students to the principles and practices involved in the production of crop plants. Labs will give the students an opportunity to become familiar with the skills and techniques involved in growing agronomic and horticultural crops.

Fall semester - 3 lecs and 2 labs per week.
Text - Barden, Halfacre and Parish, *Plant Science*.

PS36: Field Crops
Instructor: **Mr. Lewis**
A study of grasses, legumes, and other crops grown for forage or grain; factors influencing adaptation and distribution of these crops. Emphasis is placed on crops and conditions in the Atlantic Provinces.

Fall semester - 3 lecs and 2 labs per week.

PS37: Field Crop Management
Instructor: **Prof. Martin**
Preparatory: PS30 or CS12
A study of the production management of forage and grain crops. Soil conservation, crop rotations, and other multiple cropping systems are assessed. The course will provide a basis for sound feed-production decisions on Atlantic livestock farms and the ability to critically read publications pertaining to field crop management.

Winter semester - 3 lecs and 2 labs per week.

PS38: Nursery Crop Production
Instructor: **Prof. Mapplebeck**
The course examines site selection; types of nurseries; nursery layout, facilities and equipment; and the production of field-grown and container-gown nursery stock. Proper handling of nursery stock by retailers, and selling of nursery stock through garden centres are also covered.

Winter semester - 3 lecs and 2 labs per week.

PS39: Greenhouse Crop Management
Instructor: **Prof. Mapplebeck**
This course covers site selection, types of greenhouses, heating systems, ventilation, growing media, watering and fertilization, environmental controls in the greenhouse, and the production of bedding plants, pot plants, cut flowers, greenhouse vegetables and herbs. The laboratory section of this course includes visits to commercial greenhouse operations.

Fall semester - 3 lecs and 2 labs per week.

PS43: Small Fruit Crops
Instructor: **Prof. Ju**
Berry crops studied include strawberries, raspberries, cranberries, blueberries, currants, gooseberries, grapes, and kiwis. All aspects of berry production, from planting to marketing, are covered. Course also includes visits to small fruit farms and certified strawberry nurseries.

Fall semester - 3 lecs and 2 labs per week.

PS44: Tree Fruit Crops
Instructor: **Prof. Ju**
The culture and handling of apples, pears, peaches, plums, and cherries. Topics studied are soil management, propagation, training systems, pruning, harvesting, pest control, grafting and budding, storage, and marketing.

Winter semester - 3 lecs and 2 labs per week.

PS47: Turfgrass Production and Management
Instructor: **Prof. Daniels**
A study of cool-season turfgrasses, their characteristics, and proper usage. The establishment, maintenance, and renovation of turfgrass will be studied. Cultural topics

covered will emphasize proper fertilizing, watering, and pest control.

Fall semester - 3 lecs and 2 labs per week.

PS49: Potato Production
Instructor: **Prof. Goodyear**
Cultural practices involved in production are discussed in relation to the botanical characteristics of the potato plant. Physiological changes involved in sprouting, tuber initiation, crop development, and storage are considered in detail. Seed potato production is given particular attention.

Winter semester - 3 lecs and 2 labs per week.

PS50: Landscape Horticulture I
Instructor: **Prof. Goodwin**
An introduction to landscape horticulture, including the history of Old World influences on North American horticulture development. Plant-environment interaction and the fundamental principles governing plant growth are discussed, as well as the functional uses of ornamental plants in the contemporary landscape. Laboratory exercises will concentrate on the basic skills associated with the use of plants in the landscape.

Fall semester - 3 lecs and 4 labs per week.

PS51: Residential Landscape Design and Construction
Instructor: **Prof. Higgins**
Prerequisites: AE12, PS50, PS60
Residential landscape design and construction are studied. A systematic and practical approach to design is emphasized. Sketching is a component of this course. Students are taught both computer and conventional drafting to faciliate their design work.

Winter semester - 3 lecs and 4 labs per week.
Text - Hannebeum, *Landscape Design.*

PS55: Plant Propagation
Instructor: **Prof. Nowak**
Physiological and anatomical basis of plant propagation and techniques of sexual and asexual propagation of agricultural and horticultural crops as well as landscape plant material and herbaceous perennials. Propagation structures, containers, media, and sanitation, pedigreed seed production, and *in vitro* techniques for micropropagation are also components of this course.

Fall semester - 3 lecs and 3 labs per week.
Text - Hartmann, Kester and Davis, *Plant Propagation.*

PS60: Landscape Plant Materials I
Instructors: **Profs. Higgins and Olson**
Deciduous trees, shrubs, and vines are studied with respect to their identification and landscape value. The lab involves the study of plant families, plant morphology, use of plant keys, plant collecting and preparation of herbarium specimens. A plant collection is required.

Fall semester - 3 lecs and 3 labs per week.
Texts - Dirr, *Manual of Woody Landscape Plants*; Roland and Smith, *Flora of Nova Scotia*; Smith, *Vascular Plant Families*.

PS61: Landscape Plant Materials II
Instructor: **Prof. Higgins**
Landscape plant materials are studied with respect to their identification. Broad-leaf and narrow-leaf evergreens and annuals are studied. Recognition of deciduous trees by winter wood characteristics is also covered.

Winter semester - 3 lecs per week.
Text - Dirr, *Manual of Woody Landscape Plants*.

PS65: Plant Science Project
Coordinator: **Prof. Nowak**
A study of an agronomic or horticultural topic, which usually includes plant growing experimentation, that the student pursues in much more detail than is possible in lecture or laboratory course presentations. Students learn principles of agricultural experimentation and are evaluated on initiative in developing the project and on quality of oral and written reports. The work should commence in the Fall semester.

Fall and Winter semesters - 2 lecs per week.

PS70: Landscape Techniques
Instructor: **Prof. Goodwin**
Prerequisites: PS47, PS51
This is a Spring semester course. Students will be required to work under contract in the landscape horticulture trade with an approved employer for a period of at least 12 weeks. Contract content will include such areas of work as landscape construction, landscape maintenance, plant production, and sales, and will reflect the specialties of the employer.

Summer and Fall - 12 weeks.

PS71: Arboriculture
Instructor: **Prof. Goodwin**
Prerequisite: PS50
Emphasis is placed on arboriculture theory and practice. Tree problems arising from pest and disease injury, as well as environmental and non-parasitic injury of trees will be addressed. The course will focus on the tree in an urban environment. Laboratory exercises concentrate on specific arboriculture skills and techniques.

Fall semester - 3 lecs and 4 labs per week.
Text - Harris, Arboriculture, *Care of Trees, Shrubs and Vines in the Landscape*.

PS72: Landscape Maintenance
Instructor: **Prof. Goodwin**
Prerequisites: AE38, PS47, PS50
Provides an overview of site management. Time studies, scheduling of horticultural work and management techniques are included. Plant health care strategies, including pesticides and their application are discussed, and provincial pesticide applicators exams are written in preparation for licensing. A calendar of landscape maintenance tasks will be developed by the student.

Winter semester - 3 lecs and 2 labs per week.
Text - Hiratsuka et al, *A Field Guide to Forest Insects and Diseases of the Prairie Provinces*.

PS73: Landscape Horticulture II
Instructor: **Prof. Higgins**
Prerequisites: PS51, PS61
A study of herbaceous plants and their uses in landscape. Special plant groups, gardening techniques and styles will be examined. Plant identification is a component of this course. Both and computer and conventional methods of drafting will be utilized in design.

Fall semester - 3 lecs and 2 labs per week.

PS74: Landscape Design and Construction
Instructor: **Prof. Higgins**
Prerequisite: PS73
Advanced landscape planning and construction will be discussed. Such topics as site, furniture, decks, roofscapes, interior plantscapes, and estimating are included. Plant identification is an important component of this course. Both and computer and conventional methods of drafting will be utilized in design.

Winter semester - 3 lecs and 3 labs per week.

PS76: Plant Products Physiology
Instructor: **Prof. Asiedu**
Corequisite: B41
The principles of plant physiology as they apply to plant products in storage environments. Course deals with management practices associated with the harvesting and storage of crops and the effect of time period and conditions of storage on the quality of the plant products. Postharvest handling systems and value-added products through minimal processing and packaging are examined. Storage structures are studied and representative types of commercial storages visited.

Winter semester - 3 lecs and 2 labs per week.

PS90: Technology Project
Instructor: **Prof. Nowak**
This project provides an opportunity for the student to study in detail a Plant Science topic of special interest. The topic may build on other aspects of the study program. The student pursues studies under a project supervisor. The project plan developed with the advisor must include the purpose of the study, the procedures and materials used, a time schedule for the work involved, the method in which the information will be collected, the way in which comparisons and conclusions will be developed, and the format for the final report. Both a written and an oral report will be required.

Fall and Winter semesters - 2 lecs per week.

PS147: Farm Woodlot Management (A)
Instructor: **TBA**
This course has limited enrolment. Steel-toed boots and hard hats are required by law.
The importance of forestry to Canada and the Atlantic Provices is explained. Illustrated and explained are management procedures and practices for: the inventory of standing and felled trees, the establishment of new stands of trees, the tending of stands and plantations, and the harvesting of mature trees are illustrated and explained. Special attention is given to production of fuelwood, sawlogs, Christmas trees, maple sap, road construction and wildlife.

Fall semester - 2 lecs and 3 labs per week.

PS200: Vegetable Production (A)
Instructor: **Prof. Goodyear**
Prerequisites: IN100, IN101, or PS30
Production technology for the major vegetables grown in the Atlantic region are studied in detail, including botanical and horticultural characteristics, soil and fertility requirements, cultivar selection, pest management, harvest and storage requirements. Commercial vegetable enter-prises are visited.

Fall semester - 3 lecs and 2 labs per week.

PS210: Principles of Organic Horticultural Crop Production (A)
Instructor: **Prof. Goodyear**
Prerequisites: IN100 and IN101, or PS30
Study of the principles that form the basis for organic production systems. Special attention is given to soil fertility, organic soil amendments, compost and mulches, crop rotation, plant health, management of diseases and pests, companion planting, produce storage/handling and marketing. Seminar topics will include making the transition to organic production and definition and legislation of organic food in Canada.

Fall semester - 3 lecs and 3 labs/seminars per week.

PS300: Forage Crops (A)
Instructor: **Prof. Martin**
Prerequisites: IN100, IN101
Preparatories: B260, B265
Study of principle characteristics and requirements of forage crops, and the

production of forages for pasture, hay, silage, cover crops, or green manure. Emphasis will be given to forages in multiple cropping systems and rotational grazing systems and the ability to critically read publications pertaining to forage crops.

Winter semester - 3 lecs and 2 labs per week. Offered in alternate years. Next offered in 1997-98.

PS305: Grain Production (A)
Instructor: **Prof. Caldwell**
Prerequisites: IN100, IN101, B100
Preparatories: B260, B265
Study of cereals, pulses, oilseeds, and other grains, their classification, adaptation, distribution, culture, improvement, seed production, handling, grading, and utilization.

Fall semester - 3 lecs and 2 labs per week. Offered in alternate years. Next offered in 1996-97.
Text - Stoskopf, *Cereal Grain Crops*.

PS315: Tree Fruit Crops (A)
Instructor: **Prof. Ju**
Prerequisites: IN100, IN101, B100
Preparatories: B260, B265
Origins, history, biosystematics, adaptation, distribution, and culture of tree fruits. Propagation, pruning, training, harvesting and storage, pest control, and breeding of new cultivars and marketing of these crops are included in the course.

Winter semester - 3 lecs and 2 labs per week. Offered in alternate years. Next offered in 1997-98.

PS320: Small Fruit Crops (A)
Instructor: **Prof. Ju**
Prerequisites: IN100, IN101, B100
Preparatories: B260, B265
Principles and practices of small fruit production, history, biosystematics, adaptation, distribution, pest control, breeding of new cultivars, and propagation, storage, and marketing are studied.

Fall semester - 3 lecs and 2 labs per week. Offered in alternate years. Next offered in 1996-97.

PS325: Potato Production (A)
Instructor: **Prof. Asiedu**
Prerequisites: IN100, IN101, B100
Preparatories: B260, B265
History, biosystematics, and ecophysiology of the crop are reviewed. Seed selection and manipulation, planting and crop management, postharvest handling and storage practices are studied in detail. Soil fertility, crop health management strategies and nutritional qualities are covered. Biotechnology applications to cultivar development, maintenance and multiplication are also outlined. Production practices for seed, table and processing stock and marketing in Atlantic Provinces are examined in detail and some commercial operations visited.

Winter semester - 3 lecs and 2 labs per week.

PS330: Greenhouse Crop Production and Floriculture (A)
Instructor: **Prof. Mapplebeck**
Prerequisites: IN100, IN101, B100
Preparatories: B260, B265
Construction and equipment of greenhouses and related structures. Physiological principles involved in the growing and correct timing of vegetables and flower crops are studied and related to commercially viable plant production. Plant nutrition, propagation, and greenhouse management are also considered.

Fall semester - 3 lecs and 2 labs per week. Offered in alternate years. Next offered in 1997-98.

PS335: Landscape Plant Production (A)
Instructor: **Prof. Mapplebeck**
Prerequisites: IN100, IN101, B100
Preparatories: B260, B265
Production of landscape plant materials is studied in detail. More specifically, this course covers plant propagation techniques, nursery culture and equipment, harvesting, storage, transportation, and garden centre handling and sales of plants.

Winter semester - 3 lecs and 2 labs per week. Offered in alternate years. Next offered in 1996-97.

PS340: Turfgrass Management Principles and Practices (A)
Instructor: **Prof. Daniels**
Prerequisites: IN100, IN101, B100
A study of the most current practices employed in the production of commercial turf. Emphasis is placed on the scientific principles involved in the maintenance of turf in intensively used areas.

Fall semester - 3 lecs and 2 labs per week. Offered in alternate years. Next offered in 1996-97.

PS355: Tropical Agriculture (A)
Instructor: **Prof. Asiedu**
This course will introduce the student to food production, storage, and handling systems in tropical and sub-tropical countries. The sustainability of these systems and issues which limit the use of the environment for long-term food production will be identified. Farming systems and the role of National/International research centres are examined. The instruction will include resource people from several disciplines.

Fall semester - 3 lecs per week.

PS400: Plant Breeding (A)
Instructor: **Prof. Atlin**
Prerequisites: B240, MP200, one crop production subject
An introduction to the principles and practices of plant breeding, including the genetics of agriculturally important traits, germplasm conservation, breeding bio-technology, and the structure of the Canadian seed industry.

Winter semester - 3 lecs and 2 labs per week. Offered in alternate years. Next offered in 1997-98.

PS405: Agronomy (A)
Instructors: **Prof. Caldwell**
Prerequisites: PS300, PS305, PS415
The objective is to review and integrate material from prerequisite subjects on field crop production, soils, climate, and basic sciences into crop management systems. Students successfully completing this course will qualify to be identified as agronomists.

Winter semester - 3 lecs per week.

PS410: Horticulture (A)
Instructor: **Prof. Daniels**
Prerequisites: PS415, PS449, and three horticultural production courses
The objective is to review and integrate material from prerequisite courses on horticultural crops production, soil, climate and basic sciences into crop management systems. Students successfully completing this course will qualify to be identified as horticulturalists.

Winter semester - 3 lecs per week.

PS415: Crop Adaptation (A)
Instructor: **Prof. Caldwell**
Prerequisites: One crop production course
Preparatory: B260, B330
The course is designed to stimulate interest, critical thinking and investigative processes for

the understanding of crop adaptation to abiotic influences such as light, soil and water and biotic factors such as other plants, mycorrhizae, and *Rhizobia*. Agronomic practices will be related to economic and environmental responsibilities.

Fall semester - 3 lecs per week.
Texts - Gardner et al., *Physiology of Crop Plants*.

PS449: Plant Science Project-Seminar I (A)
Coordinators: **Profs. Daniels and Atlin**
Involves the selection of an appropriate project and the preparation of a research plan to investigate the chosen subject. Fundamentals of experimental design and data analysis are covered in lectures. Under the supervision of a faculty advisor, each student will select a topic, conduct a detailed literature review, and prepare an experimental plan for implementation in PS450. This course is required by all students in the Plant Science option. The research project and faculty advisor are to be chosen in consultation with the course coordinator during Semester VI, and work initiated soon thereafter. This course is required by students in Year 3 of the Plant Science option.

Winter semester - 2 lecs per week.

PS450: Plant Science Project-Seminar II (A)
Coordinators: **Profs. Daniels and Atlin**
Prerequisite: PS449
The continuation and conclusion of the subject selected in PS449. This consists of both a written and oral presentation of the project.

Fall semester - 2 lecs per week.

PS475: Plant Biotechnology (A)
Instructor: **Prof. Nowak**
This course has limited enrolment.
Theoretical bases of plant tissue culture, overview of the organization and operation of a tissue culture laboratory and tissue culture techniques and their application to nuclear seed potato production, multiplication of horticultural crops and landscape plant material, production of secondary metabolites, germplasm development and plant breeding and conservation of genetic resources. Outline of the techniques of manipulation of plant genome will also be a part of this course. Students must complete an assigned project.

Winter semester - 2 lecs and 4 labs per week.
Offered in alternate years. Next offered in 1996-97.

Text - Lindsay and Jones, *Plant Bio-technology in Agriculture*; Debergh and Zimmerman, *Micropropogation, Technology and Application*.

GRADUATE COURSES

Graduate Courses are intended only for students registered in the M.Sc. program and may be taken by undergraduate students only under exceptional circumstances

REQUIRED REGULAR COURSES

These courses are restricted to graduate students.

AG570: Communication Skills & Graduate Seminar
Instructor: **Prof. Haley**
Through practical assignment students will be able to test and develop their communication skills. Topics will include journal papers, grant applications, posters, seminars, lectures and interviews. This course is required for students enrolled in the M.Sc. in Agriculture Program.

Fall and Winter semesters - 1 lec per week.

AG571: Module Course
Instructors: **TBA**
This course normally consists of three modules. Each module consists of one month of lectures or assignments dealing with a topic in the lecturer's area of expertise. Research interests of incoming students are taken into account each year when module topics are solicited. Students should not apply to take a module unless they have at least a second year undergraduate background in the focus area. A formal evaluation is made at the end of each module. All graduate students are required to complete this course, and are encouraged to do so in their first year of study.

Fall and winter semester - 2 or 3 lecs per week.

AG900: Graduate Thesis
Students register for this course when they are engaged in research work for credit towards the M.Sc. in Agriculture degree.
Fall and winter for program duration.

RECOMMENDED REGULAR COURSES

Where an undergraduate student wishes to take one of these graduate courses, the following signatures are required for approval: the instructor(s), the relevant Department Head(s), and the Graduate Coordinator.

AG572: Applied Statistics & Experimental Design for Agriculture
Instructor: **Prof. Astatkie**
Prerequisites: MP200 and MP420, or equivalent.
This course is designed to provide: i) practical skills in statistical methods and experimental designs, ii) an appreciation of situations when more complex models and methods are required, and iii) the ability to communicate experimental problems and results clearly to colleagues and statistical consultants. Students will be expected to successfully complete practical exercises involving real experimental problems and data sets. Students will also be expected to acquire proficiency in at least one advanced statistical software package.

Winter semester - 3 lecs per week.

OTHER REGULAR COURSES

Where an undergraduate student wishes to take one of these graduate courses, the following signatures are required for approval: the instructor(s), the relevant Department Head(s), and the Graduate Coordinator.

AG527: Economic Entomology
Instructor: **Prof. Le Blanc**
Insect pest management in agriculture with emphasis on a selection of non-chemical approaches to insect control, e.g. natural, mechanical, physical, cultural, biological, biochemical, and/or legal control. According to student(s) interest, a section on chemical control can be included. This course is

consistently in accord with the theory and principles of integrated pest management (IPM) and consequently, the term assignments will incorporate the study of sampling techniques and monitoring methods of insect pests and related beneficial arthropods. Attendance to certain relevant seminars may be required and directed readings may be assigned.

A case history of a major agricultural insect pest will be included to satisfy the course requirement. The material will be submitted in term paper format and also delivered in an oral presentation. The case history will include the life cycle, host plants, pest status, damage, losses, control measures, research needs and IPM programs pertinent to the particular species.

Winter semester - 2 lecs and 1 tutorial per week.

AG535: Animal Research Methods
Instructors: **Animal Science Faculty**
This course is designed for students who are, or expect to be, working in Animal Science, or who have an interest in the methodology and ethics of animal research. The course will include consideration of some of the common or promising laboratory and field methods associated with domestic animal research, ethics of animal research, the analysis and interpretation and reporting of results. Students will be expected to participate in exercises, to contribute to discussions, and to present reviews on various aspects.

Fall semester - To be arranged with the Instructor.

AG536: Protein Nutrition
Instructor: **Prof. Anderson**
A study of the sources, availability, and metabolism of protein and amino acids for the domestic animal. Subjects addressed include discussion of sources of protein, factors affecting digestibility of protein, digestion and absorption of protein and nitrogen, urea recycling, individual amino acid metabolism, excretion of nitrogenous wastes in birds and mammals, and protein and amino acid requirements of animals.

Winter semester - To be arranged with the Instructor. Offered in alternate years. Next offered in 1996-97.

AG538: Quantitative Genetics
Instructor: **Prof. Patterson**
An introduction to quantitative genetics theory and to statistical techniques used in domestic animal improvement. Computing and statistical techniques will be demonstrated, presented, and relevant literature will be surveyed. Reference will be made throughout to performance recording programs used in Canada and throughout the world.

Winter semester - To be arranged with the Instructor.

AG539: Molecular Genetic Analysis of Populations
Instructor: **Prof. Farid**
This course is designed to give graduate students some understanding of the theoretical aspects of population and molecular genetics. Applications of DNA fingerprinting in population genetic studies will be discussed. Students will acquire hands-on experience in DNA fingerprinting. Estimation of band frequency and band sharing, and their relationships with such population parameters as gene frequency, inbreeding, and genetic distance will be covered.

Fall semester - To be arranged with the Instructor.

AG552: Plant Breeding Methods
Instructors: **Profs. Atlin and Papadopoulos**
Genetic and statistical principles underlying modern plant breeding methods are introduced. Those principles will be reinforced through the use of computer models. Cultivar development techniques for self-and cross-pollinated species are examined in detail. Applications of tissue culture, genetic engineering, and marker-facilitated selection are discussed. This course is open to students who have had introductory courses in genetics, plant breeding, statistics, and molecular biology.

Fall semester - To be arranged with the Instructor.

AG553: Nitrogen in Crop Production
Instructor: **Prof. Martin**
Students will study the transformations of N in air, soil, water, and plants and consider crop requirements for N. Topics include the chemistry of N, the N cycle, N transformations in soil, N metabolism in plants, N transport in plants, N-fixation, N losses in agricultural systems, and an evaluation of N fertilizer in these systems.

Fall semester - To be arranged with the Instructor.
Offered in alternate years. Next offered in 1996 97.

AG556: Advanced Crop Physiology
Instructor: **Prof. Caldwell**
Physiological processes relevant to crop plant development and production of harvestable yield will be examined.

Fall or Winter semester - To be arranged with the Instructor. Offered in alternate years. Next offered in 1997-98.

SPECIAL TOPICS COURSES

Special Topics Courses may be taken by undergraduate students only under exceptional circumstances. The following signatures are required for approval: the instructor(s), the relevant Department Head(s), and the Graduate Coordinator.

AG521: Special Topics in Environmental Microbiology
Instructor: **Prof. Stratton**
This course will allow students to study a particular topic in the field of environmental micro-biology in more depth than would be practical in a general course. The student will choose a topic in consultation with the instructor. An in-depth literature search will be required and the material gathered will be discussed in weekly tutorial sessions. Laboratory work will be conducted when required and if appropriate to the topic chosen. Topics for study can be of either a theoretical or applied nature, with the needs of the student being a primary factor in finalizing the topic.

Fall semester - To be arranged with the Instructor.

AG522: Special Topics in Weed Science
Instructor: **Prof. Doohan**
Topics might include: evolution of weeds, impact of weeds on human history, weed ecology and physiology, crop/weed interactions, herbicide chemistry, physiological and biochemical behaviour of herbicides in plants, environmental fate of herbicides, myco-herbicides, biorationals. Two term projects and a research critique will be required.

Winter semester - To be arranged with the Instructor.

AG524: Special Topics in Environmental Impact

Instructor: **Prof. Stratton**

This course will allow students to study a particular topic in the field of environmental impact or environmental toxicology in more depth than would be practical in a general course. The student will choose a topic for study in consultation with the instructor. An in-depth literature search will be required and the material gathered will be discussed in weekly tutorial sessions. Laboratory work will be conducted when required and if appropriate to the topic chosen. Topics for study should be related to the student's area of research or interests.

Winter semester - To be arranged with the Instructor.

AG526: Special Topics in Plant Pathology

Instructors: **Profs. Gray and Singh**

This course will be custom-designed to meet the specific needs of graduate students specializing in the area of plant pathology who need further specific knowledge and/or skills.

Fall or Winter semester - To be arranged with the Instructor.

AG531: Special Topics in Applied Ethology

Instructor: **Prof. Tennessen**

Course content will vary. Topics covered will be chosen so as to meet the requirements of individual graduate students. Aspects could include the assessment of farm animal welfare, foraging behaviour, environmental enrichment, social dynamics of livestock, early rearing environment and the effect on later behaviour.

Fall semester - To be arranged with the Instructor.

AG532: Special Topics in Animal Nutrition

Instructors: **Profs. Anderson and Fredeen and other faculty as needed**

The course is designed to provide an opportunity to study specific aspects of animal nutrition. Aspects could include study of a particular nutrient, a process in nutrition, a nutritional state, or nutrient metabolism of a specific species with focus on the research method. The student is advised to consult with their supervisor to determine the specific scope of the topic to be studied.

Fall or Winter semester - To be arranged with the Instructor.

AG534: Special Topics in Animal Physiology

Instructor: **TBA**

This course is for students with a major interest in animal physiology. The course will consist of discussions, term papers, and presentations. Students will be expected to nominate topics for consideration and to prepare major reviews and class presentations of selected topics.

Fall semester - To be arranged with the Instructor.

AG537: Special Topics in Animal Breeding and Genetics

Instructor: **Prof. Crober**

Provides students with an opportunity to pursue more detailed studies in Animal Breeding/Genetics. Topics will be decided on by the student in consultation with faculty members for the purpose of meeting the student's specific needs as defined by the thesis research. Delivery will be a combination of directed reading and tutorial discussions.

Fall or Winter semester - To be arranged with the Instructor.

AG541: Special Topics in Soil Fertility
Instructor: **Prof. Warman**
The course is designed to provide an opportunity to study specific aspects of soil fertility. Topics may include the influence of soil biological, chemical, and physical properties and processes on nutrient absorption and plant growth, with emphasis on essential plant nutrients in the soil and methods for evaluation, as well as the use of inorganic and organic amendments.

Winter semester - To be arranged with the Instructor.

AG543: Special Topics in Environmental Analysis
Instructor: **Prof. Hoyle**
Students may apply to undertake either a specially designed course in environmental analysis, or to undertake additional work further to Organic Environmental Analysis. This may be facilitated with written consent from the instructor who then assumes personal responsibility for supervising the work.

Fall or Winter semester - To be arranged with the Instructor.

AG546: Special Topics in Soil and Water Management
Instructors: **Profs. Havard, Madani, Gordon**
This course will discuss the state-of-the-art soil and water management practices in either humid or arid regions, depending on the specific needs of the graduate students. Topics may include: fundamentals of soil and water properties; drainage and water table control; management of farm irrigation and draining systems; salinity control; irrigation water requirements; drainage requirements for humid and arid regions; soil conservation; and computer modelling or irrigation and drainage systems. Guest speakers will be invited to share their experiences with the students.

Fall or winter semester - To be arranged with the Instructor.

AG547: Special Topics in Analytical Instrumentation for Researchers
Instructors: **Profs. Crowe and Stratton**
This course will be designed to meet the needs of graduate students who are using analytical instruments in their research. The course will provide the graduate student with specific theoretical knowledge and the necessary practical skills required to properly use the instruments of interest. The student will select either one of the following areas for detailed consideration, 2 to 3 of the following areas for a more general coverage: gas chromatography, liquid chromatography, atomic analysis, DNA or protein electrophoresis, infrared or fluorometric analysis, NMR, and mass spectrophotometry, microscopy.

Fall and Winter semesters - To be arranged with the Instructor.

AG551: Special Topics in Plant Breeding
Instructors: **Profs. Atlin and Papadopoulos**
This course will be designed to meet the specific needs of graduate students specializing in the area of Plant Breeding who need further specific knowledge and/or skills.

Fall or Winter semester - To be arranged with the Instructor.

AG554: Special Topics in Crop Physiology
Instructors: **Profs. Caldwell, Asiedu, Goodyear, and Martin**
This course will be designed to meet the specific needs of graduate students specializing in the area of Crop Physiology who need further specific knowledge and/or skills.

Fall or Winter semester - To be arranged with the Instructor. Offered in alternate years. Next offered in 1997-98.

AG557: Special Topics in Agricultural Biotechnology
Instructors: **Profs. MacLaren and Nowak**
This course will be designed to meet the specific needs of graduate students specializing in the area of Agricultural Biotechnology who need further specific knowledge and/or skills.

Fall or Winter semester - To be arranged with the Instructor.

AG561: Special Topics in Animal Product Technology
Instructor: **Prof. Firth**
This course will review areas important in the technology of foods derived from animals (meat, fish, eggs, milk). Such areas could include chemistry (lipid oxidation, Maillard reactions), physics (changes caused by freezing, sol-gel conversion, colour) and microbiology (spoilage, pathogenic organisms, modified-atmosphere packaging, HACCP). Each student will be expected to present a review of a particular topic.

Fall semester - To be arranged with the Instructor.

CROSS-REFERENCED COURSES

AG525: Soil Microbiology *cross-referenced as B400*
Instructor: **Prof. Stratton**
This course is designed to provide an intensive study of the microbiology of soils and will emphasize nutrient cycling and biodegradation. Topics covered include the relationships between the abiotic and biotic components of soils, the microbial biochemistry of the carbon, nitrogen, sulphur, phosphorus, and selected micronutrient cycles, heavy metal cycling, and the microbial degradation of industrial wastes and pesticides. The laboratory classes will concentrate on techniques to monitor the microbial biomass in soil and the microbial components of nutrient cycles. These include new advances in bacterial taxonomy and identification and the use of gas chromatography and high performance liquid chromatography in quantitating nutrient cycling. In addition to a major term paper, a comprehensive laboratory report on the entire term's lab work, and a single take-home examination, graduate students will be required to:
(a) Modify the term paper into a critical review of some aspect of soil microbiology (chosen in consultation with the instructor); the review must be current and in depth; it must be written in manuscript format and will be graded accordingly.
(b) Perform additional laboratory exercises not assigned to undergraduate students; use more replicates; perform a full statistical analysis of data; provide a report in manuscript format.
(c) give a seminar to the class on their term paper topic.

Fall semester - To be arranged with the Instructor.

AG544: Organic Environmental Analysis
cross-referenced as CS420
Instructor: **Prof. Hoyle**
This course has limited enrolment.
The course will involve the study of the analytical chemical techniques used in the analysis of environmental samples obtained from the atmosphere, hydrosphere, and lithosphere. Included in this study will be the sampling methods used for air, water, soil, food and wastes, and modelling of environmental contamination. In addition, government regulations, hazard assessment and public awareness of these issues will be discussed. In addition to successfully completing examinations graduate students will be required to perform the following tasks:
(a) To write a major paper on an important topical issue.

(b) To present that paper as a seminar before Departmental faculty, staff & students.
(c) To write a research proposal prior to starting the laboratory project.

Fall semester - To be arranged with the Instructor.
Offered in alternate years. Next offered in 1996 97.

AG545: Environmental Soil Chemistry *cross-referenced as CS440*
Instructor: **Prof. Warman**
The course is designed to provide an opportunity to study specific aspects of environmental soil chemistry. Topics may include the chemical composition of soils with special attention to soil biochemistry and soil organic matter with an emphasis on organic matter-clay interactions, soil organic N, P and S, and soil enzymology. Graduate students will be expected to participate in lecture/discussion sessions and complete required reading assignments. In addition, graduate students will be required to complete research papers and present their findings at in-class seminars.

Winter semester - To be arranged with the Instructor. Offered in alternate years. Next offered in 1996-97.

AG558: Plant Biotechnology *cross referenced as PS475.*
Instructor: **Prof. Nowak**
This course has limited enrolment.
Theoretical bases of plant tissue culture, overview of the organization and operation of a tissue culture laboratory and tissue culture techniques and their application to nuclear seed potato production, multiplication of horticultural crops and landscape plant material, production of secondary metabolites, germplasm development and plant breeding and conservation of genetic resources. Outline of the techniques of manipulation of plant genome will also be a part of this course. Students must complete an assigned project.

Winter semester - 2 lecs and 4 labs per week. Offered in alternate years. Next offered in 1996-97.

AG562: Ruminant Digestive Physiology & Metabolism *cross-referenced as AS475*
Instructors: **Profs. Fredeen and Lirette**
Prerequisites: AS300, AS305, CS360
This course is designed to provide an intensive study of food intake and digestion, and nutrient absorption and metabolism, in the ruminant animal. The course details current knowledge and focuses on aspects of future research interest. Students are expected to contribute to discussions and present reviews to the class on various aspects of the subject.

Fall semester - 3 lecs and 2 labs per week. Offered in alternate years. Next offered in 1996-97.

SCHOLARSHIP SECTION

Specific inquiries regarding scholarships and bursaries should be directed to the College's Awards Office located in Room 106, Cox Institute, by phone at (902) 893-6729, by fax (902) 895-4547, or by email at BCROUSE@CADMIN.NSAC.NS.CA. The College's Scholarship Committee reserves the right to authorize changes to the selection criteria and awarding of scholarships, bursaries, and prizes.

Scholarships, Bursaries and Prizes

Definition of Terms

Award - An award is a general term used to mean any presentation made to a student.

Governor-General Medal - The Governor-General Medals are awarded to the student with the highest academic standing in each of the major programs, Degree and Technical.

Scholarship - A scholarship is a monetary award to a student based primarily on academic performance, although other considerations may be considered based on the donors requirements.

Bursary - A bursary is a monetary award to a student where the primary criteria is not academic performance.

Prize/Gift - A prize or gift is an award given to a student based on the selection of the donor.

Note: In the descriptions of the various scholarships, bursaries, and prizes that follow where the selection criteria is not specified, the guidelines above apply.

ENTRANCE SCHOLARSHIPS AND BURSARIES

The following scholarships and bursaries are available to students entering a first year of study at the Nova Scotia Agricultural College.

Atlantic Shopping Centres Scholarship
The Atlantic Shopping Centres $1000 entrance scholarship is awarded to students entering their first year of study in a degree program. Selection is based on academic performance and financial need. Applications must be submitted to the NSAC Awards Office not later than September 20.

Chicken Producers Association of Nova Scotia Bursary
The Chicken Producers Association of Nova Scotia $1000 bursary is awarded to a Nova Scotia student at NSAC who shows a demonstrated interest in pursuing the study of poultry. Preference will be given to applicants with a farming background. Students in all years of study are eligible. A student may not receive this scholarship more than once. A letter of application must be submitted not later than September 20 to:
Secretary
Chicken Producers Association of Nova Scotia
Agricultural Centre
Kentville, Nova Scotia B4N 1J5

Co-op Atlantic Bursaries
Three $500 Co-op Atlantic bursaries are awarded to students entering the technical program. Selection is based on financial need, potential for community leadership and/or cooperative endeavour and the recommendation of a local co-operative or district Federation of Agriculture. These bursaries are renewable for a second year when the recipient forwards to the donor first year marks and confirmation of enrollment. Applications must be submitted to the NSAC Awards Office not later than September 20.

Hank DeBoer Memorial Scholarship
The Hank DeBoer Memorial Scholarship of $500 is awarded to a Nova Scotia student who enters a degree or technical program at NSAC and who receives no other scholarship with a higher value. The selection of the recipient will be based on academic performance. No application is required.

Kings County Federation of Agriculture Bursary
The $500 Kings County Federation of Agriculture Bursary is awarded to a resident of Kings County, NS, enrolled full-time at NSAC. Selection criteria include financial need, academic performance, and future plans for participation in the agricultural industry of Kings County. The selection will be made by the donor. Applications are available from and must be received by August 1 at the following address:

Kings County Federation of Agriculture
Blair House
Agricultural Centre
Kentville, NS B4N 1J5

Newfoundland and Labrador Federation of Agriculture Scholarships
To encourage local students to pursue careers in the agri-products industry, the Newfoundland and Labrador Federation of Agriculture awards two $500 scholarships to Newfoundland students (preferably one from the East Coast and one from the West Coast) entering studies at the NSAC. Selection criteria include academic performance and financial need. Applications must be submitted to the NSAC Awards Office not later than September 20.

Newfoundland Provincial Scholarships
The Newfoundland government, through its Department of Education, awards three scholarships of $1000 each to Newfoundland students entering the first year of a degree program at NSAC. Selection will be based on academic performance. No application is required.

Newfoundland Milk Marketing Board Scholarships
Two $500 Newfoundland Milk Marketing Board Scholarships are awarded to first year Newfoundland students (one technical and one degree). Selection will be based on academic performance. No application is required.

Nova Scotia Agricultural College Alumni Association Scholarships
The NSAC Alumni Association awards two $1000 scholarships to first year students. Selection will be based on academic performance. No application is required.

Nova Scotia Department of Agriculture and Marketing Entrance Scholarship Program
As an entrance scholarship, the scholarships are available to Nova Scotia students entering post secondary study at NSAC for the first time or Nova Scotia students entering programs with no advanced standing (carrying no credits from other post-secondary institutions).

* $2000 renewable scholarships are awarded to the top three Nova Scotia students entering degree programs (based on averages of the five subjects required for admission to the respective program of study).

* $1500 renewable scholarships awarded to all other Nova Scotia students entering degree programs with 85.0% averages in five required courses for respective program of study.

* $1000 renewable scholarships will be awarded to the top three Nova Scotia students entering technical programs

- technician and technology (based on the averages of subjects required for admission to the respective program of study).

* $500 renewable scholarships awarded to all other Nova Scotia students entering technical programs - technician and technology with 80.0% averages in the subjects required for admission for the respective program of study.

Nova Scotia Institute of Agrologists Scholarship
The $1000 NSIA Scholarship is awarded to a Nova Scotia student entering a degree program at the NSAC. In awarding the scholarship, the selection committee will take into consideration academic performance, participation in school and community activities, degree of interest in agrology and pursuing a career in the agri-food industry and financial need. Applications are available from and must be received by August 1 at the following address:

Nova Scotia Institute of Agrologists
P.O. Box 550
Truro, Nova Scotia B2N 5E3

Nova Scotia Power Scholarship
The Nova Scotia Power $1500 entrance scholarship is awarded to a Nova Scotia student entering on a full-time basis the first year of a degree program. The scholarship is renewable for up to three years by maintaining an 80.0% average in the previous year. As part of the award, the winner receives summer employment with Nova Scotia Power. Selection criteria include academic performance and demonstrated involvement in extra-curricular activities, and commitment to the summer employment. Applications must be submitted to the NSAC Awards Office not later than September 20.

Prince Edward Island Institute of Agrologists Scholarship
The $500 PEIIA Scholarship is awarded to a PEI student entering the B.Sc.(Agr.) program. Selection criteria include academic performance, school and community involvement and financial need. Applications must be submitted to the NSAC Awards Office not later than September 20.

F.W. Walsh Memorial Scholarship
In memory of the outstanding agriculturalist F. Waldo Walsh, this $800 scholarship is awarded to a student who is admitted to a degree program at NSAC. Selection is based primarily on academic performance. Financial need and participation in school and community affairs will also be considered. Applications must be submitted to the NSAC Awards Office not later than September 20.

Woodside Memorial Scholarships
In memory of Harold and Mary Woodside, formerly of Alderbrook Farm, Margate, PEI, three $1000 scholarships are awarded to first year PEI students. Selection criteria include academic performance, financial need, and participation in sports, school, and community activities. Application forms are available from guidance counsellors at PEI. high schools and must be submitted not later than August 15.

CONTINUATION SCHOLARSHIPS AND BURSARIES

The following scholarships and bursaries are available to students returning to studies beyond the first year of the various programs at the Nova Scotia Agricultural College.

Ralph H. Armstrong Memorial Bursary

The family and friends of the late Ralph Hallett Armstrong award a bursary of $500 to a student who has completed one year of study at NSAC. Former or current 4-H club members from Kings or Annapolis Counties in Nova Scotia are eligible to apply. Selection is based on financial need and academic performance. Applications must be submitted to the NSAC Awards Office not later than September 20.

Athletic Bursaries

Two $250 awards (one to a male and one to a female student) will be presented to returning students at NSAC. Selection criteria include financial need, involvement in/member of College varsity team, recommendation from a coach and satisfactory academic performance. Applications must be submitted to the NSAC Awards Office not later than September 20.

Atlantic Farm Mechanization Show Scholarship

The Atlantic Farm Mechanization Show awards a $1000 scholarship to a student from the Atlantic provinces who has completed at least one year of study at NSAC. Students in Engineering/Mechanization programs are eligible. The awarding of the scholarship is based on academic performance and the demonstrated potential for a career in the area of mechanization of agriculture. No application is required.

Atlantic Fertilizer Institute Scholarship

The Atlantic Fertilizer Institute awards a $1000 scholarship to a student from the Atlantic provinces who is entering the second year of the B.Sc.(Agr.) program. Preference will be given to students with farming interests studying in an option relating to the production of crops. Selection criteria include academic performance, participation in student life, contribution to the College community, and financial need. Applications must be submitted to the NSAC Awards Office not later than September 20.

Atlantic Fertilizer Institute Bursary

The Atlantic Fertilizer Institute awards a $500 bursary to a second year student in the technician or farming technology program. Selection criteria include farm interests, leadership qualities within the college community, and academic performance. Applications should be submitted to the NSAC Awards Office not later than September 20.

Atlantic Land Improvement Contractors Association Bursary

The Atlantic Land Improvement Contractors Association Bursary of $500 is available to degree Agricultural Engineering students with a demonstrated ability and interest in soil, water, and land improvement. No application is required.

Atlantic Provinces Hatchery Federation Bursary

The Atlantic Provinces Hatchery Federation awards a $500 bursary to a student from the Atlantic provinces who is enrolled in subjects that reflect an interest in poultry. A letter of application must be received by September 20 at the following address:

Herb Jansen
APHF Secretary
c/o NSDAM
Agricultural Centre
Kentville, NS B4N 1J5

A.B. Banks Memorial Scholarship

The $250 A.B. Banks Memorial Scholarship is

awarded to the B.Sc.(Agr.) student with the highest cumulative average at the completion of the first year and who enters the second year of the Animal Science option. No application is required.

Beaver Foods Limited Scholarships
Beaver Foods Limited awards four $500 scholarships to outstanding students with high academic performance who, for one reason or another, have not qualified for other significant awards. Applications must be submitted to the NSAC Awards Office not later than September 20.

Blueberry Producers Association of Nova Scotia Scholarship
The Blueberry Producers Association of Nova Scotia awards a $500 scholarship to a Plant Science student entering the third or fourth year of the B.Sc.(Agr.) program. Selection will be based on academic performance and financial need. Preference will be given to someone with a specialization in small fruits. Applications must be submitted to the NSAC Awards Office not later than September 20.

Bravo 500 Pest Management Scholarship
ISK Biosciences Inc. awards a $1250 scholarship to a student entering the third or fourth year of the Pest Management option at the NSAC. Only students with potato farm backgrounds will be considered for this award. Selection criteria include academic performance, and interest in employment in the Maritime potato industry. Applications must be submitted to the NSAC Awards Office not later than September 20.

Bravo 500 Technology Bursary
ISK Biosciences Inc. awards a $500 bursary to a student entering the second or third year of a technical program at NSAC. Candidates must be planning to farm (or return to home farms) following graduation. Preference will be given to students with potato and field crop backgrounds. Selection criteria include academic performance, financial need, and interest in the agricultural industry. Applications must be submitted to the NSAC Awards Office not later than September 20.

David W. Brown Memorial Bursary
The ACA Co-operative Limited awards two $500 bursaries to students entering a second year of study. Selection criteria include financial need, academic performance, and interest in farming and in the poultry industry in particular. Applications must be submitted to the NSAC Awards Office not later than September 20.

Canadian Feed Industry Association (Atlantic Division) Scholarship
The Atlantic Division of the Canadian Feed Industry Association awards a $700 scholarship to a student who is entering the third year of the B.Sc.(Agr.) program. Selection criteria include academic performance and leadership in student and community affairs. This scholarship is not available to students receiving other scholarships of higher value. Applications must be submitted to the NSAC Awards Office not later than September 20.

Canadian Institute of Forestry (Nova Scotia Section) Bursary
The Nova Scotia Section of the Canadian Institute of Forestry awards a $250 bursary to a Nova Scotia student enrolled full time at NSAC with an interest in Forestry, Woodlot Management or Aboriculture. Selection criteria include financial need, interest in and aptitude for Aboriculture/Forestry, and academic performance. Applications must be submitted to the NSAC Awards Office not later than September 20.

Gerard Chiasson Memorial Bursary
The Inverness County Federation of Agriculture awards two $250 bursaries to

Cape Breton students who have completed at least one year of study at the NSAC. The bursaries are awarded in memory of Gerard Chiasson, a past president of the Nova Scotia Federation of Agriculture who was also active in other local farm and community organizations. Selection criteria include financial need, involvement in community activities and leadership experience. In the event that more than two students possess otherwise equal qualifications, preference will be given to students from Inverness County. Applications must be submitted to the NSAC Awards Office not later than September 20.

Chicken Producers Association of Nova Scotia Bursary
The Chicken Producers Association of Nova Scotia $1000 bursary is awarded to a Nova Scotia student at NSAC who shows a demonstrated interest in pursuing the study of poultry. Preference will be given to applicants with a farming background. Students in all years of study are eligible. A student may not receive this scholarship more than once. A letter of application must be submitted not later than September 20 to:

Secretary
Chicken Producers Association of Nova Scotia
Agricultural Centre
Kentville, Nova Scotia B4N 1J5

Donald E. Clark Memorial Scholarship
In memory of Donald E. Clark, former Professor and Head of the Agricultural Engineering Department, one or more scholarships (with total value of $600) are awarded to final-year students in the Agricultural Engineering Department. Selection criteria include academic performance, interest, and aptitude in the engineering field. No application is required.

Colonel Charles Coll Memorial Scholarship
In memory of Colonel Charles H. Coll, a $500 scholarship is awarded to a student from the Maritime provinces in the final year of an Animal Science option. Selection criteria include academic performance, involvement and interest in poultry, and achievement and contribution to 4-H. No application is required.

Co-op Atlantic Scholarship
Co-op Atlantic awards a $1000 scholarship to a student at NSAC who is from the Atlantic provinces and is entering the third year of the B.Sc.(Agr.) program. Selection criteria include academic performance, financial need, and knowledge and appreciation of co-operatives. The award may be tenable for two years. Applications must be submitted to the NSAC Awards Office not later than September 20.

Dorothy Creelman Cox Scholarship
A $200 scholarship is awarded to a female student entering the second year of the B.Sc.(Agr.) program in the Plant Science option. Selection criteria include academic performance and contribution to the College community. No application is required.

Dr. Kenneth Cox Scholarship
In memory of Dr. Kenneth Cox, former Principal, this scholarship is awarded to a student entering the final year of the B.Sc.(Agr.) program. No application is required.

Dartmouth Horticultural Society Bursary
The $500 Dartmouth Horticultural Society Bursary is awarded to a student in their final year of studies at NSAC. Selection criteria include financial need, interest and experience in the agri-food industry and academic performance. Although students in all programs are eligible preference will be given to a student in a Plant Science (horticulture) program. Applications must be submitted to the NSAC Awards Office by September 20.

Eastern Animal Health Technicians Association Bursary
The Eastern Animal Health Technicians Association awards a $100 bursary to a third year student in the Animal Health Technology program. This bursary will be awarded to the student who best demonstrates proficiency in veterinary clinical skills during their second year and externship at the Atlantic Veterinary College. No application is required.

Eastern Canada Soil and Water Conservation Centre Bursary
The Eastern Canada Soil and Water Conservation Centre awards a $1000 bursary to the team of students submitting the best project proposal for their end of degree final project. The bursary is intended to recognize and support multi-disciplinary study in integrated soil management. Applications must be submitted to the NSAC Awards Office not later than September 20.

Ernest L. Eaton Memorial Scholarships
Two $500 scholarships, one for a male and one for a female, are awarded to students entering the third year of the B.Sc.(Agr.) program. Selection is based on the student's averages in the second year of their program. No application is required.

Farm Credit Corporation Scholarship
The Atlantic Region of the Farm Credit Corporation awards a $1000 scholarship to a Canadian student entering the fourth or final year of the B.Sc.(Agr.) program in the Agricultural Economics option. Selection criteria include academic performance, interest and competence in farm management and in the subjects associated with the economics of the farm business, interest and involvement in College and home community as demonstrated by participation in organizations and affairs, farm experience, and financial need. No application is required.

Farm Focus Bursary
The Farm Focus Bursary of $200 is awarded to a student entering the second year of study. Selection is based on financial need and academic performance. Applications must be submitted to the NSAC Awards Office not later than September 20.

Kings County Federation of Agriculture Bursary
The $500 Kings County Federation of Agriculture Bursary is awarded to a resident of Kings County, NS, enrolled full-time at NSAC. Selection criteria include financial need, academic performance, and future plans for participation in the agricultural industry of Kings County. The selection will be made by the donor. Applications are available from and must be received by July 31 at the following address:

Kings County Federation of Agriculture
Blair House
Kentville Agricultural Centre
Kentville, NS B4N 1J5

Lunenburg/Queens Federation of Agriculture Scholarship
The Lunenburg/Queens Federation of Agriculture Scholarship of $300 is awarded to a student from Lunenburg or Queens Counties in Nova Scotia entering a second year of study at NSAC. Selection criteria includes academic performance, farm or agricultural background or experience, and plans to pursue a career in the agricultural industry. Applications must be submitted to the NSAC Awards Office not later than September 20.

A.W. Mackenzie Memorial Scholarship
A $150 scholarship is awarded to a student entering the second year of the degree program. Selection criteria include academic performance, financial need, and participation in 4-H Club activities. A letter of application detailing 4-H experience must accompany your

application. Applications must be submitted to the NSAC Awards Office not later than September 20.

Angus and Tena MacLellan Memorial Scholarship
This $1000 scholarship is awarded to a student entering the third or fourth year of a degree program. Angus and Tena MacLellan farmed in Cloverville, Antigonish County, Nova Scotia. No application is required.

Joseph E. Mapplebeck Memorial Bursaries
In memory of Joseph E. Mapplebeck, two $500 bursaries are awarded to second year technical students. Mr. Mapplebeck farmed for 50 years in Kings County, Nova Scotia, and regarded highly a good education. Selection criteria include financial need and genuine interest in their studies. Applications must be submitted to the NSAC Awards Office not later than September 20.

H.A.L. McLaughlin Memorial Scholarship
In memory of H.A.L. McLaughlin, who taught horticulture at the NSAC from 1953 to 1971, this scholarship is awarded to a student in horticulture. No application is required.

McRorie Scholarship
In memory of Douglas McRorie, P.Ag., FAIC, former President of AIC and Vice-President (Agricultural Services) of the Royal Bank of Canada, a $500 scholarship is awarded to a student who is entering the third or fourth year of the B.Sc.(Agr.) program. Students in any area of specialization are eligible, but applicants must demonstrate a knowledge of and interest in financial management through their studies, employment, career plans and/or extra curricular activities. Applications must be submitted to the NSAC Awards Office not later than September 20.

A.C. Neish Memorial Trust Scholarship
The A.C. Neish Memorial Trust awards a $1400 scholarship to an NSAC student who completes the third year of the B.Sc.(Agr.) program. Selection criteria includes high academic performance and qualities of leadership as indicated by participation and achievement in both academic and non-academic activities. Applications must be submitted to the NSAC Awards Office not later than September 20.

Newfoundland Egg Marketing Board Scholarship
The Newfoundland Egg Marketing Board Scholarship of $1000 is awarded to a Newfoundland student entering the third or fourth year of the B.Sc.(Agr.) program. Applications must be submitted to the NSAC Awards Office not later than September 20.

Nova Scotia Department of Agriculture and Marketing Entrance Scholarships
Renewal Criteria

1. NSDAM Entrance Scholarships are renewed at their initial value by maintaining an average of 80.0% or greater in the work of the previous year.

2. The two semesters used to evaluate academic standing must be consecutive and follow the academic year (eg. fall semester and the winter semester).

3. Eligible students must be registered for a minimum of eight courses over two semesters with no semester with less than three courses.

4. Averages are calculated to one decimal place. There is no rounding up of averages. The average is

determined by all marks earned by the student in the previous year -- non-credit courses (MP080 and MP090) are included in the calculation of the year's average for degree students.

5. The scholarship is granted in two installments. The recipient receives half of the award for the fall semester and the winter portion (1/2 of scholarship) in January provided the student is meeting the requirements of criterium 3.

6. A student may not have more than one DF in their entire record for scholarship renewal.

7. An NSDAM Entrance Scholarship is tenable for the duration of the program of study.

Nova Scotia Department of Agriculture and Marketing Scholarship Program For In-Program Students

At the discretion of the Scholarship Committee, scholarships of variable amounts will be awarded to Nova Scotia students who perform well in their studies at NSAC. Students considered for these awards will be those who had not been eligible to receive the NSDAM Entrance Scholarship on admission or those who had forfeited their NSDAM Entrance Scholarship the first year. Minimum requirement will be 80.0% average in work of previous year (eight courses or more required in the year and with no more than one DF in record to date) with preference to students who have, in addition, maintained a cumulative average of 80.0%.

Nova Scotia Federation of Agriculture Bursaries

The Nova Scotia Federation of Agriculture awards two $300 bursaries to second year Nova Scotia students (one technical and one degree). Selection criteria include financial need and academic performance. Applications must be submitted to the NSAC Awards Office not later than September 20.

Nova Scotia Milk Producers Scholarship

The Nova Scotia Milk Producers Association awards a $1000 scholarship to a Nova Scotia student entering the third or fourth year of the B.Sc.(Agr.) program. Selection criteria include academic performance and interests and project work in the dairy industry. Applications must be submitted to the NSAC Awards Office not later than September 20.

Nova Scotia Soils Institute Scholarship

The Nova Scotia Soils Institute awards a $500 scholarship to an NSAC student undertaking studies in the soil sciences or soil and water engineering in the 3rd or 4th year of a degree program. Selection criteria include academic performance and interest in the soil sciences as a field of study and career option as outlined in a one to two page essay. Applications must be submitted to the NSAC Awards Office not later than September 20:

Nova Scotia Veterinary Medical Association Bursaries

The Nova Scotia Veterinary Medical Association awards two $500 bursaries to third year students in the Animal Health Technology program. Selection criteria include financial need and academic performance. No application is required.

G. E. O'Brien Memorial Bursary

In memory of George Earle O'Brien, a 1911 NSAC graduate, a $750 bursary is awarded to a degree student who has demonstrated a particular interest in and aptitude for sheep and wool production and marketing. No application is required.

Ira L. Rhodenizer Memorial Scholarship
In memory of Ira L. Rhodenizer, the Nova Scotia Federation of Agriculture awards a $300 scholarship to a second year Nova Scotia student. Selection criteria include academic performance, involvement in student affairs and participation in the 4-H program. Applications must be submitted to the NSAC Awards Office not later than September 20.

Dr. Robert C. Rix Family Farm Bursary
This bursary of $300 is awarded to a student who enters the final year of the Farming Technology program. Selection criteria include the student's determination and dedication to the objective of operating a family farm, the extent to which the student is hard working and conscientious, and financial need. No application is required.

Robin Hood Multifoods Inc. Bursary
Robin Hood Multifoods Inc., awards a $1200 bursary to an Atlantic student entering the second year of a Business or Economics or Animal Science program. The scholarship is to encourage students to consider a career in sales and technical service in private industry. Applications must be submitted to the NSAC Awards Office not later than September 20.

Rhonda Rae Rumbolt Memorial Scholarship
In memory of Rhonda Rae Rumbolt, a $2000 scholarship is awarded to a fourth year B.Sc.(Agr.) student. Selection criteria include academic performance and involvement in the College community as displayed by participation in extracurricular activities. Applications must be submitted to the NSAC Awards Office not later than September 20.

Shur-Gain Division/Maple Leaf Foods, Inc. Scholarship
Shur-Gain Division/Maple Leaf Foods, Inc. awards a $1000 scholarship to a fourth year B.Sc.(Agr.) student in the Animal Science option. Selection criteria include academic performance, leadership qualities, and participation in student & community affairs. Applications must be submitted to the NSAC Awards Office not later than September 20.

Bruce Trenholm/Atlantic '86 Scholarship
A $500 prize is awarded to an Atlantic student entering the final year of any program with a Holstein farm or 4-H (Holstein calf project) background. Selection criteria include academic performance and career goals. Applications must be submitted to the NSAC Awards office not later than September 20.

Vice-Principal's Scholarship
This scholarship is awarded to a fourth year B.Sc.(Agr.) student. No application is required.

Raymond Webber Memorial Scholarship
The Atlantic Provinces Nursery Trades Association awards a $300 scholarship to the most promising Landscape Horticulture Technology second year student. Selection criteria include academic performance and practical work skills. No application is required.

Women's Institute of Nova Scotia Scholarship
The Women's Institute of Nova Scotia awards a $500 scholarship to a student entering the third year of the B.Sc.(Agr.) program. Selection criteria include academic performance, leadership and participation in student and community affairs, career plans and financial need. Applications are available from and must be received by May 15 at the following address:

W.I.N.S.
Nova Scotia Agricultural College
P.O. Box 550
Truro, Nova Scotia B2N 5E3

MEDALS & PRIZES

Canadian Society of Animal Science Prize
The Canadian Society of Animal Science presents a book prize at Autumn Assembly to a student in the fourth year of the Animal Science option of the B.Sc.(Agr.) program. This award is selected on the basis of outstanding scholarship.

K. de Geus Memorial Prize for Plant Science
In memory of the late K. de Geus, a prize is awarded to a technical graduate. Selection is based on high standing in course work and preference is given to students in the horticultural field. No application is required.

Noel Enman Memorial Award
Established in 1984, the Noel Enman Memorial Award is presented annually in memory of NSAC alumnus, Noel Enman, 1961-1983, to a technician or technology graduate whose personality and fellowship have contributed to student life and activities, thereby gaining the respect of the students and faculty at NSAC. Nominations should be submitted through the office of the Dean of Student Services. The award is presented at the graduation class banquet prior to Convocation.

H.J. Fraser Memorial Prize for English
In memory of the late Professor H.J. Fraser, a prize is awarded to a second year student who has achieved excellence in a first-year English course at NSAC. No application is required.

Dr. Gerry W. Friars Undergraduate Research Prize
The Dr. Gerry W. Friars Undergraduate Research Prize is awarded to the student who is judged to have completed the best written research report as part of his/her fourth year project requirements. Dr. Friars, an NSAC Alumnus, was introduced to scientific research by an undergraduate research project. This was the beginning of a career in research and teaching. No application is required.

Governor-General's Medals
A silver Governor-General's Medal is awarded to the B.Sc.(Agr.) graduate who achieves the highest academic standing in the program. A bronze Governor-General's Medal is awarded to the technical graduate who achieves the highest academic standing in the program. No application is required.

Ketchum Manufacturing Company Limited Prize
The Ketchum Manufacturing Company Limited Prize is awarded to a graduate of the Animal Science option. No application is required.

MTC Pharmaceuticals Prize
MTC Pharmaceuticals (a member of Maple Leaf Foods Inc.) awards a prize to a graduate of the Animal Health Technology program at NSAC. The selection of the award is based on excellence in all aspects of the Animal Health Technology program including clinical, laboratory, and laboratory animal skills. No application is required.

Maritime Provinces Swine Producers' Prizes
The New Brunswick Hog Marketing Board, Prince Edward Island Quality Swine Inc., and Pork Nova Scotia jointly sponsor two Prizes. No application is required.

$400 is awarded to a technical graduate who, through performance in the Swine Production course and in light of other swine-related endeavours, shows the best combination of academic performance and practical swine husbandry ability.

$600 is awarded to a B.Sc.(Agr.) graduate in recognition of academic excellence, combined

with a genuine interest in the swine industry in Atlantic Canada. Performance in the degree-level swine production course and in other course work associated with swine production is the major consideration in selecting the recipient.

Nova Scotia Veterinary Medical Association Prize
The Nova Scotia Veterinary Medical Association awards a prize of $300 to a technical student who excelled in the animal physiology and animal health courses and who subsequently enrolls in the technology year. No application is required.

G.G. Smeltzer Prize
The $300 G.G. Smeltzer Prize is awarded to a second year student who excelled in the work of the first year Plant Science technician program. No application is required.

R.H. Stevenson Memorial Prize for Mathematics and Physics
In memory of the late Professor R.H. Stevenson, a prize is awarded to a second year student who achieved excellence in the first year of Mathematics and Physics at NSAC. No application is required.

SCHOLARSHIPS AND BURSARIES FOR CONTINUING STUDIES BEYOND THE B.SC.(AGR.) AND TECHNICAL LEVEL AT NSAC

Stuart F. Allaby Graduate Studies Fund
Stuart F. Allaby Graduate Studies Fund will provide an annual prize to a M.Sc. student at NSAC concentrating on animal research.

Cobequid Dog Club Scholarship
The Cobequid Dog Club awards a $400 scholarship to a Nova Scotia student from the NSAC who is admitted to a veterinary college. No application is required.

Harney Estate Scholarships
The late Dr. Patricia Harney, Class of '48, Diploma, has bequeathed a sizeable portion of her estate to NSAC. The income from the funds is to be used to provide three scholarships for NSAC graduates to pursue graduate study at Macdonald College, McGill University, or the University of Guelph. The funds make further study possible for NSAC graduates to help preserve the long-standing links between NSAC, Macdonald College, and Guelph.

Edith Main Memorial Bursary
In memory of Edith Main, the auxiliary to the Nova Scotia Veterinary Medical Association awards a $100 bursary to a Nova Scotia student who has attended the NSAC and has been admitted to a Canadian veterinary college. No application is required.

Nova Scotia Fur Institute Scholarship
The Nova Scotia Fur Institute awards a $2500 scholarship to a graduate in Animal Science from the NSAC who is pursuing graduate studies in fur production at an approved university. Selection will be based primarily on academic performance. Applications must be submitted not later than January 31 to:

Chairman
Nova Scotia Fur Institute
Nova Scotia Agricultural College
P.O. Box 550,
Truro, NS B2N 5E3

University of Maine Scholarship
Under the agreement between the University of Maine at Orono and the NSAC, up to five Maritime students each year who have completed the second year of the B.Sc.(Agr.) program and are recommended by the Principal may enter the penultimate year at Maine and pay the same tuition as the residents of Maine. The tuition is a varying figure, but the arrangement represents a saving of about $1000 per year.

EXTERNAL SCHOLARSHIPS AND BURSARIES for which NSAC students are eligible to apply.

OTHER ENTRANCE SCHOLARSHIPS (Although not exclusive to NSAC students, the following award is available to students entering NSAC.)

Benny Duivenvoorden Memorial Bursary
In memory of Benny Duivenvoorden, Eastern Breeders Inc., Atlantic Branch, awards a $500 bursary to a New Brunswick 4-H member who enters a recognized college of agriculture. Applications must be submitted not later than August 31 to:

E.B.I. Inc., Atlantic Branch
Box 1567
Fredericton, New Brunswick E3B 5G2

OTHER CONTINUING SCHOLARSHIPS (Although not exclusive to NSAC students, the following scholarships/awards are available to students studying at NSAC.)

Atlantic Golf Superintendents Association Scholarship
The Atlantic Golf Superintendents Association Scholarship is available to residents of Atlantic Canada. Its intent is to both encourage students to pursue golf course management as a career option and to support students in enhancing their knowledge and skills for the turf industry. Applicants must have a minimum of two summers/seasons work experience in the turf industry, preferably be enrolled in at least the second semester of a recognized turf grass program and be presently enrolled in a minimum of a one year program. Selection will be based on academic performance, financial need, and letters of reference. Applications must be submitted to the NSAC Awards Office not later than September 20.

Canadian Society for Horticultural Science Scholarship
A scholarship of $250 is awarded to two students enrolled in a Canadian diploma program that specializes in Horticulture. Eligible institutions include members of the Canadian Association of Diploma in Agriculture Programs (CADAP) and other institutions which, in the opinion of the selection committee, provide the student with the equivalent of a two-year post secondary Horticulture Diploma. The scholarship will be made on the basis of academic performance and class standing in the first year of the program and documentation of other relevant information including experience in horticulture. Deadline for complete applications is June 30.

Canadian Association of Diploma in Agriculture Program Bursaries
The Canadian Association of Diploma in Agriculture Programs awards two bursaries of $500 each to students enrolled in Technician or Technology programs. The bursaries serve to encourage technical students to broaden their learning experience by enabling the recipients to spend one or two semesters of study at another post-secondary agricultural institution in Canada. The bursaries will be given annually to each of two students from two different CADAP institutions. Selection criteria include academic performance, a demonstrated interest in agriculture, reasons for wishing to participate and background. Applications must be submitted not later than December 15 to:

Vice Principal Academic
Nova Scotia Agricultural College
P.O. Box 550
Truro, NS B2N 5E3

Canadian Golf Superintendents Association Scholarships

The Canadian Golf Superintendents Association supports CGSA member students attending educational programs as a means of enhancing their knowledge and skills for the turfgrass profession. The Scholars Fund is available to those currently enrolled in at least the second semester of a recognized turfgrass program of two years duration or longer. Selection criteria include academic performance, financial need, and the content of the application which demonstrates the applicant's interest in the field of turfgrass as a career. Applications are due by November 30 at the following address:

Canadian Golf Superintendents Association
5580 Explorer Drive, Suite 509
Mississauga, ON L4W 4Y1

Dairytown Products Ltd. University Scholarship

Dairytown Products Ltd. awards a $1000 scholarship and a summer employment opportunity for a third or fourth year university student to encourage them in the study of Dairy Science and/or Food Technology. Applicants must be New Brunswick residents enrolled in a science or engineering degree program at a recognized college or university. Preference will be given to a student enrolled in Dairy or Food Science studies. Selection will be based on academic performance, financial need, involvement in agriculture, and interest in dairy or food industry. Applications must include a 500 word essay, two letters of recommendation, and a transcript and be submitted not later than July 31 to:

Scholarship Committee
Dairytown Products Ltd.
P.O. Box 378
Sussex, NB E0E 1P0

Keith Gilmore Foundation Scholarships

Three $1500 scholarships are offered to individuals in an undergraduate or post-graduate degree program in agriculture, journalism or communications at a recognized university. The successful applicant will already have completed a minimum of one year in his/her major field of studies.

Three $500 scholarships are offered to individuals enrolled in a recognized diploma program in agriculture and/or journalism or communications. The successful applicant will have already completed a minimum of one year in a diploma program.

Applications are available at the NSAC Awards Office and should be submitted not later than July 1 to:

The Keith Gilmore Foundation
5160 Skyline Way N.E.
Calgary, Alberta T2E 6V1

Holstein Association of Canada Scholarships

Holstein Canada awards two $1000 scholarships to post secondary students in Canada. Applicants must have completed at least one year of college/university and maintained a minimum average of 70% in the year of application. To be eligible, applicants must be a regular or junior member of Holstein Canada or a son/daughter of a member. Selection criteria include academic performance, future goals, 4-H experience and farm background. Applications are available from and must be received by June 22 at the following address:

Jane N. Whaley
Promotion Manager
Holstein Association of Canada
P.O. Box 610, Brantford, ON
N3T 5R4

Arlen Kerr Memorial Scholarship
The Canada Mink Breeders Association awards a $1200 renewable scholarship to Canadian graduate students engaged in Mink Research attending any Canadian University or Veterinary College. Applicants should submit their education profile and research proposal by January 15 to:

Karlene Hart, Executive Secretary
Canada Mink Breeders Association
65 Skyway Ave., Suite B
Rexdale, ON M9W 6C7

New Brunswick Institute of Agrologists Scholarship
The New Brunswick Institute of Agrologists awards a $1000 scholarship to a student from New Brunswick entering the third year of study in the B.Sc.(Agr.) program at an agricultural college/faculty in Canada. The Scholarship Committee will take into consideration academic performance, participation in extra-curricular activities and financial need. Applications should be submitted not later than September 20 to:

Registrar
NBIA
c/o NB Agriculture
PO Box 6000
Fredericton, NB E3B 5H1

George B. Whalen Memorial Scholarship
The New Brunswick Milk Marketing Board awards a $750 scholarship in memory of George B. Whalen, who dedicated a great part of his life to the promotion of a more viable dairy industry in New Brunswick. Applicants must be New Brunswick residents enrolled in the second, third, or fourth year of study in a university degree program relating to agriculture or the dairy industry. Areas of study may include, but are not necessarily limited to, plant and animal science, agricultural engineering, veterinary medicine, agricultural economics, etc. Selection will be based on financial need, academic performance, involvement in community and future plans. Applications including a 300 - 500 word essay, two letters of recommendation, and a transcript of marks must be submitted not later than June 24 to:

Scholarship Committee
New Brunswick Milk Marketing Board
P.O. Box 490
Sussex, NB E0E 1P0

GENERAL INFORMATION

Centre for Continuing Education

The Centre for Continuing Education is the division of NSAC which offers flexibility in providing educational opportunities for people at times and places that are convenient to them. Continuing Education Programs are designed to assist adults to acquire the knowledge, skills and perspectives which will help enhance their personal and professional development. The Centre's programming is a co-operative effort involving many Departments and individuals from the NSAC, the Nova Scotia Department of Agriculture and Marketing, and other government and industry groups.

As part of our commitment to life-long learning, the Centre offers a wide range of programming from degree credit courses, to short professional upgrading courses, and includes Certificate Programs, as well as a large number of custom designed training courses for particular applications. In 1994-95 for example, the Centre for Continuing Education provided training for 1,281 individuals.

The Centre also traditionally offers a "summer-school" where a number of credit courses are held during the spring-summer semester. Courses offered are based on student need. Prospective students should check with the Centre concerning each semester's offerings.

The Centre has a fully equipped computer lab and offers professional training in the range of computer applications. Our computer training features "hands-on" learning and small class sizes.

Courses which utilize traditional "in-class" teaching are offered on campus and at various sites throughout the Atlantic region. The Centre also offers distance learning opportunities through independent home study packages and "teaching at a distance" programming throughout the region through our audio-graphics capacity, which brings an "electronic classroom" to your community.

In 1995, 112 courses were held, and new courses to meet specific needs are continually being developed. Prospective students are encouraged to contact the Centre regarding their training needs and interests.

The following list of recent courses will provide a guide to the range of offerings available through the Centre for Continuing Education. For specific current offerings, please contact the Centre at 902-893-6666 or via email at: conted@cox.nsac.ns.ca or via fax at 902-895-5528.

Trade Skills Certificates
- Horseshoeing
- Meat Cutting

Animal Agriculture
- Poultry Production
- Swine Nutrition Home Study
- Introduction to Milking Procedures

Food Product Technology
- Jam & Jelly Production

Landscape & Horticulture
- Landscape Design Maintenance
- Landscape Construction Series
- Nursery/Greenhouse
- Aboriculture
- Edible Horticulture
- Diversify Your Business
- Garden Centres
- Floral Industry
- Landscaping Your Home
- Garden Series

Machinery & Equipment
- Farm Equipment Apprenticeship Program
- Hydraulic Systems
- Engine Systems
- Welding

Management & Professional Development
- Agricultural Lenders School
- Effective Writing on the Job
- Bookkeeping
- Starting Your Own Business
- Effective Human Resource Management
- Growing Your Own Business
- Basic Statistics
- Atomic Absorption for Researchers

Computer Applications
- Introduction to Computers
- Simply Accounting
- Computer Mediated Communications
- Computer Aided Drafting
- WordPerfect for Windows
- Lotus
- FoxPro
- Computer Applications for Office and Small Business
- Computerized Presentations
- Harvard Graphics
- Getting the Most from your E-Mail System
- Perfect Office

Special Interest
- First Aid
- Starting a Farm
- Pond Culture of Trout
- Basic Forestry and Wildlife Ecology
- Christmas Tree Production

Churches
Churches representing a wide range of denominations are located in Truro and Bible Hill.

Day Care
The Nova Scotia Agricultural College Day Care is a non-profit organization governed by a Board of Advisors appointed by the Principal. The Day Care is open five days a week from 7:30 a.m. to 6:15 p.m. It is licensed under the Department of Community Services for 33 children per day. A reduced rate is available for the children of students. Five subsidized spaces are also funded by the Department of Community Services. These spaces are available only to students whose income falls below a certain level. Remember to reserve early to ensure a space in September. The NSAC Day Care promotes quality child care.

Programs Offered
The Nova Scotia Agricultural College was formally opened in 1905 to assume and expand the work that for several years had been carried on by the School of Horticulture in Wolfville and the School of Agriculture in Truro. The College operates under the authority of an Act of the Legislature of Nova Scotia.

A wide range of programs is offered at NSAC. In addition to a B.Sc. (Agr.), offered in association with Dalhousie University, the first two years of an Engineering degree, a two-year Pre-Veterinary medicine program, four technician programs, seven technology programs, and numerous vocational and continuing education courses are offered.

Students who wish to take the two-year Pre-Veterinary medicine program to meet the admission requirements of the Atlantic Veterinary College at the University of Prince Edward Island will be counselled in their selection of courses.

Students completing 22 specified courses of the Engineering degree program may complete their professional engineering program after a

further three years in any engineering discipline at the Technical University of Nova Scotia or may apply to any other institution. Students completing 27 specified courses of the TUNS-NSAC cooperative Environmental Engineering Degree program may complete their professional engineering program in four academic semesters at the Technical University of Nova Scotia.

Two-year programs leading to Technician Diplomas are offered in Agricultural Business, Agricultural Engineering, Animal Science, and Plant Science. Graduates may continue their studies in a program of directed studies for a third year and earn a Diploma of Technology in Agriculture.

Two- and three-year Diploma of Technology programs are available in the areas of Agriculture, Animal Health, Biology, Chemistry Laboratory, Farming, Food Quality, and Landscape Horticulture.

The Nova Scotia Agricultural College via a unique cooperation with Dalhousie University offers a Master of Science in Agriculture Program. The Master of Science degree is granted by Dalhousie University in association with the Nova Scotia Agricultural College, the only educational institution in the Atlantic Region with the faculty and facilities capable of providing such a program of study. Through a similar affiliation, students may obtain a Ph.D. in Biology from Dalhousie University. NSAC may also host graduate students registered at other acceptable universities.

The various programs for the 1995 96 college year are listed and described in this calendar. The Faculty reserves the right to make any necessary revisions and additions.

The Faculty reserves the right to withhold any courses for which fewer than five students apply.

The Faculty will give sympathetic consideration to any student who wishes to take a special selection of courses in order to fulfil a specific need. The choice of courses will be limited to those that do not conflict when scheduled.

Students may write examinations in either of the two official languages of Canada.

Facilities

The Nova Scotia Agricultural College is located on a 165-hectare property at Bible Hill, a kilometre northeast of Truro, Nova Scotia. The record of the College's graduates in the past 90 years is conclusive evidence that students obtain a sound agricultural education in the programs offered.

The College buildings - Cumming Hall, Harlow Institute, Banting Building, MacRae Library, Langille Athletic Centre, Collins Horticultural Building, Cox Institute of Agricultural Technology, Boulden Building, Hancock Veterinary Building, Animal Science Building, MacMillan Show Centre, and a modern farm building complex provide excellent teaching and research facilities, as well as offices and laboratories for faculty and staff, and for some staff of the Nova Scotia Department of Agriculture and Marketing. Fraser House, Trueman House, Chapman House, and Jenkins Hall provide excellent living and dining accommodations for male and female students.

Post Office Address

Nova Scotia Agricultural College
P.O. Box 550
Truro, NS B2N 5E3

Telephone

Registrar's Office: (902) 893-6723

College Colours

Royal Blue and Regular Gold

STUDENT SERVICES

The Dean of Student Services is responsible for all non-classroom aspects of student life from initial acceptance to graduation. This includes areas such as residence and food services, medical/counselling services, career services and athletics.

Athletics

Recreational activities. The Langille Athletic Centre provides an opportunity for students to choose a number of activities to enjoy during their leisure time. Racquetball, squash, and badminton are very popular racquet games. The spacious facility includes a power lifting room with free weights and a number of specific benches for the serious lifter. A new fitness and muscle toning room contains individual weight machines, stair climbers, bikes, rowing machines, and other equipment for the individual who wants to maintain a level of fitness. Swimming, tennis, golf and curling facilities are also available, off campus, to students during the academic year.

Intramural athletics. The intramural program continues throughout the year with units of competition including soccer, softball, volleyball, hockey, basketball, badminton, table tennis, racquetball, and squash. Competition may be on a co-ed class, residence floor, or league draft system.

Varsity athletics. NSAC is a member of the Nova Scotia Colleges Athletic Association, which includes nine colleges/universities. Conference sports for both men and women include soccer, volleyball, basketball, and badminton. Winners from the conference advance to the national championships administered by the Canadian Colleges Athletic Association.

Also recognized as varsity teams are men's hockey and men and women woodsmen teams. The hockey team competes in a local competitive district league. The woodsmen teams compete in tournaments throughout the year against teams from New Brunswick, Quebec, Ontario, Maine, Vermont, and New York.

Career Services

The Nova Scotia Agricultural College provides facilities and personnel to assist graduates and undergraduates to obtain part-time, summer, and permanent employment.

Career Services contacts representatives of the agricultural industry to arrange for on- and off-campus recruitment of students.

Individual counselling related to career planning and employment information associated with agriculture is available. Students are informed of employment opportunities, which are posted on bulletin boards at various locations on campus. General information on career planning, potential employers, and exchange programs is also available at Career Services.

Health Services

An infirmary is located in Trueman House. Daily hours are maintained. General health concerns and referrals to medical doctors, dentists, and other specialists are made through the Assistant Dean Health Services. It is strongly recommended all students obtain medical insurance which at minimum provides coverage for prescription drugs, physiotherapy, and accidental dental injury. This type of insurance is required of all students playing varsity sports, student who are not Canadian citizens, and may be required by individual academic departments for participation in laboratory classes.

Residence and Food Service

Accommodation and dining facilities are available for up to 350 students in co-education and single sex arrangements. Three residences, Chapman, Fraser and Trueman, are equipped with private and shared accommodation, modern laundry facilities, mail delivery and student lounge/games room. Each room is equipped with such basic furnishings as: bed, mattress, desk, chair, closet and drapes. Students are encouraged to develop their social and personal potential through participation in House Council, Student Union and Student Services activities.

Dining Services provide a balanced, healthy menu from which students may choose a variety of main course and dessert items. Special meals are held to celebrate many special occasions such as Thanksgiving, Christmas, etc.

Student Government

Through a system of self-government, students are encouraged to accept the greatest possible degree of responsibility in connection with their own affairs. Only full-time students taking regular programs are allowed to act as executive members of the Student Union or as members of student committees.

Faculty members, appointed by the Faculty, act in an advisory capacity with student committees on financial, literary, social, and athletic affairs so that every possible benefit may be derived from these activities.

ADMINISTRATION AND FACULTY

ADMINISTRATIVE OFFICERS

Principal
L.E. Haley, B.S.A., M.S.A. (Toronto), Ph.D. (California)
Vice-Principal Academic
E.B. Burnside, B.S.A., M.S.A. (Toronto), Ph.D. (North Carolina)
Vice-Principal Administration
B.M. MacDonald, B.Sc., M.Sc. (Maine), Ed.D. (West Virginia)
Registrar
T.L. Dolhanty, B.A. (Lethbridge)
Assistant Registrar
A.L. Sibley
Dean of Student Services
R.M. Stevens, B.B.A., M.Ed. (Acadia)
Assistant Dean Career Services and Awards
B.M. Crouse, B.Sc. (Agr.) (Guelph)
Assistant Dean Health Services
J.K. Peebles (RN)
Assistant Dean Judicial
J. Hoyle, B.A. (Univ. Yorke), B.A. (Open Univ.), B.Ed. (Dalhousie), M.Sc. (Leeds), Ph.D. (Dalhousie)
Coordinator of Research & Graduate Studies
W.M. Connors-Beckett, B.B.A. (Mt. St. Vincent)
Chief Librarian
B.R. Waddell, B.A. (Colorado), M.L.S (Dalhousie)
Director of Athletics (Acting)
J.M. Smith, B.P.Ed. (Dalhousie)
Director of Continuing Education
M.B. Johnstone, B.A. (St. Francis Xavier), M.A. (McMaster)
Director of International Development
W. Radford, B.A., P.G.C.E., M.Ed. (Leeds)
Business Manager
R.O. Mosher, B.B.A. (Acadia)
Manager, Information Technology
R.C. Raymond, B.Eng. (Digital Systems/Comm.) (Memorial)
Publications and Alumni Affairs
S.L. Brown, B.A. (UNB), B.PR. (MSVU)
Administrative Secretary
R.M. MacKay

FACULTY

Principal
L.E. Haley, B.S.A., M.S.A. (Toronto), Ph.D. (California)
Agricultural Engineering
J.D. Cunningham, B.S.A. (Toronto),B.E., M.A.Sc. (Technical University of Nova Scotia)
-Associate Professor and Head
J.F. Adsett, B.Sc. (Agr.) (McGill), M.Sc.E. (U.N.B.), Ph.D. (Saskatchewan)
-Associate Professor
J.P. Blanchard, B.Sc. (St. Mary's), B.Sc. (Dalhousie), M.Sc. (Agr.Eng.), Ph.D. (Technical University of Nova Scotia)
-Assistant Professor
P.L. Havard, B.Sc. (Agr.Eng.), M.Sc., Ph.D. (McGill)
-Associate Professor
S.A. Madani, B.Sc. (Pahlavi), M.Sc. (British Columbia), Ph.D. (Washington)
-Associate Professor
M.N. Rifai, M.Sc., Ph.D. (Nitra)
-Associate Professor
K.J. Sibley, B.Sc. (Agr.Eng.), M.Sc. (McGill)
-Associate Professor
Animal Science
D.C. Crober, B.Sc. (Agr.), M.Sc. (McGill), Ph.D. (British Columbia)
-Professor and Head
D.M. Anderson, B.S.A., M.Sc. (Manitoba), Ph.D. (Saskatchewan)
-Professor
E.B. Burnside, B.S.A., M.S.A. (Toronto), Ph.D. (North Carolina)
-Vice-Principal Academic and Professor

R. Campbell, B.Sc.(Agr.)(McGill), M.Sc. (Manitoba)
-Lecturer

J.D. Castell, B.Sc., M.Sc. (Dalhousie), Ph.D. (Oregon)
-Adjunct Professor

E. Charmley, B.Sc. (Aberdeen), Ph.D. (Reading)
-Adjunct Professor

J. Duston, B.Sc. (Bath), Ph.D. (Aston)
-Assistant Professor

C.T. Enright, M.Sc.,MBA, Ph.D. (Dalhousie)
-Associate Professor

A.H. Farid, B.Sc., M.Sc. (Shiraz), Ph.D. (Alberta)
-Associate Professor

N.L. Firth, B.Sc. (Edinburgh), M.S. (Purdue), Ph.D. (Cornell)
-Associate Professor

A.H. Fredeen, B.S.A. (Saskatchewan), M.Sc. (Guelph), Ph.D. (California)
-Associate Professor

K.E. Glover, B.Sc.(Agr.), M.Sc. (Guelph), Ph.D. (Dalhousie)
-Adjunct Professor

P.Y. Hamilton, B.Sc. (Agr.) (McGill), M.Sc. (Maine)
-Professor Emeritus

R.M.G. Hamilton, B.Sc. (Agr.), M.Sc.(Agr.) (McGill), Ph.D. (Western)
-Adjunct Professor

S. Lall, B.Sc. (Allahabad), M.Sc., Ph.D. (Guelph)
-Adjunct Professor

A. Lirette, B.Sc.S. (Medicine), B.Sc.A., M.Sc. (Laval), Ph.D. (Alberta)
-Associate Professor

L.A. MacLaren, B.Sc. (Agr.)(Guelph), M.Sc. (Alberta), Ph.D. (California)
-Assistant Professor

W.G. Mathewson, B.Sc., M.Sc. (Aberdeen)
-Professor Emeritus

D.L. Patterson, B.Sc. (Alberta), M.Sc., Ph.D. (Guelph)
-Associate Professor

W.B. Ramsay, D.V.M. (Guelph)
-Associate Professor

K.I. Rouvinen, B.Sc., M.Sc., Ph.D. (Kuopio)
-Chair in Fur Animal Research

T. Tennessen, B.A., B.Sc., M.Sc., Ph.D. (Alberta)
-Associate Professor

Biology

A.B. Gray, B.Sc. (Bishops), M.Sc., Ph.D. (McGill)
-Professor and Head

L.E. Crosby, B.Sc., M.Sc. (Acadia)
-Associate Professor

D.J. Doohan, B.Sc. (Agr.) (Guelph), M.Sc., Ph.D. (North Carolina)
-Adjunct Professor (jointly with the Plant Science Department)

L.J. Eaton, B.Sc. (Acadia), M.Sc., Ph.D. (Dalhousie)
- Industrial Research Professorship

L.E. Haley, B.S.A., M.S.A. (Toronto), Ph.D. (California)
-Principal and Professor

J.-P.R. Le Blanc, B.A. (Montreal), B.Sc. (Quebec), Ph.D. (McGill)
-Professor

V.O. Nams, B.Sc. (Toronto), M.Sc. (Alberta), Ph.D. (Victoria)
-Associate Professor

A.R. Olson, B.A. (Augustana), M.Sc. (Wisconsin), Ph.D. (Alberta)
-Professor

M.G. Sampson, B.Sc. (Dalhousie), B.Sc. (Agr.), M.Sc. (McGill)
-Associate Professor

R. Singh, B.Sc. (Agr.), M.Sc. (Agr.) (Agra Univ.), Ph.D. (N.Dakota)
-Adjunct Professor

G.W. Stratton, B.Sc. (Agr.), M.Sc., Ph.D. (Guelph)
-Professor

Chemistry and Soil Science

A.R. Robinson, B.Sc. (Agr.), M.Sc., Ph.D. (McGill)
-Professor and Head

G.R. Brewster, B.A., M.Sc., Ph.D.
(Western Ontario)
-Associate Professor

M.R. Carter, B.Sc. (Agr.), M.Sc. (Alberta), Ph.D. (Saskatchewan)
-Adjunct Professor

N.L. Crowe, B.Sc. (Agr.), M.Sc. (McGill), Ph.D. (Guelph)
-Associate Professor

J. Hoyle, B.A. (Univ. York), B.A. (Open Univ.), B.Ed. (Dalhousie) M.Sc. (Leeds), Ph.D. (Dalhousie)
-Associate Professor

W.M. Langille, B.Sc. (Acadia), M.Sc. (McGill)
-Professor Emeritus

M.P. Merrin, B.Sc. (London, Kings College), Ph.D. (Dalhousie)
-Assistant Professor

J.C. Miller, B.Sc. (Agr.) (Guelph), M.Sc. (Alberta)
-Associate Professor

A.S. Payne, B.Sc. (Agr.), M.Sc. (McGill)
-Associate Professor

P.R. Warman, B.Sc. (Agr.) (Rutgers),M.Sc., Ph.D. (Guelph)
-Professor

Economics and Business Management

S.G. Russell, B.Sc. (Agr.) (Guelph), M.B.A. (St. Mary's)
-Associate Professor and Head

J.S. Clark, B.A. (Guelph), M.Sc. (Saskatchewan), Ph.D. (North Carolina)
-Associate Professor

D.M. Dunlop, B.Sc. (Agr.) (Nova Scotia Agricultural College), M.Sc. (Alberta),
-Lecturer

K.G. Grant, B.A. (Acadia), M.A., Ph.D. (Western Ontario)
-Professor

S.J.B. Stackhouse, B.Sc. (Agr. Ec.), M.Sc. (Guelph)
-Associate Professor

J.C. Tait, B.Sc. (Agr.) (McGill), M.Sc. (New Hampshire)
-Associate Professor

M.P. Whalen, B.Sc. (St. Mary's), M.B.A. (Dalhousie)
-Chair of Marketing

Humanities

P.M. Sanger, B.A. (Melbourne), B.Ed. (Acadia), M.A. (Victoria)
-Associate Professor and Head

K.B. Beesley, B.E.S., Ph.D. (Waterloo)
-Associate Professor

P. Cox, B.A. (Acadia), M.A. (Toronto)
-Professor Emeritus

L.L. Sanderson, B.Sc. (Agr.), M.Sc. (Guelph)
-Associate Professor

J.M. Smith, B.P.Ed. (Dalhousie)
-Assistant Professor

Mathematics and Physics

C.T. Madigan, B.Sc., M.Sc. (Windsor)
-Associate Professor and Head

T. Astatkie, B.Sc., M.Sc. (Addis Ababa), Ph.D. (Queen's)
- Associate Professor

D.G. Bishop, B.Eng. (Agr.), M.Eng. (Agr.) (Technical University of Nova Scotia)
-Associate Professor

R.G. Farmer, B.B.A. (U.C.C.B.), M.B.A. (St. Mary's)
-Associate Professor

A. Georgallas, B.Sc.(Queen Elizabeth College), Ph.D.(London)
-Associate Professor

R.H. Loucks, M.Sc. (U.B.C.), Ph.D. (Michigan)
-Adjunct Professor

K. MacRae, B.Ed. (British Columbia), M.Sc., Ph.D. (Oregon)
-Adjunct Professor

G.J. Pearson, B.Sc., M.Sc. (Queens), B.Ed. (Dalhousie)
-Associate Professor

Plant Science

C.D. Caldwell, B.Sc. (Mt. Allison), M.Sc. (Dalhousie), Ph.D. (East Anglia)
-Professor and Head

S.K. Asiedu, B.Sc. (Agr.), M.Sc., Ph.D. (McGill)
-Associate Professor

G.N. Atlin, B.Sc. (Agr.), M.S. (Guelph), Ph.D. (Iowa)
-Associate Professor

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