2004/2005 Calendar




nova scotia agricultural college

Your Atlantic University College of Agriculture

EDUCATION FOR LIFE

nova scotia agricultural college

Link to the Future

Ninety-ninth Calendar
2004/2005

MAILING ADDRESS

Office of the Registrar
Nova Scotia Agricultural College
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Nova Scotia, Canada B2N 5E3

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Mission Statement

The Nova Scotia Agricultural College excels in education and the provision of new knowledge in agriculture, food, and the environment for the benefit of society.

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.

2004/2005 Schedule of Dates

September 7, 2004	Student Services Orientation
September 8, 2004	Fall Registration and Academic Orientation
September 9, 2004	Classes Begin
September 22, 2004	Last day to register for a course – Fall semester
October 11, 2004	Thanksgiving – No classes
October 15, 2004	College Royal – No classes in afternoon
October 15-16, 2004	Homecoming/Reunion Weekend
October 22, 2004	Last day to drop a course without academic penalty
October 28, 2004	Autumn Assembly
November 11, 2004	Remembrance Day – No classes
November 19, 2004	Last day to apply for Drop Fail Status
December 1, 2004	Last day to apply to graduate from Master's program in May
December 3, 2004	Last day of classes (Fall semester)
December 6-14, 2004	Exams
December 15, 2004	Last day to apply to graduate from undergraduate or technical program in May
January 5, 2005	Classes begin
January 18, 2005	Last day to register for a course – Winter semester
February 9, 2005	President's List Reception
February 14, 2005	Founder's Day ***100th Anniversary***
February 18, 2005	Last day to drop a course without academic penalty
February 21-25, 2005	Mid-term Study Break
February 28, 2005	Last day to apply to the Animal Health Technology program
March 24, 2005	Last day to apply for Drop Fail Status
March 25, 2005	Good Friday – No classes
March 28, 2005	Easter Monday – No classes
April 8, 2005	Last day of classes – Winter semester
April 11-19, 2005	Winter semester examinations
May 6, 2005	Convocation
June 27-29, 2005	Supplemental examinations
June 30, 2005	Last day to cancel registration and residence application and receive refund
July 2, 2005	Last day to apply to graduate from Master's program in October

Admissions Information

ADMISSIONS STATUS

Full-time

Students are admitted as full-time (three or more courses per semester) students to a program of study if they meet all current admission requirements of that program at the time of application and there is room in the program. The Registrar may admit full-time students on a probationary basis. Full-time students in good standing have the right to move through the program in the normal fashion.

Part-time

Students are admitted as part-time (fewer than three courses per semester) students to a program of study if they meet all the current admission requirements of that program at the time of application and there is room in the program. The Registrar may admit part-time students on a probationary basis. Part-time students in good standing have the right to move through the program in the normal fashion.

Mature

Students who do not meet admission requirements may be admitted as either full-time or part-time students on the basis of being mature applicants as defined in the College Calendar. Mature applicants are considered on a case-by-case basis, and may be admitted on a probationary basis. Mature students who complete one full semester in good standing assume normal student status.

Visiting

Students are admitted as visiting students on the basis of a Letter of Permission from another post-secondary institution. Enrolment in specific courses is subject to availability of seats in the course. Visiting students do not have student status beyond the semester to which they are admitted.

Unclassified

Students are admitted to a single course as unclassified students upon permission of the Registrar and the instructor. Unclassified students do not have ongoing student status and may not enroll in more than one course.

No Program

Students may be admitted to one or more courses on a "no program" basis. Admission is to specified courses on a case-by-case basis. No-program students have no ongoing status.

International

Students who do not have Canadian citizenship or permanent residence in Canada may be admitted as international students. These students must produce proof of a student visa before permission to register will be granted. Also, international students must purchase the Health Insurance arranged by the College, for their term of study.

ADMISSION

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 completed application form (forms not properly completed will delay processing)
- the application fee of $25
- an official record of high school work
- an official transcript for work done at previous post-secondary institutions (if applicable)
- evidence of competency in English for applicants whose native language is not English (see information on English Language Tests)
- supplementary information as required for specific programs.

Admissions Information

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 five 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.

Academic Probation

Students may be admitted to NSAC on Academic Probation:

(a) if the student is a mature student who does not meet admission requirements for the program or
(b) if the student's last full-time enrolment at any institution has resulted in dismissal or suspension for academic reasons, or
(c) if the student meets most, but not all, of the requirements for admission.

When a student is admitted on probation, all regulations for probationary students apply.

English Language Tests

If English is not your native language, you must provide official results from **one** of the following standardized tests:

- **TOEFL** - a minimum score of 550 OR a minimum computer-based TOEFL score of 213
- **MELAB** - a minimum score of 80
- **IELTS** - a minimum score of 6.0 is required

* Students who meet all admission requirements except for the English Testing levels may be accepted to NSAC subject to completion of a University Preparatory English Program offered by the International Language Institute, in cooperation with NSAC. Please contact NSAC for more information.

Application Deadlines for Domestic Students

The application deadline for all programs for Fall semester is **August 1** with the following exception: Animal Health Technology – **February 28**.
The application deadline for Winter semester is **December 1**.

Application Deadlines for International Students

The application deadline for all programs for Fall semester is **March 1**. The application deadline for Winter semester is **July 1**.

Entrance Requirements

NSAC ENTRANCE REQUIREMENTS, BY PROGRAM, 2004/2005

Applicants must have an overall average of 60% in the courses required for admission unless otherwise indicated.

All candidates for admission to the program leading to a B.Sc.(Agr.) and to the Pre-Veterinary program must present high school graduation certificates showing an average of at least 60%, with no mark below 50%, in five university preparatory subjects, including:

- English
- Pre-Calculus Mathematics (70% in NS Academic Mathematics 12, NS Advanced Mathematics 12, or NL3200 is required)
- any two of the following science requirements: Biology, Chemistry[1], Physics[1], Geology, Oceanography[2] or Agriculture[2]
- one other Grade 12 university preparatory subject.

[1]Students who do not have Grade 12 Chemistry or Grade 12 Physics will be required (depending on the major selected) to take non-credit prerequisite courses in Chemistry and Physics in their first year.

[2]Provided students have five Grade 12 university preparatory credits including English and Math, they are able to use NS Oceans 11 and/or NS Agriculture 11 to meet the science requirements.,

PROGRAM	ENGLISH	MATH	CHEMISTRY	BIOLOGY	PHYSICS	ELECTIVE
Engineering Diploma	NS 12	NS PreCal 12 or Academic 12[1]	NS 12	N/A	NS 12	NS 12
	NB 122 or 121	NB 120	NB122 or 121		NB 122	NB 122
	PE 621	PE 621	PE 621		PE 621	PE 621
	NL 3101 & 3201	NL 3201 or 3200[1]	NL 3202		NL 3201 or 3202	NL 3000 level
Technician	NS 12	NS 11	NS 11	NS 10 or Integrated Sci.	N/A	N/A
50% minimum average req'd	NB 122 or 121	NB 112 & 122	NB 111 or 112	NB102		
	PE 621	PE 521	PE 521	PE 521		
	NL 3101 & 3201	NL 2201	NL 2201	NL 2201 or 2202		
Technology	NS 12	NS PreCal 12 or Academic 121	NS 12	NS 12	N/A	NS 12
(Animal Health)	NB122 or 121	NB 120	NB 122	NB 122 or 120		NB 122
	PE 621	PE 621	PE 621	PE 621		PE 621
	NL 3101 & 3201	NL 3201 or 3202	NL 3202	NL 3201 or 3202		NL 3000 level
Technology	NS 12	NS PreCal 12 or Academic 12[1]	NS 11	NS 12	N/A	NS 12
(Environmental Horticulture)	NB122 or 121	NB 120	NB 111 or 112	NB 120 or 122		NB 122
	PE 621	PE 621	PE 521	PE 621		PE 621
	NL 3101 & 3201	NL 3201 or 3200	NL 2202	NL 3201		NL 3000 level
Technology	NS 12	NS 11	NS 11	NS 10 or Integrated Sci.	N/A	N/A
(Plant Science)	NB 122 or 121	NB 112 & 122	NB 111 or 112	NB102		
No minimum average req'd	PE 621	PE 521	PE 521	PE 521		
	NL 3101 & 3201	NL 2201	NL 2201	NL 2201 or 2202		
Technology (Agricultural)	Satisfactory completion of Technician Diploma.					
Technology (Farming)	Satisfactory completion of first year of a Technician program.					
Bachelor of Technology (Environmental Horticulture)	Years one and two are satisfied by the successful completion of the Environmental Horticulture Technology program or its equivalent, with a cumulative average of at least 70%.					

[1] 70% or higher

Key NS = Nova Scotia NB = New Brunswick PE = Prince Edward Island NL = Newfoundland & Labrador

Note: Possession of the minimum entrance requirements does not guarantee admission.

Entrance Requirements

ADMISSION REQUIREMENTS FOR B.SC. (AGR.), PRE-VETERINARY MEDICINE AND ENGINEERING

All candidates for admission to the program leading to a B.Sc.(Agr.) and to the Pre-Veterinary program must present high school graduation certificates showing an average of at least 60%, with no mark below 50%, in five university preparatory subjects, including:

- English
- Pre-Calculus Mathematics (70% in NS Academic Mathematics 12, NS Advanced Mathematics 12, or NL3200 is required)
- any two of the following science requirements: Biology, Chemistry[1], Physics[1], Geology, Oceanography[2] or Agriculture[2]
- one other Grade 12 university preparatory subject.

[1]Students who do not have Grade 12 Chemistry or Grade 12 Physics will be required (depending on the major selected) to take non-credit prerequisite courses in Chemistry and Physics in their first year.

[2]Provided students have five Grade 12 university preparatory credits including English and Math, they are able to use NS Oceans 11 and/or NS Agriculture 11 to meet the science requirements.,

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 12 university preparatory subjects including English, Pre-Calculus Mathematics (70% in NS Mathematics 12 or NL 3200 is acceptable), Chemistry, Physics, and one other subject. **Possession of the minimum entrance requirements does not guarantee admission.**

Graduates of Newfoundland & Labrador Grade 12 will be considered for direct entry if their average is 60% or higher in five university preparatory subjects, including English, Mathematics (70% in Math 3200 acceptable), Chemistry, and Biology or Physics. The Grade 12–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.**

Students who have all the requirements except Grade 12 Chemistry may be permitted to complete a preparatory Chemistry course (CHEM0050) in their first term. Prior approval must be given from the Registrar before enrolling for this course.

ADMISSION REQUIREMENTS FOR BACHELOR OF TECHNOLOGY DEGREE (ENVIRONMENTAL HORTICULTURE)

Environmental Horticulture

The B.Tech Environmental Horticulture major is designed to provide a broad, comprehensive education for those planning a career in the landscape horticulture profession. It will prepare students to work successfully in the diverse landscape industry or create their own businesses within the industry. This major could also lead to graduate study in the area of landscape architecture and related fields.

Years one and two of this program are satisfied by the successful completion of the Environmental Horticulture Technology program or its equivalent, with a cumulative average of at least 70%. Applicants who meet the general requirements described above (two years post-secondary) may be admitted to the program upon completion of prescribed preparatory courses.

Entrance Requirements

ADMISSION REQUIREMENTS FOR BACHELOR OF TECHNOLOGY IN APPLIED SCIENCE

Applicants are required to have a high school graduation certificate with an average of at least 60%, and no mark below 50%, in five Grade 12 university preparatory subjects including English, Physics, Pre-Calculus Math (70% in academic Math acceptable) and two other subjects, preferably Chemistry and Biology.

ADMISSION REQUIREMENTS FOR TECHNICIAN PROGRAMS

Agricultural Business and Animal Science Technician

Applicants are required to have a high school graduation certificate with university preparatory courses in Grade 12 English, Grade 11 Mathematics, Grade 11 Chemistry, and either Grade 10 Biology or Integrated Science.

ADMISSION REQUIREMENTS FOR TECHNOLOGY PROGRAMS

Animal Health Technology

Applicants are required to have a high school graduation certificate with pass marks and an average of at least 60% in five Grade 12 university preparatory subjects: Biology, Chemistry, English, Pre-Calculus Mathematics (70% in NS Academic Math 12 or NL Math 3200 acceptable) and one other course. The selection process includes a full day of interviews and orientation. Applications will be accepted between January 2 and February 28.

Environmental Horticulture Technology

Applicants are required to have a high school graduation certificate with pass marks and an average of at least 60% in four Grade 12 university preparatory subjects—Biology, English, Mathematics, and one other course—plus Grade 11 Chemistry. Applicants may be required to attend a selection interview. **Possession of the minimum entrance requirements does not guarantee admission.**

Plant Science Technology

Applicants are required to have a high school graduation certificate with university preparatory courses in Grade 12 English, Grade 11 Mathematics, Grade 11 Chemistry, and either Grade 10 Biology or Integrated Science.

Entrance Requirements

ADMISSION REQUIREMENTS FOR TECHNOLOGY PROGRAMS ENTERED FROM TECHNICIAN PROGRAMS

Agricultural Technology

A person with an NSAC Technician Diploma or equivalent may apply to continue studies that 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

Admission to this program requires satisfactory completion of the first year of the Agricultural Business or Animal Science Technician or Plant Science Technology program, and a satisfactory selection interview.

ADMISSION REQUIREMENTS FOR B.SC.(AGR.) PROGRAM FOR STUDENTS GRADUATING FROM HIGH SCHOOLS IN THE UNITED STATES OF AMERICA

Students must have achieved a "B" average in five Grade 12 university preparatory courses: English, Pre-Calculus Mathematics, Chemistry, Physics* or Biology, and one other course.

Students must have achieved a combined score of at least 1100 in two SAT tests.

Students who are not U.S. citizens, or whose mother tongue is other than English, may be subject to additional requirements.

***Note:** Students who have not completed Grade 12 Physics, with the exception of those planning to enter the Agricultural Business or Agricultural Economics majors within the B.Sc.(Agr.) program, must take Physics PHYS0050 (a non-credit course) in their first year at NSAC.

Schedule of Fees

All fees are due and payable as of the first day of classes (September 9, 2004 for the Fall semester and January 5, 2005 for the Winter semester). Fee calculations are made during the last week in August, and are updated daily from that time. Payment must be by cash, money order, certified cheque, Visa, MasterCard, or debit card. Any student with an unpaid account at the end of the second week of classes will be permitted to continue only upon settlement of the outstanding account.

TUITION FEES (CANADIAN CITIZENS AND PERMANENT RESIDENTS)

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

Note: At the time of printing the 2004/2005 NSAC Calendar, tuition fees for 2004/2005 were unavailable. The rates shown below are the rates for the 2003/2004 academic year.

	Price per Course	
Program	**2003**	**2004**
Credit (Degree level)	$470	*
Non-Credit (Technical level)	$290	*
Animal Health Technology Courses	$390	*
Audit** (Degree level)	$470	*
Audit** (Technical level)	$290	*
Introductory Studies (non-credit)	$150	*
Distance Education Course Fee	N/A	$25

* Not available at time of printing

**Only students enrolled full time in regular College programs are permitted to audit a course. In some cases, students may be admitted on a non-credit basis through the Centre for Continuing and Distance Education.

For information on Graduate Program fees, contact the Research & Graduate Studies Office.

Undergraduates are permitted to register for graduate-level courses only with the approval of the Graduate Coordinator. In cases where undergraduates are permitted to register for graduate courses, the graduate tuition fee will be applied.

TUITION FEES (INTERNATIONAL STUDENTS)

	Price per Course	
Program	**2003**	**2004**
Credit (Degree level)	$900	*
Non-Credit (Technical level)	$900	*

* Not available at time of printing

WORK TERM (PRACTICUM) FEES

All practicums are charged the equivalent of at least three technical course fees. Students enrolled in a practicum are regarded as full-time students. As such, they are eligible for financial assistance.

BOOKS	**2004**
Full-time students (approx./year)	$1200

Schedule of Fees

STUDENT AND TECHNOLOGY · RENEWAL FEES

A full-time student fee is applicable to students registered in three or more courses in a semester. It is compulsory and non-refundable. The fee includes Athletics, Caution/Development Fund, Student Union, and Health Service fees. A per-course student fee is applicable to part-time students. A technology renewal fee is charged to all full- and part-time students.

Caution/Development Fund

Full-time students, at the beginning of each semester, must make a payment to cover the cost of damages to College property, breakage in labs, etc.

In residence, 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 students 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. The balance of monies collected and not required to cover damages/breakages will be placed into funds to support student residence development, study abroad, and broad-based student development activities and services.

Full-time Students (per semester)	**2004**
Student Fees	$145
Technology Renewal	$ 50

Part-time Students (per course)

This fee is applicable to students who are registered in one or two courses in a semester. It is compulsory and non-refundable. Part-time students receive a student card.

Part-time Student Fee	$ 27
Technology Renewal	$ 15

PROGRAM-RELATED FEES

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.

Full-time students in the Animal Health Technology program are charged an additional Materials and Service Fee. In 2003/2004 this fee was $75 per semester. The 2004/2005 fee was not available at the time of printing. 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 Plant and Animal Sciences.

NSAC requires that all students entering the AHT program be vaccinated against rabies and show proof of vaccination prior to beginning the program. This is required as a result of the increasing possibility that animals in this region may be infected. The HDVC is required in three doses - one on each of days 0, 7, and 21. AHT students will be required to have their serum tested for rabies antibodies two years following the vaccination and those with inadequate levels of protection will be required to get an additional dose of HDVC.

APPLICATION TO GRADUATE

Students intending to graduate in May must submit an "Application to Graduate" to the Registrar by the previous December 15. Students who apply by November 15 to graduate will receive confirmation from the Registrar prior to the start of the winter term. There is no fee charged for an application to graduate submitted by the deadline. Applications that are submitted after December 15 must be accompanied by a $50 late fee.

Schedule of Fees

TRANSCRIPTS

Students' academic records, including their official NSAC files, are the property of NSAC. Students' transcript of records are privileged information and to that end will not be released by the Registrar to those outside the University without the prior written permission of the student. As required by their appointment, academic administrators within NSAC have access to students' complete academic records.

To request a transcript, students must complete the appropriate form, obtainable from the Registrar's Office, or mail or fax a signed letter of request to the Registrar's Office. It is not possible to accept a transcript request over the telephone. Transcript requests are processed strictly in the order in which they are received. Although the normal processing time is approximately five working days, additional time will be required at peak periods.

Official transcripts are forwarded directly from the Registrar's Office to an official third party.

Students whose accounts are in arrears will be denied transcripts until the debt is paid.

SUPPLEMENTAL EXAMINATIONS

(For information on supplemental examinations, see Regulations and Procedures.)

Program	2003	2004
Each exam	$150	*

* Not available at time of printing

REGISTRATION DEPOSIT

New Students $200

The final admission step for new students is to submit the $200 Registration Deposit to the Office of the Registrar. When this deposit is received, the student is granted a Permit to Register and will receive a package guiding him or her through the registration process.

Returning Students

Students with outstanding balances will not be permitted to register for the Fall or Winter semester without making arrangements to settle their accounts with Financial Services.

Schedule of Fees

RESIDENCE DEPOSIT/CANCELLATION FEE

Deposits are applied to total residence fees. The residence deposit will be refunded, up to but not after June 30, for students who submit written notice of cancellation by that time. No deposits received after June 30 will be refunded. Failure to cancel a room reservation in writing by August 20 will result in a charge of not less than $300. New students wishing to apply for accommodation in residence must submit the $190 Residence Deposit when they submit the Registration Deposit.

Returning Students Registered for Residence Room Draw

Returning students wishing to take part in the March Room Draw should contact the Office of the Dean of Student Services for details. A cancellation fee of $300 will be levied against any students failing to cancel their application by August 20. **Note:** students with outstanding balances on their accounts will not be permitted to enter the room draw.

Early Arrivals to Residence

Accommodating early arrivals in residence is normally not possible, but in extenuating circumstances, early arrivals may be accommodated. A written request documenting why alternative arrangements cannot be made must be provided to the Residence Manager no later than August 15 or December 1 for the Fall and Winter semesters respectively. Those granted permission to arrive early will be charged a per diem rate.

Residence and Meal Plan Fees

The following term rates are in effect in 2004/2005.

	Price per Term	
Plan	**Fall 2004**	**Winter 2005**
Shared room and 19 meals	$2715	$2715
Shared room and 14 meals	$2670	$2670
Private room and 19 meals	$2965	$2965
Private room and 14 meals	$2915	$2915
Large private room and 19 meals	$3180	$3180
Large private room and 14 meals	$3135	$3135

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.

Other Residence Fees (per year)	
House Fee	$30
Laundry Fee	$60
Key Deposit	$25

Schedule of Fees

Graduate/Mature Student Housing

NSAC offers alternate student accommodation on the ground floor of Trueman House.

This program features apartment-style living with peers. It includes a fully equipped kitchen with lots of cupboard space. The furnished sitting area includes a TV with satellite service and a computer with high-speed Internet; students share these common areas from eleven private rooms. Each student room is furnished and includes local phone service, satellite, and high-speed Internet service. The washroom and shower rooms are shared.

Rates for 2004/2005 are $530 and $560 monthly and are payable at the first of each month. This includes access to the laundry room, cleaning of common areas, garbage removal, parking, utilities, high-speed Internet, satellite, and local phone service.

Students wishing to apply should forward an application and deposit of $250 to reserve space in this program. This deposit will be applied to the first month's rent. The deposit will be refunded up to, but not after, one month prior to your arrival date. Students are required to notify the residence office in writing, one month prior to their intent to terminate their residence agreement.

Students participating in this program may, but are not required to, purchase a meal plan from Food Services in Jenkins Hall.

Note: Phones, TVs, computers, and connection cables are the responsibility of the student.

REFUNDS

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

Student fees will be refunded to students who withdraw during the second week of the semester. After the second week, there will be no refund except in the case of a withdrawal for health or other compelling compassionate reasons.

Tuition Fees

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

Until the end of 10th class day	100%
Until the end of 15th class day	80%
Until the end of 20th class day	50%
Until the end of 25th class day	25%
Beyond 25th class day	No refund

Schedule of Fees

Residence Fees

Students who accept a place in residence and fail to cancel their residence application prior to August 20 for the Fall semester and December 20 for the Winter semester will forfeit their residence deposit or be levied a $300 cancellation fee. Room fees are charged from the first day that residences are officially open. Students 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 third 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.

NON-PAYMENT OF FEES

If fees are owing, you must arrange with Financial Services to pay outstanding fees before registration will be permitted.

Transcripts will not be issued to students with outstanding accounts.

CANADA STUDENT LOANS PROGRAM

Eligible students enrolled in the degree and technical programs can apply for Government of Canada student 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
PO Box 2290
Halifax Central
Halifax, NS B3J 3C8

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

Prince Edward Island
Department of Education
PO Box 2000
Charlottetown, PE C1A 7N8

Newfoundland & Labrador
Department of Education
Student Aid Division
St. John's, NL 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 time. Once it is signed, the student may take it to the lending agency to arrange for funds.

Schedule of Fees

INTERNATIONAL STUDENT INFORMATION

Application Deadlines

September admission	March 1
January admission	July 1

Costs Per Year (in Canadian dollars) 2003/2004 rates. Tuition rates for 2004/2005 not available at time of printing 2004/2005 Calendar

Tuition Fees (based on 10 credits)	**2003**	**2004**
Degree	$9000	*
Technician/Technology	$9000	*

* Not available at time of printing

Estimated Expenses	**2004**
Books and instruments (per semester)	$600
Health insurance (single coverage, per semester; required for all non-Canadian students)	$205

Compulsory Non-Refundable Fees	**2004**
(Compulsory non-refundable fees include athletic, caution/development fund, student union, technology renewal, health service, laundry, and house fees.) per semester	$240
Residence Plus Meal Plans (per semester)	$2670–3180

For more details see Schedule of Fees on page 12.

Off-Campus Accommodations	
One-room apartment:	$300–500/month
Boarding:	$200–300/month

Information regarding off-campus housing and leases can be found on the Student Services website: www.nsac.ns.ca/stuserv/

Non-Resident Meal Plans	**2003**	**2004**
(Tax included)		
10 meals (lunches only)	$53.45	*
10 meals (lunches & suppers)	$64.15	*

* Not available at time of printing

Personal Expenses	
Clothing and amusement (approx.):	$1,600

Entrance Requirements

Please contact the NSAC Registrar's Office for details on entry requirements from specific countries.

English Language Requirements

If English is not your native language, you must provide official results from **one** of the following standardized tests:

- **TOEFL** - a minimum score of 550 OR a minimum computer-based TOEFL score of 213
- **MELAB** - a minimum score of 80
- **IELTS** - a minimum score of 6.0 is required

* Students who meet all admission requirements except for the English Testing levels may be accepted to NSAC subject to completion of a University Preparatory English Program offered by the International Language Institute, in cooperation with NSAC. Please contact NSAC for more information.

Student Visa and Health Insurance

International students must have proof of a student visa and health insurance before permission to register will be granted.

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.

Note: At the time of printing the 2004/2005 NSAC Calendar, tuition fees for 2004/2005 were unavailable. The tuition rates shown are the rates for the 2003/2004 academic year.

Regulations and Procedures

All students are under the charge of the President and are responsible to him at all times for their conduct. The President 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 President 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* under Community Standards and the *Residence Handbook*, available at *www.nsac.ca/stuserv/*

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

FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY

The Freedom of Information and Protection of Privacy Act (FOIPOP) provides for the protection of an individual's right to privacy but also requires that certain records be disclosed upon request unless they are exempted from the disclosure. The Act requires that the University not disclose personal information if that information would constitute an unreasonable invasion of personal privacy. Applicants to NSAC are advised that information they provide along with other information placed in a student file will be used in conjunction with university practices for internal use and will not be disclosed to third parties except in compliance with the FOIPOP Act or as otherwise required by law.

ACADEMIC ADVISING

The College is committed to providing students with ready access to qualified academic advisors. Upon admission, every student is assigned an advisor who is available to assist the student in making choices. **The final responsibility for a student's program rests with the student.**

ACADEMIC STANDING

- Academic records are reviewed after every term.
- Academic Probation can be assessed after each term. Students on Academic Probation can continue to register on their own while on probation if their cumulative average is at least 55.
- At the end of the academic year (after the Winter semester) academic records will be reviewed and students with poor academic records may, at that time, be placed on Academic Probation or Required to Withdraw for a full semester (normally the Fall semester, returning in the Winter semester).

Academic Probation (assessed each term)

Students are placed on Academic Probation if they take two or more courses and:

- they have a sessional average less than 50%, OR
- they have failed 50% or more of their courses (including Drop Fails), OR
- their cumulative average is less than 60% (less than 55% for Tech students).

Removal From Academic Probation

Students will not be removed from Academic Probation until their cumulative average is at least 60% (at least 55% for Tech students).

Required To Withdraw (assessed once per year)

Students will be Required To Withdraw for a full semester if they have two consecutive terms (normally Fall/Winter) of two or more courses where:

- they have a sessional average below 50%,OR
- they have failed 50% or more of their courses (including Drop Fails).

Note: Students returning from a period of RW are automatically placed on AP.

Required to Withdraw – Appeal Policy

Grounds for Appeal

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

- medically documented/supported personal illness, injury or trauma
- documented/supported severe traumatic circumstances in immediate family such as death or serious illness.

Appeal Process Procedures and Deadlines

1. Students must submit a letter to the Chairperson of the Standards and Admissions Committee (through the Registry Office) requesting that their status be appealed. The letter should clearly demonstrate that the appeal is in accordance with the Grounds for Appeal in the section above. Documentation supporting any claims made must also be included. All information contained in the letter will be kept confidential within the committee.
2. If a student deems that any member(s) is (are) in conflict, the student may request that such member(s) be removed for the duration of the appeal hearing. This request must be made in writing through the Registrar's Office prior to the date of the hearing. The Standards and Admissions Committee will consider and rule on such a request prior to the hearing.
3. Appeals relating to Winter semester performance must be received by 4:30 pm on June 15. 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.

Regulations and Procedures

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.

Regulations concerning Academic Misconduct can be found in the following documents: 1) NSAC *Student Code of Conduct;* 2) *Guidelines for Dealing with Cases of Academic Dishonesty at NSAC.* These documents are available at *www.nsac.ns.ca/stuserv/*

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:

- Each course must be at the same academic level as the one it is replacing.
- Each course must satisfy a requirement of the student's academic program.
- Students enrolled in a four-year degree program must complete a minimum of 15 courses at NSAC to graduate.
- Students enrolled in an Engineering Diploma program must complete a minimum of 11 courses at NSAC to graduate.
- Students enrolled in a technical diploma program must complete a minimum of one-half of the required courses at NSAC to graduate.

Students may be eligible for advanced credit standing based on the results of an Advanced Placement exam (AP) or an International Baccalaureate certificate (IB). Those wishing to apply for credit at NSAC based on AP or IB must supply an official transcript of test results to the Registrar's Office. The student will be notified once the assessment is complete.

Only credits that are relevant to the student's program will be considered. Transfer credits will be awarded based on equivalent NSAC courses. Elective credits may be awarded for courses that have no direct match in the NSAC curriculum. Credits will be awarded upon admission to the B.Sc.(Agr.) degree program for students with an AP national exam with 4 or 5, or Higher Level IB classes with 5, 6, or 7. A maximum of five credits may be awarded.

Transfer credits are evaluated on an individual basis and will vary depending on each student's personal academic program. Please consult the Registrar's Office for information concerning your application and transfer credits.

Official transcripts must be submitted to the Registrar's Office before previous post-secondary work will be considered for advanced standing. **Transcripts received after August 15 for the Fall semester, or after December 1 for the Winter semester, may not be evaluated before Add/Drop deadlines.**

ATHLETICS

All full-time students are eligible to play for teams representing the College, subject to conditions established by NSAC, the Atlantic Colleges Athletic Association, and the Canadian Colleges Athletic Association.

All teams or groups that represent the institution must be accompanied by a member of the College staff or senior leader (non-student) approved by the Athletic Director (athletics) or Dean of Student Services (groups or clubs).

ATTENDANCE IN CLASS

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

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, with the permission of the instructor, audit a course. Terms and conditions of the audit will be set forth by the instructor at the outset. Students who do not fulfil the conditions may have their privileges revoked, and will not have the audit recorded on their transcript. Audit students are not entitled to evaluation of their performance.

Only students enrolled full-time in regular College programs are permitted to audit a course. In some cases, students may be admitted on a non-credit basis through the Centre for Continuing and Distance Education.

NORMAL COURSE LOAD

A normal full-time course load for students registered in the degree program is considered to be five courses per semester. A normal full-time course load for students registered in the technical program is six courses per semester.

COURSE OVERLOAD

Students registered in the degree program who wish to take more than six courses in a single term must have the permission of the Vice President Academic in consultation with the student's advisor. Students registered in the technical program who wish to take more than seven courses in a single term must have the permission of the Vice President Academic in consultation with the student's advisor.

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. A Challenge for Credit is charged at 50% of the course fee.
- 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 that appears on the student's transcript. This includes courses assigned a Drop Fail (DF) or Audit status and 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 credits may be accumulated by Challenge for Credit.

DROPPING COURSES

Deadline to Drop a Course Without Penalty

The last day to drop a course without academic penalty is 4:30 pm on the Friday of the seventh week of classes (October 22, 2004 for the Fall semester and February 18, 2005 for the Winter semester).

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 Fail. A Drop Fail is counted as a failed subject when determining student standings. When determining averages a Drop Fail 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 Fail Status

The last day to declare a Drop Fail status for a course is 4:30 pm on the Friday of the 11th week of classes (November 19, 2004 for the Fall semester and March 24, 2005 for the Winter semester).

If a student is registered for a course after the deadline date indicated for a Drop Fail, 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 lose credit 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 40–49% (note: some courses may not permit a supplemental exam). Each supplemental examination is 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 then 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 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 supplemental examinations and must include the fee of $150 for each supplemental examination by June 2. No supplemental examination is to be written until the required fee has been paid.

The supplemental fee will be reimbursed only if the student notifies the Registrar's Office of the decision not to write by June 9. If an applicant does not write a supplemental examination, the fee is forfeited. There is to be no refund for supplementals with passing grades.

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 (note: some courses may not permit a supplemental). With the exception of the special supplemental examinations for potential graduates, all supplemental examinations are written in June.

Under no circumstances is a candidate to write a special supplemental examination before paying the fee.

Deferred Examinations

A deferred examination is permitted only 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 on which the regular examination in the 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

International Study Opportunities

The Nova Scotia Agricultural College believes that international education, research, and exchange opportunities are important to the educational experience of all members in the College community.

The Nova Scotia Agricultural College has international Memorandums of Understanding with:

- Agricultural University of Norway (NLH) at Ås
- Universidad de Cienfuegos, Cuba
- The Federal University of Santa Catarina, Florianópolis, Brazil
- University of Agriculture, Nitra, Slovak Republic
- Writtle College, United Kingdom
- Agricultural College of Hvanneyri, Iceland
- Czech University of Agriculture, Prague, Czech Republic
- Estonian Agricultural University
- College of Agriculture, Science and Education, Jamaica
- Mendel University of Agriculture and Forestry, Brno
- Universidad Francisco de Paula Santander, Cucuta, Colombia
- Fujian Agricultural and Forestry University

These memorandums enable NSAC and the partner institutions to exchange staff, students, and faculty and to participate in research and other exchange activities. For more information on international exchange opportunities while attending NSAC please contact the International Centre.

Students in the B.Sc.(Agr.) program may study for one or two semesters in French at Laval University in Quebec City. Interested B.Sc.(Agr.) students should apply to participate in the Laval University exchange program by contacting the Vice-President Academic.

Technical Exchange Program

Students who wish to do a technical exchange program at another institution must have that program approved by the NSAC Curriculum Committee. The request should be submitted to the working group by the student's program advisor or the Department Head.

Upon approval of the program, the Chair of the Curriculum Committee will recommend to the Registrar which courses will be replaced in the student's program and which courses must be completed at the host institution.

GRADES

Basis of Marking

The evaluation of a course may be based on tests, laboratory exercises, other assignments and examinations, and attendance. In determining a final mark, instructors will take into consideration 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 attendance requirements and the workload for the course, together with the appropriate dates and values of tests, term papers, quizzes, other assignments, and final examinations. No credit is given for a course unless all requirements for it have been completed.

Grade Appeals

Wherever possible, the student should resolve differences over assigned grades with the course instructor. After consultation with the instructor, the student may still wish to appeal the grade. The appeal must be submitted in writing to the Registrar, along with the $25 non-refundable fee, after release of final marks and not later than 30 days after the release of final marks. The Registrar may waive the 30-day deadline in exceptional circumstances.

Appeals of grades will be considered by a committee convened by the Registrar and consisting of the Vice-President Academic, the Department Head, the Chair of the Standards and Admissions Committee, and one member of Faculty Council selected by the student. In the case where one of the committee members is the instructor of the course in question, the Vice-President Academic will appoint an alternate. The committee will consider written submissions from the student and the instructor, and may request to meet with either of them. An appeal may be based on questions of process or content. In the case of the latter, any grade changes must be based on a reread. If the committee does not recommend a reread, the student may ask for one. In that case the student must pay a $100 fee, which will be refunded if the resulting grade is higher. Grades resulting from rereads may be higher or lower than the original grade and are final. The Department Head for the course in question will recommend to the appeals committee an external person or persons who will be selected to conduct the reread. In the case where the Department Head is the instructor of the course in question, the Vice-President Academic will recommend the external reader to the committee.

All decisions of the grades appeals committee are final. In the case where a grade is changed, the instructor will be provided with a written explanation for the change.

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.

Regulations and Procedures

GRADUATION

Application for Graduation

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

Late Application for Graduation Fee

An application to graduate that is submitted after December 15 must be accompanied by a $50 Late Fee.

Graduation Requirements

Graduands may opt to fulfil 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.

Diplomas Granted in Absentia

Unless the Registrar has been notified 24 hours prior to the commencement of graduation exercises that a candidate for graduation is to be absent, a fee of $10 must be paid to the Registrar's Office before a diploma is released.

Academic Residency Requirements

B.Sc.(Agr.)

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

B.Tech

Students intending to graduate with a B.Tech 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.

Technical Diploma

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

Transfer Credits for Technical Graduates Admitted to the NSAC B.Sc.(Agr.) Program

Students who have graduated from an NSAC Technical diploma program, and who have been admitted to the NSAC B.Sc.(Agr.) program, shall be awarded a minimum of 10 credits toward the NSAC B.Sc.(Agr.) program, provided all other program requirements are met.

Applicants with Technical diplomas from other institutions will be evaluated on a case-by-case basis, and these applicants will normally be awarded the 10-course minimum if their technical program matches one of those offered by NSAC.

Minimum Cumulative Average Requirements for the B.Sc.(Agr.), B.Tech, and B.Eng.

Students are required to have a minimum cumulative average of 60% in all courses required for the program in order to graduate. Courses transferred from other institutions are not normally considered in calculating the cumulative average.

Standing on Graduation (in effect until August 2006)

With High Honours

Cumulative average of 80% or higher

With Honours

Cumulative average of 75–79%

Standing on Graduation (effective September 2006)

With High Honours

Cumulative average of 90% or higher

With Honours

Cumulative average of 80-89.9%

Second Diploma

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

Advanced Standing

Students who successfully complete a Technical diploma program at NSAC and apply to the B.Sc.(Agr.) program will receive a minimum of 10 credits towards their degree.

HEALTH INSURANCE REQUIREMENTS

Students not covered by a Canadian provincial health insurance plan (i.e. those who are not Canadian citizens) are required to purchase a health insurance policy through the College. Once admitted, the student will be registered for coverage effective their date of arrival in Canada. The charge will be included on each student's account. Other insurance policies from home countries will not be accepted. Canadian students may also purchase an extended health insurance policy. Information may be obtained in Student Services.

Students who participate in varsity athletics are covered by a "sport" insurance policy. Details can be obtained through the Athletic Department.

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

It is the students' responsibility to ensure that 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 that all students obtain additional health and accident insurance above and beyond that available through provincial health insurance plans.

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.

Courses that are taken without a Letter of Permission will not be credited towards a student's program.

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.

PRESIDENT'S LIST

The top 10 percent of students within a program of study (Degree, Engineering, Technician, Technology) will be included on the President's List. These students must have an average of 80% or higher, have been enrolled in four or more courses, and have no failures (including Drop Failures).

Students who have achieved 80% in the practicum and an average of 80% in the previous semester (four courses minimum) will be considered eligible to be included on the President's List.

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. Applications for readmission will be considered on an individual basis. Applications must be accompanied by a letter outlining the factors that accounted for poor academic performance and explaining why the applicant feels ready to commence studies again.

REGISTRATION

Computerized Registration

NSAC is implementing a new Student Information System (SIS) that will enable students to register for courses via the web from anywhere in the world. The implementation of the new Datatel SIS will be phased in over the next three years. Web registration for the 2004/2005 Fall semester will be available to students in the summer of 2004. All students who have a Permit to Register can carry out their registration by means of the new system. Directions are issued to new and returning students prior to the registration period.

Students are responsible for ensuring that their course registration is complete and accurate. Students are academically and financially responsible for each course in which they are registered.

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 June 30.

Course Registrations

It is the responsibility of the student to ensure that he/she is properly registered in courses. Students will receive credit only 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 and will be responsible for all tuition fees. Deadlines for adding and dropping courses are strictly enforced.

Prerequisites

Students may be removed from courses for which they do not have prerequisites. Prerequisite waivers can be granted only by the instructors and must be submitted in writing, with the instructor's signature, to the Registry.

RESIDENCE

Residence Regulations are to be found in the NSAC *Student Handbook*, Community Standards, and *Residence Handbook*, available at *www.nsac.ns.ca/stuserv/*

STUDENT SAFETY

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

Regulations and Procedures

STUDENT STATUS

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

Full-time

Students who are taking three or more credit courses in a semester, are registered in a program, and have ongoing status are full-time students.

Part-time

Students who are taking fewer than three courses, are registered in a program, and have ongoing status are part-time students.

Visiting

Students who are admitted to one or more courses on the basis of a letter of permission from another bona fide post-secondary institution are visiting students. Visiting students do not have ongoing student status. That is, **if they wished to enrol for another semester they would be required to go through the application for admission process again.**

Unclassified

Students who are admitted to one course only with permission of the Registrar and instructor, are not registered in a program of study, and do not have ongoing student status are unclassified students.

No Program

Students may be admitted to one or more courses on a "no-program" basis. Admission is to specified courses on a case-by-case basis. No-program students do not have ongoing student status.

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

TRANSCRIPTS

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

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.

Explanation of Terms and Codes

Each course is described by an alpha-numeric code. The alpha prefix identifies the main subject area, and the following digits identify the specific course.

Courses numbered 1000 or higher are taken for degree credit courses. Numbers up to 0999 are offered in Technical programs. Numbers up to 0099 are offered as non-degree requirements. Numbers 5000+ are offered in the Graduate Program.

Courses with an 'A' designation focus on one or more aspects of the agri-food system. The agri-food system includes production, management, processing, and marketing of crops and livestock and their products. Other courses may use agricultural examples, but are not designated 'A' because their main focus is not on the agri-food system.

Some first-year core courses are offered by distance delivery in addition to or instead of traditional delivery. These courses are denoted by DE. For information on distance courses see page 220.

PROGRAM CODES

BSCAG	Degree (B.Sc.(Agr.))
BTECH	Bachelor of Technology (B.Tech)
ENG	Engineering
MSC	Masters
TN	Technician
TY	Technology

Degree

Major		*Minor*	
AB	Agricultural Business	AB	Agricultural Business
AQ	Aquaculture	AC	Agricultural Chemistry
AS	Animal Science	AS	Animal Science
BSM	Bio-Environmental Systems Management	AEC	Agricultural Economics
AEC	Agricultural Economics	ES	Environmental Studies
ES	Environmental Studies	PM	Pest Management
EH	Environmental Horticulture	PS	Plant Science
PS	Plant Science		
PV	Pre-Veterinary		
NP	No Program, University		

Engineering

ENG Engineering

Technician

Major		*Minor*	
AB	Agricultural Business	AB	Agricultural Business
AS	Animal Science	AE	Agricultural Engineering
		AS	Animal Science
		PS	Plant Science

Technology

Major		*Specializations*	
AH	Animal Health	AGR	Agronomy
AT	Agricultural Technology	ED	Edible Horticulture
EH	Environmental Horticulture	OH	Ornamental Horticulture
FT	Farming Technology		
PS	Plant Science		

Undergraduate Degree Programs

GENERAL INFORMATION

Bachelor of Technology

The Bachelor of Technology (B.Tech) is awarded in association with Dalhousie University. It is a four-year program designed to provide a comprehensive study of specific areas of technology. Graduates of this program will have mastered a number of skills necessary to address present and future advances in technology associated with specific career paths. A balance of communication and technical skills will be achieved.

All majors in the program have an admission requirement of at least two years of post-secondary studies. The majors are designed to provide advanced studies for NSAC diploma graduates and require many of the elements of these programs as a foundation. Applicants from other post-secondary programs will be assessed and may be required to take some qualifying courses upon admission. Each major has specific entrance requirements, and possession of minimum requirements does not guarantee admission.

Bachelor of Science in Agriculture and Degree Diploma in Engineering

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 four-year program in various disciplines are offered, including an engineering discipline and a two-year pre-veterinary program.

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 Dalhousie University. Those who elect the Biosystems (Agricultural) or Environmental Engineering disciplines at Dalhousie University, which are sponsored jointly by Dalhousie and NSAC, may elect to complete them as co-op programs.

The Pre-Veterinary program also serves as the first two years of the B.Sc.(Agr.) program, Animal Science major. Transfer to other majors of the B.Sc.(Agr.) program is possible, but it may then 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 with a Cumulative Grade Average at or above the minimum required (60%), and who are in good standing, will be granted the degree of Bachelor of Science in Agriculture, B.Sc.(Agr.).

Until August 2006 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 Grade Average of 80% or better. An Honours diploma will be awarded to graduates achieving a Cumulative Grade Average of between 75% and 79%. Effective September 2006 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 Grade Average of 90% or better. An Honours diploma will be awarded to graduates achieving an Cumulative Grade Average of between 80 and 89.9%.

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 an 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

Undergraduate Degree Programs

Institute is required by provincial statute to practise 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 that the academic content and teaching facilities are acceptable to allow graduates admission into all provincial and territorial associations.

BACHELOR OF SCIENCE IN AGRICULTURE

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 of the Atlantic provinces.

Normally, students select a Major during their first year at NSAC and continue in that field of study until they graduate.

All candidates for admission to the program leading to a B.Sc.(Agr.) and the Pre-Veterinary program must present high school graduation certificates showing an average of at least 60%, with no mark below 50%, in five Grade 12 university preparatory subjects, including English, Chemistry, Pre-Calculus Mathematics (70% in NS Math 12 or NL Math 3200 acceptable), and Biology or Physics. Students who are accepted into all majors, with the exception of Agricultural Business and Agricultural Economics, but who have not successfully completed Physics at the Grade 12 university preparatory level must take Physics PHYS0050, a non-credit course, in their first year at NSAC. **Possession of the minimum entrance requirements does not guarantee admission.**

Majors Offered at NSAC	**Minors Offered at NSAC**
Agricultural Business	Agricultural Business
Agricultural Economics	Agricultural Chemistry
Bio-Environmental Systems Management	Agricultural Economics
Environmental Studies	Animal Science
Animal Science	Environmental Studies
Aquaculture	Plant Science
Plant Science	Pest Management

Syllabus

All Majors

Year 1

Semester I

AGRI1000 (IN100)	Agricultural Ecosystems (A) ***DE**
BIOL1000 (B100)	Botany
CHEM1000 (CS101)	General Chemistry I
ECON1000 (EB110)	Principles of Microeconomics* (A) ***DE**
MATH1000 (MP100)	Calculus & Analytic Geometry I

Semester II

BIOL1001 (B110)	Zoology
CHEM1001 (CS102)	General Chemistry II
ECON1000 (EB110)	Principles of Microeconomics* (A) ***DE**
MATH1001 (MP105)	Calculus & Analytic Geometry II

*Elective***

*and **one** of:*

ENGL1000 (H113)	Composition
ENGL1001 (H101)	The Novel
ENGL1002 (H102)	Nature in English and American Literature
GEOG1000 (H170)	Introductory Human Geography
SOCI1000 (H160)	Introductory Sociology

* ECON1000 (EB110): Principles of Microeconomics can be taken in either semester and should be alternated with the choice of ENGL1000 (H113), ENGL1001 (H101), ENGL1002 (H102), GEOG1000 (H170), or SOCI1000 (H160).

**Students planning to major in Agricultural Business or

Agricultural Economics may wish to select ECON1001 Principles of Macroeconomics.

Required Courses Past the First Year
(required of all students)

AGRI4000 (IN400)	Contemporary Issues in Agriculture (A)
STAT2000 (MP210)	Introduction to Statistics
RESM4XXX*	Project-Seminar I (A)
RESM4XXX*	Project-Seminar II (A)

plus two Humanities electives, one of which must be at the 3000 or 4000 level.

* RESM4XXX …*Project-Seminar I* and RESM4XXX …*Project-Seminar II* represent the Project-Seminar courses, including RESM4004 (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.

DE indicates that the course is offered by Distance Education in addition to or instead of by traditional methods of delivery.

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

Courses with an 'A' designation focus on one or more aspects of the agri-food system. The agri-food system includes production, management, processing, and marketing of crops and livestock and their products. Other courses may use agricultural examples, but are not designated 'A' because their main focus is not on the agri-food system.

The purpose of the project-seminar course sequence in the College Core is to give each student the opportunity to pursue independent research in the area of his/her interest. Each student will gain hands-on experience as well as experience in the preparation, design, and analysis of a project in written and oral formats.

Agricultural Business

In addition to the B.Sc.(Agr.) core, students must take the following courses to meet the requirements of this program:

Major

ECON1001 (EB255)	Principles of Macroeconomics
ECON2001 (EB305)	Intermediate Macroeconomics
ECON2002 (EB220)	Production Economics (A)
ECON3000 (EB260)	Mathematical Economics
ECON3002 (EB320)	Agricultural and Food Policy (A)
ECON3003 (EB325)	Mathematical Programming
MGMT2002 (EB335)	Marketing
MGMT2003 (EB340)	Farm Management (A)
MGMT2004 (EB210)	Financial Accounting I
MGMT2005 (EB215)	Financial Accounting II
MGMT3000 (EB315)	Management Accounting
MGMT4000 (EB410)	Strategic Management
MGMT4001 (EB445)	Advanced Entrepreneurship (A)
STAT3000 (MP211)	Intro. to Planned Studies: Surveys and Experiments

Electives must include three 'A' courses.

Minor

A minimum of six courses including:

MGMT2002 (EB335)*	Marketing
MGMT2003 (EB340)*	Farm Management (A)
MGMT2004 (EB210)*	Financial Accounting I

*and three of the following***:*

ECON1001 (EB255)	Principles of Macroeconomics
ECON2000 (EB200)	Intermediate Mi.croeconomics
ECON3002 (EB320)	Agricultural and Food Policy (A)
ECON4002 (EB441)	Topics in Advanced Farm Management (A)
MGMT2001 (EB230)	Introduction to Business Law
MGMT2005 (EB215)	Financial Accounting II
MGMT3000 (EB315)	Management Accounting
MGMT3001 (EB430)	International Marketing

MGMT3002 (EB435)	Consumer Behaviour
MGMT4000 (EB410)	Strategic Management
MGMT4001 (EB445)	Advanced Entrepreneurship (A)
SPEC2000 (EB221)***	Topics in Economics and Business Management (A)
SPEC4005 (EB421)***	Special Topics in Agric. Economics and Business I (A)
SPEC4006 (EB422)***	Special Topics in Agric. Economics and Business II (A)

* If this course is required for a student's major, then the student must substitute another course from the above list.

** Students cannot select courses which are required for their major.

*** Topics must relate to agricultural business.

Recommended Syllabus for a Major in Agricultural Business

Year 2

Semester III

ECON2000 (EB200)	Intermediate Microeconomics
MGMT2004 (EB210)	Financial Accounting I
STAT2000 (MP210)	Introduction to Statistics
	Elective
	Elective

Semester IV

ECON1001 (EB255)	Principles of Macroeconomics I*
ECON2002 (EB220)	Production Economics (A)
MGMT2005 (EB215)	Financial Accounting II
STAT3000 (MP211)	Intro to Planned Studies: Surveys & Experiments
	Elective

Year 3

Semester V

ECON3000 (EB260)	Mathematical Economics
MGMT2002 (EB335)	Marketing
MGMT2003 (EB340)	Farm Management (A)
MGMT3000 (EB315)	Management Accounting
	Elective

Semester VI

ECON3002 (EB320)	Agricultural & Food Policy (A)
ECON3003 (EB325)	Mathematical Programming
	Elective
	Elective
	Elective

Year 4

Semester VII

AGRI4000 (IN400)	Contemporary Issues in Agriculture (A)
MGMT4000 (EB410)	Strategic Management
RESM4004 (EB425)	Research Methods for Economics & Business (A)
	Elective
	Elective

Semester VIII

MGMT4001 (EB445)	Advanced Entrepreneurship (A)
RESM4005 (EB450)	Project-Seminar for Economics & Business (A)
	Elective
	Elective
	Elective

Electives must include two Humanities courses, one of which must be at the 3000 or 4000 level, and three 'A' courses. (See page 241 for a list of courses and their designations.)

Agricultural Economics

In addition to the B.Sc.(Agr.) core, students must take the following courses to meet the requirements of this program:

Major

ECON1001 (EB255)	Principles of Macroeconomics
ECON2000 (EB200)	Intermediate Microeconomics
ECON2001 (EB305)	Intermediate Macroeconomics
ECON3000 (EB260)	Mathematical Economics
ECON3002 (EB320)	Agricultural and Food Policy (A)
ECON3003 (EB325)	Mathematical Programming
ECON3004 (EB330)	Agricultural Markets and Prices (A)
ECON3005 (EB360)	Econometrics
ECON4001 (EB419)	Agrifood Policy Analysis (A)
MGMT2002 (EB335)	Marketing
MGMT2003 (EB340)	Farm Management (A)
MGMT2004 (EB210)	Financial Accounting I

Electives must include three 'A' courses.

Minor

A minimum of six courses including:

ECON2000* (EB200)	Intermediate Microeconomics
ECON3000* (EB260)	Mathematical Economics

*and four of the following***:*

ECON1001 (EB255)	Principles of Macroeconomics
ECON2001 (EB305)	Intermediate Macroeconomics
ECON2002 (EB220)	Production Economics (A)
ECON3001	Environmental Economics
ECON3002 (EB320)	Agricultural and Food Policy (A)
ECON3003 (EB325)	Mathematical Programming
ECON3004 (EB330)	Agricultural Markets and Prices (A)
ECON3005 (EB360)	Econometrics
ECON4000	Advanced Microeconomics
ECON4001 (EB419)	Agrifood Policy Analysis (A)
ECON4002 (EB441)	Topics in Advanced Farm Management (A)
ECON4003	Resource Economics
MGMT2003 (EB340)	Farm Management (A)
SPEC2000 (EB221)***	Topics in Economics and Business Management (A)
SPEC4005 (EB421)***	Special Topics in Agricultural Economics and Business I (A)
SPEC4006 (EB422)***	Special Topics in Agricultural Economics and Business II (A)

* If this course is required for a student's major, then the student must substitute another course from the above list.

** Students cannot select courses which are required for their major.

*** Topics must relate to Agricultural Economics.

Recommended Syllabus for a Major in Agricultural Economics

Year 2

Semester III

ECON2000 (EB200)	Intermediate Microeconomics
MGMT2004 (EB210)	Financial Accounting I
STAT2000 (MP210)	Introduction to Statistics ***or*** Elective
	Elective
	Elective

Semester IV

ECON1001 (EB255)	Principles of Macroeconomics*
ECON3004 (EB330)	Agricultural Markets & Prices (A)
STAT2000 (MP210)	Introduction to Statistics ***or*** Elective
	Elective
	Elective

Year 3

Semester V

ECON2001 (EB305)	Intermediate Macroeconomics*
ECON3000 (EB260)	Mathematical Economics
ECON3005 (EB360)	Econometrics
MGMT2002 (EB335)	Marketing
MGMT2003 (EB340)	Farm Management (A)

Semester VI

ECON3002 (EB320)	Agricultural and Food Policy (A)
ECON3003 (EB325)	Mathematical Programming
	Elective
	Elective
	Elective

Year 4

Semester VII

AGRI4000 (IN400)	Contemporary Issues in Agriculture (A)
ECON4001 (EB419)	Agrifood Policy Analysis (A)
RESM4004 (EB425)	Research Methods for Economics & Business (A)
	Elective
	Elective

Semester VIII

RESM4005 (EB450)	Project-Seminar for Economics & Business (A)
	Elective
	Elective
	Elective
	Elective

* Students who successfully complete ECON1001 Principles of Macroeconomics in their first year as an elective may be able to select ECON2001 (EB305) Intermediate Macroeconomics in the third semester of their second year.

STAT2000 (MP210) should be completed in Semester III or IV. STAT2000 (MP210) is a prerequisite to ECON3005 (EB360).

Electives must include two Humanities courses, one of which must be at the 3000 or 4000 level, and three 'A' courses. (See page 241 for a list of courses and their designations.)

Animal Science

In addition to the B.Sc.(Agr.) core, students must take the following courses to meet the requirements of this program:

Major

ANSC2000 (AS200)	Animal Agriculture I (A)
ANSC2001 (AS201)	Animal Agriculture II (A)
ANSC3000 (AS310)	Animal Breeding (A)
BIOL2006 (AS230)	Mammalian Physiology
BIOL3008 (AS330)	Growth, Reproduction, and Lactation (A)
CHEM2000 (CS201)	Organic Chemistry I
CHEM3001 (CS302)	Biochemical Pathways
GENE2000 (B240)	Genetics I
NUTR3000 (AS305)	Animal Nutrition
PHYS1002 (MP140)	Physics I ***or*** PHYS1000 (MP150) Physics for Life Sciences I

plus

two Animal Science courses at the 3000 or 4000 level

one Animal Science course at the 4000 level (RESM4002 (AS449) and RESM4003 (AS450) cannot be used)

(These three must be 'A' courses.)

Minor

Any **six** courses approved by the Animal Science Department Program Advisor. The content of the minor will be decided on a student-by-student basis. Students cannot select courses which are required for their major or the College core. Students wishing to take fourth-year module courses (ANSC4000, ANSC4001, ANSC4002 (AS490) series) should note that prerequisite courses must be completed prior to enrolment.

Recommended Syllabus for a Major in Animal Science

Year 2

Semester III

ANSC2000 (AS200)	Animal Agriculture I (A)
CHEM2000 (CS201)	Organic Chemistry I
GENE2000 (B240)	Genetics I
PHYS* ***or***	*Elective*
	Elective

Semester IV

BIOL2006 (AS230)	Mammalian Physiology
CHEM3001 (CS302)	Biochemical Pathways
PHYS* ***or***	*Elective*
	Elective
	Elective

Year 3

Semester V

ANSC2001 (AS201)	Animal Agriculture II (A)
BIOL3008 (AS330)	Growth, Reproduction & Lactation (A)
NUTR3000 (AS305)	Animal Nutrition
	Elective
	Elective

Semester VI

ANSC3000 (AS310)	Animal Breeding (A)
RESM4002 (AS449)	Project-Seminar I (A)
	Elective
	Elective
	Elective

Year 4

Semester VII

AGRI4000 (IN400)	Contemporary Issues in Agriculture (A)
RESM4003 (AS450)	Project-Seminar II (A)
	Elective
	Elective
	Elective

Semester VIII

	Elective
	Elective
	Elective
	Elective
	Elective

PHYS* – Students must complete the combination of PHYS1000 (MP150) or PHYS1002 (MP140) and STAT2000 (MP210) in Semesters III & IV. If PHYS1000/PHYS1002 (MP150/MP140) is done in Semester III, then STAT2000 (MP210) will be done in Semester IV. If STAT2000 (MP210) is done in Semester III, then PHYS1002 (MP140) will be done in Semester IV.

Electives must include two Humanities courses, one of which must be at the 3000 or 4000 level; two 3000- or 4000-level Animal Science courses; and one 4000-level Animal Science course. Three of these electives must be 'A' courses. (See page 241 for a list of courses and their designations.)

Aquaculture

In addition to the B.Sc.(Agr.) core, students must take the following courses to meet the requirements of this program:

Major

ANSC3000 (AS310)	Animal Breeding (A)
AQUA2000 (AS210)	Introduction to Aquaculture (A)
AQUA3000 (AS370)	Fish Health (A)
AQUA4000 (AS440)	Finfish Production ***or***
AQUA4001 (AS445)	Shellfish Production
BIOL3005 (AS380)	Physiology of Aquatic Animals (A)
BIOL3006 (AS375)	Aquatic Ecology
CHEM2000 (CS201)	Organic Chemistry I
CHEM3001 (CS302)	Biochemical Pathways
ENGN2004 (AE215)	Aquacultural Environment (A)
ENGN3013 (AE360)	Aquacultural Engineering (A)
GENE2000 (B240)	Genetics I
MICR2000 (B225)	Microbiology
MGMT2003 (EB340)	Farm Management (A)
NUTR3000 (AS305)	Animal Nutrition ***or***
NUTR3002 (AS365)	Fish Nutrition (A)
PHYS1000 (MP150)	Physics for Life Sciences I ***or***
PHYS1002 (MP140)	Physics I

and one of:

ECON40002 (EB441)	Topics in Advanced Farm Management (A)
MGMT1000 (EB225)	Small Business Entrepreneurship
MGMT2002 (EB335)	Marketing
MGMT2004 (EB210)	Financial Accounting I

Recommended Syllabus for a Major in Aquaculture

Year 2

Semester III

AQUA2000 (AS210)	Introduction to Aquaculture (A)
CHEM2000 (CS201)	Organic Chemistry I
GENE2000 (B240)	Genetics I
PHYS* ***or***	*Elective*
	Elective

Semester IV

ENGN2004 (AE215)	Aquacultural Environment (A)
CHEM3001 (CS302)	Biochemical Pathways
MICR2000 (B225)	Microbiology
PHYS* ***or***	*Elective*
	Elective

Year 3

Semester V

BIOL3005 (AS380)	Physiology of Aquatic Animals (A)
BIOL3006 (AS375)	Aquatic Ecology
MGMT2003 (EB340)	Farm Management (A)
NUTR3000 (AS305)	Animal Nutrition ***or*** Elective
	Elective

Semester VI

ANSC3000 (AS310)	Animal Breeding (A)
AQUA3000 (AS370)	Fish Health (A)
ENGN3013 (AE360)	Aquatic Engineering (A)
NUTR3002 (AS365)	Fish Nutrition (A) ***or*** Elective
RESM4010 (AS449)	Aquaculture Project-Seminar I (A)

Year 4

Semester VII

AGRI4000 (IN400)	Contemporary Issues in Agriculture (A)
AQUA4000 (AS440)	Finfish Production ***or*** Elective
RESM4011 (AS450)	Aquaculture Project-Seminar II (A)
	Elective
	Elective

Semester VIII

AQUA4001 (AS445)	Shellfish Production ***or*** *Elective*
	Elective
	Elective
	Elective
	Elective

SOIL2000 (CS220)	Introduction to Soil Science (A)
STAT3000 (MP211)	Introduction to Planned Studies: Surveys and Experiments

*plus **one** of the following two courses:*

CHEM3009 (ES312)	Environmental Chemistry
ENGN2000 (AE200)	Environmental Impacts & Resource Management (A)

Note: Electives must include two 'A' courses (only one 'A' course if ENGN2000 (AE200) is taken).

Minor

Students intending to declare a minor in Environmental Studies require a minimum of five courses including ENVS2000 (ES200) and ENVS2001 (ES201) plus three other courses approved by the Department of Environmental Sciences. Students may not select courses which are required for their major.

Recommended Syllabus for a Major in Environmental Studies

Year 2

Semester III

CHEM2000 (CS201)	Organic Chemistry I
ECON2000 (EB200)	Intermediate Microeconomics
ENVS2000 (ES200)	Environmental Studies I (A)
SOIL2000 (CS220)	Introduction to Soil Science (A)
STAT2000 (MP210)	Introduction to Statistics

Semester IV

CHEM3001 (CS302)	Biochemical Pathways
ENVS2001 (ES201)	Environmental Studies II (A)
MICR2000 (B225)	Microbiology
STAT3000 (MP211)	Intro to Planned Studies: Surveys and Experiments
	Elective

Year 3

Semester V

BIOL3001 (B330)	Ecology
CHEM3009 (ES312)	Environmental Chemistry ***or*** *Elective*
ECON3001	Environmental Economics
ENGN2000 (AE200)	Environmental Impacts and Resource Management (A) ***or***
ENVS3001 (ES330)	Environmental Sampling and Analysis
PHYS1000 (MP150)*	Physics for the Life Sciences I ***or***
PHYS1002 (MP140)*	Physics I ***or***
	Elective

Semester VI

ENGN4000 (AE410)	Water and Water Quality Management (A)
ENVS3002 (ES333)	Waste Treatment and Remediation (A)
PHYS1000 (MP150)*	Physics for the Life Sciences I ***or***
PHYS1002 (MP140)*	Physics I ***or***
	Elective
	Elective
	Elective

Year 4

Semester VII

AGRI4000 (IN400)	Contemporary Issues in Agriculture (A)
CHEM3009 (ES312)	Environmental Chemistry ***or***
ENGN2000 (AE200)	Environmental Impacts and Resource Management (A) ***or*** *Elective*
RESM4006 (ES449)	Environmental Sciences Project-Seminar I (A)
	Elective
	Elective

Year 4

Semester VII

AGRI4000 (IN400)	Contemporary Issues in Agriculture (A)
ENGN2000 (AE200)	Environmental Impacts and Resource Management (A)
ENGN3003 (AE311)	Technology for Precision Agriculture
RESM4001 (AE450)	Bio-Environmental Systems Management Project-Seminar II (A)
	Elective

Semester VIII

ENGN4000 (AE410)	Water and Water Quality Management (A)
ENGN4002 (AE420)	Management of Mechanized Agricultural Systems (A)
	Elective
	Elective
	Elective

PHYS* – Students must complete the combination of PHYS1000 (MP150) or PHYS1002 (MP150) and STAT2000 (MP210) in Semesters III & IV. If PHYS1000/PHYS1002 (MP150/MP140) is done in Semester III then STAT2000 (MP210) will be done in Semester IV. If STAT2000 (MP210) is done in Semester III, then PHYS1002 (MP140) will be done in Semester IV.

Electives must include two Humanities courses, one of which must be at the 3000 or 4000 level. CMMT3000 Communication Theory and Skills and EXTE3000 (H320) Extension Education in the Rural Community or EXTE3001 (H321) Leadership Development and the Social Action Process are recommended. (See page 241 for a list of courses and their designations.)

[1] strongly recommend MGMT2000 (H140) Human Resource Management

[2] strongly recommend ENGN2004 (AE215) Aquacultural Environment

Recommended Electives:

CHEM2001 (CS201)	Organic Chemistry I
CSCI1000 (MP222)	Computer Methods
ECON2000 (EB200)	Intermediate Microeconomics
ECON3001	Environmental Economics
ECON3002 (EB320)	Agricultural and Food Policy (A)
ECON4003	Resource Economics
ENGN3013 (AE360)	Aquacultural Engineering (A)
ENGN4001 (AE412)	Water Quality Issues (A)
MATH4000 (MP460)	Agricultural Modelling
MGMT2002 (EB335)	Marketing
MGMT4000 (EB410)	Strategic Management
SPEC4012 (AE415)	Directed Studies in Agricultural Engineering (A)
STAT3000 (MP211)	Intro to Planned Studies: Surveys and Experiments

Environmental Studies

In addition to the B.Sc.(Agr.) core, students must take the following courses to meet the requirements of this program:

Major

BIOL3001 (B330)	Ecology
CHEM2000 (CS201)	Organic Chemistry I
CHEM3001 (CS302)	Biochemical Pathways
ECON2000 (EB200)	ntermediate Microeconomics
ECON3001	Environmental Economics
ENGN4000 (AE410)	Water and Water Quality Management (A)
ENVS2000 (ES200)	Environmental Studies I (A)
ENVS2001 (ES201)	Environmental Studies II (A)
ENVS3001 (ES330)	Environmental Sampling and Analysis
ENVS3002 (ES333)	Waste Treatment and Site Remediation (A)
MICR2000 (B225)	Microbiology
PHYS1002 (MP140)	Physics I ***or*** PHYS1000 (MP150) Physics for the Life Sciences I

SOIL2000 (CS220)	Introduction to Soil Science (A)
STAT3000 (MP211)	Introduction to Planned Studies: Surveys and Experiments

*plus **one** of the following two courses:*

CHEM3009 (ES312)	Environmental Chemistry
ENGN2000 (AE200)	Environmental Impacts & Resource Management (A)

Note: Electives must include two 'A' courses (only one 'A' course if ENGN2000 (AE200) is taken).

Minor

Students intending to declare a minor in Environmental Studies require a minimum of five courses including ENVS2000 (ES200) and ENVS2001 (ES201) plus three other courses approved by the Department of Environmental Sciences. Students may not select courses which are required for their major.

Recommended Syllabus for a Major in Environmental Studies

Year 2

Semester III

CHEM2000 (CS201)	Organic Chemistry I
ECON2000 (EB200)	Intermediate Microeconomics
ENVS2000 (ES200)	Environmental Studies I (A)
SOIL2000 (CS220)	Introduction to Soil Science (A)
STAT2000 (MP210)	Introduction to Statistics

Semester IV

CHEM3001 (CS302)	Biochemical Pathways
ENVS2001 (ES201)	Environmental Studies II (A)
MICR2000 (B225)	Microbiology
STAT3000 (MP211)	Intro to Planned Studies: Surveys and Experiments
	Elective

Year 3

Semester V

BIOL3001 (B330)	Ecology
CHEM3009 (ES312)	Environmental Chemistry ***or*** *Elective*
ECON3001	Environmental Economics
ENGN2000 (AE200)	Environmental Impacts and Resource Management (A) ***or***
ENVS3001 (ES330)	Environmental Sampling and Analysis
PHYS1000 (MP150)*	Physics for the Life Sciences I ***or***
PHYS1002 (MP140)*	Physics I ***or***
	Elective

Semester VI

ENGN4000 (AE410)	Water and Water Quality Management (A)
ENVS3002 (ES333)	Waste Treatment and Remediation (A)
PHYS1000 (MP150)*	Physics for the Life Sciences I ***or***
PHYS1002 (MP140)*	Physics I ***or***
	Elective
	Elective
	Elective

Year 4

Semester VII

AGRI4000 (IN400)	Contemporary Issues in Agriculture (A)
CHEM3009 (ES312)	Environmental Chemistry ***or***
ENGN2000 (AE200)	Environmental Impacts and Resource Management (A) ***or*** *Elective*
RESM4006 (ES449)	Environmental Sciences Project-Seminar I (A)
	Elective
	Elective

Semester VIII	
RESM4007 (ES450)	Environmental Sciences
	Project-Seminar II (A)
	Elective
	Elective
	Elective
	Elective

Note for Years 3 and 4: One of the following two courses is required: ENGN2000 (AE200) Environmental Impacts and Resource Management (A) or CHEM3009 (ES312) Environmental Chemistry. CHEM3009 (ES312) is offered in alternate years.

*Students must take *either* PHYS1000 (MP150) ***or*** PHYS1002 (MP140) *but not both for credit.*

Electives must include one Humanities course at the 3000 or 4000 level, one additional Humanities course at any level (see page 241 for a list of courses and their designations), and two 'A' courses. However, if ENGN2000 (AE200) is taken, then only one additional 'A' course is required.

Plant Science

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

Major

BIOL2002 (B260)	Plant Physiology
BIOL2004 (B270)	Structural Botany
BIOL2005 (B300)	Principles of Plant Pathology (A)
BIOL3000 (B320)	General Entomology (A)
BIOL3002 (B335)	Weed Science (A)
CHEM2000 (CS201)	Organic Chemistry I
CHEM3001 (CS302)	Biochemical Pathways
GENE2000 (B240)	Genetics I
PHYS1000 (MP150)	Physics for the Life Sciences I ***or***
PHYS1002 (MP140)	Physics I
PLSC4001 (PS415)	Crop Adaptation (A)
SOIL2000 (CS220)	Introduction to Soil Science (A)

plus

two Plant Science Production (PDN) Courses
two Plant Science (PS) Elective Courses
one of AGRN4000 (PS405) Agronomy (A) ***or***
HORT4001 (PS410) Horticulture (A)
Electives must include one 'A' course.
(See page 241 for a list of courses and their designations.)

Minor

Any five Plant Science degree courses approved by the Plant Science Program Advisor. Students cannot select courses which are required for their major.

Recommended Syllabus for a Major in Plant Science

Year 2

Semester III	
CHEM2000 (CS201)	Organic Chemistry I
GENE2000 (B240)	Genetics I
SOIL2000 (CS220)	Introduction to Soil Science (A)
	*Elective**
	Elective

Semester IV	
BIOL2002 (B260)	Plant Physiology
BIOL2004 (B270)	Structural Botany
CHEM3001 (CS302)	Biochemical Pathways
	*Elective**
	Elective

Year 3

Semester V

BIOL2005 (B300)	Principles of Plant Pathology (A)
BIOL3000 (B320)	General Entomology (A)
BIOL3002 (B335)	Weed Science (A)
	Elective
	Elective

Semester VI

RESM4008 (PS449)	Plant Science Project-Seminar I (A)
	Elective
	Elective
	Elective
	Elective

Year 4

Semester VII

AGRI4000 (IN400)	Contemporary Issues in Agriculture (A)
PLSC4001 (PS415)	Crop Adaptation (A)
RESM4009 (PS450)	Plant Science Project-Seminar II (A)
	Elective
	Elective

Semester VIII

AGRN4000 (PS405)	Agronomy (A) ***or***
HORT4001 (PS410)	Horticulture (A)
	Elective
	Elective
	Elective
	Elective

*Students must complete the combination of PHYS1000 (MP150) or PHYS1002 (MP140) and STAT2000 (MP210) in Semester III & IV. If PHYS1000/PHYS1002 (MP150/MP140) is done in Semester III, then STAT2000 (MP210) will be done in Semester IV. If STAT2000 (MP210) is done in Semester III, then PHYS1002 (MP140) will be done in Semester IV. (PHYS1000 (MP150) is preferred for Plant Science majors.)

Electives must include two Humanities courses, one of which must be at the 3000 or 4000 level, two Plant Science Production (PDN) courses and two additional Plant Science (PS) courses. (See page 241 for a list of courses and their designations.)

Minor in Agricultural Chemistry

Students intending to declare a minor in Agricultural Chemistry require a minimum of five courses including CHEM2000 (CS201) and CHEM3003 (CS318) plus three other chemistry courses approved by the Department of Environmental Sciences. Students may not select courses which are required for their major.

Minor in Pest Management

Students intending to declare a minor in Pest Management require a minimum of four courses including MICR2000 (B225) plus three other courses from the following:

BIOL3005 (B300)	Principles of Plant Pathology (A)
BIOL3000 (B320)	General Entomology (A)
BIOL3002 (B335)	Weed Science (A)
ENVS4001 (B406)	Economic Plant Pathology (A)
ENVS4002 (B425)	Economic Entomology (A)
ENVS4003 (B445)	Applied Weed Science (A)

Students may not select courses which are required for their major.

BACHELOR OF TECHNOLOGY (ENVIRONMENTAL HORTICULTURE)

This Nova Scotia Agricultural College program is designed to prepare students for a career in the landscape horticulture profession. It will prepare students to work successfully in the diverse landscape industry or to create their own businesses within the industry. This major could also lead to graduate study in the area of landscape architecture and related fields.

Years one and two of this program are satisfied by the successful completion of the Environmental Horticulture Technology program or a landscape-related program approved by the Department of Environmental Studies, with a cumulative average of at least 60%. Applicants who meet the general requirements described above (two years post-secondary) may be admitted to the program upon completion of prescribed preparation courses.

Year 3

Spring/Summer Semester

HORT2002 (PS270)	Landscape Horticulture Work Program I (12 weeks)

Semester V

BIOL 1000 (B100)	Botany
CHEM1000 (CS101)	General Chemistry I
ENVS2000 (ES200)	Environmental Studies I (A)
HORT3000 (ES370)	Env. Processes & Natural Landscape Functions
SOIL2000 (CS220)	Introduction to Soil Science*/*Elective*

Semester VI

ENVS2001 (ES201)	Environmental Studies II (A)
MGMT1000 (EB225)	Small Business Entrepreneurship
SOIL3000 (CS320)	Soil Fertility (A)
	Elective
	Elective

Year 4

Semester VII

BIOL2005 (B300)	Principles of Plant Pathology* (A)/*Elective*
BIOL3000 (B320)	General Entomology (A)
BIOL3002 (B335)	Weed Science* /*Elective*
HORT3007 (PS360)	Environmental Horticulture Project **
	Elective

Semester VIII

ENVS4001 (B406)	Economic Plant Pathology (A)
ENVS4002 (B425)	Economic Entomology (A)
ENVS4003 (B445)	Applied Weed Science (A)
	Elective
	Elective

Notes: Students are required to take one Humanities elective at the 2000 level or higher. (See page 241 for a list of courses and their designations.)

* Students who have completed an equivalent course at the diploma level with a mark of 70% or higher may take an elective in its place.

** HORT3007 (PS360) may be taken in any semester.

Recommended Electives:

A minimum of 3 electives must be chosen from this list.

BIOL2004 (B270)	Structural Botany
ENGN3015 (AE370)	Irrigation and Drainage
ENVS1000 (ES202)	Basic Composting Skills (A) or
ENVS4004 (CS457)	The Science of Composting and its Application (A)
HORT2003 (PS290)	The British Garden
HORT3000 (ES370)	Environmental Processes & Natural Landscape Functions
HORT3001 (ES380)	Landscape Project Management
HORT3004 (PS330)	Greenhouse Crop Production & Floriculture (A)***
HORT3005 (PS335)	Landscape Plant Production (A)
HORT3006 (PS370)	Landscape Horticulture Work Program II
HORT4000 (ES470)	Urban Tree Management
HORT4002 (PS440)	Management of Specialized Turf
HORT4004 (PS460)	Landscape Horticulture Project II **
SPEC4010 (PS421)	Special Topics in Plant Science I (A)**
SPEC4011 (PS422)	Special Topics in Plant Science II (A)**
SOIL3001 (CS345)	Soil Conservation in Agriculture (A)
SPEC4007 (ES401)	Special Topics in Environmental Studies I (A)**
SPEC4008 (ES402)	Special Topics in Environmental Studies II (A)**

** These courses may be taken in any semester. Students are permitted to take no more than two Special Topics courses.

*** Students who complete HORT0201 (PS39) at the diploma level may not take HORT3004 (PS330) for credit.

BACHELOR OF TECHNOLOGY IN APPLIED SCIENCE (FIRST OFFERED 2005/2006)

This program results in the awarding of an ***Engineering Technology Diploma*** after successful completion of Year 2, and a ***Bachelor of Technology in Applied Science*** after successful completion of Year 4.

Under the auspices of a Memorandum of Understanding (MOU), graduates of the degree program are qualified to apply for direct admission into the Bachelor of Education degree in Technology Education offered by Acadia University. Any student planning to continue studies towards a teaching certificate should, in consultation with their Student Advisor, ensure that their program of study includes six courses from a second teachable subject area such as Biology, Chemistry, Economics, or Mathematics.

Students must complete the following courses to complete the requirements of the program:

CSCI1000 (MP222)	Computer Method
ECON1000 (EB110)	Principles of Microeconomics (A)
ENGL1000 (H113)	Composition
ENGN1001 (AE102)	Design and Graphics
ENGN1003 (AE120)	Properties and Mechanics of Materials
ENGN1004	Wood Construction Technology I
ENGN1005	Metal Construction Technology I
ENGN2001 (AE202)	Agricultural Machinery
ENGN2006 (AE260)	Surveying
ENGN2007	Fluid Power Technology
ENGN2008	Digital Electronics and Computer Interfacing
ENGN3001 (AE305)	Engineering Measurements and Controls
ENGN3009 (AE335)	Materials Handling and Processing
ENGN3018	Technology Modules
ENGN3019	Communications Technology
ENVS2000 (ES200)	Environmental Studies I
ENVS2001 (ES201)	Environmental Studies II

MATH1000 (MP100)	Calculus and Analytic Geometry I
MATH1001 (MP105)	Calculus and Analytic Geometry II
PHYS1002 (MP140)	Physics 1
RESM4000 (AE449)	Project Seminar I
RESM4001 (AE450)	Project Seminar II
	1 English Elective
	1 Social Studies Elective
	5 Technology Electives
	11 Electives

Recommended Syllabus

Year 1

Semester I

ECON1000	Principles of Microeconomics
ENGL1000	Composition
ENGN1001	Design and Graphics
ENGN1005	Metal Construction Technology I
MATH1000	Calculus & Analytic Geometry I

Semester II

ENGN1003	Properties & Mechanics of Materials
ENGN1004	Wood Construction Technology I
ENGN2001	Agricultural Machinery
MATH1001	Calculus & Analytic Geometry II
PHYS1002	Physics I

Year 2

Semester III

CSCI1000	Computer Methods
ENGN2006	Surveying
ENGN3009	Materials Handling & Processing
	*Elective**
	*Elective**

Semester IV

ENGN2007	Fluid Power Technology
ENGN2008	Digital Electronics & Computer Interfacing
ENGN3001	Engineering Measurements & Controls
	*Elective**
	*Elective**

Confer Engineering Technology Diploma upon successful completion of Year 2.

Year 3

Semester V

ENGN3019	Communications Technology
ENVS2000	Environmental Studies I
	Elective
	Elective
	Elective

Semester VI

ENGN3018	Technology Modules
ENVS2001	Environmental Studies II
RESM4000	Bio-Environmental Systems Management Project-Seminar I
	Elective
	Elective

Year 4

Semester VII

RESM4001	Bio-Environmental Systems Management Project-Seminar II
	Elective
	Elective
	Elective
	Elective

Semester VIII

Elective
Elective
Elective
Elective
Elective

Note: * indicates that two of the four electives in Year 2 must be from the list of Technology Electives

The following lists contain courses qualifying as electives in the designated study areas required of the program. It is the student's responsibility to ensure that any prerequisite requirements for taking any of the courses listed are met.

Technology Electives

ENGN2000 (AE200)	Environmental Impacts and Resource Management (A)
ENGN2002 (AE204)	Introduction to Systems Analysis
ENGN2004 (AE215)	Aquacultural Environment (A)
ENGN2009	Metal Construction Technology II
ENGN2010	Wood Construction Technology II
ENGN3003 (AE311)	Technology for Precision Agriculture
ENGN3007 (AE320)	Structures and their Environment
ENGN3010 (AE340)	Soil and Water (A)
ENGN3013 (AE360)	Aquacultural Engineering (A)
ENGN3016 (AE380)	Engineering Economy
ENGN4000 (AE410)	Water and Water Quality Management (A)

Social Studies Electives

CMMT3000	Communication Theory and Skills**
ECON1001 (EB255)	Principles of Macroeconomics
EXTE3000 (H320)	Extension Education in the Rural Community
EXTE3001 (H321)	Leadership Development and the Social Action Process
GEOG1000 (H170)	Introductory Human Geography
GEOG3000 (H370)	Rural Geography**
HIST1000	Introduction to Canadian History I: 1000–1867
HIST1001	Introduction to Canadian History II: 1867–present
HIST3000 (H301)	Rural History**
PHIL3000 (H350)	Environmental and Agricultural Ethics
POLS1000	Introduction to Political Science
POLS1001	Structure and Function of Government
SOCI1000	Introductory Sociology
SOCI1001	Introductory Sociology II
SOCI3000	Rural Sociology

Note: **indicates that students intending to get their B.Ed. (Technology Education) degree *must* take one of these electives to meet provincial teacher licensing requirements. All the 3000-level Social Studies courses have prerequisites.

English Electives

ENGL1001 (H101) The Novel
ENGL1002 (H102) Nature in English and American Literature
ENGL3000 (H310) Literature of Atlantic Canada

ENGINEERING DIPLOMA

The Engineering Diploma program is the 22-course Associated Universities program given in conjunction with Dalhousie University's Faculty of Engineering. Students who successfully complete this program at NSAC receive an Engineering Diploma.

As Dalhousie University and the Associated Universities (AUs) form a unified system of engineering education, all diploma graduates from the AUs are guaranteed admission to Dalhousie. Students at the AUs will normally apply to disciplines at Dalhousie at the end of their first year in engineering since some discipline-specific courses are required in Year 2. They will be granted placeholder status on the basis of their averages and the availability of seats in the discipline. These placeholders will be assured continuance if the standards for promotion are met by the student at the AU in Year 2. Placeholders are valid for one year, although holders may reapply. Students are free to apply for transfer to Dalhousie before completion of the engineering diploma, subject to Dalhousie's course transfer regulations — this is an important consideration for those requiring discipline-specific courses not offered at a particular AU. 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:

- all courses specified in the syllabus of courses
- at least 22 semester courses
- at least 11 courses at NSAC, including 6 of the last 10 required courses.

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

Syllabus

Year 1

Semester I

CHEM1000 (CS101)	General Chemistry I
ENGL1002 (H102)*	Nature in English and American Literature
ENGN1001 (AE102)	Design and Graphics
MATH1000 (MP100)	Calculus and Analytic Geometry I
PHYS1002 (MP140)	Physics I

Semester II

CHEM1001 (CS102)	General Chemistry II
ENGN1002 (AE110)	Statics
MATH1001 (MP105)	Calculus and Analytic Geometry II
PHYS1003 (MP145)	Physics II
	Humanities*

Year 2

Semester III

CSCI2000 (MP220)	Computer Science
ENGN3000 (AE300)	Electric Circuits
	Discipline-specific
	Discipline-specific
	Discipline-specific
	Discipline-specific

Semester IV

MATH2001 (MP236)	Differential Equations
STAT2001 (MP212)	Probability & Statistics for Engineering
	Discipline-specific
	Discipline-specific
	Discipline-specific
	Discipline-specific

Note: The following discipline-specific courses are required for each engineering discipline:

Engineering Diploma Program – Required Discipline-Specific Courses

Semester III

Biosystems (Agricultural)	ENGN2005 Dynamics	CHEM2000 Organic Chemistry I	BIOL1000 Botany	Humanities
Chemical	ENGN2000 Envmtl. Impacts & Resource Mgt.	ENGN3002 Thermodynamics	MATH2000 Multivariable Calculus	CHEM2000 Organic Chemistry I
Civil	ENGN20005 Dynamics	ENGN3002 Thermodynamics	MATH2000 Multivariable Calculus	Humanities
Electrical	ENGN3004 Digital Circuits	ENGN3002 Thermodynamics	MATH2000 Multivariable Calculus	Humanities
Environmental	ENGN2000 Envmtl. Impacts & Resource Mgt	CHEM2000 Organic Chemistry I	BIOL1000 Botany	Humanities
Industrial	ENGN2005 Dynamics	ENGN3002 Thermodynamics	MATH2000 Multivariable Calculus	Humanities
Mechanical	ENGN2005 Dynamics	ENGN3002 Thermodynamics	Humanities	Humanities
Metallurgical	ENGN2005 Dynamics	ENGN3002 Thermodynamics	MATH2000 Multivariable Calculus	Humanities
Mining	ENGN2005 Dynamics	ENGN3002 Thermodynamics	MATH2000 Multivariable Calculus	Humanities

Semester IV

Biosystems (Agricultural)	ENGN3006 Strength of Materials	ENGN3011 Fluid Mechanics	ENGN3016 Engineering Economy	BIOL1001 Zoology
Chemical	ENGN3005 Fund. of Chem. Engineering	ENGN3011 Fluid Mechanics	ENGN3016 Engineering Economy	Humanities
Civil	ENGN3006 Strength of Materials	ENGN3011 Fluid Mechanics	ENGN3016 Engineering Economy	GEOL2000 Intro. to Geology
Electrical	MATH3000 Applied Linear Algebra	CSCI3000 Data Structures & Num. Methods	ENGN3008 Circuit Analysis	ENGN3017 Design Project
Environmental	GEOL2000 Intro. to Geology	ENGN3011 Fluid Mechanics	ENGN3016 Engineering Economy	BIOL1001 Zoology
Industrial	ENGN3006 Strength of Materials	ENGN3011 Fluid Mechanics	ENGN3016 Engineering Economy	Humanities
Mechanical	ENGN3006 Strength of Materials	ENGN3011 Fluid Mechanics	ENGN3016 Engineering Economy	ENGN3017 Design Project
Metallurgical	ENGN3006 Strength of Materials	ENGN3011 Fluid Mechanics	ENGN3016 Engineering Economy	Humanities
Mining	ENGN3006 Strength of Materials	ENGN3011 Fluid Mechanics	ENGN3016 Engineering Economy	Humanities

Notes: Humanities may be any (H) course except FREN1000 (H130), FREN1001 (H131), SPAN1000 (H135), and SPAN1001 (H136). See page 241 for a list of courses and their designations.

Prior to graduation from Dalhousie University's Faculty of Engineering, students must complete two writing courses; ENGL1000 (H113), ENGL1001 (H101), ENGL1002 (H102), SOCI1000 (H160), and GEOG1000 (H170) are acceptable.

Prior to graduation from Dalhousie University's Faculty of Engineering, students must complete a Technical Communications course; ENGL1000 (H113), with components from ENGN1001 (AE102) and CSCI2000 (MP220), satisfies this requirement.

A Humanities course may only be used once to satisfy one of the above requirements.

Undergraduate Degree Programs

Biosystems (Agricultural) Engineering and Environmental Engineering

These two disciplines of engineering are taught and administered jointly by the Engineering Department of NSAC and the Biological Engineering Department, Dalhousie University's Faculty of Engineering. They are both co-operative programs but, unlike programs of other engineering disciplines, they are based on both biological and engineering science principles. This makes it practical for students to transfer after Year 1 of the B.Sc.(Agr.) program into Year 2 of these engineering programs.

Students in these disciplines who complete the two-year engineering diploma enter Dalhousie University's Faculty of Engineering in year three and can then return to NSAC in Semester VII to study specialized Agricultural Engineering, Agricultural, Aquacultural, and Environmental Science courses.

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

PRE-VETERINARY MEDICINE

Students prepare to enter the program leading to a 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 application for admission to the Atlantic Veterinary College. It is the student's responsibility to ensure that 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:

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

Science courses will normally have a laboratory component.

Recommended Syllabus

Year 1

Semester I

AGRI1000 (IN100)	Agricultural Ecosystems* (A) ***DE**
BIOL1000 (B100)	Botany
CHEM1000 (CS101)	General Chemistry I
ENGL1000 (H113)	Composition
MATH1000 (MP100)	Calculus & Analytic Geometry I

Semester II

BIOL1001 (B110)	Zoology
CHEM1001 (CS102)	General Chemistry II
ECON1000 (EB110)	Principles of Microeconomics* (A) ***DE**
ENGL1001 (H101)	The Novel
MATH1001 (MP105)	Calculus & Analytic Geometry II*

Year 2

Semester III

ANSC2000 (AS200)	Animal Agriculture I* (A)
CHEM2000 (CS201)	Organic Chemistry I
GENE2000 (B240)	Genetics I
PHYS**	Physics or
STAT2000 (MP210)	Introduction to Statistics
	Humanities/SS Elective***

Semester IV

BIOL2006 (AS230)	Mammalian Physiology*
CHEM3001 (CS302)	Biochemical Pathways*
MICR2000 (B225)	Microbiology
PHYS**	Physics or
STAT2000 (MP210)	Introduction to Statistics
	Humanities/SS Elective***

* May substitute another elective; check requirements of specific options to complete a degree at NSAC.

** PHYS1000 (MP150) Physics for Life Sciences I or PHYS1002 (MP140) Physics

*** Any Humanities or Economics (ECON) or Management (MGMT) course will fit requirements of Humanities or Social Science Elective (see page 241 for a list of courses and their designations)

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.

GENERAL INFORMATION

Admission Requirements for Technician Programs Including Agricultural Business and Animal Science

High school graduation with university preparatory courses in Grade 12 English, Grade 11 Math, Grade 11 Chemistry, and either Grade 10 Biology or Integrated Science.

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% until August 2006. Effective September, 2006 a Honours diploma will be awarded to one who has attained an average of at least 80% and a High Honours diploma will be awarded to a student who has attained an average of at least 90%

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 enrol 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:

- Ontario Agricultural College, University of Guelph, Guelph, Ontario
- Eastern College, Newfoundland & Labrador
- Olds College, Olds, Alberta
- Lakeland College, Vermilion Campus, Vermilion, Alberta
- University of Maine
- Writtle College, England

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

Students wishing to do a technical exchange program at another institution must have that program approved by the NSAC Curriculum Committee. The request should be submitted to the Curriculum Committee by the student's program advisor or the Department Head. Upon approval of the program, the Chair of the Curriculum Committee will recommend to the Registrar which courses will be replaced in the student's program and which courses must be completed at the host institution. The programs must be laid out before the student leaves for the exchange institution.

Technician Programs

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

AGRN0201 (PS52)	Cropping Systems I: Cereal-Based Systems
CHEM0100 (CS14)	Agricultural Chemistry
ECON0100 (EB13)	Introductory Microeconomics
ENGL0100 (H10)	Technical Writing
MGMT0100 (EB10)	Accounting
SOIL0100 (CS12)	Principles of Soil Science
ANSC0100 (AS12)	Farm Workplace I *(Optional)*

Semester II

AGRN0202 (PS56)	Cropping Systems II: Forage-Based Systems
CSCI0100 (MP14)	Computational Methods
ECON0101 (EB12)	Introductory Macroeconomics
MGMT0101 (EB11)	Applied Accounting & Taxation
MGMT0103 (EB41)	Business Law
SOIL0200 (CS13)	Soil Management

Year II

Semester III

ANSC0103 (AS16)	Farm Animal Production I
ANSC0104 (AS18)	Farm Animal Biology I
MGMT0102 (EB40)	Agricultural Marketing
MGMT0201 (EB65)	Business Project
MGMT2003 (EB340)	Farm Management (A)
ANSC0100 (AS12)	Farm Workplace I *(Optional)*

Semester IV

ANSC0109 (AS66)	Farm Animal Production II
ANSC0110 (AS68)	Farm Animal Biology II
ECON2002 (EB220)	Production Economics (A)
MGMT0200 (EB42)	Applied Farm Management
MGMT0201 (EB65)	Business Project
	*Humanities Elective**

Agricultural Business with a Minor in Plant Science

Year I

Semester I

AGRN0201 (PS52)	Cropping Systems I: Cereal-Based Systems
CHEM0100 (CS14)	Agricultural Chemistry
ECON0100 (EB13)	Introductory Microeconomics
ENGL0100 (H10)	Technical Writing
MGMT0100 (EB10)	Accounting
SOIL0100 (CS12)	Principles of Soil Science
ANSC0100 (AS12)	Farm Workplace I *(Optional)*

Semester II

AGRN0202 (PS56)	Cropping Systems II: Forage-Based Systems
CSCI0100 (MP14)	Computational Methods
ECON0101 (EB12)	Introductory Macroeconomics
MGMT0103 (EB41)	Business Law
MGMT0101 (EB11)	Applied Accounting and Taxation
SOIL0200 (CS13)	Soil Management

Year 2

Semester III

ANSC0103 (AS16)	Farm Animal Production I
BIOL0200 (B43)	Entomology
HORT2000 (PS200)	Vegetable Production (A)[1]
MGMT0102 (EB40)	Agricultural Marketing
MGMT0201 (EB65)	Business Project
MGMT2003 (EB340)	Farm Management (A)
	*Humanities Elective**

Semester IV

AGRN0200 (PS49)	Potato Production[1]
BIOL0101 (B40)	Plant Pathology
ECON2002 (EB220)	Production Economics (A)
MGMT0200 (EB42)	Applied Farm Management
MGMT0201 (EB65)	Business Project
PLSC0203 (PS76)	Plant Products Physiology

[1] *May substitute HORT0202 (PS43) or HORT0203 (PS44) if timetable permits.*

(See page 241 for a list of courses and their designations.)

Agricultural Business with a Minor in Agricultural Engineering

Year 1

Semester I

CHEM0100 (CS14)	Agricultural Chemistry
ECON0100 (EB13)	Introductory Microeconomics
ENGL0100 (H10)	Technical Writing
ENGN1000 (AE101)	Computer Aided Graphics and Projection
MGMT0100 (EB10)	Accounting
SOIL0100 (CS12)	Principles of Soil Science
ANSC0100 (AS12)	Farm Workplace I *(Optional)*

Semester II

CSCI0100 (MP14)	Computational Methods
ECON0101 (EB12)	Introductory Macroeconomics
MGMT0101 (EB11)	Applied Accounting and Taxation
MGMT0103 (EB41)	Business Law
SOIL0200 (CS13)	Soil Management
	*Humanities Elective**

Year 2

Semester III

AGRN0201 (PS52)	Cropping Systems I: Cereal-Based Systems
ANSC0103 (AS16)	Farm Animal Production I
MGMT0102 (EB40)	Agricultural Marketing
MGMT0201 (EB65)	Business Project
MGMT2003 (EB340)	Farm Management (A)
	Elective

Semester IV

AGRN0202 (PS56)	Cropping Systems II: Forage-Based Systems
ECON2002 (EB220)	Production Economics (A)
ENGN0101 (AE38)	Horticultural Engineering
ENGN0103 (AE52)	Agricultural Power Systems
ENGN2001 (AE202)	Agricultural Machinery
MGMT0200 (EB42)	Applied Farm Management
MGMT0201 (EB65)	Business Project

(See page 241 for a list of courses and their designations.)

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. Students interested in working with lab or companion animal species should consider the Animal Health Technology program.

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.

The number of students accepted into the program is limited. The selection process includes a written questionnaire, required of all students, and may include an interview either in person or by telephone. Applications will be accepted until April 1. Students applying after that date will be considered only if space still exists.

Assuming published academic standards are met, acceptance is based primarily on an assessment of whether the student's goals are compatible with the objectives of the program. Priority will be given to students who have previous experience with farm animals and/or on commercial farms.

Individuals accepted to the program must be capable of working with all species of farm animals and in farm units on a regular basis. Students who are not able to meet these requirements may not be able to continue in the program. Protective clothing and footwear is required and appropriate vaccinations may be needed. Details will be sent to students on acceptance.

Syllabus[1]

Year 1

Semester I

ANSC0100 (AS12)	Farm Workplace I
ANSC0101 (AS13)	Farm Animal Production & Practices I
ANSC0105 (AS20)	Farm Animal Breeding
ANSC0107 (AS26)	Farm Animal Biology & Practices I
ENGL0100 (H10)	Technical Writing
SOIL0100 (CS12)	Principles of Soil Science

Semester II

ANSC0102 (AS14)	Farm Animal Production & Practices II
ANSC0106 (AS22)	Farm Workplace II
ANSC0108 (AS27)	Farm Animal Biology and Practices II
ANSC0111 (AS65)	Project-Seminar
CSCI0100 (MP14)	Computational Methods
SOIL0200 (CS13)	Soil Management

Year 2

Semester III

AGRN0201 (PS52)	Cropping Systems I: Cereal-Based Systems
ANSC0200 (AS76)	Farm Animal Production III
ANSC0201 (AS77)	Farm Animal Production III Practices
	Economics Elective[2]
	Elective[3]

Semester IV

AGRN0202 (PS56)	Cropping Systems II: Forage-Based Systems
ANSC0202 (AS86)	Farm Animal Production IV
ANSC0203 (AS87)	Farm Animal Production IV Practices
	Economics Elective[2]
	Elective[3]

Students should consult with the Program Coordinator prior to choosing electives.

Technician Programs

[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 Plant and Animal Sciences Department.

[2] Students must choose two of the following four Management courses: MGMT0100 (EB10), MGMT2003 (EB340) (offered in the Fall semester), MGMT0101 (EB11), and MGMT0103 (EB41) (offered 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. Students should consult with the program coordinator prior to choosing electives and apply to the Head of the Department of Plant and Animal Sciences to have courses approved as electives.

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, and with the practice of Environmental Horticulture and Plant Science. 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. Until August 2006, 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%. Effective September 2006, a High Honours diploma will be awarded to a student who has attained an average of at least 90%, and an Honours diploma will be awarded to one who has attained an average of at least 80%.

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

ANIMAL HEALTH

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.

Most AHT graduates from NSAC find employment in small-animal practices. The main thrust of the program is therefore towards companion animals. The limited livestock component of the AHT Program is designed to help those graduates who choose to work in mixed practices and those who wish to develop their clinical skills in farm animal medicine.

Admission Requirements

High school graduation with pass marks and an average of at least 60% in Biology, Chemistry, English, Math (Pre-Calculus Mathematics), and one other course, all at the following provincial levels: New Brunswick 120, 121; Newfoundland & Labrador Academic 3 (70% required in Math 3200); Nova Scotia Academic 12 (70% required in Mathematics 12 if Pre-Calculus Mathematics is not taken); Prince Edward Island Academic XII. The selection process includes a full day of interviews and orientation at NSAC during February, March and April. Applications will be accepted between January 2 and February 28.

Syllabus

Year 1

Semester I

AHVT0100 (AS60) Animal Nursing – Clinical Practices I
ANSC2000 (AS200) Animal Agriculture I (A)
BIOL0100 (B15) Animal Anatomy
BIOL2000 (B200) Cell Biology
CHEM0100 (CS14) Agricultural Chemistry
ENGL0100 (H10) Technical Writing

Semester II

AHVT0101 (AS61)	Animal Nursing – Clinical Practices II
ANSC2003 (AS241)	Companion Animal Behaviour
BIOL2006 (AS230)	Mammalian Physiology
CSCI0100 (MP14)	Computational Methods
MICR2000 (B225)	Microbiology
	Elective

Year 2

Semester III

AHVT0200 (AS62)	Animal Nursing – Clinical Practices III
AHVT0202 (AS24)	Principles of Disease
AHVT0204 (AS37)	Laboratory Animal Care I
AHVT0205 (AS39)	Veterinary Lab Techniques I
AHVT0206 (AS40)	Support Services in Veterinary Practice

Semester IV

AHVT0201 (AS63)	Animal Nursing – Clinical Practices IV
AHVT0203 (AS36)	Principles of Pharmacology
AHVT0207 (AS49)	Veterinary Lab Techniques II
ANSC3001 (AS320)	Animal Health (A)
CMMT0100 (H45)	Veterinary Practice Communications

Year 3

Semester V (Summer-Fall)

AHVT0301 (AS99)	Practicum – Animal Health Technology

Semester VI

AHVT0302 (AS64)	Animal Nursing – Clinical Practices V
AHVT0303 (AS59)	Veterinary Lab Techniques III
AHVT0304 (AS95)	Animal Health Technology Project
AHVT0305 (AS71)	Laboratory Animal Care II

ENVIRONMENTAL HORTICULTURE

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

Admission Requirements

High school graduation with pass marks and an average of at least 60% in Biology, English, Math, and one other course, all at the following provincial levels: New Brunswick 120 or 121; Newfoundland & Labrador Academic 3; Nova Scotia 441 or 442; Prince Edward Island Academic XII. Additionally, the applicant must have passed Grade 11 Chemistry. Applicants may be required to attend a selection interview.

Syllabus

Year 1

Semester I

BIOL0200 (B43)	Entomology
CSCI1000 (MP222)	Computer Methods
HORT0100 (ES60)	Landscape Plants I
HORT0102 (PS47)	Turfgrass Production and Management
HORT0103 (PS50)	Landscape Horticulture I
SOIL0100 (CS12)	Principles of Soil Science

Semester II

BIOL0101 (B40)	Plant Pathology
BIOL0102 (PS45/B41)	Plant Physiology & Stress Management
BIOL0103 (B46)	Weed Science
ENGN0101 (AE38)	Horticultural Engineering
HORT0101 (ES61)	Landscape Plants II
SOIL0200 (CS13)	Soil Management

Spring Session

HORT0206 (PS70)	Landscape Techniques – 12 weeks

Year 2

Semester III

ENGL0100 (H10)	Technical Writing
ENGN0100 (AE14)	Surveying
HORT0204 (ES62)	Landscape Plants III
HORT0207 (PS71)	Arboriculture
	Elective
	Elective
	Elective

Semester IV

CMMT0101 (H60)	Communication Skills
MGMT2000 (H140)	Human Resource Management
	Elective
	Elective
	Elective
	Elective

Recommended Electives:

A minimum of five of the seven electives must be chosen from this list.

ENGN1000 (AE101)	Computer Aided Graphics and Projection
ENGN0102 (AE46)	Soil and Water Resources Management
ENGN1004	Wood Construction Technology I
HORT0200 (PS38)	Nursery Crop Production
HORT0201 (PS39)	Greenhouse Crop Management
HORT0202 (PS43)	Small Fruit Crops
HORT0203 (PS44)	Tree Fruit Crops
HORT0205 (PS51)	Residential Landscape Design and Construction
HORT0208 (PS72)	Landscape Maintenance
HORT0209 (PS73)	Landscape Horticulture II
HORT0210 (PS74)	Landscape Design and Construction
MGMT0100 (EB10)	Accounting
MGMT0103 (EB41)	Business Law
PLSC0200 (PS55)	Plant Propagation
PLSC0201 (PS90)	Technology Project
PLSC0203 (PS76)	Plant Products Physiology

Technology Programs

PLANT SCIENCE TECHNOLOGY

This two-year program takes an entrepreneurial approach to agriculture, stressing a combination of practical skills and good basic knowledge; students learn in the context of social and environmental responsibility using sustainable production systems. Graduates will be skilled in problem-solving, diagnostics and whole-system analysis.

The first two semesters are common for the three areas of concentration (ornamental horticulture, edible horticulture and agronomy). This allows the student flexibility in choosing options and selecting courses in the second year. The first-year courses provide students with a strong background in plant production techniques and small business practices preparing them for their required summer work experience in PS99 Plant Science Techniques. In their second year of study, students concentrate in their area of specialization, allowing them to tailor their education by selecting from more specialized courses.

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.

Admission Requirements

High school graduation with university preparatory courses in Grade 12 English, Grade 11 Mathematics, Grade 11 Chemistry, and either Grade 10 Biology or Integrated Science.

Syllabus

Year 1

Semester I

BIOL0200 (B43)	Entomology
ENGL0100 (H10)	Technical Writing
MGMT0100 (EB10)	Accounting
PLSC0100 (PS35)	Utilization of Plant Resources
PLSC0200 (PS55)	Plant Propagation
SOIL0100 (CS12)	Principles of Soil Science

Semester II

BIOL0101 (B40)	Plant Pathology
BIOL0102 (PS45)	Plant Physiology and Stress Management
BIOL0103 (B46)	Weed Science
CSCI1000 (MP222)	Computer Methods
MGMT1000 (EB225)	Small Business Entrepreneurship
MGMT2000 (H140)	Human Resource Management

Semester III (Spring/Summer)

PLSC0202 (PS99)	Plant Science Techniques

Semester IV and Semester V

After the core 12 courses are taken in the first year, students must choose 12 more courses to complete the diploma. Each student chooses an area of concentration from the three shown below. Each area has 7 core courses, including the summer course PLSC0202 (PS99) Plant Science Techniques. The student then chooses 5 more elective courses (at least 3 from the "recommended electives" group) to complete the 24 credits.

Technology Programs

Ornamental Horticulture

Semester IV

HORT0100 (ES60)	Landscape Plants I
HORT0103 (PS50)	Landscape Horticulture I
HORT0201 (PS39)	Greenhouse Crop Management
	Elective
	Elective
	Elective

Semester V

ENGN0101 (AE38)	Horticultural Engineering
HORT0101 (ES61)	Landscape Plants II
HORT0200 (PS38)	Nursery Crop Production
	Elective
	Elective

Edible Horticulture

Semester IV

AGRN0201 (PS52)	Cropping Systems I: Cereal-Based Systems
ANSC0100 (AS12)	Farm Workplace I
HORT2000 (PS200)	Vegetable Production (A)
HORT0202 (PS43)	Small Fruit Crops
	Elective
	Elective

Semester V

AGRN0200 (PS49)	Potato Production
HORT0203 (PS44)	Tree Fruit Crops
	Elective
	Elective
	Elective

Agronomy

Semester IV

AGRN0201 (PS52)	Cropping Systems I: Cereal-Based Systems
ANSC0100 (AS12)	Farm Workplace I
ANSC0103 (AS16)	Farm Animal Production I
	Elective
	Elective
	Elective

Semester V

AGRN0200 (PS49)	Potato Production
AGRN0202 (PS56)	Cropping Systems II: Forage-Based Systems
ANSC0109 (AS66)	Farm Animal Production II
	Elective
	Elective

Recommended Electives:

ENGN0101 (AE38)	Horticultural Engineering
ENGN0103 (AE52)	Agricultural Power Systems
ENGN2001 (AE202)	Agricultural Machinery
HORT0102 (PS47)	Turfgrass Production and Management
HORT0204 (ES62)	Landscape Plants III
HORT2001 (PS210)	Principles of Organic Horticultural Crop Production (A)
MGMT0102 (EB40)	Agricultural Marketing
MGMT0103 (EB41)	Business Law
MGMT2003 (EB340)	Farm Management (A)
PLSC0203 (PS76)	Plant Products Physiology
PLSC1000 (PS147)	Farm Woodlot Management (A)
PLSC2000 (PS211)	Specialty Crops

or other courses approved by the Department of Plant & Animal Sciences.

Plant Science core courses from the other areas of concentration may also be used as recommended electives: HORT0100 (ES60), HORT0204 (ES61), HORT0200 (PS38), HORT0201 (PS39), HORT0202 (PS43), HORT0203 (PS44), AGRN0200 (PS49), HORT0103 (PS50), HORT2000 (PS200).

Technology Programs

TECHNOLOGY PROGRAMS ENTERED FROM TECHNICIAN PROGRAMS

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

A student who successfully completes all the requirements will be granted a Diploma of Technology. Until August 2006, a diploma with High Honours will be awarded to a student who has attained an average of at least 80%, and a diploma with Honours will be awarded to one who has attained an average of at least 75%. Effective September 2006, a diplomas with High Honours will be awarded to a student who has attained an average of at least 90% and a diploma with Honours will be awarded to one who has attained at average of at least 80%.

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 that would lead to a Diploma of Technology in Agricultural Technology. In order to satisfactorily complete the requirements for a Diploma of Technology in Agricultural Technology, a student must complete 12 approved courses, including a Technology Project, and earn an average of at least 60%.

Until August 2006 a diploma with Honours is awarded if an average of at least 75% is attained, including a mark of at least 75% on the Technology Project. A diploma with High Honours is awarded if an average of at least 80% is attained, including a mark of at least 80% on the Technology Project. Effective September 2006 a mark of 80% will be required on the Technology Project to receive an Honours diploma and a mark of 90% will be required on the Technology Project to receive a High Honours diploma.

The program of study including a Technology Project course (ANSC0300 (AS90), MGMT0302 (EB90), or PSC0201 (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, provided all prerequisites are met.

Farming Technology

This program helps students prepare for careers as farmers, on a self-employed basis or as managers on commercial farms. Students wishing to pursue studies leading to a Diploma of Technology in Farming Technology register for the first year of the Agricultural Business, Animal Science Technician or Plant Science Technology 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 Technology, a student must complete all required courses, the on-farm training, and 14 of the approved electives, and must fulfil the experience requirement.

Until August 2006, a diploma with High Honours will be awarded to a student who has attained an average of at least 80%, and a diploma with Honours will be awarded to one who has attained an average of at least 75%. For a diploma with Honours or High Honours to be awarded, the student's mark in the Farm Project must be at or above the average mark requirement for Honours or High Honours. Effective September 2006 a diploma with High Honours will

be awarded to a student who has attained an average of at least 90%, and a diploma with Honours will be awarded to one who has attained an average of at least 80%.

Syllabus

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

Year 1

Semester I

AGRN0201 (PS52)	Cropping Systems I: Cereal-Based Systems
ANSC0100 (AS12)	Farm Workplace I
CHEM10100 (CS14)	Agricultural Chemistry
MGMT0100 (EB10)	Accounting
MGMT0102 (EB40)	Agricultural Marketing
MGMT2003 (EB340)	Farm Management (A)

Semester II

AGRN0202 (PS56)	Cropping Systems II: Forage-Based Systems
CSCI0100 (MP14)	Computational Methods
ECON2002 (EB220)	Production Economics (A)
ENGN0103 (AE52)	Agricultural Power Systems
MGMT0101 (EB11)	Applied Accounting and Taxation
SOIL0200 (CS13)	Soil Management

Semester III

MGMT0301 (EB95) Practicum – Farming Technology, 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

MGMT0200 (EB42)	Applied Farm Management
MGMT0300 (EB72)	Farm Project
	14 Electives

Recommended Electives:

Semester I

ANSC0103 (AS16)	Farm Animal Production I
ANSC0104 (AS18)	Farm Animal Biology I
ANSC0200 (AS76)	Farm Animal Production III
BIOL0200 (B43)	Entomology
ECON0100 (EB13)	Introductory Microeconomics
ENGN0100 (AE14)	Surveying
ENGN1000 (AE101)	Computer Aided Graphics and Projection
HORT0201 (PS39)	Greenhouse Crop Management
HORT0202 (PS43)	Small Fruit Crops
HORT2000 (PS200)	Vegetable Production (A)
HORT2001 (PS210)	Principles of Organic Horticultural Crop Production (A)
PLSC0200 (PS55)	Plant Propagation
PLSC1000 (PS147)	Farm Woodlot Management (A)
	*Humanities Course**

Semester II or IV

AGRN0200 (PS49)	Potato Production
ANSC0109 (AS66)	Farm Animal Production II
ANSC0110 (AS68)	Farm Animal Biology II
ANSC0203 (AS87)	Farm Animal Production IV Practices
BIOL0101 (B40)	Plant Pathology
BIOL0102 (PS45/B41)	Plant Physiology and Stress Management
BIOL0103 (B46)	Weed Science
ECON0101 (EB12)	Introductory Macroeconomics
ENGN0101 (AE38)	Horticultural Engineering
ENGN1004	Wood Construction Technology
ENGN2001 (AE202)	Agricultural Machinery
HORT0200 (PS38)	Nursery Crop Production
HORT0203 (PS44)	Tree Fruit Crops
MGMT0103 (EB41)	Business Law
PLSC0203 (PS76)	Plant Products Physiology

(See page 241 for a list of courses and their designations.)

Introductory Studies Courses

Introductory Studies courses are designed to give potential students who fall below the College's entrance requirements the opportunity to enter NSAC programs. The one-semester courses, offered in the Fall and Winter semesters, consist of a collection of non-credit courses in Preparatory Chemistry, Mathematics, and Introductory Physics.

Applicants may, based on individual assessment, be admitted into Introductory Studies courses. The assessment includes educational background, life experience and personal motivation. Students with sufficient academic background may be eligible to take some university credit courses along with their required Introductory Studies courses. Applicants may also be admitted into Introductory Studies courses as prerequisites for another course.

For detailed course descriptions of the following Introductory Studies courses, please see Course Descriptions, Introductory Studies:

CHEM0050 (CS89)	Preparatory Chemistry
MATH0050 (MP85)	Functions
PHYS0050 (MP90)	Introductory Physics

For more information, please contact the Registrar's Office (reg@nsac.ns.ca).

Certificate Programs

CERTIFICATE OF SPECIALIZATION IN ORGANIC AGRICULTURE

NSAC is now offering a new Certificate program in Organic Agriculture. This initiative will provide students with an opportunity to specialize in the expanding area of organic agriculture. The **Certificate of Specialization in Organic Agriculture** will enable students to approach agriculture from their area of interest, to know they can be recognized for this accomplishment and to continue to take other courses in agriculture toward a degree. To date the total organic sector is about 1–2 % of agriculture overall. However, the employment opportunities are expected to increase in an industry that is growing at the rate of 20% per year. There are also opportunities for self-employment on smaller farms than might be profitable under conventional production. Any student who has successfully completed four of the eligible organic agriculture credit courses *(see list)* and has an overall average of at least 60% in these courses can apply to receive a Certificate of Specialization in Organic Agriculture. Two of the courses may be substituted with approved "organic" courses offered by external institutions (see below). These alternate courses will be taken on a Letter of Permission.

Eligible Courses:

AGRI1002 (IN202):	Transition to Organic Agriculture
AGRN1000 (PS202):	Organic Field Crop Management
ANSC1000 (AS202):	Organic Livestock Production
ENVS1000 (ES202):	Basic Composting Skills
HORT2001 (PS210):	Principles of Organic Horticulture

Note: Students will not be required to take the courses in any particular order. ENVS1000, AGRI1002 and HORT2001 are currently offered in the fall semester. ANSC1000 and AGRN1000 are currently offered in the winter semester.

Other institutions offering courses that may be taken within the certificate:

1. University of British Columbia [Key Indicators of Sustainable Agriculture - UBC Agroecology 361],
2. University of Saskatchewan [Weeds & Organic Systems],
3. University of Manitoba [Dryland Cropping Systems],
4. University of Guelph [Marketing in Organic Agriculture], and
5. Laval Université [French translation of the following NSAC courses – ES202, IN202, PS202 and AS202]*

* A student cannot receive credit for taking the same course in both French and English.

For more information or to apply for the Certificate, contact the Centre for Continuing & Distance Education (902-893-6666).

Description of Courses – Undergraduate and Technical

The course descriptions are grouped according to discipline and are in alphabetical and numerical order. NSAC has implemented a new course numbering system for the 2004/2005 academic year. Course descriptions include the new course number, the old course number in brackets, the course title, and any applicable course designation(s). The course designations will assist students in determining program requirements as described in the program syllabi.

Designations include: (A) for Agriculture Courses, (H) for Humanities Courses, (AS) for Animal Science Courses, (PS) for Plant Science Courses, and (PDN) for Plant Science Production Courses.

Students who require a course for their program are given priority over students who are using the course as an elective. Enrolment in some cases may be restricted to specific program groups or may have maximum enrolment.

Course information indicates the weekly instructional requirement in hours per week. Thus "Winter: 3 lecs, 1 tutorial, and 3 labs" would indicate that the student would attend three hours of lecture, one hour of tutorial, and three hours of lab in the Winter semester. It does NOT indicate how many separate instructional sessions there are. For example, the three lecture hours may be three one-hour sessions, or two one-and-a-half-hour sessions.

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

Corequisite: A course which must be taken concurrently with another course which lists it as a corequisite.

Prerequisite: A course which must be taken prior to the course which lists it as a prerequisite.

Preparatory: A course which is recommended to be taken prior to the course which lists it as a preparatory. This is particularly important for students without sufficient background information in that area.

Note: Students may be removed from courses for which they do not have prerequisites. Students who feel that they can successfully complete a course but do not have the required prerequisites or corequisites may seek the permission of the instructor to register for the course. Prerequisite waivers can be granted only by the instructors and must be submitted in writing, with the instructor's signature, to the Registry.

Description of Courses – Undergraduate and Technical

AGRICULTURAL

AGRI1000 (IN100): Agricultural Ecosystems (A) *DE

Coordinator: **Prof. Caldwell**

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. There will be a farm tour for all AGRI1000 students on September 22, 2004, from 1 pm until 7 pm. The course will expose students to issues and raise questions to be considered during the remainder of their undergraduate careers.

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.

*DE – also offered as a web-based distance education course.

AGRI1001 (IN101): Food Security (A) *DE

Coordinator: **Prof. Fredeen**

This course is structured similarly to AGRI1000. 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 careers.

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.

*DE – only offered as a web-based distance education course.

AGRI1002 (IN202): Transition to Organic Agriculture (A) *DE

Instructor: **TBA**

This course is recommended for students looking for a general introduction to organic agriculture. The course consists of five stand-alone modules: Why organic?, Organic Certification, Planning the Farm System, Transition to Organic Crop Production, and Transition to Organic Livestock Production. Throughout the course students will be encouraged to participate in discussion groups and use the organic information resources currently available over the Internet.

Fall semester.

*DE – only offered as a web-based distance education course.

AGRI1003 (H150): Agriculture Today (H)

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.

AGRI3000 (MP330): Agrometeorology

Instructor: Prof. Gordon

Prerequisite: PHYS1000 or PHYS1002

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 2005/2006.

AGRI4000 (IN400): Contemporary Issues in Agriculture (A)

Instructor: **Prof. Tennessen**

This course has limited enrollment.

Prerequisite: Third- or fourth-year standing

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, 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 2004/2005; offered every year beginning 2006/2007.

Description of Courses – Undergraduate and Technical

AGRONOMY

AGRN0200 (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.

AGRN0201 (PS52): Cropping Systems I: Cereal-Based Systems
Instructor: **Plant & Animal Sciences Faculty**
This course takes a systems approach to the study of crop and soil management in rotations involving the growing of the principle cereals, oilseeds, pulses and other grains and their relationship to the main vegetable cash crops in the region. Through a whole-farm approach over time, it studies environmentally and economically sustainable methods for cash crop and grain-based animal feed production. It stresses soil and water conservation and an understanding of principles and processes of the nutrient cycles which are critical to improving the food production environment. Students will gain a knowledge of grains in relation to people and the environment, from soil to shelf.
Fall semester – 3 lecs and 2 labs per week.

AGRN0202 (PS56): Cropping Systems II: Forage-Based Systems
Instructor: **Prof. Martin**
The second course in cropping systems focuses on the forage crops. Students will acquire the basic knowledge and skills for the management of forage crops within cropping systems in a socially and environmentally responsible manner. Soil and water conservation will be emphasized in the context of production agriculture. Production and management for sustainable yields of forage crops under conditions specific to Atlantic Canada will be emphasized. Students will develop investigative and critical thinking skills to evaluate forage publications and enable themselves to address production challenges as they arise.
Winter semester – 3 lecs and 2 labs per week.

AGRN1000 (PS202): Organic Field Crop Management (A, PS) *DE
Instructor: **TBA**
This course will introduce students to organic principles and practices applied to the production and management of field crops. The criteria for optimum yield and quality of field crops are presented within the context of organic farming principles, sustainable soil and nutrient management, and the requirements for organic certification. Five stand-alone modules provide a framework for study:
Soil and Field Management Practices: methods used in organic farming to build and maintain soil fertility, preserve soil structure, conserve and recycle nutrients, reduce weed pressure, and reduce outbreaks of pest and disease;
Nutrient Management Planning: how to optimize the efficiency of nutrient cycling, improve resource utilization, and minimize nutrient loss on the farm;
Forages: organic methods of production for pasture, hay, silage, cover crops or green manure;
Row Crops: organic methods of production of cereal row

crops (corn, sorghum), root crops (carrots, potatoes), seed legumes (soybean, peas, beans), and others (e.g., hemp); and Small Grains and Oilseeds: organic methods of production of winter-seeded grains (winter wheat, winter rye), spring-seeded grains (spring wheat, oats and barley), oilseeds (canola, flax) and others.
Winter semester.
*DE – only offered as a web-based distance education course.

AGRN3000 (PS300): Forage Crops (A,PDN)
Instructor: **Prof. Martin**
Prerequisite: AGRI1000
Preparatories: BIOL2002, BIOL2003
Study of principal 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.
Fall semester – 3 lecs and 2 labs per week.
Offered in alternate years; next offered in 2005/2006.

AGRN3001 (PS305): Grain Production (A, PDN)
Instructor: **Prof. Caldwell**
Prerequisites: AGRI1000, BIOL1000
Preparatory: BIOL2002
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 2004/2005.

AGRN3002 (PS325): Potato Production (A, PDN)
Instructor: **Prof. Asiedu**
Preparatory: BIOL2002
History, biosystematics, and ecophysiology of the crop are reviewed. Seed selection and manipulation, planting and crop management, post-harvest 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.

AGRN4000 (PS405): Agronomy (A, PS)
Instructor: **Prof. Caldwell**
Prerequisites: AGRN3000, AGRN3001, PLSC4000
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.

ANIMAL HEALTH TECHNOLOGY

AHVT0100 (AS60): Animal Nursing – Clinical Practices I

Instructor: **Prof. Ramsay**

This classroom and practical course introduces the Animal Health Technology (AHT) student to the profession and to the clinical environment. Classroom and practical topics introduced include: Safety in the Animal Clinic; Animal and Facilities Maintenance; Veterinary Hospital Routines and Procedures; Veterinary Medical Terminology; Veterinary Clinical Equipment; Disease and Disease Control; the AHT Profession; Metric-SI. This course enables the student to: perform certain procedures with clinical equipment; begin to use veterinary medical terminology; provide supervised care for small animals; maintain small animal facilities under supervision; describe principles of disease control and prevention; use Metric-SI in the veterinary medical context. Clinical equipment and procedures dealt with include: minor items such as the clinical thermometer, nail clippers, hair clippers, hypodermic syringe and needle; large items such as the autoclave, anaesthetic delivery system; procedures such as the small animal TPR; administration of medication by the oral, otic and ophthalmic routes; nail and hair grooming. Some topics are developed further in later courses of the Clinical Stream. Basic First Aid and WHMIS training is included.

Fall Semester – 3 lecs and 2 labs per week.

AHVT0101 (AS61): Animal Nursing – Clinical Practices II

Instructor: **Prof. Ramsay**

Prerequisites: AHVT0100, BIOL0100

This course continues the clinical topics introduced in AHVT0100 and develops them further; it also introduces new topics. Veterinary Medical Terminology is continued and greater proficiency is required. Drug administration techniques are developed in classroom and clinical sessions, including subcutaneous injection. Concepts and practice of sample collection are developed. Clinical equipment and procedures continue with: surgical instruments and equipment; radiography machine operation; preparation for anaesthetic induction and monitoring equipment; bandage and splint materials. Dose and dose-rate clinical calculations are introduced. The concepts of client education and counselling are introduced with assignments on common diseases and other topics. Nutrition as it applies to dogs and cats is introduced. This course enables the AHT student to function in various areas in the veterinary clinic as an assistant.

Winter semester – 3 lecs and 2 labs per week.

AHVT0200 (AS62): Animal Nursing – Clinical Practices III

Instructor: **Prof. Ramsay**

Prerequisite: AHVT0101

This course continues the clinical topics introduced in AHVT0100 and AHVT0101 and introduces more. Classroom and clinical topics include: procedures dealing with anaesthesia, drug administration and sampling; surgical preparation and assistance; radiography exposure and processing. Other classroom topics return to veterinary medical terminology, veterinary practice safety, and clinical calculations at an expected higher level of performance. Various less-often-performed medical procedures are dealt with. Client education as a basis for describing procedures and other topics is continued. This course enables the student to perform various procedures and counsel clients on a limited basis.

Fall semester – 4 lecs and 4 labs per week.

AHVT0201 (AS63): Animal Nursing – Clinical Practices IV

Instructor: **Prof. Ramsay**

Prerequisites: AHVT0202, AHVT0204, AHVT0200

This course continues clinical nursing topics introduced earlier in the Clinical Courses stream and develops them further as it introduces new procedures and topics. These topics include: cardiovascular shock and fluid therapy; anaesthetic emergencies; pain management; electrocardiography; and dental disease. Small animal nutrition is continued with nutritional management of disease state. Veterinary medical terminology is revisited with high expectations of student performance. Diseases of the eye are briefly dealt with. Sample collection for the external laboratory is dealt with primarily as it pertains to histopathology specimens. This course provides students with enough competence and awareness of background principles to enter the practicum/externship period ready to learn on the job and improve their performance under supervision.

Winter semester – 4 lecs and 4 labs per week.

AHVT0202 (AS24): Principles of Disease

Instructor: Prof. Ramsay

Prerequisites: BIOL0100, MICR2000, AHVT0100

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 examples 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 – 4 lecs per week.

Description of Courses – Undergraduate and Technical

AHVT0203 (AS36): Principles of Pharmacology
Instructor: **Prof. Ramsay**
Prerequisite: AVHT0200
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.

AHVT0204 (AS37): Laboratory Animal Care I
Coordinator: **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.

AHVT0205 (AS39): Veterinary Laboratory Techniques I
Coordinator: **Prof. Ramsay**
Prerequisite: MICR2000, CHEM0100
Corequisite: AHVT0202
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. Various aspects of microbes and parasites significant in animal disease are dealt with in the classroom. Performance in laboratory techniques should demonstrate observance of principles and good manual skills.
Fall semester – 4 lecs and 6 labs per week.

AHVT0206 (AS40): Support Services in Veterinary Practice
Instructor: **Prof. Ramsay**
Prerequisites: MATH0100, AVHT0100
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.
Fall semester – 3 lecs per week.

AHVT0207 (AS49): Veterinary Laboratory Techniques II
Coordinator: **Prof. Ramsay**
Prerequisites: AHVT0205, AHVT0202
Corequisite: AHVT0201
This course continues the general format of Laboratory Techniques I, concentrating on hematology, 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.

AHVT0300 (AS75): Animal Nursing and Clinical Procedures III
Instructor: **Prof. Ramsay**
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. Last offered 2004/2005.

AHVT0301 (AS99): Practicum – Animal Health Technology
Coordinator: **Prof. Ramsay**
Prerequisites: Completion of all courses in the first four semesters of the AHT program or permission of the Faculty of the Department of Plant and Animal Sciences.
Completion of the credit for AS99 is required for admission to the final semester courses of the AHT program. No percentage mark is given for this course but credit is awarded upon satisfactory completion of all components. The AHT practicum involves off-campus learning experiences in workplace settings. Part 1 is an externship conducted by the Atlantic Veterinary College (AVC) at the University of Prince Edward Island; Part 2 involves one or more other externships. The student must complete a veterinary practice externship at an approved location. The student may also complete another externship in a non-practice (institutional) setting.

Part 1: The AVC portion of the practicum is offered in the early part of the summer. Students attend this externship in two or more sections. Room and board during the externship and transportation to the AVC are the responsibility of the student. During this period, students are given training in clinical areas of the AVC Veterinary Teaching Hospital (VTH). Students work with and learn from AHTs and other paraprofessional staff. Evening and night shifts are a large part of the AVC externship. A certificate is awarded for successful completion of this component of the AHT practicum.

Part 2: The veterinary practice portion of the practicum involves an externship in an approved private veterinary practice. Students locate these from a list of available practices supplied by NSAC. A new practice located by the student may be approved. Student-trainees normally earn a salary on this portion of the practicum as they gain experience in a variety of clinical and other relevant skills.

Students who wish to complete externships at other locations in addition to that in veterinary practice may do so as part of this Practicum course.

AHVT0302 (AS64): Animal Nursing – Clinical Practices V
Instructor: **Prof. Ramsay**
Prerequisite: AHVT0201
Corequisite: AHVT0304
This course is a capstone or consolidation course in veterinary clinical procedures and in related nursing topics generally. All techniques and procedures from earlier clinical stream courses are re-evaluated and higher standards are expected. Many topics are dealt with on a mini-seminar basis. Client counselling continues to be stressed in student assignments and seminars. Students serve as teaching assistants for other students in clinical practical sessions of AHVT0201. Upon completion of this course the AHT student should be able to join the veterinary practice as a graduate AHT and perform to entry-level standard in clinical areas. The student should also be able to complete and pass the VTNE (PES) examination in appropriate (clinical) domains.
Winter semester – 4 lecs and 4 labs per week. First offered 2005/2006.

AHVT0303 (AS59): Veterinary Laboratory Techniques III
Coordinator: **Prof. Ramsay**
Prerequisite: AHVT0207
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 4 labs per week.

AHVT0304 (AS95): Animal Health Technology Project
Coordinator: **Prof. Ramsay**
Prerequisite/Corequisite: AHVT0301 or AHVT0300
This course is intended to give the student experience with project planning and execution. It also aims to refine the student's presentation skills to individuals and small groups. The product should be of value to the AHT Program, its students, or technicians in veterinary practice. Typical products include: educational materials in video or printable CD-ROM format; models or equipment that can be used in the program; surveys of employers and graduates. The student also prepares a poster board "sampler" and presents the final product to other students and staff members. During the semester, mini-seminars on various topics are used to help improve presentation skills.
Winter semester – 3 lecs and 1 tutorial per week.

AHVT0305 (AS71): Laboratory Animal Care II
Coordinator: **Prof. Ramsay**
Prerequisites: AHVT0204, AHVT0201
This course is designed to prepare 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 – 3 lecs and 3 labs per week.

Description of Courses – Undergraduate and Technical

ANIMAL SCIENCE

ANSC0100 (AS12): The Farm Workplace I
Instructors: **Dept. of Plant and Animal Sciences Staff**
Coordinator: **Mr. Nicholson**
Diverse aspects 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 Department of Plant and Animal Sciences.
Fall semester – 1 lec and 3 labs per week.

ANSC0101 (AS13): Farm Animal Production and Practices I
Instructors: **Dept. of Plant & Animal Sciences Faculty and Staff**
Coordinator: **Mr. Nicholson**
This course discusses the study of farm animals with the major emphasis on livestock production and management of meat animals. This will include growth, dairy, egg and broiler production, fur production, and livestock housing as it relates to the life cycles of farm animals. Farm animal welfare and its importance to everyday livestock production will also be discussed. The lab topics will emphasize meat and milk production as well as livestock handling, management skills, livestock measurements and evaluation, livestock records and their use on the farm. The practices will build on the concepts covered in lecture and lab and will enable the student to develop some competency in the husbandry skills necessary for working on livestock farms.
Available only to Animal Science Technician students.
Fall semester – 3 lecs, 2 labs and 6 hours practice per week.

ANSC0102 (AS14): Farm Animal Production and Practices II
Coordinator: **Mr. Nicholson**
Prerequisite: ANSC0101
A study of farm animals with the major emphasis on livestock feeds and feeding technology, farm animal reproduction and animal health as related to the life cycle of farm animals and the principles of farm animal production. Diverse aspects of farm animal production will be covered. The practices will require Animal Science Technician students to expand on the concepts covered in the lectures and to further develop competency in their livestock management skills. These skills will include livestock measurements and evaluation, data collection and recording, observation, and facilities maintenance.
Available only to Animal Science Technician students.
Winter semester – 3 lecs, 2 labs and 6 hours practice per week.

ANSC0103 (AS16): Farm Animal Production I
Instructors: **Dept. of Plant and Animal Sciences Faculty**
Coordinator: **Mr. Nicholson**
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 livestock handling, safety around livestock, stockmanship and management skills, livestock measurements and evaluation, data collection, livestock records, and environmental aspects. 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.

ANSC0104 (AS18): Farm Animal Biology I
Instructors: **Dept. of Plant and Animal Sciences Faculty**
Coordinator: **Mr. Nicholson**
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.

ANSC0105 (AS20): Farm Animal Breeding
Instructor: **Prof. Patterson**
The course covers the basic principles of Mendelian and quantitative genetics as they apply to farm animal production. Breeds and improvement programs are discussed for each species. Specific topics include selection procedures and recording programs, computer simulation of breeding programs, and applications of biotechnology.
Fall semester – 3 lecs and 2 labs per week.

ANSC0106 (AS22) : The Farm Workplace II
Instructors: **Dept. of Plant and Animal Sciences Staff**
Coordinator: **Mr. Nicholson**
Prerequisite: ANSC0100
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 standard operating procedures, 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 related to safety and maintenance. The skills may be learned on campus, on approved farms, or at other institutions pending approval by the Department of Plant and Animal Sciences.
Winter semester – 1 lec and 3 labs per week.

ANSC0107 (AS26): Farm Animal Biology and Practices I
Instructors: **Dept. of Plant and Animal Sciences Faculty and Staff**
Coordinator: **Mr. Nicholson**
A study of Farm Animal Biology with major emphasis on fundamental principles of anatomy, reproductive and environmental physiology. The course will enable students to describe the biological life cycles of farm animals as they relate to farm animal production. The practices will require Animal Science Technician students to expand on the biological concepts covered in the lectures. The practices will also emphasize detailed lab instruction in anatomy and structure, biological features of the productive animal as well as measurements, evaluation, observations and environmental monitoring.
Available only to Animal Science Technician students.
Fall semester – 3 lecs, 2 labs and 6 hours practice per week.

ANSC0108 (AS27): Farm Animal Biology and Practices II
Instructors: **Dept. of Plant and Animal Sciences Faculty and Staff**
Prerequisite: ANSC0107
The major emphasis is on the fundamental principles of animal nutrition and digestive physiology, reproductive physiology and animal health. Diverse aspects of animal biology will be covered, but the focus will be on providing a general background, rather than on specific types of livestock production. The practices will require Animal Science Technician students to expand on the biological concepts covered in the lectures and to develop competency in the skills necessary for an application of biological principles to livestock management practices. Lab topics will emphasize detailed instruction in anatomy and structure, biological features of the productive animal, livestock measurements and evaluation, observations, and environmental monitoring.
Available only to Animal Science Technician students.
Winter semester – 3 lecs, 2 labs and 6 hours practice per week.

ANSC0109 (AS66): Farm Animal Production II
Instructors: **Dept. of Plant and Animal Sciences Staff**
Coordinator: **Mr. Nicholson**
Prerequisite: ANSC0103
A study of farm animals with the major emphasis on livestock 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.

ANSC0110 (AS68): Farm Animal Biology II
Instructors: **Dept. of Plant and Animal Sciences Staff**
Coordinator: **Mr. Nicholson**
Prerequisite: ANSC0104
The major emphasis is 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.

ANSC0111 (AS65): Project-Seminar
Coordinators: **Profs. Firth and Miller**
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.

ANSC0200 (AS76): Farm Animal Production III
Instructors: **Dept. of Plant and Animal Sciences Staff**
Coordinator: **Mr. Nicholson**
Prerequisites: ANSC0101, ANSC0102, ANSC0107, ANSC0109, ANSC0110
A detailed study of selected areas in farm animal production, with the major emphasis 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 principles to livestock production practices. 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.

ANSC0201 (AS77): Farm Animal Production III Practices
Instructors: **Dept. of Plant and Animal Sciences Staff**
Coordinator: **Mr. Nicholson**
Prerequisites: ANSC0100, ANSC0102, ANSC0106, ANSC0107
Corequisite: ANSC0200
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.
Fall semester – 16 labs per week.

ANSC0202 (AS86): Farm Animal Production IV
Instructors: **Dept. of Plant and Animal Sciences Faculty**
Coordinator: **Mr. Nicholson**
Prerequisite: ANSC0200
A detailed study of selected areas in farm animal production, with the major emphasis 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 apply biological and management principles to livestock production practices. 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.
Winter semester – 6 lecs and 2 tutorials per week.

ANSC0203 (AS87): Farm Animal Production IV Practices
Instructors: **Dept. of Plant and Animal Sciences Staff**
Coordinator: Mr. Nicholson
Prerequisites: ANSC0106, ANSC0200, ANSC0201
Corequisite: ANSC0202
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.

ANSC0300 (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 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.

Description of Courses – Undergraduate and Technical

ANSC1000 (AS202): Organic Livestock Production (A, AS) *DE

Instructor: **TBA**

This course provides information on organic livestock production in general, as well as more detailed analyses of organic beef and sheep, dairy, and swine and poultry production. An in-depth study of organic approaches to livestock health is included. The course is divided into five stand-alone modules: Introduction to Organic Livestock Production, Organic Beef and Sheep Production, Organic Dairy Production, Organic Swine and Poultry Production, and Health Management in an Organic Livestock System. A variety of information delivery methods will be used, including text on the Internet, a printed resource guide, and a CD-ROM with video clips and slide shows. Students will be encouraged to participate in discussion groups and use the organic information resources currently available over the Internet. Evaluation will be based on participation, written assignments, module quizzes and a final exam.

Winter semester.

*DE – only offered as a web-based distance education course.

ANSC2000 (AS200): Animal Agriculture I (A, AS)

Instructors: **Profs. Farid and Fredeen**

Prerequisite: AGRI1000

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 dairy animals. Additional animal industries that are particularly seasonal in nature, e.g. fur growth and pelting, may be introduced as is appropriate.

Fall semester – 3 lecs and 3 labs per week.

ANSC2001 (AS201): Animal Agriculture II (A, AS)

Instructors: **Profs. Anderson, Rathgeber, & Rouvinen-Watt**

Prerequisite: AGRI1000

Recommended: ANSC2000

A continuation of Animal Agriculture I, emphasizing the management and production of poultry, swine, fur and alternative species.

Fall semester – 3 lecs and 3 labs per week.

ANSC2002 (AS240): The Horse: Its Biology and Use (A, AS)

Instructor: **Prof. Tennessen**

Prerequisite: Second-year standing or equivalent in any program

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? The course will include discussion of sources and treatment of illness and disabilities, and the biology and control of common parasites; demonstrations of English and Western riding (students will not be taught to ride); visits to the Truro Raceway; study of the importance of shoeing to the working horse; and exposure to the use of horses as draft animals.

Fall semester – 2 lecs and 2 labs per week.

ANSC2003 (AS241): Companion Animal Behaviour (AS)
Instructor: **Prof. Tennessen**
In this course, students will study the fundamentals of animal learning and how those principles affect success in training and behaviour modification. Attention will be given to understanding and solving behaviour problems (e.g. separation anxiety, dominance aggression, fighting, inappropriate urination, and behavioural stereotypies). The focus is on companion animals – dogs and cats, and to some extent horses. The normal development of behaviour in those species will be covered.
Winter semester – 3 lecs per week.

ANSC3000 (AS310): Animal Breeding (A, AS)
Instructor: **Prof. Patterson**
Prerequisites: GENE2000, STAT2000
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.
Winter semester – 3 lecs and 2 labs per week.

ANSC3001 (AS320): Animal Health (A, AS)
Instructor: **T. Semple**
Prerequisite: MICR2000
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 – 3 lecs and 2 labs per week.

ANSC3002 (AS341): Domestic Animal Behaviour (A, AS)
Instructor: **Prof. Tennessen**
Prerequisite: BIOL2006 or BIOL3005
A study of the behaviour of farm animals. The course presents information that is relevant to the care and management of animals. Topics covered include domestication, animal communication, social behaviour, reproductive and maternal behaviour, development of behaviour, genetics of behaviour, and the influence of management systems and practices on behavioural characteristics. Considerable attention is also given to welfare issues in animal agriculture.
Fall semester – 3 lecs and 2 labs per week.

ANSC3003 (AS345): Eggs and Dairy Products (A, AS)
Instructor: **Prof. Firth**
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.

ANSC3004 (AS350): Meat Science (A, AS)
Instructor: **Prof. Firth**
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 by-products.
Winter semester – 2 lecs and 2 labs per week.

ANSC3005: Animal Welfare (A, AS)

Instructor: **Prof. Tennessen**

Prerequisite: at least third-year standing

Preparatory: PHIL3000

This course deals with the well-being of animals, with emphasis on farm animals. Issues include what we mean by animal welfare, what the animal welfare issues are in modern agriculture and in modern society, and how we use ethology and physiology to assess animal welfare. The course outlines the international efforts to improve on-farm animal welfare. There is a term-project in which students attempt to assess animal welfare in a particular farm (or other) environment, and all students will participate in class debates on current issues in animal welfare.

Winter semester – 3 lecs and 2 labs per week.

ANSC4000 (AS490), ANSC4001 (AS492), ANSC4002 (AS494): Topics in Animal Production I (A, AS)

Instructors: **Dept. of Plant and Animal Sciences Faculty**

Coordinator: **Prof. Tennessen**

Prerequisites: NUTR3000, GENE3000, BIOL3009

This is a series of applied production courses which may be taken as early as Semester VI of the third year in the Animal Science major. These courses are offered both semesters and the content may vary from year to year. The course may be taken up to three times by a student. The course number reflects whether it is the first, second or third time a student is enrolled. (i.e. the first time a student takes this production course, it will be ANSC4000; the second time, ANSC4001; and the third time, ANSC4002).

Each course consists of 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. 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 each four-week period. Occasionally modules may be scheduled outside regular class time, but this will be indicated prior to sign-up. Students are to see their Animal Science Advisor for selection and availability of modules prior to enrolling. Some modules may have restricted enrolment.

Fall and winter semesters – 3 lecs and 3 labs per week.

ANSC4003: Avian Production Systems (AS)
Instructor: **Prof. Rathgeber**
Prerequisites: ANSC2001, NUTR3000
This course will focus on management of commercial poultry from hatching to the production of value-added products. The course material will require the application of the sciences of nutrition, genetics, physiology, and behavior to understand the key aspects of growth, reproduction and health of commercial poultry species.
Winter semester – 3 lecs and 3 labs per week.

AQUACULTURE

AQUA2000 (AS210): Introduction to Aquaculture (A, AS)
Instructors: **Dept. of Plant and Animal Sciences Faculty**
Coordinator: **Prof. Enright**
Prerequisite: AGRI1000
The history and the current status of world aquaculture production are discussed, with emphasis on species with potential in Atlantic Canada. Advances in freshwater or marine finfish and shellfish culture are included. Aquatic plant production is discussed. Business aspects of aquaculture are introduced. The course includes field trips to aquaculture and related facilities.
Fall semester – 3 lecs and 3 labs per week.

AQUA3000 (AS370): Fish Health (A, AS)
Instructor: **Prof. Duston**
Prerequisite: BIOL3005
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 practiced.
Winter semester – 3 lecs and 3 labs per week.

AQUA4000 (AS440): Finfish Production (AS)
Instructor: **Prof. Duston**
Prerequisites: NUTR3000 or NUTR3001, AQUA3000, BIOL3006
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. The course includes a weekend field trip to commercial farms; attendance is obligatory.
Fall semester – 3 lecs and 3 labs per week.

AQUA4001 (AS445): Shellfish Production (AS)
Instructor: **Prof. Enright**
Prerequisites: NUTR3000 or NUTR3001, AQUA3000, BIOL3005
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.

ART

ARTS2000 (H230): Nature's Image: A Survey of Landscape Art (H)
Instructor: **TBA**
This course will provide an introduction to the history of art forms depicting landscape with the major focus being on landscape painting. The course will consist of 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 lecs/studio per week.

BIOLOGY

BIOL0100 (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 3 labs per week.

BIOL0101 (B40): Plant Pathology
Instructor: **TBA**
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.

BIOL0102 (PS45/B41): Plant Physiology and Stress Management
Instructor: **Prof. Percival**
This course is aimed at gaining an insight into various plant physiological, growth, and developmental processes and to develop a fundamental understanding and appreciation as to how various environmental factors influence growth, differentiation, and developmental processes in plants. The course also examines the impact of various abiotic stresses on plant growth and development, yield and productivity including acclimation and adaptation techniques. Emphasis will be given on plant diagnosis.
Winter semester – 3 lecs and 2 labs per week.

Description of Courses – Undergraduate and Technical

BIOL0103 (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.

BIOL0200 (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.

BIOL1000 (B100): Botany
Instructor: **Prof. Olson**
An introduction to the fundamental concepts of land plant biology with an emphasis on sexual reproduction. Topics include eucaryotic cell organization, cell divisions, multicellularity, alternation of heteromorphic generations, homospory and heterospory. In addition, representatives of the major phyla are examined in relation to the overall diversity of the Kingdom Plantae. The topics presented in the laboratory reinforce the lectures through specific examples and applications.
Fall semester – 3 lecs and 3 labs per week.

BIOL1001 (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 3 labs per week.

BIOL2000 (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.

BIOL2001 (B201): Cell Biology Laboratory
Instructor: **TBA**
This course combines the lectures of BIOL2000 with a laboratory section. Students will participate fully in BIOL2000 and, as well, complete laboratory sessions to complement lecture material. Students may receive credit for only one of BIOL2000 or BIOL2001.
Fall semester – 3 lecs and 3 labs per week.

BIOL2002 (B260): Plant Physiology
Instructor: **Prof. Percival**
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.

BIOL2003 (B265): Systematic Botany
Instructor: **Prof. Olson**
Preparatory: BIOL1000 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.

BIOL2004 (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. Emphasis 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.

BIOL2005 (B300): Principles of Plant Pathology (A)
Instructor: **Prof. Gray**
This course 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 nematode isolation, identification, and inoculation.
Fall semester – 3 lecs and 3 labs per week.

BIOL2006 (AS230): Mammalian Physiology (AS)
Instructor: **Prof. MacLaren**
Corequisite: CHEM3001 (or CHEM2005) or BIOL2000 and BIOL0100
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: homeostasis, the nervous, muscular, endocrine, cardiovascular, respiratory, renal and digestive systems, and an introduction to environmental physiology.
Winter semester – 3 lecs and 3 labs per week.

BIOL3000 (B320): General Entomology (A)
Instructor: **Prof. Le Blanc**
Preparatory: BIOL1001
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.

BIOL3001 (B330): Ecology
Instructor: **Prof. Nams**
Prerequisites: BIOL1000, BIOL1001
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.

BIOL3002 (B335): Weed Science (A)
Instructor: **Prof. Sampson**
Prerequisite: BIOL1000
Preparatory: BIOL2002
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. 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.

BIOL3003 (B340): Comparative Vertebrate Anatomy
Instructor: **Prof. Crosby**
Prerequisite: BIOL1001
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 3 labs per week.
Offered in alternate years; next offered in 2004/2005.

BIOL3004 (AS335): Environmental Physiology (A, AS)
Instructor: **Prof. Tennessen**
Prerequisite: BIOL2006 or BIOL3005
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.

BIOL3005 (AS380): Physiology of Aquatic Animals (A, AS)
Instructor: **Prof. Duston**
Prerequisite: BIOL1001
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.

BIOL3006 (AS375): Aquatic Ecology (AS)
Instructor: **Prof. Enright**
Prerequisite: ENGN2004
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.
Fall semester – 3 lecs and 3 labs per week.

BIOL3007 (PS390): Insects and Diseases of Landscape Plants (PS)
Instructor: **TBA**
The objective of this course is the study of the common insects and diseases of concern in the urban forest and ornamental trade in Atlantic Canada. For each taxa reviewed, signs, symptoms (distant, close and detailed), life cycle, life habits, hosts, range, monitoring methods, and management are considered through an integrated approach. Group learning may involve case studies of important insects and diseases. Also discussed are symptoms caused by abiotic factors.
Winter semester – 3 lecs and 2 labs per week.

BIOL3008 (AS330): Growth, Reproduction and Lactation (A, AS)
Instructor: **Prof. MacLaren**
Prerequisite: BIOL2006
A continuation of BIOL2006, 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.

BIOL4000 (AS460): Avian Biology (A, AS)
Instructor: **Prof. Rathgeber**
Prerequisites: ANSC2001, GENE2000, CHEM3001 (or CHEM2005)
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.
Offered in alternate years; next offered 2005/2006.

BIOL4001 (AS470): Animal Cell Culture (AS)
Coordinator: **Prof. MacLaren**
Prerequisite: BIOL2001
The objective of this course is to provide a theoretical and practical understanding of the uses and methods of animal cell culture. Lectures and laboratories will demonstrate the requirements of animal cells for normal growth and differentiation, the use of cell cultures as research models and for clinical, pharmaceutical and cytotoxicity screening will be discussed, as well as the commercial use of animal cell culture for the production of biological compounds.
Winter semester – 2 lecs and 4 labs per week.

BIOL4002 (B435): Conservation Biology
Instructor: **Prof. Nams**
Prerequisite: BIOL3001
This course has limited enrolment.
This course will examine the ecological concepts underlying current issues in conservation biology. Topics covered include effects of agricultural habitat fragmentation on wildlife, conservation of biodiversity, stability and resilience of ecosystems, optimum design of nature reserves, and habitat heterogeneity. This is a discussion-style course concentrating on current published papers.
Winter semester – 3 lecs per week.

Description of Courses – Undergraduate and Technical

CHEMISTRY

CHEM0100 (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.

CHEM1000 (CS101): General Chemistry I

Instructor: **Prof. Crowe**

Prerequisite: Successful completion of academic Grade 12 Chemistry or equivalent

This course is designed to help students understand chemical equations, reactions, and calculations. The chemistry of aqueous media is highlighted (properties of water, ionization of weak electrolytes, buffers). In addition to the traditional classroom interaction, students will be exposed to problem-based learning and co-operative learning. Students will be exposed to the proper use of various analytical equipment and apparati. The laboratory will focus on the development of practical lab skills applicable to the agricultural and environmental industries.

Fall semester – 3 lecs and 3 labs per week.

CHEM1001 (CS102): General Chemistry II

Instructor: **Prof. Crowe**

Prerequisite: CHEM1000

This second semester of General Chemistry will include a theoretical understanding of atomic and molecular structures. An understanding of physical equilibria will be extended to practical applications of chromatographic analyses.

Winter semester – 3 lecs and 3 labs per week.

CHEM2000 (CS201): Organic Chemistry I

Instructor: **Prof. Hoyle**

Prerequisite: CHEM1001 (or old CS100)

This course provides an introduction to the structure and reactions of organic compounds. The course is approached from a mechanistic point of view and has particular emphasis on appropriate spectroscopy (IR and MS). The topics covered in this course include chemical bonding, isomerism, acid-base properties and the isolation and purification of organic compounds. The ciasses of organic compounds covered will include alkanes, alkenes, alkynes, simple aromatics, organohalides, alcohols and related compounds.

Laboratory work will include introductory techniques of organic chemistry and both HPLC and gas chromatography.

Fall semester – 2 lecs, 1 tutorial and 3 labs per week

Description of Courses – Undergraduate and Technical

CHEM2001 (CS202): Organic Chemistry II
Instructor: **Prof. Hoyle**
Prerequisite: CHEM2000 (or old CS110)
This course continues building on work begun in CS201 Organic Chemistry I. Functional groups included here will be carbonyls (aldehydes, ketones, acids, and their derivatives), more complex aromatics, simple organometallics and bifunctional organic compounds. The emphasis on mechanistic chemistry will continue, as will the study of appropriate spectroscopy (MNR and UV-Vis). In addition, an introduction to organic syntheses and biomolecules will be undertaken.
Winter semester – 3 lecs per week.

CHEM2002 (CS212): Analytical Chemistry I
Instructor: **Prof. Crowe**
Prerequisite: CHEM1001 (or old CS100)
This course will equip the non-chemistry major with an understanding of the basis of quantitative analytical chemistry, including relevant laboratory technique. Included will be both non-instrumental (gravimetry) and instrumental techniques (UV-visible spectrophotometry, atomic absorption spectrophotometry, HPLC, GC, and potentiometry). The course will focus on proper sample preparation, analysis, data interpretation and proper laboratory technique. The examples used throughout the course would be from the environmental and agri-food areas.
Fall semester – 3 lecs and 3 labs per week.

CHEM2003 (CS275): Food Chemistry I (A)
Instructor: **Prof. Hoyle**
Prerequisite: CHEM2000 (or old CS110)
An introductory study of the chemistry of food and food components. The emphasis will be on water, fats, proteins and carbohydrates (and related compounds) with an overview of vitamins, minerals and additives. Methods of analysis will be discussed in detail and thus will be augmented by hands-on laboratory experiences with these analytic procedures.
This course may not be taken for credit by students who have credit for CHEM2004.
Fall semester – 3 lecs and 3 labs per week.

CHEM2004 (CS276): Introductory Food Chemistry (A)
Instructor: **Prof. Hoyle**
An introductory study of the chemistry of food and food components. The emphasis will be on water, fats, proteins and carbohydrates (and related compounds) with an overview of vitamins, minerals and additives. Methods used for analysis of food components will be discussed in detail.
This course may not be taken for credit by students who have credit for CHEM2003.
Fall semester – 3 lecs per week.

CHEM2005 (CS200): Biochemistry I
Instructor: **Prof. Robinson**
Prerequisite: old 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 3 labs per week. Last offered 2004/2005.

Description of Courses – Undergraduate and Technical

CHEM3000 (CS301): Biochemistry
Instructor: **Prof. Robinson**
Prerequisite: CHEM2000
The major emphasis of this course will be to study the characteristics of the building block biomolecules that make up the macromolecules in living cells. The course will also cover how these building blocks are assembled to form the major macromolecules. The importance and function in living cells of selected macromolecules of the major classes will be examined.
Fall semester – 3 lecs and 3 labs per week. Next offered in 2005/2006.

CHEM3001 (CS302): Biochemical Pathways
Instructor: **Prof. Robinson**
Prerequisite: CHEM2000
The major focus of this course will be on the biochemical pathways and activities that account for the assimilation, transformation, degradation and synthesis of the major macromolecules in living cells. Catalytic as well as regulatory strategies used by living cells will also be discussed. The biochemical pathways involved in the metabolism of proteins, lipids and carbohydrates will be covered as well as the biochemical importance of the macromolecules DNA and RNA. The final topic will be to examine and understand how metabolism consists of highly interconnected biochemical pathways and how hormones play a major role in regulating varying aspects of cellular metabolism.
Winter semester – 3 lecs and 3 labs per week.

CHEM3002 (CS310): Radiotracers in Agriculture (A)
Instructor: **Prof. Robinson**
Prerequisites: CHEM1001 (or old CS100) and MATH1000
This course has limited enrolment.
This course sets forth the concepts of radioactivity necessary for the practical use of radiotracers in agriculture, covering radiation theory; radiation counting; sample preparation techniques for counting; applied tracer techniques in soil, plant, and animal studies; isolation and identification of isotope labels; and localization of labels in molecular structures.
Winter semester – 3 lecs and 3 labs per week.

CHEM3003 (CS318): Advanced Integrated Chemistry Laboratory I
Instructor: **Prof. Hoyle**
Prerequisite: CHEM2001 (or old CS211 or old CS316)
The course will cover advanced laboratory topics in the fields of inorganic, general, and organic chemistry. Whenever possible these topics will be chosen from the fields of environmental science or agriculture. In particular, the use of spectroscopic techniques for the identification of chemical compounds will be applied, where appropriate.
Fall semester – 4 labs per week.
Offered in alternate years; next offered in 2005/2006.

CHEM3004 (CS341): Instrumental Analytical Chemistry II

Coordinator: **Prof. Hoyle**

Prerequisite: CHEM2002

For one course credit, students will select four different modules (3 weeks each) from the module offerings. At the discretion of the module coordinator, modules may have a tutorial component in place of a laboratory component. Students interested in taking this course should indicate their interest to the Course Coordinator by the end of the sixth week of the semester preceding the semester in which they wish to take module offerings. Maximum and minimum students in a module will be determined on an individual module basis.

Fall or Winter semester – 3 lecs and 3 labs or tutorials per week.

CHEM3005 (CS342): Instrumental Analytical Chemistry III

Instructors: **Dept. of Environmental Sciences Faculty**

Coordinator: **Prof. Hoyle**

Prerequisite: CHEM3004

Students who have successfully completed four modules as part of CHEM3004 may opt to take another four modules for a credit in CHEM3005. Students interested in taking this course should indicate their interest to the Course Coordinator by the end of the sixth week of the semester preceding the semester in which they wish to take module offerings. Maximum and minimum students in a module will be determined on an individual module basis.

Fall or Winter semester – 3 lecs and 3 labs or tutorials per week.

CHEM3006 (CS360): Mammalian Biochemistry

Instructor: **Prof. Robinson**

Prerequisite: CHEM2000 (or old CS110)

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, and the gonads, as well as the hypothalamus, hypophysis, and adrenals.

Winter semester – 3 lecs per week.

CHEM3007 (CS375): Food Chemistry II (A)

Instructor: **Prof. Crowe**

Prerequisite: CHEM2003 or CHEM2004

This course, which builds on CHEM2003 (or CHEM2004) will provide an in-depth study of minor food components including vitamins, colorants (natural and artificial), nutraceuticals and textural agents. Beneficial and/or deleterious interactions between food components will be examined (Maillard, caramelization, rancidity and enzymatic reactions). Recent advances in processing technology will be introduced.

This course may not be taken for credit by students who have credit for CHEM3008.

Winter semester – 3 lecs and 3 labs per week.

CHEM3008 (CS376): Intermediate Food Chemistry (A)
Instructor: **Prof. Crowe**
Prerequisite: CHEM2003 or CHEM2004
This course, which builds on CHEM2003 (or CHEM2004), will provide an in-depth study of selected food components including vitamins, colorants (natural and artificial), nutriceuticals and textural agents. Beneficial and/or deleterious interactions between food components will be examined (Maillard, caramelization, rancidity, and enzymatic reactions). Recent advances in processing technology will be introduced as time permits.
Offered concurrently with CHEM3007, and may not be taken for credit by students who have credit for CHEM3007.
Winter semester – 3 lecs per week.

CHEM3009 (ES312): Environmental Chemistry
Instructor: **Prof. Hoyle**
Prerequisite: CHEM2000 (or old CS110)
In this course students will undertake an in-depth study of the chemical processes involved in the pollution of the environment. Chemical pollution of the atmosphere, hydrosphere, and lithosphere will each be studied in depth. In each case, chemical solutions to these problems will be considered. Chemical processes such as dissolution, coordination, ion exchange, hydrolysis, ionization, and freezing point depression will be covered.
Fall semester – 3 lecs per week.
Offered in alternate years; next offered in 2005/2006.

CHEM3010 (IN395): Applied Biochemistry
Instructors: **TBA**
Corequisite: MICR3001
Application of different analytical techniques to the detection, extraction, purification and characterization of biological compounds. Current strategies in development of diagnostic kits and scaling-up purification procedures (downstream processes) based on biochemical principles will also be part of this course. The laboratory part of this course will be integrated with material covered in other biotechnology courses.
Fall semester – 2 lecs and 4 labs per week.
Not offered in 2004/2005.

CHEM3011 (IN397): Advanced Biochemistry
Instructor: **TBA**
Prerequisites: BIOL2001, CHEM3011
An overview of principles of metabolic control and exploitation of multi-enzyme systems in biotechnology. Biological half-life, signal transduction and expression, assembly and post-translational modification of regulatory enzymes will be the main focus of this course. Laboratory training will be integrated with material covered in lectures.
Winter semester – 3 lecs and 3 labs per week.

CHEM4000 (CS436): Advanced Integrated Chemistry Laboratory II
Instructor: **Prof. Hoyle**
Prerequisite: CHEM3003 (or old CS211 or old CS316)
This course will cover specialized chemistry laboratory topics in the fields of inorganic, general, and organic chemistry. Whenever possible, these topics will be picked from the fields of environmental science or agriculture. The laboratory will have a significant project, chosen by the student in consultation with the instructor.
Winter semester – 5 labs per week.
Offered in alternate years; next offered in 2005/2006.

Description of Courses – Undergraduate and Technical

COMMUNICATIONS

CMMT0100 (H45): Veterinary Practice Communication
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 is open to all technicians, and is required for students in the Animal Health Technology program.
Winter semester – 1 lec and 2 labs per week.

CMMT0101 (H60): Communication Skills
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 skills plus incorporating audiovisual 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.

CMMT3000: Communication Theory and Skills (H)
Instructor: **Prof. Sanderson**
Prerequisite: at least second-year standing
This course is designed to provide students with the opportunity to enhance their communication skills and knowledge. Since a key requirement of today's job market is the ability to communicate effectively, students will be exposed to the theory and the practice of communication. An important component of the course will be the emphasis on the practical application of communication knowledge.
Winter semester – 3 lecs and 2 labs per week.

COMPUTER

CSCI0100 (MP14): Computational Methods

Instructor: **Prof. Bishop**

A computer-based course to develop problem-solving and decision-making abilities and computational skills. 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.

CSCI1000 (MP222): Computer Methods

Instructor: **Prof. Bishop**

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. The course will cover word processing, spreadsheets, databases, programming, statistics, communications, graphics, and process control. Industry-leading software will be used.

Fall and Winter semesters – 3 lecs and 2 labs per week.

CSCI2000 (MP220): Computer Science

Instructor: **Prof. Bishop**

Introduction to problem-solving methods and algorithm development. Emphasis is on designing, coding, debugging, and documenting programs, using C.

Fall semester – 3 lecs and 2 labs per week.

CSCI3000 (MP336): Data Structures and Numerical Methods

Instructor: **Prof. Bishop**

Prerequisite: CSCI2000

This course introduces the student to system analysis and software techniques. Topics covered include objects, stack, queues, multiple linked lists, searching and sorting algorithms and their implementation in the C++ programming language. The students use linear algebra and numerical methods in engineering examples while learning to implement properly structured solutions.

Winter semester – 3 lecs and 2 labs per week.

ECONOMICS

ECON0100 (EB13): Introductory Microeconomics
Instructor: **Prof. Stackhouse**
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.
Fall semester – 3 lecs per week.

ECON0101 (EB12): Introductory Macroeconomics
Instructor: **Prof. Yiridoe**
Prerequisite: ECON0100
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.
Winter semester – 3 lecs per week.

ECON1000 (EB110): Principles of Microeconomics (A) *DE
Instructor: **Prof. Dunlop**
A comprehensive principles of microeconomics course with emphasis on the economics of the agri-food industry and resources in an international context. Microeconomic theory studied will consist of: the market system, producer and consumer theory, environmental and resource economics, as well as agricultural and international trade policy.
Fall and winter semesters – 3 lecs per week.
* DE – also offered as a web-based distance education course.

ECON1001 (EB255): Principles of Macroeconomics
Instructor: **Prof. Grant**
Prerequisite: ECON1000
This course introduces the student to basic macroeconomic concepts and to both short-term and long-term macroeconomic analysis. The basic macroeconomic concepts include economy-wide output, the price level and inflation, asset prices and interest rates, international exchange rates among currencies, and the international balance of payments. The introduction to short-term macroeconomic analysis, or business-cycle analysis, is based on John Maynard Keynes' work on the 1929-33 Great Depression. The introduction to long-term macroeconomic analysis is based on Robert Solow's work on economic growth. Throughout the course macroeconomics is related to the historical experience of farmers and to contemporary macroeconomic forces affecting the agri-food sector.
Winter semester – 3 lecs and 1 tutorial per week.

ECON2000 (EB200): Intermediate Microeconomics
Instructor: **Prof. Yiridoe**
Prerequisite: ECON1000
A course in microeconomics at the intermediate level. Topics include the theory of the firm, consumer theory, markets and market structure, and externalities and public goods. All major concepts are presented graphically and some are studied using basic mathematics as well.
Fall semester – 3 lecs and 2 labs per week

ECON2001 (EB305): Intermediate Macroeconomics
Instructor: **Prof. Grant**
Prerequisite: ECON1001
This course extends the Principles of Macroeconomics course to the intermediate level. Short-term, or business-cycle, macroeconomics is progressed from the introductory Keynesian income determination model to the IS-LM model, and then to the Aggregate Demand – Aggregate Supply model. The long-term macroeconomic content advances the introductory economic growth model in considering the relative importance of the factors determining the overall rate of economic growth.
Throughout the course macroeconomic theory is related to macroeconomic policy goals, stabilizing the economy in the short term and promoting improvement in economic well-being in the long term.
Fall semester – 3 lecs per week.

ECON2002 (EB220): Production Economics (A)
Instructor: **Prof. Tait**
Prerequisite: ECON1000 or ECON0100
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 3 labs per week.

ECON3000 (EB260): Mathematical Economics
Instructor: **TBA**
Prerequisites: MATH1000, ECON2000
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 economic 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.

ECON3001: Environmental Economics
Instructor: **Prof. Clark**
Prerequisite: ECON2000
This course is designed to give students an understanding of how economists view environmental problems. Topics of study will include public versus private goods, externalities, market failure and the role of property rights in the economic system. The Coase theorem will also be presented. Policy analysis contrasting market-based solutions to environmental problems with conventional solutions will be discussed. Specific topics will then be covered, including environmental policy surrounding water pollution, air pollution and climate change.
Fall semester – 3 lecs per week.

Description of Courses – Undergraduate and Technical

ECON3002 (EB320): Agricultural and Food Policy (A)

Instructor: **Prof. Dunlop**

Prerequisite: ECON1000

This course introduces students to the structure of the agrifood 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 agrifood industry, students will examine possible solutions to these issues. Topics covered include: reasons for government intervention; historical development of agrifood 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; and agribusiness involvement in agriculture and food policy.

Winter semester – 3 lecs and 2 labs per week.

ECON3003 (EB325): Mathematical Programming

Instructor: **Prof. Yiridoe**

Prerequisite: ECON3000

An introduction to the theory and application of mathematical programming in the agri-food industry. The role of matrix algebra in determining linear programming solution procedures is developed. The information requirements, organization, and skills of model building are also introduced. The course will make extensive use of computer algorithms that permit students to model real-world systems in the production, resource supply, service and retail sectors of the agri-food industry.

Winter semester – 4 lecs and 1 lab per week.

ECON 3004 (EB330): Agricultural Markets and Prices (A)

Instructor: **Prof. Grant**

Prerequisite: ECON2000

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.

ECON3005 (EB360): Econometrics

Instructor: **Prof. Clark**

Prerequisites: ECON2000, STAT2000

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.

Description of Courses – Undergraduate and Technical

ECON4000: Advanced Microeconomics

Instructor: **Prof. Clark**

Prerequisites: ECON2000, ECON3000

This course is intended to give students an advanced treatment of Microeconomics. It is strongly recommended for those students wishing to undertake graduate work in economics, agricultural economics or resource and environmental economics. Topics will include production economics, profit functions, cost functions, supply functions and factor demand. An advanced treatment of demand theory will also be presented, including Hicksian and Marshallian demands, derived via Slutsky's equation. Both primal and dual approaches will be discussed.

Winter semester – 3 lecs and 2 labs per week.

ECON4001 (EB419): Agrifood Policy Analysis (A)

Instructor: **Prof. Dunlop**

Prerequisites: ECON2000, ECON3002

This capstone course will focus on the economic analysis of agricultural and trade policy, 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; 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 per week.

ECON4002 (EB441): Topics in Advanced Farm Management (A)

Instructor: **Prof. Yiridoe**

Prerequisites: ECON2000 and one of ECON3003, ECON3005, or STAT3000

A module course that introduces students to selected aspects of practical farm decision-making topics, with an orientation toward application of theoretical and analytical principles for identifying, analyzing, and solving farm business management problems. Topics include (but are not limited to) risk theory and risk management, economics of farming systems, and agribusiness project appraisal.

Winter semester – 3 lecs and 3 labs per week.

ECON4003: Resource Economics

Instructor: **Prof. Clark**

Prerequisite: ECON3000

This course will introduce students to the area of Resource Economics. Topics that will be discussed will include dynamic versus static optimization, renewable versus non-renewable resources, conservation and depletion, and sustainable development. Specific areas that will be covered will include forestry economics, fisheries economics, and global climate change.

Fall semester – 3 lecs per week.

ENGLISH

ENGL0100 (H10): Technical Writing
Instructor: **Prof. Sanderson**
The 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. ENGL0100 is not equivalent to any 1000-level ENGL course.
Fall semester – 3 lecs per week.

ENGL1000 (H113): Composition (H)
Instructor: **Prof. Stiles**
This course has two primary objectives: to improve students' basic writing abilities and to offer training in scientific writing—in particular the literature review. The course consists of one lecture and one tutorial per week. Tutorials focus on building skills in composing, revising, editing, grammar, sentence structure, and mechanics; the lectures cover topics such as bias, essay forms, and the issues surrounding paraphrasing and citing. Students are required to write extensively throughout the term. A part of evaluation is based upon written work done under examination conditions during class.
Fall semester – 1 lec and 1 tutorial per week.

ENGL1001 (H101): The Novel (H)
Instructor: **Prof. Stiles**
In this course, four to six novels will be read, discussed, and analyzed. In the process, students will acquire a vocabulary for talking about literature, and will put to use critical reading and writing skills. They will also learn how the novel can be a window into the historical age in which it is written, illuminating issues such as colonialism, gender relations, culture, race, ethnicity, or the differences between rural and urban life. Novels selected will vary from year to year, but may include those written by Chinua Achebe, Emily Brontë, Kate Chopin, Joseph Conrad, Daniel Defoe, Charles Dickens, Antonine Maillet, Toni Morrison, Gabrielle Roy, Mary Shelley, Oscar Wilde, and others.
Winter semester – 3 lecs per week.

ENGL1002 (H102): Nature in English and American Literature (H)
Instructor: **TBA**
This course explores the ways in which nature has been represented in literature. Selected works by a number of authors of fiction, nonfiction and poetry will be examined, including English writers Dorothy Wordsworth, John Clare, William Blake, and William Wordsworth, and American authors Thoreau, Emerson, Hawthorne, Whitman, Melville, and Galway Kinnell.
Fall semester – 3 lecs per week.

ENGL3000 (H310): Literature of Atlantic Canada (H)
Instructor: **Prof. Stiles**
Prerequisite: ENGL1000 or ENGL1001 or ENGL1002
This course focuses on the prose and poetry of the Atlantic region of Canada. We will be looking at the works we read in historical, geographical and social context. We will also be discussing the concept of regionalism in literature. Classes will include lectures, films, videos, presentations, and discussions.
Fall semester – 3 lecs per week.

Description of Courses – Undergraduate and Technical

ENGINEERING

ENGN0100 (AE14): Surveying

Instructor: **TBA**

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 leveling, triangulation and traverse exercises, and construction surveying, with emphasis on their application to farm construction projects.

Fall semester – 2 lecs and 3 labs per week.

ENGN0101 (AE38): Horticultural Engineering

Instructor: **Prof. Cunningham**

Small gasoline engine structure and operating theory are studied, with emphasis on engine maintenance and troubleshooting. 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 3 labs per week.

ENGN0102 (AE46): Soil and Water Resources Management

Instructor: **Prof. Madani**

This course examines the fundamentals of soil and water management with application to agriculture. The course deals with hydrology, erosion, irrigation and drainage systems, water quality related to agriculture, and water table management.

Fall semester – 2 lecs and 3 labs per week.

ENGN0103 (AE52): Agricultural Power Systems

Instructor: **Prof. Rifai**

Tractor engines are studied as well as the theory of power transmission in farm tractors and other agricultural vehicles. Principles of electric motors and their power transmission applications will also be studied. Maintenance and troubleshooting are included. Other farm power options will be considered, such as solar, wind, and water power.

Winter semester – 3 lecs and 3 labs per week.

ENGN1000 (AE101): Computer Aided Graphics and Projection

Instructor: **Prof. Cunningham**

Freehand sketching, instrument drawing, and Computer Aided Drafting (CAD) techniques are used to develop proficiency in understanding and communicating in the graphical language. Experience is gained in reading and drawing orthographic, isometric, and oblique projections of objects as well as sectional and auxiliary views. Both Architectural and SI units of linear measure will be used in producing scaled drawings.

Fall semester – 2 lecs and 3 labs per week.

ENGN1001 (AE102): Design and Graphics

Instructor: **Prof. Cunningham**

This course will provide students with experience in conceptual design, team work and utilizing CAD. Students will develop skills such as engineering freehand sketching, 3-D visualization and reading/production of engineering drawings. Communication via the graphical language will culminate in the presentation of design projects and solutions.

Fall semester – 2 lecs and 3 labs per week.

Description of Courses – Undergraduate and Technical

ENGN1002 (AE110): Statics

Instructor: **Prof. Rifai**

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 3 labs per week.

ENGN1003 (AE120): Properties and Mechanics of Materials

Instructor: **Prof. Cunningham**

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.

ENGN1004: Wood Construction Technology I

Instructor: **TBA**

An introductory course in the selection, operation, and maintenance of woodworking hand and power tools. The principles of selection, operation, and maintenance of workshop tools in the modern woodworking shop are studied. Students will be required to present seminars on various fabrication techniques and construction tools. Occupational Health and Safety issues pertaining to wood shop work procedures will be covered.

Winter semester – 2 lecs and 3 labs per week.

ENGN1005: Metal Construction Technology I

Instructor: **TBA**

This in an introductory course to familiarize students with common metal construction technologies, machines and tools used in a metal fabrication shop. The principles of welding and welding applications will be emphasized. Students will be required to present demonstrations on the use of various metal hand and power tools, as well as present a seminar on some form of metal fabrication technology. Occupational Health and Safety issues pertaining to metal shop work procedures will be covered.

Fall semester – 2 lecs and 3 labs per week.

ENGN2000 (AE200): Environmental Impacts and Resource Management (A)
Instructor: **Prof. Blanchard**
Prerequisites: BIOL1000, CHEM1001 (or old CS100)
This course is an introduction to environmental engineering and technology, emphasizing a quantitative engineering approach. The course addresses the issues associated with the safe and ecologically appropriate handling, processing, storage, and utilization of organic wastes arising from human activities, including agriculture and bio-resource production systems. Topics covered will include: growth models for populations of living organisms, as well as models for depletion and replenishment of natural resources; the concept of mass and energy balances applied to quantify changes in environmental systems; physical, chemical and biological unit operations for treatment and reduction of solid, liquid and gaseous wastes; and reduction of pollution impacts on air and water resources.
Labs will include visits to environmental treatment facilities.
Fall semester – 3 lecs and 3 labs per week.

ENGN2001 (AE202): Agricultural Machinery
Instructor: **TBA**
Engineering principles of farm machinery are studied, including machinery for soil preparation, planting, crop care, and harvesting. Machines and their unit operations are analyzed with respect to function, work rates, material flows, and power usage. The importance of monitoring machine performance relating to work quality and environmental effects of machine operation will be studied. Labs will emphasize safety, basic maintenance, adjustment, calibration, and performance testing.
Winter semester – 3 lecs and 3 labs per week.

ENGN2002 (AE204): Introduction to Systems Analysis
Instructor: **Dept. of Engineering and other NSAC Faculty**
Coordinator: **Prof. Sibley**
Introduction to engineering principles associated with biological systems analysis. Sub-components of the system are identified and interrelationships are defined. The technical management of actual systems will include problem definition, information search, idea generation and development of practical solutions. Through the use of case studies and guest speakers, students will appreciate the systems approach to identify the role of technological, human, and other resources in the operation of rural enterprises. The course promotes skills in teamwork, relevant case studies, written and oral presentations and the use of computer-based decision support systems.
Fall semester – 3 lecs and 3 labs per week.

ENGN2003 (AE207): Food Processing Systems (A)
Instructor: **Prof. Blanchard**
Prerequisites: BIOL1000, CHEM1001
This course will present an overview of food processing systems. Physical, chemical and biological properties of foods relevant to processing preservation will be examined. An overview of various food processing unit operations will be presented; general design considerations for food plants to maintain hygienic processing conditions will be examined; and generic examples of food processing plant layout for various classes of food commodities, such as vegetables, fruits, seafood, meats, dairy, and baked goods, will be reviewed.
Winter semester – 3 lecs and 3 labs per week.

Description of Courses – Undergraduate and Technical

ENGN2004 (AE215): Aquacultural Environment (A)
Instructor: **Prof. Blanchard**
Principles necessary for understanding and providing optimal aquatic environments for aquaculture production are reviewed. Topics in water habitat management will be emphasized, including: water properties of both fresh- and salt-water systems; water quality and reconditioning techniques; maintenance of dissolved oxygen and removal of metabolic wastes in aquaculture rearing systems; and evaluation of water resource requirements for aquaculture.
Winter semester – 3 lecs and 3 labs per week.

ENGN2005 (AE230): Dynamics
Instructor: **Prof. Rifai**
Prerequisites: MATH1001, PHYS1000 or PHYS1002
The dynamics course represents the second class in the study of engineering mechanics. Topics include kinematics, kinetics, work and energy, and 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.

ENGN2006 (AE260): Surveying
Instructor: **Prof. Havard**
An introduction to surveying principles and use of levels, transits and global positioning systems (GPS). Horizontal and vertical measurements for construction, profile and topographic surveys are introduced and lab exercises are stressed. Emphasis is on map preparation and interpretation, Introduction to AutoCad.
Fall semester – 3 lecs and 3 labs per week.

ENGN2007: Fluid Power Technology
Instructor: **TBA**
This course covers the subjects essential to understanding the design, analysis, operation, and maintenance of fluid power systems: hydraulic, pneumatic, and water. Emphasis is placed on the practical applications of fluid power and the functioning of system components such as reservoirs, pumps, compressors, motors, valves, filters, lines and hoses, and mechanical and electrical controls in typical fluid power circuits. The principles of fluid flow, pressure and force, energy conservation, and power in the context of using fluid energy to do useful mechanical work are covered. Theory is presented to emphasize how and why fluid power systems operate. General maintenance, safety and environmental issues associated with fluid power systems are also discussed.
Winter semester – 3 lecs and 3 labs per week.
First offered in 2005/2006.

ENGN2008: Digital Electronics and Computer Interfacing
Instructor: **TBA**
This course covers the theory and applications of digital electronics technology and the control of digital devices by computers and programmable logic controllers (PLCs). Digital technology has become the dominant method of communication, control, sensing, computation and amusement in modern society. This course will provide the foundation to better understand current and future digital systems. Digital logic circuits, data forms and applications are studied. Computers in the laboratory are used to interface with and control a variety of digital devices such as computer numerical controlled (CNC) machines, robotics, cameras, scanners, lab equipment, etc. Students are introduced to Visual Basic programming for interfacing with computer ports and analog input devices. Hands-on projects are completed to control real-world applications such as traffic lights, process control and experimentation equipment.
Winter semester – 3 lecs and 3 labs per week.
First offered in 2005/2006.

Description of Courses – Undergraduate and Technical

ENGN2009: Metal Construction Technology II

Instructor: **TBA**

Prerequisite: ENGN1005

This is an advanced course in metal construction technologies using power machines (including CNC) and tools used in a metal fabrication shop. Advanced principles of welding and welding applications will be emphasized. Students will be required to present demonstrations on the use of various power machines as well as design and construct a major metal project using the skills learned in both Metal Construction Technology courses.

Fall semester – 2 lecs and 3 labs per week.

First offered in 2005/2006.

ENGN2010: Wood Construction Technology II

Instructor: **TBA**

Prerequisite: ENGN1004

An advanced course in the operation and maintenance of woodworking hand and power tools, and shop machinery. Students will learn about specialized machinery and advanced joinery technologies. The operation, maintenance, and repair of workshop tools in the modern woodworking shop are studied, with emphasis on re-alignment and setting up for accessories and jigs. Written work safety procedures will be reviewed. Individual projects are undertaken by students with the skills acquired in both Wood Construction Technology courses utilizing the shop equipment.

Fall semester – 2 lecs and 3 labs per week.

First offered in 2005/2006.

ENGN3000 (AE300): Electric Circuits

Instructor: **Prof. Havard**

Prerequisite: PHYS1003

Fundamentals of electric circuit analysis using Kirchoff's current and voltage laws, Thevenin's, Norton's, superposition and source transformation for DC and AC circuits. Circuit components include resistors, capacitors, inductors, voltage and current sources. Use of PSPICE simulation software, multimeters and oscilloscope in lab exercises to familiarize students with circuits analysis.

Fall semester – 3 lecs and 2 labs per week.

ENGN3001 (AE305): Engineering Measurements and Controls (A)

Instructor: **Prof. Havard**

Prerequisite: PHYS1000 or PHYS1002

The course examines the fundamentals for measurement of environmental parameters such as temperature, pressure, humidity, stress, and strain. The use of electronic instruments and microcomputers are demonstrated through laboratory exercises. Several methods of control are investigated.

Winter semester – 3 lecs and 3 labs per week.

ENGN3002 (AE310): Thermodynamics

Instructor: **Prof. Havard**

Prerequisite: MP140 or MP150

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.

Description of Courses – Undergraduate and Technical

ENGN3003 (AE311): Technology for Precision Agriculture

Instructors: **Dept. of Engineering Faculty**

Coordinator: **Prof. Adsett**

Prerequisite: ENGN2006 or ENGN0100

This course will provide students with a fundamental understanding of the concepts and principles related to precision agriculture. This includes the technology and use of electronics in collecting and analyzing data with emphasis on spatial variability. Electronic sensors, monitoring instrumentation, computer equipment, machine controllers. Nutrient management systems, application of GPS-based surveys, precision farming software (e.g. SSToolBox), geographic information system (GIS) software utilization, and GPS hardware are examined.

Fall semester – 3 lecs and 3 labs per week.

ENGN3004 (AE312): Digital Circuits

Instructor: **TBA**

This course includes an introduction of Boolean algebra, encoders, decoders, shift registers, and asynchronous and synchronous counters, together with timing considerations. Design of asynchronous circuits, synchronous sequential circuits, and finite state machines is covered. Karnaugh mapping techniques and state tables and diagrams are taught. Programmable logic is introduced. Contemporary computer-aided design and analysis software is used throughout the course.

Fall semester – 3 lecs and 3 labs per week.

ENGN3005 (AE314): Fundamentals of Chemical Engineering

Instructor: **TBA**

The main objective of this course is to develop the students' ability to perform mass and energy balances on reactive and non-reactive processes. Introductory topics include systems of units and a study of process variables such as temperature, pressure and flow rate. Also covered are fundamental properties of multiphase systems: phase equilibrium, vapour pressure, phase rule, Raoult's and Henry's Laws, and colligative properties. Emphasis is placed on developing problem-solving skills.

Winter semester – 3 lecs and 2 labs per week.

ENGN3006 (AE315): Strength of Materials

Instructor: **Prof. Adsett**

Prerequisites: ENGN1002, MATH1001, PHYS1000 or PHYS1002

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.

ENGN3007 (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.

ENGN3008 (AE332): Circuit Analysis

Instructor: **Prof. Havard**

This course covers advanced circuit analysis techniques, starting with sinusoidal excitation. The concepts of phasors and complex impedence are fully developed. Mutual inductance and magnetically coupled coils are used to introduce transformer behaviour and performance. Real and reactive power flow is covered before the introduction of balanced three-phase circuits for power distribution. Symmetrical components are introduced as a means of dealing with unbalanced networks. The concepts of grounding and harmonics are also introduced.
Winter semester – 3 lecs and 3 labs per week.

ENGN3009 (AE335): Materials Handling and Processing (A)

Instructor: **Prof. Adsett**

Prerequisite: MATH1001

Preparatory: PHYS1000 or PHYS1002

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.

ENGN3010 (AE340): Soil and Water (A)

Instructor: **Prof. Madani**

Prerequisite: MATH1001

This course covers the hydrologic cycle and its components; basic soil-water-plant relationships; drainage theory and design; and irrigation systems and design. Crop water requirements, water supply, water conveyance, and salinity control are discussed. Emphasis is placed on water table management and agricultural water management.
Fall semester – 3 lecs and 3 labs per week.

ENGN3011 (AE350): Fluid Mechanics

Instructor: **Prof. Madani**

Prerequisite: ENGN2005 or permission of the instructor

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.

ENGN3012 (AE355): Principles of Agricultural Machinery (A)

Instructor: **TBA**

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.

ENGN3013 (AE360): Aquacultural Engineering (A)

Instructor: **Prof. Blanchard**

Support facilities, equipment, and systems for aquatic production will be examined. Topics studied will include: selection of component materials and structures suitable for confinement, protection, and growth of aquaculture species; principles of design and selection of equipment for recirculation systems for aquaculture; and the principles of water flow and handling in open and closed conduits.
Winter semester – 3 lecs and 3 labs per week.

ENGN3014 (AE365): Principles of Engineering in Landscape Horticulture

Instructor: **Prof. Cunningham**

Mathematical concepts will be applied with engineering principles to solve problems encountered in landscape horticulture. Topics will include units of measure, systems of units, distance, area, volume, force, pressure, work, power, energy, rates of flow/application, calibration, and concentrations of solution. Applications will include hydraulics, fluid flow and equipment calibration, power transmission and speed ratios, earth cut and fill volumes, and triangulation and area calculations.

Winter semester – 3 lecs per week.

ENGN3015 (AE370): Irrigation and Drainage

Coordinators: **Profs. Havard and Madani**

This course examines basic soil-water-plant-atmosphere relationships. It introduces students to soil and water conservation and management principles. The course covers irrigation and drainage of golf courses, athletic areas, parks, and residential landscape. Students who are required to take ENGN3010 may not take ENGN3015 for credit.

Fall semester – 2 lecs and 3 labs per week.

Offered in alternate years; next offered in 2005/2006.

ENGN3016 (AE380): Engineering Economy

Instructor: **Prof. Adsett**

This course deals with the economics of decision-making. After introducing fundamental concepts and cash-flow diagrams, interest factors are dealt with in some detail. A variety of discounted cash-flow techniques are covered, including rate-of-return calculations. Inflation, accounting, tax, and risk are also among the topics considered.

Winter semester – 2 lecs and 3 labs per week.

ENGN3017 (AE206): Design Project

Instructor: **Prof. Sibley**

Prerequisites: ENGN1001, ENGN3006

This self-study course provides a project-based exercise in the engineering design process. Students work in teams and as individuals on defined projects that utilize knowledge and skills in graphics, statics, computing, and mechanics of materials. The projects encompass conceptual design, detailed analysis, engineering drawings, experimentation, physical model fabrication, laboratory testing, and preparation of professional reports.

Winter semester – 4 labs per week.

ENGN3018: Technology Modules

Instructor: **TBA**

This course deals with the operating concepts of CNC machines, plastics forming and construction technology, and transportation technology in a modular format. Approximately 4 weeks will be allocated to the study of each module area. The students will be able to perform operations in the technology area upon completion of the appropriate module. Practical hands-on laboratory and shop experiences are emphasized, as are associated aspects of Occupational Health and Safety. Students will also make presentations to the class regarding specific features and operations of the technologies studied.

Winter semester – 5 lecs per week.

First offered in 2006/2007.

ENGN3019: Communications Technology

Instructor: **TBA**

This course addresses issues, systems and methodology in computer-related communications technology. Among the topics studied are desktop publishing, digital photography and image editing, video production, web page design, and presentation software usage. Supplementary classes in graphic design and screen printing will be available as time allows. Emphasis is placed on practical production techniques and individual design situations.

Fall semester – 5 lecs per week.

First offered in 2006/2007.

ENGN4000 (AE410): Water and Water Quality Management (A)

Instructor: **Prof. Madani**

Relationship between agriculture and water quality, chemical use, water quality monitoring techniques, animal waste and water quality, non-point source pollution, and best management practices to reduce chemical leaching to surface water and groundwater are discussed. Soil erosion, soil conservation practices, Universal Soil Loss Equation (USLE) and Revised USLE (RUSLE) are covered. Artificial wetland and its relation to agricultural and waste management is also discussed.

Winter semester – 3 lecs and 3 labs per week.

ENGN4001 (AE412): Water Quality Issues (A)

Coordinator: **Prof. Madani**

Prerequisite/Corequisite: ENGN4000

Current environmental water quality issues such as contamination of surface and ground water are discussed. Emphasis is placed on providing solutions to the water quality problems. Agricultural water quality models will also be examined.

Winter semester – 3 lecs per week.

Offered in alternate years; next offered in 2005/2006.

ENGN4002 (AE420): Management of Mechanized Agricultural Systems (A)

Instructor: **Prof. Adsett**

Prerequisite: MATH1001 or PHYS1000 or PHYS1002

Preparatory: MGMT2003

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 practical management decisions in production or processing operations of the student's interest.

Winter semester – 2 lecs and 3 labs per week.

ENGN4003 (AE440): Senior Design Project for Engineers I

Instructor: **Engineering Faculty**

Senior engineering students gain first-hand experience in applying design principles and practices by undertaking a real-world design project. Students are expected to display a high level of initiative and ingenuity in carrying out the project through its various design stages. As well, students will gain proficiency with an engineering project's written and oral communication requirements by keeping a project log book, preparing written project proposals and reports, and orally presenting their design project in a seminar format.

Fall semester – 1 lec and 5 labs per week.

ENVIRONMENTAL STUDIES

ENVS1000 (ES202): Basic Composting Skills (A) *DE
Instructor: **TBA**
Composting and the utilization of organic matter produced on the farm provide the basis for soil fertility in organic systems; however, potential benefits derived from compost use are often limited by the supply and quality of on-farm produced composts. The objective of this Web-based course is to teach composting primarily by providing students with the opportunity to make their own compost over a period of 13 to 15 weeks. Students learn through five stand-alone modules[1]: Composting of Organic Materials (how the underlying principles of composting are applied when combining various feedstock materials for composting); Composting Process (how to evaluate and manage an actively working pile and troubleshoot to maintain optimum conditions for composting); On-Farm Composting (efficient and low-cost composting methods for agricultural composting at various scales); Compost Quality (how to evaluate the quality of the finished compost, as well as the quality requirements of various standards, markets, and end uses for compost); and Compost Utilization and Marketing (considerations and requirements for the optimum use of compost in organic greenhouse crop production and organic farming systems, as well as factors which are important in the marketing of compost).
[1] Note that making compost and completing all five modules will be a requirement for students who are taking the course for credit. Students who are not taking the course for credit may also decide to make compost and complete all five modules; however, this is not a requirement for non-credit students. To provide maximum flexibility for non-credit students, the modules are offered as independent (stand-alone) units. Students may take either ENVS1000 or ENVS4004 but not both for credit.
Fall semester.
*DE – only offered as a web-based distance education course.

ENVS2000 (ES200): Environmental Studies I (A)
Instructors: **Profs. Nams, Hoyle**, and **Madani**
Coordinator: **Prof. Stratton**
Prerequisites: 8 technician, technology or degree course credits
This is the first of a two-semester course sequence that deals with environmental issues from both an agricultural and a socio-economic basis. The scientific principles of each issue will first be outlined and explained, and then the agricultural and socio-economic aspects of the issue will be examined. The topics to be emphasized in this course will include issues associated with population growth, the atmosphere, and the hydrosphere. Students will be expected to show their understanding of the interplay between agriculture and environmental issues by writing a major term paper.
Fall semester – 3 lecs and 1 tutorial per week.

ENVS2001 (ES201): Environmental Studies II (A)
Coordinator: **Prof. Stratton**
Prerequisite: ENVS2000
This is the second of a two-semester course sequence that deals with environmental issues from both an agricultural and a socio-economic basis. All aspects of the issues will be integrated together to provide an overall view of each issue. The topics to be emphasized in this course will include issues associated with biodiversity, the lithosphere, waste management, and legal aspects of the environment. Students will be expected to show their understanding of the interplay between agriculture and environmental issues by writing a major term paper.
Winter semester – 3 lecs and 1 tutorial per week.

ENVS3000 (B365): Environmental Impact

Instructor: **Prof. Stratton**

Prerequisites: ENVS2000, ENVS2001

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.

Fall semester – 3 lecs and 3 labs per week.

Offered in alternate years; next offered in 2005/2006.

ENVS3001 (ES330): Environmental Sampling and Analysis

Instructors: **Dept. of Environmental Sciences Faculty**

Coordinator: **Prof. Nams**

Prerequisites: STAT3000, CHEM2000 (or old CS110)

This course will introduce students to the proper methods of sampling for biological and chemical analyses, as well as for environmentally oriented surveys. Several analytical methods will be introduced for chemical analyses, including spectrophotometry, electrochemistry (pH and ion selective electrodes), and chromatography. Emphasis will be given to the actual collection of samples and their subsequent analysis.

Fall semester – 3 lecs and 3 labs per week.

ENVS3002 (ES333): Waste Treatment and Remediation (A)

Instructor: **Prof. Stratton**

Prerequisite: ENVS2001

This course will examine the following topics: pollution from wastes, waste disposal and treatment, the use of wastes, wastes as resources, recycling, composting, waste reduction, incineration, biomass from wastes, biogas production, site remediation, and bioremediation. Agricultural wastes will be emphasized throughout the course.

Winter semester – 3 lecs and 3 labs per week.

ENVS3003 (ES350): Environmental Studies Field Course

Coordinator: **Prof. Hoyle**

Prerequisites: 30 degree credits, including ENVS2000 and ENVS2001

This course is designed to provide students with an opportunity to pursue a holistic approach to solve real environmental problems. It will be of 12 days' duration and will be held at (an) environmentally significant site(s). Students will be expected to pre-plan and to perform on-site analyses to identify any environmental problems. An interim report of findings will be required during the course. After completion of the field work, students are expected to write a report of their findings with appropriate recommendations regarding solutions to identified problems.

Students should contact the course instructor prior to October 15 of the preceding Fall semester for scheduling information about the course. Expenses associated with the course are the responsibility of the student. The course is offered subject to enrolment.

Summer session – 12-day course.

ENVS3004 (B385): Principles of Pest Management (A)

Instructor: **Prof. Sampson**

Prerequisites: BIOL1000, BIOL1001

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.

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

ENVS4000 (B405): Pesticides in Agriculture (A)
Coordinator: **Prof. Sampson**
Preparatories: BIOL2005, BIOL3000, BIOL3002
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.

ENVS4001 (B406): Economic Plant Pathology (A)
Instructor: **Prof. Gray**
Prerequisite: BIOL2005
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 3 labs per week.

ENVS4002 (B425): Economic Entomology (A)
Instructor: **Prof. Le Blanc**
Prerequisite: BIOL3000
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.

ENVS4003 (B445): Applied Weed Science (A)
Instructor: **Prof. Sampson**
Prerequisite: BIOL3002
Deals with principles of weed science from an ecological perspective. Included are discussions on ecology and management of weeds in traditional agro-ecosystems as well as in low-input sustainable agricultural systems. The roles of biological, cultural, and chemical control in these systems will be stressed.
Winter semester – 3 lecs and 3 labs per week.

ENVS4004 (CS457): The Science of Composting & Its Application (A)
Instructor: **TBA**
Prerequisite: CHEM1000 (or old CS100)
Principles of compost production, including 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; and environmental concerns – odour, organic and inorganic contaminants, pathogens, and heavy metals. Students may take either ENVS4004 or ENVS1000 but not both for credit.
Fall semester – 3 lecs and 3 labs per week.
Offered in alternate years; next offered in 2005/2006.

EXTENSION EDUCATION

EXTE3000 (H320): Extension Education in the Rural Community (H)
Instructor: **Prof. Sanderson**
Prerequisite: at least third-year standing
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.
Offered in alternate years; next offered in 2004/2005.

EXTE3001 (H321): Leadership Development and the Social Action Process (H)
Instructor: **Prof. Sanderson**
Prerequisite: at least third-year standing
Students will be looking at leadership development from a number of angles: current theories, leader identification, and leadership skills. The impact of leadership on the social action process will be analyzed in the context of rural communities. Analysis of the social action process will focus on participatory approaches to rural community development and extension. Students will have the opportunity to enhance personal leadership skills through discussion and practice.
Fall semester – 3 lecs per week.
Offered in alternate years; next offered in 2005/2006.

FOOD SCIENCE

FOOD3000 (CS380): Food Quality Assurance (A)
Instructor: **Prof. Crowe**
Prerequisites: CHEM2000 (or old CS110), MATH1000
The various quality philosophies (QC, QA, TQM) will be studied with respect to their industrial application. The course will centre on the use of control charts to monitor processes and to evaluate the quality of both incoming 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 commercial 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 semester – 3 lecs and 3 labs per week.

FRENCH

FREN1000 (H130): French Language I (H)
Instructor: **TBA**
Prerequisite: Grade 12 French or equivalent within the last five years
This course is designed to fill the needs of students who have studied French in high school and is intended to review grammar and provide an opportunity to polish and refine language skills. Classes will emphasize basic grammatical structures, pronunciation, listening comprehension, and speaking skills. FREN1000 is designed to provide the student with opportunities to use the language and enhance written, spoken and comprehension skills. This course is not intended as an introduction to the French language. Students whose first language is French or who are fluent in the French language are not eligible to take this course.
Fall semester - 3 lectures per week.

FREN1001 (H131): French Language II (H)
Instructor: **TBA**
Prerequisite: FREN1000
This course is designed to fill the needs of students who have already studied French, and is intended to review grammar and provide an opportunity to refine language skills. Classes will emphasize basic grammatical structures, pronunciation, listening comprehension, and speaking skills. FREN1001 is designed to provide the student with opportunities to actively use the language. This course is intended not as an introduction to French language but as a continuation of FREN1000, a review of its major aspects. It is expected that students have a basis grasp of French grammar and some vocabulary. This course is not suitable for students whose first language is French or who are fluent in the French language.
Winter semester – 3 lecs and 2 tutorials per week.

GENETICS

GENE2000 (B240): Genetics I
Instructor: **N. McLean**
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.

GENE3000 (B370): An Introduction to Molecular Genetics
Instructor: **Prof. Wang-Pruski**
Prerequisites: GENE2000 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 procaryotes and eucaryotes 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 2004/2005.

HIST3000 (H301): Rural History (H)

Instructor: **Prof. Stiles**

Prerequisite: H1000 or H1001

This course will introduce students to selected problems in the study of rural history. Problems to be considered in at least two time periods may include the following: the problem of change in rural society, vis-á-vis industrialization; the intersection of national, ethnic, and other "identity" with rurality; the changing nature of work in rural societies; rural political movements; idealizations or distortions related to the concept of rural; agriculture and other "cultures" in the rural context of the past.

Winter semester – 3 lecs per week.

HORTICULTURE

HORT0100 (ES60): Landscape Plants I

Instructors: **Profs. Morton & Olson**

Herbaceous and woody plants are studied with respect to their identification, landscape value and use. Special groups of plants to be studied include plants with fall interest, shade-loving plants, groundcovers, and vines, as well as many other plants suited to Atlantic landscapes. 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 2 labs per week.

HORT0101 (ES61): Landscape Plants II

Instructor: **TBA**

Herbaceous, woody, and aquatic plants are studied with respect to their identification, landscape value, and use. Special plant groups covered in the course include interior plants, culinary herbs, plants with special growth habits, native plants, and bog and marginal plants for aquatic gardens, in addition to many other plants for Atlantic landscapes. The recognition of deciduous woody plants by their winter wood characteristics is included.

Winter semester – 3 lecs per week.

HORT0102 (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.

GEOGRAPHY

GEOG1000: Introductory Human Geography (H)
Instructor: **TBA**
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.

GEOG3000 (H370): Rural Geography (H)
Instructor: **TBA**
Prerequisite: GEOG1000
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.
Winter semester – 3 seminar hours per week.

GEOLOGY

GEOL2000 (CS230): Introduction to Geology
Instructor: **Prof. Brewster**
Topics covered in 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.

HISTORY

HIST1000: Introduction to Canadian History I: 1000–1867 (H)
Instructor: TBA
This course introduces students to the theory and practice of history through a general historical survey of Canadian history for the period from approximately 1000 CE [Common Era] to about the mid-19th century. Historical theories and methodologies will be introduced in this course. A social and/or cultural approach is emphasized, with focus on Aboriginal peoples and Contact, Acadia and New France; British North America to Confederation.
Fall semester – 3 lecs per week.

HIST1001: Introduction to Canadian History II: 1967–Present (H)
Instructor: **TBA**
This course will examine the problem of modernity, through an exploration of Canadian history from the mid-19th century through to the present. Political, social, and cultural developments and transformations will be emphasized. In addition to the exploration of Canadian history from Confederation to the present, students will be introduced (or, in the case of those who have previously taken Introduction to Canadian History I, reintroduced) to concepts, theories and methodologies employed in historical study.
Winter semester – 3 lecs per week.

HIST3000 (H301): Rural History (H)
Instructor: **Prof. Stiles**
Prerequisite: H1000 or H1001
This course will introduce students to selected problems in the study of rural history. Problems to be considered in at least two time periods may include the following: the problem of change in rural society, vis-á-vis industrialization; the intersection of national, ethnic, and other "identity" with rurality; the changing nature of work in rural societies; rural political movements; idealizations or distortions related to the concept of rural; agriculture and other "cultures" in the rural context of the past.
Winter semester – 3 lecs per week.

HORTICULTURE

HORT0100 (ES60): Landscape Plants I
Instructors: **Profs. Morton & Olson**
Herbaceous and woody plants are studied with respect to their identification, landscape value and use. Special groups of plants to be studied include plants with fall interest, shade-loving plants, groundcovers, and vines, as well as many other plants suited to Atlantic landscapes. 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 2 labs per week.

HORT0101 (ES61): Landscape Plants II
Instructor: **TBA**
Herbaceous, woody, and aquatic plants are studied with respect to their identification, landscape value, and use. Special plant groups covered in the course include interior plants, culinary herbs, plants with special growth habits, native plants, and bog and marginal plants for aquatic gardens, in addition to many other plants for Atlantic landscapes. The recognition of deciduous woody plants by their winter wood characteristics is included.
Winter semester – 3 lecs per week.

HORT0102 (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.

Description of Courses – Undergraduate and Technical

HORT0103 (PS50): Landscape Horticulture I
Instructor: **Prof. Goodwin**
An introduction to landscape horticulture.
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 3 labs per week.

HORT0200 (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-grown 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.

HORT0201 (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.

HORT0202 (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.

HORT0203 (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.

HORT0204 (ES62): Landscape Plants III
Instructor: **Prof. Goodwin**
Herbaceous, woody and aquatic plants are studied with respect to their identification, use, and value in landscape settings. Special plant groups included in the course include woodland plants, sensory plants, container plants, medicinal herbs, xeric plants, submerged and floating aquatic plants, and salt-tolerant plants, in addition to many other plants for Atlantic landscapes. The recognition of woody plants by their winter wood characteristics is included.
Fall and Winter semesters – 2 lecs per week.

HORT0205 (PS51): Residential Landscape Design and Construction
Instructor: **Prof. MacKenzie**
Prerequisites: ENGN1000, HORT0100, HORT0103, HORT0209
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 facilitate their design work.
Winter semester – 3 lecs and 3 labs per week.

HORT0206 (PS70): Landscape Techniques
Instructor: **Prof. Goodwin**
Prerequisites: HORT0102, HORT0103
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 12 weeks (480 hours). 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.
Spring semester – 12 weeks.

HORT0207 (PS71): Arboriculture
Instructor: **Prof. MacKenzie**
Prerequisite: HORT0103
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 3 labs per week.

HORT0208 (PS72): Landscape Maintenance
Instructor: **Prof. Goodwin**
Prerequisites: ENGN0102, HORT0102, HORT0103
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 applicator 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.

HORT0209 (PS73): Landscape Horticulture II
Instructor: **Prof. Goodwin**
Prerequisite: HORT0100
Prerequisite/Corequisite: HORT0103
A study of herbaceous plants and their uses in landscape. Special plant groups, gardening techniques and styles will be examined. Both computer and conventional methods of drafting will be utilized in design.
Fall semester – 3 lecs and 2 labs per week.

HORT0210 (PS74): Landscape Design and Construction
Instructor: **Prof. MacKenzie**
Prerequisite/Corequisite: ENGN0102
Advanced landscape planning and construction will be discussed. Such topics as site grading, paving, retaining walls, decks, landscape lighting, water features, commercial landscapes, and estimating are included. Students will be required to estimate material and labour requirements for lab projects and create construction drawings and specifications.
Winter semester – 3 lecs and 3 labs per week.

HORT2000 (PS200): Vegetable Production (A, PDN)
Instructor: **Prof. Goodyear**
Preparatory: AGRI1000 or PLSC0100
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, and harvest and storage requirements. Commercial vegetable enterprises are visited.
Fall semester – 3 lecs and 2 labs per week.

HORT2001 (PS210): Principles of Organic Horticulture (A, PDN) *DE

Instructor: **Prof. Goodyear**

Preparatory: AGRI1000 or PLSC0100

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, and 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.

*DE – also offered as a web-based distance education course alternate years with on-campus course.

Next offered (DE only) Fall 2004. Next offered (on-campus only) Fall 2005.

HORT2002 (PS270): Landscape Horticulture Work Program I (PS)

Instructor: **Prof. Goodwin**

This is a Spring semester course. Students are required to work under contract in the landscape horticulture trade with an approved employer for a period of at least 12 weeks (480 hours minimum). Contract content may include such areas of work as landscape construction design and maintenance, plant production, turf maintenance, and plant sales. The content of the contract will reflect the specialities of the employer. Available only to B.Tech (Env. Hort.) students.

Spring semester – 12 weeks.

HORT2003 (PS290): The British Garden (PS)

Instructor: **Prof. Goodwin**

The history of British landscape development is studied, supported by visits to gardens that exemplify period design. Period garden features and the design philosophy that fostered the evolution of landscape development will be discussed. The maintenance and management of these landscapes will be examined. North American and British landscape maintenance standards and techniques will be compared. Plant identification will be a component of this course. This course involves self-directed study.

The course is offered in England, subject to enrolment. Expenses associated with the course are the responsibility of the student.

Summer semester – 4 weeks intensive.

HORT2004 (PS280): Introduction to Viticulture (PS)
Instructor: **Prof. Percival**
Prerequisite: BIOL1000 or BIOL0102
Note: Students taking this course must be 19 years of age or older. This course on viticulture in the Atlantic region will initially examine the taxonomy, morphology, physiology, and biochemistry of grapevine growth and fruit maturation. Emphasis will be placed on the environmental regulation of grapevine growth, development, yield and composition, and manage-ment strategies to optimize grape production in cool-climate viticulture production areas. Included will be an examination of the importance of site selection, soil management, grapevine cultivars, rootstocks, clones, production systems, and vineyard establishment. Cultural management practices including pruning, training, canopy management, crop control, and mechanization will be discussed, and an overview of pest pressures and other environmental concerns including winter hardiness covered. Lastly, the harvesting and vinification of wine grapes will be examined with the inclusion of "hands-on" laboratory sessions at a commercial vineyard and winery. Successful completion of the course should prepare students for upper-division courses in viticulture and oenology.
Fall semester – 3 lecs and 3 labs per week

HORT3000 (ES370): Environmental Processes and Natural Landscape Functions
Coordinator: **Prof. MacKenzie**
The structure, functions, and dynamics of landscapes that are altered by human design are discussed. Key ecological processes and their disruption, landscape modification, and landscape planning and management will be examined. Students are expected to participate in field work, and to engage in self-directed study.
Fall semester – 3 lecs and 3 labs per week.

HORT3001 (ES380): Landscape Project Management
Instructor: **Prof. MacKenzie**
Prerequisite: A previous course in landscape design and construction
This is an advanced course in landscape design, estimating and construction. Principles and processes for cost estimating will be studied utilizing actual landscape projects, considering local building codes and regulations. Computers will be utilized in the process.
Fall semester – 3 lecs and 3 labs per week.

HORT3002 (PS315): Tree Fruit Crops (A, PDN)
Instructor: **Prof. Ju**
Prerequisites: AGRI1000, BIOL1000
Preparatory: BIOL2002
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 2005/2006.

HORT3003 (PS320): Small Fruit Crops (A, PDN)
Instructor: **Prof. Ju**
Prerequisites: AGRI1000, BIOL1000
Preparatory: BIOL2002
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 2004/2005.

HORT3004 (PS330): Greenhouse Crop Production and Floriculture (A, PDN)
Instructor: **Prof. Mapplebeck**
Prerequisites: AGRI1000, BIOL1000
Preparatory: BIOL2002
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 2005/2006.

HORT3005 (PS335): Landscape Plant Production (A, PDN)
Instructor: **Prof. Mapplebeck**
Prerequisites: AGRI1000, BIOL1000
Preparatory: BIOL2002
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 2004/2005.

HORT3006 (PS370): Landscape Horticulture Work Program II (PS)
Instructor: **Prof. Goodwin**
This is a Spring semester course. Students are required to work under contract in the landscape trade. The type of employment work experience gained must be different than that gained in previous work experience program courses. Available only to B.Tech (Env. Hort.) students.
Spring semester – 12 weeks.

HORT3007 (PS360): Environmental Horticulture Project I (PS)
Coordinator: **Prof. Mapplebeck**
This course requires the student to select an appropriate project plus a faculty advisor in consultation with the course coordinator. A project implementation plan will then be prepared. The projects may vary considerably in nature. Available only to B.Tech (Env. Hort.) students.
Fall or Winter semester – 1 lec per week.

HORT4000 (ES470): Urban Tree Management
Instructor: **Prof. Goodwin**
Prerequisite: HORT0207 or a previous course in arboriculture, or permission of the instructor
The focus of this course is on the management of the urban forest. Tree inventory systems, planning the urban forest, rhizosphere management, site reclamation, the valuation of urban trees, and trees and the law will be included. Lab exercises will include tree assessment techniques, tree inventory exercises, use of tree inventory software, new techniques for hazard tree assessment, new techniques for managing pests and diseases in urban trees, and site assessment and remediation. Tree pruning exercises will emphasize preservation of tree structure, quality of cuts, and work efficiency and safety.
Fall semester – 3 lecs and 3 labs per week.

HORT4001 (PS410): Horticulture (A, PS)
Instructor: **Prof. Daniels**
Prerequisites: PLSC4000 and three horticultural production courses
The objective is to review and integrate material from prerequisite courses on horticultural crop 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.

HORT4002 (PS440): Management of Specialized Turf (PS)

Instructor: **Prof. Daniels**

Prerequisite: HORT0102

Planning, designing, and implementing various management strategies for specific turfgrass situations, including moderately to intensively managed athletic fields, golf courses, and lawn bowling establishments.

Fall semester – 2 lecs and 3 labs per week.

HORT4003 (PS470): Tree Management (PS)

Instructor: **Prof. Goodwin**

Enrolment restricted; preference given to B.Tech (Env. Hort.) students.

The focus of this course is on the management of the urban forest. Tree inventory systems, planning the urban forest, landfill site reclamation, and the value of urban trees will be included. Lab exercises will include climbing and pruning, flexible cable installation, and tree assessment.

Fall semester – 3 lecs and 4 labs per week. Last offered 2003/2004.

HORT4004 (PS460): Environmental Horticulture Project II (PS)

Coordinator: **Prof. Daniels**

This course requires the student to select an appropriate project plus a faculty advisor in consultation with the course coordinator. A project implementation plan will then be prepared. The projects may vary considerably in nature. The project could be a site analysis, a design, a maintenance calendar, a construction or maintenance estimate (cost analysis), or a nursery propagation or production study.

Available only to B.Tech (Env. Hort.) students.

Fall or Winter semester – 1 lab per week.

INTERNATIONAL DEVELOPMENT

INTD2000 (IN205): Food Systems in the Tropics (A)

Coordinators: **Profs. Asiedu** and **Russell**

This course examines tropical food systems with particular reference to Jamaica in the West Indies. Students will learn about farming systems, tropical crops and livestock, business structures of tropical agriculture, producer organizations, marketing, financing, trade, government involvement in food systems, and the consumer. Field trips to various agri-industry operations will be undertaken.

This intensive two-week course is offered in Jamaica at the College of Agriculture, Science and Education. Additional fees for travel, meals, and accommodations apply. Registration is through the Centre for Continuing and Distance Education.

Spring semester (subject to enrolment).

INTD2001 (IN206): Agricultural Systems of Central Europe

Coordinators: **Profs. Rifai** and **Gray**

This course examines agricultural systems in central Europe with particular reference to Slovakia, the Czech Republic, and Hungary. Students will learn about the geography, history, farming systems, crop and animal husbandry, agricultural equipment and machinery, landscape development, and agricultural economics of central Europe. Field trips to various agri-industry operations will be undertaken.

This intensive two-week course is offered in Slovakia at the Slovak University of Agriculture in Nitra, in the Czech Republic at the University of Agriculture in Prague, and in Hungary at the Svent Istvan University in Budapest. Additional fees for travel, meals, and accommodations apply. Registration is through the Centre for Continuing and Distance Education.

Spring semester – following exams in April.

INTD3000 (PS355): Tropical Agriculture (A, PS)
Instructor: **Prof. Asiedu**
This course will introduce the student to food production, storage, and handling systems in tropical and subtropical countries. The sustainability of these systems and issues that 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.

MATH

MATH1000 (MP100): Calculus and Analytic Geometry I
Instructors: **Profs. Madigan** and **Georgallas**
Prerequisite: Grade 12 Pre-Calculus Mathematics or Introductory Studies MATH0050
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 mathematics diagnostic test, to be taken the day following registration. Students not admitted must take MATH0050.
Fall and Winter semesters – 3 lecs and 1 tutorial per week.

MATH1001 (MP105): Calculus and Analytic Geometry II
Instructors: **Profs. Madigan** and **Georgallas**
Prerequisite: MATH1000
A continuation of MATH1000 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 MATH1000, topics from analytic geometry are covered at appropriate stages of the course.
Fall and Winter semesters – 3 lecs and 1 tutorial per week.

MATH2000 (MP230): Multivariable Calculus
Instructor: **Prof. Madigan**
Prerequisite: MATH1001
This course covers functions of several variables: vectors, space curves, partial derivatives, optimization, multiple integrals and their applications, vector fields, line integrals, flux integrals, divergence and curl, Stokes Theorem, and the Divergence Theorem.
Fall semester – 4 lecs and 2 labs per week.

MATH2001 (MP236): Differential Equations
Instructor: **Prof. Madigan**
Prerequisite: MATH1001
This course introduces the basic theory of differential equations, considers various techniques for their solution, and looks at various applications. Topics include First Order Linear and Non-Linear differential equations; differential equations of higher order; Laplace Transforms; Series solutions; systems of equations; and Fourier Series. Topics from Linear Algebra are included as required.
Winter semester – 4 lecs and 2 tutorials per week.

MATH3000 (MP335): Applied Linear Algebra
Instructor: **TBA**
This course covers geometric vectors in three dimensions, dot product, lines and planes, complex numbers, systems of linear equations, matrix algebra, matrix inverse, determinants, Cramer's rule, introduction to vector spaces, linear independence and bases, rank, linear transformations, orthogonality and applications, Gram-Schmidt algorithm, eigenvalues and eigenvectors.
Winter semester – 3 lecs and 2 labs per week.

MATH4000 (MP460): Agricultural Modelling
Instructor: **Prof. Georgallas**
Prerequisites: MATH1001 and permission of the instructor
The aim of the course is to teach agricultural students when and how to attempt to express their ideas mathematically, and 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.

MANAGEMENT

MGMT0100 (EB10): Accounting
Instructor: **TBA**
An introduction to accounting topics useful to managers. Topics include recording transactions, forms of business organization, cash and accrual bases of accounting, financial statements, internal control, payrolls, bank reconciliation, and types of accounting systems, with an introduction to microcomputer applications.
Fall semester – 3 lecs and 2 labs per week.

MGMT0101 (EB11): Applied Accounting and Taxation
Instructor: **TBA**
Prerequisite: MGMT0100
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 accounting project.
Winter semester – 3 lecs and 2 labs per week.

MGMT0102 (EB40): Agricultural Marketing
Instructor: **Prof. Russell**
Preparatory: ECON0100
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.

MGMT0103 (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.

MGMT0200 (EB42): Applied Farm Management

Instructor: **Prof. Tait**

Prerequisite: MGMT2003

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 3 labs per week.

MGMT0201 (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. Project will take more than one semester to complete.

Fall semester – 5 labs per week.

MGMT0300 (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.

MGMT0301 (EB95): Practicum – Farming Technology
Coordinator: **Prof. Tait**
The seven-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.
Time – May to November, at the end of the first year of the Farming Technology program.

MGMT0302 (EB90): Economics and Business 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.

MGMT1000 (EB225): Small Business Entrepreneurship
Instructor: **Prof. Russell**
This course provides students with an overview of small business management theory and practice presented from an entrepreneurial perspective. Topic areas discussed include identifying and evaluating new business opportunities, financing the business, marketing management, human resources, and financial management. Upon successful completion of the course, students will understand the elements of business planning required for successful small businesses today.
Winter semester – 3 lecs per week.

MGMT2000 (H140): Human Resource 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.
Fall and Winter semesters – 3 lecs per week.

MGMT2001 (EB230): Introduction to 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.

Description of Courses – Undergraduate and Technical

MGMT2002 (EB335): 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.

MGMT2003 (EB340): Farm Management (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 3 labs per week.

MGMT2004 (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, making 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; and plant and equipment.
Fall semester – 3 lecs and 2 labs per week.

MGMT2005 (EB215): Financial Accounting II
Instructor: **TBA**
Prerequisite: MGMT2004
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.

MGMT3000 (EB315): Management Accounting
Instructor: **Prof. Russell**
Prerequisite: MGMT2004
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, break-even analysis, differential analysis, and capital investment analysis.
Fall semester – 3 lecs and 2 labs per week.

MGMT3001 (EB430): International Marketing
Instructor: **Prof. Whalen**
Prerequisite: MGMT2002
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 that 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.

MGMT3002 (EB435): Consumer Behaviour
Instructor: **Prof. Whalen**
Prerequisite: MGMT2002
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.

MGMT4000 (EB410): Strategic Management
Instructor: **Prof. Whalen**
Prerequisites: Students will normally be Agricultural Business majors who have successfully completed the first three years of the program.
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 agribusiness 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.

MGMT4001 (EB445): Advanced Entrepreneurship (A)
Instructor: **Prof. Russell**
Prerequisites: MGMT2002, MGMT2003 and at least third-year degree standing
This course will apply the concepts of entrepreneurship to creating and managing a small business. Students will investigate opportunities for new agribusinesses and develop business plans which consider management structure, financing, production, marketing, and taxation. Lectures, case studies, guest speakers, and project assignments will be utilized.
Winter semester – 3 lecs and 3 labs per week.

MICROBIOLOGY

MICR2000 (B225): Microbiology
Instructor: **Prof. Stratton**
Preparatories: BIOL1000, BIOL1001
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 laboratory coats.
Winter semester – 3 lecs and 3 labs per week.

MICR3000 (B355): Food Microbiology (A)
Instructor: **TBA**
Prerequisite: MICR2000
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.
Fall semester – 3 lecs and 3 labs per week.

MICR3001 (IN390): Microbial Biotechnology
Instructors: **Prof. Blanchard**
Prerequisites: MICR2000, CHEM3000 (or old CS205), and one physics course
A study of the various techniques required for employing microbial systems in biotechnology applications. Topics covered will include fermentation kinetics, culture systems, fermenter control, scale-up concerns, and some specific applications, such as the use of microbial systems in bioremediation and waste disposal, and as biological pesticides or fertilizers. Laboratory classes will be integrated with material covered in other biotechnology courses.
Fall semester – 3 lecs and 3 labs per week.
Not offered in 2004/2005.

MICR4000 (B400): Soil Microbiology (A)
Instructor: **Prof. Stratton**
Prerequisites: MICR2000, SOIL2000
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 3 labs per week.
Offered in alternate years; next offered in 2004/2005.

NUTRITION

NUTR3000 (AS305): Animal Nutrition (AS)
Instructor: **Prof. Firth**
Prerequisite: CHEM3001 (or CHEM2005 and preparatory old 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.

NUTR3001 (AS325): Applied Animal Nutrition (A, AS)
Instructors: **Profs. Firth** and **Anderson**
Prerequisite: NUTR3000
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.

NUTR3002 (AS365): Fish Nutrition (A, AS)
Instructor: **Prof. Anderson**
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.

NUTR4000 (AS475): Ruminant Digestive Physiology and Metabolism (AS)

Instructor: **Prof. Fredeen**

Prerequisites: BIOL2006, NUTR3000, CHEM3006

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 2004/2005.

PHILOSOPHY

PHIL3000: Environmental and Agricultural Ethics (H)

Instructor: **TBA**

Prerequisite: at least third-year standing

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). Students will be evaluated on 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 – one 2-hour seminar per week.

PHYSICS

PHYS1000 (MP150): Physics for the Life Sciences I

Instructor: **Prof. Georgallas**

Prerequisite: Grade 12 Physics (NS Physics 12, NB 121 or 122, PE 621, NL 3201 or 3202) or Introductory Studies PHYS0050

Prerequisite/Corequisite: MATH1000

In this course an understanding of Physics is acquired by exploring the physical principles which underlie complex biological structures. The nature of materials and the forces that act on them is introduced through a series of topic examples taken from evolution, mammalian physiology, plant structure, and others.

Fall and Winter semesters – 3 lecs per week, 11/2 labs/tutorials per week (alternating weekly).

Students may take either PHYS1000 or PHYS1002 but not both for credit.

PHYS1001 (MP250): Physics for the Life Sciences II

Instructor: **Prof. Georgallas**

Prerequisite: PHYS1000 or PHYS1002

In this course the physical principles underlying perception throughout the animal kingdom are introduced. The examples chosen emphasize adaptation and strategies (e.g., echolocation and noctuid moths) and represent a wide range of forms (e.g., eyes of the common scallop pecten, electric location by the fish Gymnarchus niloticus).

Winter semester – 3 lecs per week, 11/2 labs/tutorials per week (alternating weekly).

PHYS1002 (MP140): Physics I
Instructor: **Prof. Pearson**
Prerequisite: Grade 12 Physics (NS Physics 12, NB 121 or 122, PE 621, NL 3201 or 3202) or Introductory Studies MATH0050
Prerequisite/Corequisite: MATH1000
Fundamental physical principles that are necessary for the understanding of the agricultural sciences form the core material of this 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.
Fall and Winter semesters – 3 lecs, 11/2 labs, and 1 tutorial per week.
Students may take either PHYS1000 or PHYS1002 but not both for credit.

PHYS1003 (MP145): Physics II
Instructor: **Prof. Pearson**
Prerequisite: PHYS1002
A continuation of PHYS1002. The course mainly deals with electromagnetic theory, including such topics as electric charges, 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.

PLANT SCIENCE

PLSC0100 (PS35): Utilization of Plant Resources
Instructor: **Prof. Goodyear**
Using an integrated systems approach, students are introduced to the principles and practices involved in the sustainable production of crop plants. Practical exercises will give the students an opportunity to gain knowledge and skills involved in economic and environmental growing of agronomic and horticultural crops.
Fall semester – 3 lecs and 2 labs per week.

PLSC0200 (PS55): Plant Propagation
Instructor: **Prof. Pruski**
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.

PLSC0201 (PS90): Technology Project
Coordinator: **Prof. Asiedu**
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.

PLSC0202 (PS99): Plant Science Techniques
Coordinator: **Ms. Kilyanek**
Prerequisite: completion of first year of Plant Science Technology program
This is a Spring semester course intended for students in the Plant Science Technology program following their first year of study. Students will be required to work under contract in an area of Plant Science with an approved employer for a period of at least 12 weeks (480 hours). Contract content will be relevant to the student's area of study and will be negotiated between the employer, the course coordinator, and the student. Assessment will be based on this contract and will be carried out jointly by the employer and the course coordinator.
Spring semester – 12 weeks.

PLSC0203 (PS76): Plant Products Physiology
Instructor: **Prof. Asiedu**
The principles of plant physiology as they apply to plant products in storage environments. This 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. Post-harvest 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.

PLSC1000 (PS147): Farm Woodlot Management (A, PDN)
Instructor: **T. Smith**
This course has limited enrolment.
The importance of forestry to Canada and the Atlantic Provinces is explained. 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.
Steel-toed boots and hard hats are required by law.
Fall semester – 3 lecs and 3 labs per week.

PLSC2000 (PS211): Specialty Crops (PDN)
Coordinator: **Prof. Mapplebeck**
This course will examine opportunities for specialty crop production, using an entrepreneurial approach. A core group of specialty crops will be examined. Production requirements, production and marketing potential, end use, and value adding will be studied. Students will have optional crop choices to reflect individual interest. A major project is required.
Winter semester – 3 lecs and 2 labs per week.

PLSC2001: Theory and Practice of Plant Propagation (PS)

Instructor: **Prof. Pruski**

Prerequisite: BIOL1000

Prerequisite/corerequisite: BIOL2002

This course is intended to give students an advanced knowledge in the area of Plant Propagation. It is strongly recommended to those students wishing to undertake graduate work in plant sciences, biotechnology, environmental sciences and ecology. It is also recommended to managers of greenhouses and nurseries. Topics will include biology of plant propagation, propagation environment, breeding systems, seed and vegetative propagation, cell and tissue micropropagation, and propagation of selected plant species for commercial production.

Winter semester – 3 lecs and 3 labs per week.

PLSC4000 (PS400): Plant Breeding (A, PS)

Instructor: **N. McLean**

Prerequisites: GENE2000, STAT2000, 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 2005/2006.

PLSC4001 (PS415): Crop Adaptation (A, PS)

Instructor: **Prof. Lada**

Prerequisite: one crop production course

Preparatory: BIOL2002, BIOL3001

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. Agricultural practices will be related to economic and environmental responsibilities.

Fall semester – 3 lecs per week.

POLITICAL SCIENCE

POLS1000: Introduction to Political Science (H)
Instructor: **TBA**
An introductory study of the ideologies of modern movements. Liberal democracy, conservatism, democratic socialism, fascism, and Marxist perspectives will be covered. Analysis of such central concepts as liberty, equality, power, authority, justice, law, constitutionalism, democracy, and authoritarianism will be presented and discussed. This course provides an overview of the various institutions and policies involved in governing. There will be a focus on rural social movements.
Fall semester – 3 lecs per week.

POLS1001: Structure and Function of Government (H)
Instructor: **TBA**
Students will study the legislative, executive, and judicial aspects of the Canadian state, and their interactions. They will look at political processes and policy development. This course will provide students with the basic knowledge of how governments operate at all levels. It will offer insight into how and why political decisions are made about the issues that affect all Canadians: taxation, education, employment, health care, and the debt. There will be a focus on issues of interest to rural Canada.
Winter semester – 3 lecs per week.

RESEARCH METHODS/PROJECT-SEMINARS

RESM4000 (AE449): Bio-Environmental Systems Management Project-Seminar I (A)
Coordinator: **Prof. Sibley**
Prerequisite: Bio-Environmental Systems Management (or Agricultural Mechanization) student in third year, or consent of the coordinator
Students will study an operation (information gathering) and review management of technology, human, finance and environmental resources. A group report and individual oral and poster presentations are required.
Winter semester – 1 scheduled seminar session per week.

RESM4001 (AE450): Bio-Environmental Systems Management Project-Seminar II (A)
Coordinator: **Prof. Sibley**
Prerequisite: RESM4000
Restricted to Bio-Environmental Systems Management (or Agricultural Mechanization) students in their final year or consent of the coordinator. This is a continuation of RESM4000 with a study and examination of alternatives to identified problems within the operation. Working with industry representatives, the course will identify solutions to current problems. Written and oral reports are presented to class and industry.
Fall semester – 4 labs per week.

RESM4002 (AS449): Animal Science Project-Seminar I (A)

Instructors: **Dept. of Plant and Animal Sciences Faculty**

Coordinator: **Prof. Tennessen**

Prerequisite: Animal Science major in third or fourth year of the program, or consent of the coordinator.

In consultation with a faculty advisor, Animal Science majors select 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.

Winter semester – 2 labs per week.

RESM4003 (AS450): Animal Science Project-Seminar II (A)

Instructors: **Dept. of Plant and Animal Sciences Faculty**

Coordinator: **Prof. Tennessen**

Prerequisite: RESM4002

Fall semester – 2 labs per week.

RESM4004 (EB425): Research Methods for Economics and Business (A)

Instructor: **Prof. Grant**

Prerequisites: at least third-year standing, including ECON1000

The lectures cover general methodological issues within business and social sciences research, as well as considering specific research techniques. Students undertaking fourth-year projects within the Department of Business and Social Sciences begin their projects, under faculty supervision, through this course's project development process. Other students may instead write one or more papers on research methodology.

Fall semester – 2 lecs and 2 labs per week.

RESM4005 (EB450): Project-Seminar for Economics and Business (A)

Instructors: **Dept. of Business and Social Sciences Faculty**

Coordinator: **Prof. Grant**

Prerequisite: RESM4004

Under the supervision of faculty, students complete the research projects begun in RESM4004. 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.

RESM4006 (ES449): Environmental Sciences Project-Seminar I (A)

Instructors: **Dept. of Environmental Sciences Faculty**

Coordinator: **Prof. Stratton**

Prerequisite: students registered for their final year in the Department of Environmental Sciences, or consent of the coordinator

A required course for all B.Sc.(Agr.) students registered in the Department of Environmental Sciences. Each student will choose a research project and faculty advisor in consultation with the course coordinator. Each student will present periodic oral and written reports on their subject of investigation. Other written and seminar topics may be assigned. Topics on communication skills and the presentation of scientific information in various formats will be discussed in the weekly seminar periods.

Fall semester – as arranged.

RESM4007 (ES450): Environmental Sciences Project-Seminar II (A)
Instructors: **Dept. of Environmental Sciences Faculty**
Coordinators: **Profs. Le Blanc** and **Nams**
Prerequisite: RESM4006
A continuation of RESM4006. Students will continue with their research projects. The course will culminate in the presentation of project results, in several formats. Other written and seminar topics may be assigned.
Winter semester – one seminar per week.

RESM4008 (PS449): Plant Science Project-Seminar I (A, PS)
Instructors: **Dept. of Plant and Animal Sciences Faculty**
Coordinator: **Prof. Asiedu**
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 RESM4009. 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 all students in Year 3 of the Plant Science option.
Winter semester – 2 lecs per week.

RESM4009 (PS450): Plant Science Project-Seminar II (A, PS)
Instructors: **Dept. of Plant and Animal Sciences Faculty**
Coordinator: **Prof. Asiedu**
Prerequisite: RESM4008
The continuation and conclusion of the subject selected in RESM4008. This consists of both a written and an oral presentation of the project.
Fall semester – 2 lecs per week.

RESM4010: Aquaculture Project-Seminar I (A)
Instructors: **Dept. of Plant and Animal Sciences Faculty**
Coordinator: **Prof. Tennessen**
Prerequisite: Aquaculture major in third or fourth year of the program, or consent of the coordinator
In consultation with a faculty advisor, Aquaculture majors select 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.
Winter semester – 2 labs per week.

RESM4011: Aquaculture Project-Seminar II (A)
Instructors: **Dept. of Plant and Animal Sciences Faculty**
Coordinator: **Prof. Tennessen**
Prerequisite: RESM4010
Fall semester – 2 labs per week.

RESM4012 (IN449): Agricultural Biotechnology Project-Seminar I (A)
Instructor: **TBA**
Prerequisite: 5 semesters in AgBiotech Major
In consultation with a faculty advisor, AgBiotech Majors in their third year will select a research topic. The topic will be investigated and reported orally and in a written report. Other topics of current interest will also be presented and discussed in the weekly seminar period.
Winter semester – 2 seminars per week.
Not offered in 2004/2005.

RESM4013 (IN450): Agricultural Biotechnology Project-Seminar II
Instructor: **TBA**
Prerequisite: RESM4012
A continuation of RESM4012.
Winter semester – 2 seminars per week.
Not offered in 2004/2005.

SOCIOLOGY

SOCI1000 (H160): Introductory Sociology (H)
Instructor: **TBA**
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.

SOCI1001: Introductory Sociology II (H)
Instructor: **TBA**
The study of social issues uses sociological theory and research to examine social dynamics and social consequences associated with various current concerns. The topics covered will vary from year to year, but may well include problems such as gender and race relations, child and spousal abuse, substance abuse, poverty, work and alienation, and environmental issues. There will be a focus on issues of interest to rural Canada.
Winter semester – 3 lecs per week.

SOCI3000 (H360): Rural Sociology (H)
Instructor: **TBA**
Prerequisite: SOCI1000
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.
Fall semester – one 3-hour seminar per week.

SOILS

SOIL0100 (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.

SOIL0200 (CS13): Soil Management
Instructor: **Prof. Miller**
Prerequisite: SOIL0100
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.

SOIL2000 (CS220): Introduction to Soil Science (A)
Instructor: **Prof. Brewster**
Prerequisite/Corequisite: CHEM1001 (or old 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 3 labs per week.

SOIL3000 (CS320): Soil Fertility (A)
Instructor: **Prof. Miller**
Prerequisite: SOIL2000
Preparatory: BIOL2002
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 3 labs per week.
Offered in alternate years; next offered in 2005/2006.

SOIL3001 (CS345): Soil Conservation in Agriculture (A)
Instructors: **Profs. Miller** and **Brewster**
Prerequisite: AGRI1000
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.

SOIL4000 (CS440): Environmental Soil Chemistry
Instructor: **TBA**
Prerequisite: SOIL2000
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 seminar-discussions integrate basic soil chemical principles with problems in waste disposal, metal contamination, nutrient leaching, pesticide degradation, etc.
Winter semester – 3 lecs and 3 labs per week.
Offered in alternate years; next offered in 2005/2006.

SPANISH

SPAN1000 (H135): Basic Spanish I (H)
Instructor: **TBA**
This course will be offered subject to minimum enrolment. 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.
Fall semester – 3 lecs per week.

SPAN1001 (H136): Basic Spanish II (H)
Instructor: **TBA**
Prerequisite: SPAN1000
This course will be offered subject to minimum enrolment. This course is designed for anglophone, francophone and international students. It is a continuation of SPAN1000 with emphasis on comprehension, conversation, reading, and writing.
Winter semester – 3 lecs per week.

SPECIAL TOPICS

SPEC2000 (EB221): Topics in Economics and Business Management (A)
Instructors: **Dept. of Business and Social Sciences Faculty**
Prerequisites: 10 degree or diploma credits
An opportunity for students throughout the College to study introductory topics defined by an individual student, a group of students, or faculty. The course is conducted by classes, tutorials, assigned readings, assignments and/or other appropriate activities. Topics must be supervised by a faculty member and approved by the department head.
Fall, Winter or Summer semester – as arranged.

SPEC4000 (AS421): Special Topics in Animal Science or Aquaculture (AS)
Instructors: **Dept. of Plant and Animal Sciences Faculty and Staff**
Coordinator: **Prof. Tennessen**
Prerequisites: two years of full-time study at a post-secondary institution (normally 20 degree credits), and permission of the instructor
This is an opportunity to study a special topic in the area of animal science or aquaculture as defined by an individual student, group of students or faculty. The course is conducted by tutorials, assigned readings, assignments, field trips and/or other appropriate activities. The special topics would normally be supervised by a faculty or staff member associated with the Animal Science program or the Aquaculture program and approved by the department head.
Fall or Winter semester – as arranged.

SPEC4001 (B421): Special Topics in Agribiology I (A)
Instructors: **Dept. of Environmental Sciences Faculty**
Prerequisite: 20 degree credits
An opportunity to study a special topic defined by an individual student, a 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.

SPEC4002 (B422): Special Topics in Agribiology II (A)
Instructors: **Dept. of Environmental Sciences 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.

SPEC4003 (CS415): Special Topics in Chemistry and Soil Science I (A)
Instructors: **Dept. of Environmental Sciences Faculty**
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.

SPEC4004 (CS425): Special Topics in Chemistry and Soil Science II (A)

Coordinator: **Prof. Hoyle**

Prerequisite/Corequisite: SPEC4003

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 an area of interest similar to that studied in SPEC4003 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.

Fall or Winter semester – as arranged.

SPEC4005 (EB421): Special Topics in Agricultural Economics and Business I (A)

Instructors: **Dept. of Business and Social Sciences Faculty**

Prerequisites: 30 degree courses

An opportunity to study a special topic, defined by an individual student, a 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.

SPEC4006 (EB422): Special Topics in Agricultural Economics and Business II (A)

Instructors: **Dept. of Business and Social Sciences Faculty**

Prerequisites: 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 semester – as arranged.

SPEC4007 (ES401): Special Topics in Environmental Studies I (A)

Instructors: **NSAC Faculty**

Coordinator: **Prof. Stratton**

Prerequisites: 20 degree, technology or technical credits, including ENVS2000 and ENVS2001, and permission of the coordinator

This is an opportunity to study a special topic in the area of agricultural environmental studies or environmental horticulture as 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 would normally be supervised by a faculty member associated with either the Environmental Studies or Environmental Horticulture program and must be approved by the coordinator.

Fall or Winter semester – as arranged.

SPEC4008 (ES402): Special Topics in Environmental Studies II (A)
Instructors: **NSAC Faculty**
Coordinator: **Prof. Stratton**
Prerequisites: 20 degree, technology, or technical credits, including ENVS2000 and ENVS2001, and permission of the coordinator
This is an additional opportunity to study a special topic in the area of agricultural environmental or environmental horticulture studies as defined by an individual student, group of students, or faculty. The course is conducted by tutorials, assigned readings, assignments, and/or appropriate activities. Although the second topic selected may be in a similar area of interest to that studied in ES401, it must be sufficiently distinct to warrant additional study. Special topics would normally be supervised by a faculty member associated with the Environmental Studies or Environmental Horticulture program and must be approved by the Coordinator.
Fall or Winter semester – as arranged.

SPEC4009 (H403): Special Topics in Rural Studies (H)
Instructors: **Dept. of Business and Social Sciences Faculty**
Prerequisite: at least third-year standing
This is an opportunity to study a special topic, defined by an individual student, a group of students, or faculty. The course will consist of tutorials, assigned readings, writing assignments, and/or other appropriate activities. Special topics must be supervised by a Faculty member and approved by the Business and Social Sciences department head.
Fall, Winter, or Summer semester, as arranged – 3 lecs per week.

SPEC4010 (PS421): Special Topics in Plant Science I (A, PS)
Instructors: **Dept. of Plant and Animal Sciences Faculty**
Prerequisites: 20 degree credits or enrolment in the B.Tech program
An opportunity to study a special topic, defined by an individual student, a 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, Winter or Summer semester – as arranged.

SPEC4011 (PS422): Special Topics in Plant Science II (A, PS)
Instructors: **Dept. of Plant and Animal Sciences Faculty**
Prerequisites: 20 degree credits or enrolment in the B.Tech program
A second special topics course provides additional opportunity for students to individualize the 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 PS421, 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, Winter or Summer semester – as arranged.

SPEC4012 (AE415): Directed Studies in Agricultural Engineering (A)
Instructors: **Engineering Department Faculty**
Independent studies are developed through literature review or laboratory or field research on topics pertinent to agricultural engineering.
Fall or Winter semester – as arranged.

STATISTICS

STAT2000 (MP210): Introduction to Statistics

Instructor: **Prof. Astatkie**

Graphical presentation of data; descriptive statistics; normal, binomial, t and F distributions; sampling distributions and the central limit theorem; estimation and hypothesis testing of a single mean and the difference between two means; and introduction to correlation, regression and analysis of variance for simple experimental designs.

Fall and Winter semesters – 3 lecs, 1 tutorial, and 1 computer lab per week.

STAT2001 (MP212): Probability and Statistics for Engineering

Instructor: **Prof. Pearson**

This calculus-based first course in probability and statistics is designed to interact with the major disciplines within engineering. Topics include descriptive statistics, mathematics of probability, random variables and probability distributions, estimation, hypothesis testing, linear regression and correlation, and introduction to analysis of variance. Problem-solving skills in material related to engineering will be emphasized.

Winter semester – 3 lecs, 1 tutorial, and 1 lab per week.

STAT3000 (MP211): Introduction to Planned Studies: Surveys and Experiments

Instructor: **Prof. Astatkie**

Prerequisite: STAT2000

This course is a continuation of STAT2000. Topics covered include sampling techniques, simple and multiple linear regression, analysis of variance for completely randomized and randomized block designs, nonparametric tests, and introduction to categorical data analysis.

Winter semester – 3 lecs, 1 tutorial, and 1 computer lab per week.

STAT4000 (MP420): Intermediate Statistical Methods

Instructor: **Prof. Astatkie**

Prerequisite: STAT3000

Analysis of single-factor experiments, randomized blocks, latin squares, and factorial and two-level fractional factorial designs.

Fall semester – 3 lecs and 1 computer lab per week.

Description of Courses – Introductory Studies Program

These non-credit courses are offered for students who do not meet entrance requirements or who require upgrading to enter certain courses.

CHEM0050 (CS89): Preparatory Chemistry
Instructor: **B. Jones**
Prerequisite: approval of the Registrar
This course is designed for students who satisfy all other requirements for admission but lack the Grade 12 Chemistry course. The course will cover the basic materials necessary for entrance into CHEM1000, including review of the periodic table, nomenclature, chemical reactions, aqueous solutions, chemical bonding and other topics as determined by a review of the class. CHEM0050 is not intended to duplicate or replace Grade 12 Chemistry.
Fall semester – 3 lecs and 1 tutorial per week.

MATH0050 (MP85): Functions
Instructor: **B. Jones**
Prerequisite: if required as a result of performance on a mathematics diagnostic test
This is a one-semester course designed for those who do not have the requisite skills for the first-year mathematics courses but have shown sufficient basic mathematical ability to warrant a one-semester course to make up for the deficiencies. This course will emphasize the study of the basic functions used in the sciences. Topics to be covered include linear, exponential, logarithmic, and trigonometric functions. Emphasis is placed on using a graphing calculator. MATH0050 is not intended to duplicate or replace Grade 12 Pre-Calculus Mathematics.
Fall semester – 3 lecs and 1 tutorial per week.

PHYS0050 (MP90): Introductory Physics
Instructor: **B. Jones**
An introductory course for entering students who do not have the equivalent of NS Grade 12 Physics. Course topics include dynamics, statics, fluids, and heat.
Fall and Winter semesters – 2 lecs and 2 tutorials per week.

Graduate Program

MASTER OF SCIENCE IN AGRICULTURE

The Master of Science program with a specialization in agriculture is a joint program offered by the Nova Scotia Agricultural College (NSAC) and Dalhousie University. Dalhousie University grants the Master of Science degree in association with NSAC. Graduate students may take graduate courses offered at NSAC and at Dalhousie University. This provides graduate students in the M.Sc. program in agriculture with a wide variety of courses from which to select. Graduate courses offered at NSAC are listed herein. Graduate courses offered at Dalhousie University are listed in the Dalhousie University Graduate Studies Calendar 2004/2005, available on the Dalhousie web site at *www.dalgrad.dal.ca*.

Students accepted for enrolment in the M.Sc. program are registered at NSAC and Dalhousie and are given a student identification number for each institution in accordance with the systems in place at each institution. **Official transcripts for all students are produced by Dalhousie University.**

For all academic matters relating to the M.Sc. program including admission requirements, degree requirements, examinations, evaluations and theses, students are deemed to be students of both NSAC and Dalhousie University. Students are subject to the academic regulations and rules of the Faculty of Graduate Studies as outlined in the Dalhousie University *Graduate Studies Calendar 2004/2005*.

For all non-academic matters, including the payment of tuition and other fees, scholarships, bursaries, research and conference funding, athletics, and non-academic discipline, students are deemed to be students of NSAC. Graduate students are referred to the NSAC *Community Standards 2004/2005* document *(www.nsac.ns.ca/stuserv/handbooks.htm)* for further information on the rules and regulations governing the College community. This document describes the regulations/standards that constitute reasonable behaviour and outlines the process by which breaches of these standards are adjudicated. This document also contains the alcohol and drug policy, information on appeal processes and the NSAC *Student Code of Conduct*. The College's Policy for Responsible Computing also applies to graduate students and can be found in the document *Policy Governing Access to and Use of NSAC Academic Computing (www.nsac.ns.ca/acs/policies.htm)*.

All students must agree to obey all the regulations of NSAC and all academic regulations of the Faculty of Graduate Studies, Dalhousie University. Additionally, students are advised that this Calendar is not an all-inclusive set of rules and regulations but represents only a portion of the rules and regulations that will govern the student's relationship with NSAC and Dalhousie University. Other rules and regulations are contained in additional publications (e.g. *Graduate Program Procedures Manual*) that are available to the student from Dalhousie University Registry and Faculty of Graduate Studies as well as the NSAC Registry and Research & Graduate Studies Office. Students are also advised that the regulations herein are subject to change.

Graduate Program

Animal Science
(livestock, fur animals, poultry, shellfish and finfish)
Animal Management
Behaviour
Breeding
Molecular Genetics
Nutrition
Physiology

Environmental Science
Agricultural Systems Management
Ecology
Entomology
Pest Management
Resource Management
Wastewater Management
Weed Science

Plant Science
(fruits, vegetables, grains, forages and specialty crops)
Cropping Systems Management
Plant Breeding
Molecular Genetics
Nutrition
Pathology
Physiology

Soil Science and Agricultural Chemistry
Food Biochemistry
Food Product Development
Food Safety and Quality
Soil Chemistry
Soil Conservation and Management
Soil Fertility

NSAC has unique strengths in the areas of Organic Agriculture; Air, Water and Soil Quality Management; Fur Animal Research; Aquaculture Production; Pasture Management; and Agricultural Waste Management. There are also opportunities for graduate studies in Engineering. Contact us for details.

ADMISSION REQUIREMENTS

Candidates must hold a Bachelor's degree with a minimum 'B' average or GPA of 3.0 from a university of recognized standing. For entry into the Master's program, candidates must hold a Bachelor's degree with Honours or the equivalent of honours standing as granted by Dalhousie University in the area in which graduate work is to be done or an area that is relevant to the graduate work. A four-year Bachelor's degree may be considered as equivalent of honours if there is significant evidence of independent research capacity (such as a research project as part of a course) or if the degree is officially approved as an honours equivalent. In those cases where a candidate has a three-year degree and an honours program was not available to them, first-class candidates will be considered for admission into the two-year program or Qualifying Year (programs are described below).

English is the standard language of study at NSAC and Dalhousie University. Thus, candidates whose native language is not English must demonstrate their capacity to pursue a graduate-level program in English before admission. The standard test is TOEFL (Test of English as a Foreign Language). The minimum acceptable score for the written TOEFL is 580 and for the computer-based TOEFL is 237. Official TOEFL reports are to be submitted to NSAC (institution code 0844). The following other tests will also be accepted with the following minimum scores: MELAB, 90; IELTS, 7; CanTest, average of 4.5 with no band score lower than 4.0; CAEL, 60 overall, with no band score lower than 50.

There are some exceptions to this policy. Please contact the Research & Graduate Studies Office, NSAC, at (902) 893-6502 (e-mail: mlaw@nsac.ns.ca), if you have any questions regarding the English Language Requirement.

Further information on these tests may be obtained from:

Test of English as a Foreign Language (TOEFL)
Education Testing Service
P.O. Box 6151
Princeton, NJ
USA 08541
www.toefl.org

Michigan English Language Assessment Battery (MELAB)
English Language Institute (ELI)
TCF Building
University of Michigan
401 E. Liberty, Ste 350
Ann Arbor, Michigan
USA 48104-2298
www.lsa.umich.edu/eli/melab.htm

International English Language Testing System (IELTS)
University of Cambridge Local Examinations Syndicate
1 Hills Road
Cambridge, UK
CB12EU
www.ielts.org

Canadian Test of English for Scholars and Trainees (CanTest)
CanTEST Project Office
Second Language Institute
University of Ottawa
600 King Edward Avenue
Ottawa, ON
K1N 6N5
www.arts.uottawa.ca/ils/eng/cantest_register.html

Canadian Academic English Language Assessment (CAEL)
School of Linguistics and Applied Language Studies
Carleton University
126 Paterson Hall, 1125 Colonel By Drive
Ottawa, ON
K1S 5B6
www.carleton.ca/slals/cael.htm

All applications will be reviewed at NSAC based on the academic qualifications and record of the applicant. Completed applications are sent from the Graduate Coordinator to the head of the department to which the student is applying. The department head receives completed applications, arranges for a departmental recommendation on admission for each applicant, and assists the Graduate Coordinator with finding a supervisor and funding support for acceptable M.Sc. candidates. A recommendation on admission, signed by the Department Head, will be forwarded to the Graduate Coordinator within two weeks of receiving the completed application. Recommendations regarding admission will then be forwarded from NSAC to the Dean of Graduate Studies, Dalhousie University. At this stage, NSAC will contact applicants to inform them that a positive recommendation has been made to the Faculty of Graduate Studies (FGS), Dalhousie University. **This does not constitute official acceptance into the graduate program.** Final decisions on all admissions are made by FGS, Dalhousie University, and there are no appeals on admission decisions. FGS reserves the sole right to reject applications from candidates who meet or exceed the minimum admission requirements. Official acceptance is achieved when the recommendation has been approved by FGS, Dalhousie University, and a formal letter of acceptance is issued by the Dalhousie Registrar's Office. This letter is the only official notification that is sent out. All other forms of communication, including letters from the supervisor or department, do not constitute official acceptance or rejection. Please note that entry into the graduate program is very competitive and applicants who meet the minimum requirements are not guaranteed admission. Normally, successful applicants have academic records and qualifications that are well above the minimum required.

Note that supporting documents included in applications (e.g., transcripts, letters of reference, etc.) will be verified for authenticity. Applicants submitting fraudulent documents will have their names published on the listserv of the Association of Registrars of Universities and Colleges in Canada and may have their acceptance rescinded.

Dalhousie University reserves the right to rescind any acceptance of an applicant in the program or to rescind an offer of admission of an applicant into the program. Such rescission will be in writing in accordance with Dalhousie University regulations (see Dalhousie University *Graduate Studies Calendar 2004/2005*).

Application forms and details may be obtained from:

Research & Graduate Studies Office
Cumming Hall, Nova Scotia Agricultural College
PO Box 550, Truro, Nova Scotia B2N 5E3
Phone (902) 893-6502 Fax (902) 893-3430
www.nsac.ns.ca

Students who have taken graduate courses before applying for graduate studies, and who have not used these credits for another degree, should apply for appropriate graduate credit at the time of admission. Dalhousie University's Faculty of Graduate Studies does not guarantee that advanced standing will be granted for courses taken prior to admission to the graduate program. Under no circumstances will advanced standing be approved retroactively.

Graduate Program

ACADEMIC DEADLINES

A complete list of academic deadlines for those students enrolled in the M.Sc. program can be found in the *Graduate Program Procedures Manual 2004/2005*. The Graduate Coordinator distributes this manual to all registrants in the M.Sc. program annually at registration.

Starting Dates

Students may choose to begin their Master of Science in Agriculture program in the Fall (September 1), Winter (January 1), or Spring (May 1) session.

Application Deadlines

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

September 1 is June 1 (non-Canadian students April 1)
January 1 is November 15 (non-Canadian students August 31)
May 1 is February 28 (non-Canadian students December 31)

*If visa processing is lengthy (such as in the People's Republic of China), applicants should apply at least two months before the deadline, e.g., by January 31 for September admission.

Applicants who require a student visa and are not funded by NSAC or an officially-recognized funding agency must provide proof of financial ability with their application. Immigration Canada is increasingly rigorous about requiring proof of sufficient financial support to complete the program of study.

PROGRAMS OF FULL-TIME AND PART-TIME STUDY

One-Year M.Sc. Program

Ten graduate credits are required. The thesis will count for a maximum of six credits. The remaining credits (pass grade of 'B-' or 70% in each course) must include AGRI5700 (Communication Skills and Graduate Seminar). The number of credits awarded for the thesis is intended to make the total number of credits equal to the number required for the M. Sc. degree (ten), and is not related to the thesis quality; it is expected that a thesis awarded four credits is of the same quality as a thesis awarded six credits. The one-year program involves a program fee requirement of one year, during which a full-time student is expected to be on campus unless otherwise given permission to take courses or undertake research somewhere else. The one-year program fee is followed by continuing fees as required.

Two-Year M.Sc. Program

In addition to the requirements for a one-year M.Sc. program, students must complete at least five credits related to their thesis work with a grade of 'B-' (70%) or better in each course. These additional credits may be at the undergraduate or graduate level. The two-year program involves two years of program fees followed by continuing fees as required.

Graduate Courses

Graduate courses at NSAC are numbered in the 5000 series. No course can be assigned a graduate number without the recommendation of the Curriculum Committee and the approval of Faculty Council (NSAC) and the Curriculum Committee, Faculty of Graduate Studies (Dalhousie University). The last dates for adding and deleting classes are published in the schedule of Academic Deadlines, as printed in the Dalhousie University Graduate Studies Calendar 2004/2005. For withdrawals within this period, the class and the withdrawal are not recorded on the academic

record. After these dates, the student is responsible for the content of the class and receives a grade for it. Students may not transfer from full to part-time status by withdrawing from classes after the deadlines listed in the schedule of Academic Deadlines.

Advanced Placement

Advanced placement can be given for courses already counted toward a previous degree. Advanced placement can reduce the overall number of course requirements when the student's previous degree and standing are exceptional. Advanced placement must be approved by the supervisor, the Graduate Coordinator and FGS, and must be clearly annotated on the student's Graduate Program Form. Students should be aware that courses approved for advanced placement will not appear on their official transcript of the NSAC/Dalhousie M.Sc. program.

Transfer Credit

A transfer credit allows for courses completed outside of the student's program, normally at another institution, to be used as part of the student's degree requirements. Such courses cannot have been used for credit for another degree, and cannot exceed 33% of the student's overall requirements. This total of 33% would also include any courses taken on Letter of Permission. Transfer credits should be applied for within the first term following admission and must be approved by the student's supervisor, the Graduate Coordinator, and FGS. An original transcript and course equivalency is required. Approved transfer credits will appear on the student's official transcript of the NSAC/Dalhousie M.Sc. program.

Letters of Permission

The maximum number of courses taken outside of NSAC/Dalhousie University Master's program, combining classes taken by Letters of Permission and by Transfer Credits, shall normally be confined to 33% of the class requirements. Courses approved by Dalhousie University (after examination of course descriptions) can be taken at other universities on Letter of Permission as part of the graduate degree program provided the course is not available at NSAC or Dalhousie University. **Graduate students enrolled in the M.Sc. program in agriculture do not need a Letter of Permission to take courses at Dalhousie University.**

Approval of the Letter of Permission is granted by the Dean of Graduate Studies, Dalhousie University. Graduate students must be registered and have paid appropriate fees before letters of permission will be approved. Full-time and part-time students are eligible to apply to take a course on a Letter of Permission. Students may not take classes outside of the NSAC/Dalhousie M.Sc. Program for graduate credit unless prior approval has been received from the Faculty of Graduate Studies, Dalhousie University. **Letters of Permission are not approved retroactively.**

Students must achieve a 'B-' (70%) grade or better in order to achieve a pass standing at NSAC/Dalhousie University. Grades below 'B-' received for courses taken on a Letter of Permission at another institution will be recorded as a failing grade on the student's record. The normal regulations governing grading policy apply to classes taken at other institutions (i.e., a 'C+' on a graduate class taken elsewhere will be deemed an 'F' in the student's program and will render him/her liable to academic withdrawal). Students who fail a class may not replace that class on a Letter of Permission, except with special permission of FGS.

NSAC will normally pay the tuition, **up to a maximum of $500**, for students who pay a program fee to take classes on a Letter of Permission if the course is a required course

for the student's M.Sc. program and the course is not available at NSAC or Dalhousie University. (Thus, this policy would not apply to students who pay 'course fees'.) NSAC will reimburse the student up to a maximum of $500 toward the cost of a course taken on a Letter of Permission provided that the student passes the course (minimum grade of 'B-' or 70%). Students are only reimbursed after they have taken and passed the course. To be reimbursed, the student must provide proof of payment for the course and official transcripts showing that the course was passed.

Ancillary Courses

A student may be directed by his/her supervisor or supervisory committee to take undergraduate courses which are ancillary in nature to the student's specific area of study. Undergraduate courses recommended by a supervisor or the supervisory committee as advisable additional background to the degree program, but not specifically required for that program, are termed ancillary courses and are usually taken in a department other than the one in which the student is registered. These are taken by the student for credit in order to make up deficiencies in background or to acquire important skills of an ancillary nature. The pass grade in ancillary courses taken at NSAC (i.e., NSAC undergraduate courses) is 60%. Ancillary classes must be listed on the Program Form but do not count toward the required number of credits for the M.Sc. Degree. Students who take ancillary courses at another institution are responsible for the tuition fees at the other institution. Undergraduate courses taken at NSAC will not appear on the student's official transcript of the M.Sc. program issued by Dalhousie University and will not be included as part of the student's graduate program. The NSAC Registry will record ancillary courses.

Additional Undergraduate and Audit Courses

As part of their regular fees, graduate students may take two undergraduate courses for credit and two audits of their choice in addition to their 10 required program credits. Approval is required from the student's supervisory committee for the additional undergraduate credit and audit courses.

Independent Study, Directed Readings and Special Topics

Students may not register for more than two independent study, directed readings or special topics courses in any graduate program.

Passing Grade for Required Courses

All courses (graduate or undergraduate) not designated "audit" or "ancillary" at the admission interview are "required" and must be passed with a grade of at least 'B-' (70%). Courses in which a student fails to obtain this grade may not be reclassified as "audit" or "ancillary" at the end of semester.

Grading Policy

Graduate students must achieve a minimum, or passing grade of 'B-' in all classes required as part of their degree program. Any lower grade will be recorded as a failure. Note that **there is no withdrawal (WD) grade for graduate students** (see grading chart below), except where a student formally withdraws from the program.

Dalhousie University's FGS uses the following grading scheme:

Letter Grade	Numerical (%) Equivalent
A+	90–100
A	85–89
A–	80–84
B+	77–79
B	73–76
B–	70–72
F	<70

Academic Transcript

The academic transcript is a reflection of academic progress and therefore reflects both passes and failures. It cannot be altered after the fact. Accordingly, it is essential that students be fully aware of the deadlines for adding and withdrawing from graduate classes. Except for university purposes, transcripts, both official and unofficial, will be issued only on the request of the student and, where appropriate, on payment of the required fee. A student will receive only an unofficial transcript. Upon a student's request, official transcripts will be sent to other universities, or to business organizations. Graduate students are reminded that their official academic transcript must be requested directly from Dalhousie University. Official transcripts can be requested through Dalhousie's on-line system.

Incomplete Courses

A student who fails to complete the required work for a particular class during the normal period of the class will receive a grade of 'F' (Fail). However, where circumstances warrant it, a grade of 'INC' (Incomplete) may be assigned. Subsequent completion of the work following the end of the class may result in a change of grade by the class instructor, as long as the work is completed before the following deadlines:

Fall term classes	February 1
Winter term classes	June 1
Full academic year classes (e.g., AGRI5700)	June 1
Summer term classes	October 1

After these deadlines, an 'INC' grade cannot be changed without permission of FGS, Dalhousie University.

Where the formal deadline for completion of work is beyond the INC deadline, the instructor can request permission from the Faculty of Graduate Studies to extend the INC for an approved period of time.

Where illness is involved, a certificate from the student's physician will be required. This certificate should indicate the dates and duration of the illness, when possible should describe the impact it had on the student's ability to fulfil academic requirements, and should include any other information the physician considers relevant and appropriate. To obtain a medical certificate, students who miss examinations, tests or the completion of other assignments should contact their physician at the time they are ill and should submit a medical certificate to their instructor as soon thereafter as possible. Such certificates will not normally be accepted after a lapse of more than one week from the examination or assignment completion date.

For exceptional circumstances other than illness, appropriate documentation, depending on the situation, will be required. Requests for alternate arrangements should be made to the instructor in all cases. The deadlines for changing a grade from ILL to a letter grade are the same as those listed above for changing a grade from INC to a letter grade.

In Progress Courses

The grade of "In Progress" may be used only to report the thesis course, research project classes, and those designated as "open to independent completion of study". Final submission of grades for project and independent study courses is April 30 for fall term courses and August 31 for winter term and regular session (AGRI5700, AGRI5710 and AGRI5705) courses.

Academic Standards

When the work of a student becomes unsatisfactory (including insufficient progress), or a student's attendance is irregular without sufficient reason, withdrawal from one or more courses or academic dismissal from the program may be required.

Failed Courses

A student who fails to obtain the minimum grade (B-) in any course in any year is automatically withdrawn (academically dismissed) immediately from the program. However, such a student may apply, in writing, to the NSAC Graduate Coordinator for reinstatement. Reinstatement to the program after a failing grade must be supported by the Graduate Coordinator and the head of the department in which the student is registered at NSAC, and must be approved in writing by the Faculty of Graduate Studies. Note that any academic withdrawal and reinstatement will be recorded on the student's official transcript.

Length of Program and Extensions

Graduate students have a maximum period of time within which to complete all of the requirements for their graduate program.

Usual Time Limits

Usual time limits for the completion of degrees are:

One-year M.Sc., full-time: 2 years
One-year M.Sc., part-time: 4 years

Upper Time Limits

Upper time limits for the completion of degrees are:

One-year M.Sc., full-time: 4 years
One-year M.Sc., part-time: 5 years
Two-year M.Sc., full-time: 5 years
Two-year M.Sc., part-time: 7 years

Students may apply for extensions beyond the upper time limits. A first extension of one year may be granted by the Faculty of Graduate Studies on the recommendation of the Graduate Coordinator, along with a satisfactory Progress Report Form completed and signed by the student and the supervisor. A request for one further extension, the Final Extension, must be submitted to the Graduate Coordinator with a Report of Progress in the previous year together with a detailed plan and timetable for completion of the thesis within the following 12-month period. If supported by the supervisory committee, the Graduate Coordinator will forward the recommendation to the Dean of Graduate Studies for approval. The student is then expected to defend and submit the approved thesis within that academic year. Further extensions will only be given for one term to provide for necessary revisions to the thesis following defence. Under no circumstances can a student be registered in a program for more than 10 years.

Graduate Program

Withdrawal From Program

A student who decides to withdraw from the graduate program must immediately notify, in writing, his/her supervisor and the Graduate Coordinator. The Graduate Coordinator will notify the NSAC Registrar, the Dalhousie Registrar, and the Dean of Dalhousie University's Faculty of Graduate Studies. Refund of fees, if applicable, will be calculated from the date this letter is received by the Graduate Coordinator. A withdrawal is not official until it has been approved by the FGS and is received in the Dalhousie Registrar's Office. Under no circumstances will the FGS back-date a withdrawal notice.

Academic Dismissal

A student may be required to withdraw from the program for academic reasons (e.g., resulting from class failure, failure of ATC examination, or lack of academic progress), for academic offences such as plagiarism, irregularities in the presentation of data, for non-academic reasons (e.g., breach of an NSAC or Dalhousie University regulation or Code of Student Conduct), or for failure to maintain registration status. The student will be notified by the appropriate body of the reason for the required withdrawal. The student has the right to appeal the decision to the Graduate Coordinator.

Readmission of Students

A student who is required to withdraw, who voluntarily withdraws, or whose registration has lapsed rnay apply for readmission within ten (10) years of initial registration. Readmission is not automatic because of the competition for places with incoming students. A student who is academically withdrawn may not apply for readmission for at least 12 months following the official date of the withdrawal.

Readmitted Students

Students who fail to register and pay tuition fees for any term before the degree requirements have been fulfilled are considered to have withdrawn and will be required to apply for readmission. Readmitted students (except those who have been withdrawn for academic reasons) must pay fees for the terms in which they were not registered, to a maximum of three terms at the current "continuing fee" rate.

Readmitted students who were academically withdrawn will not be charged make-up fees for the three terms immediately following the official date of withdrawal. Make-up fees will be charged for any term thereafter, to a maximum of three terms, until the student is registered.

Students who have not maintained registration are normally required to have a satisfactory thesis in hand or a timetable for completion approved by the Graduate Coordinator and signed by the student and thesis supervisor, before they can be readmitted.

Students may be readmitted only once during the course of their program. Application for readmission must meet normal application deadlines, and all outstanding fees must be paid.

Other Program Components

Demonstrating

As part of their graduate training all students must spend at least one academic term demonstrating in an undergraduate class. It is hoped that graduate students will participate in a variety of activities through the demonstrating position such as preparing teaching materials, giving prelab presentations/instructions, monitoring student progress, and marking assignments. The demonstrating will normally occupy six hours per week for the teaching term and will be paid for by the department at the prevailing rate ($900 per term) unless payment is disallowed by the terms of a scholarship. Department heads, in consultation with the students' supervisors, are responsible for ensuring that each graduate student is assigned at least one demonstrating position during their program. Although departments must ensure that a position is available for every student within their department so that this program requirement can be fulfilled, students may demonstrate in an undergraduate course outside of their academic department.

Students are encouraged to discuss this requirement with their supervisor and their department head early in their program. Students interested in demonstrating in an undergraduate course outside of their academic department should discuss this possibility with their supervisor, the instructor of the course in which they are interested, and the department head of the department in which the course is offered. If a student is able to arrange to complete the demonstrating requirement in a course outside of their academic department, they must notify their supervisor and their Department Head. **The department in which the student is registered will not pay for a graduate student to demonstrate in an undergraduate course that is offered outside his/her academic department.** The demonstrating requirement can be completed in the student's first or second year of the program. Students may demonstrate in more than one course only with permission from their supervisory committee. Students are responsible for ensuring that the instructor of the course receives, and submits to the Research & Graduate Studies Office, a Teaching Assistantship Evaluation Report form. These forms are available from the Graduate Coordinator. The performance of students as demonstrators will be evaluated by those in charge of the course. Departments are responsible for ensuring that sufficient demonstrating positions are available to their graduate students.

Admission to Candidacy (ATC) Examination

Each student must pass an Admission to Candidacy (ATC) examination early in their program, **normally within the first four to six months** in which a student is registered. The purposes of the examination are:

- to evaluate the student's competency to pursue graduate studies in the student's chosen discipline within the context of the proposed research; and
- to identify and address any specific weaknesses in the student's background relevant to the proposed research area.

If the ATC examination is not completed within the first six months of the student's program, the student must submit a request for an extension with a detailed time line for the completion of the examination before registration for their third term of study will be permitted. The request for the extension and time line for completion must be approved and supported by the student's supervisory committee. Students who do not complete the ATC examination within their first year of study may not be permitted to register for their second year of study.

A Research Proposal must be prepared by all students as a requirement for Admission to Candidacy. It is recommended that the research proposal be no more than

25 single-sided pages. Students are to develop the research proposal in consultation with their supervisor and supervisory committee members.

The ATC examination is based on the presentation of an acceptable research proposal for the M.Sc. thesis and successful defense of this proposal before an examining committee. The examiners will consider not only the merit and feasibility of the proposal but also the student's knowledge of methodology, the context of the research, and the student's general academic background in areas relevant to the research.

The ATC examination will constitute the first official meeting of the supervisory committee. However, meetings between the student and the supervisory committee prior to the ATC examination are strongly recommended. The ATC Examining Committee will include a chair, one external examiner and the members of the supervisory committee. The Chair of the ATC will normally be the head of the student's academic department of study or his/her designate. The Chair of the ATC must be a member of the Faculty of Graduate Studies, Dalhousie University. In the event that the department head is not available to chair the exam and a designate from the department cannot be obtained, the Vice President Academic may act as Chair. The External Examiner may be a qualified scholar from outside NSAC, an Honorary Research Associate or Adjunct Professor of NSAC, or an NSAC Faculty member. In addition to the chair and external examiner, the ATC Examining Committee will normally consist of three to four examiners. Larger numbers of examiners are at the discretion of the student and the supervisor. One committee member may be replaced by an alternate examiner if it is impossible to have all members present.

Decision will be by consensus and the alternatives are Pass or Fail. The Chair will vote only if the committee vote is tied. Recommendations and/or conditions may accompany a Pass outcome. If the student requires further background preparation, the student may be required to take additional courses as a condition of passing the ATC examination. Appropriate classes or remedial effort will be assigned for the following academic year. If the research proposal is not deemed to be satisfactory, the student may be required to rewrite the research document. The Graduate Coordinator will verify that these assignments are completed. A student who fails the ATC examination is required to withdraw from the program. A failed ATC examination can be appealed to the Graduate Coordinator within three working days. The student will then be re-examined within two weeks by the Chair, the student's supervisor, and three faculty not on the original examining committee.

Students in a two-year M.Sc. program or part-time program may elect to delay the candidacy examination for up to one year.

Thesis

A satisfactory thesis embodying contributions to research must be presented and successfully defended in a public oral examination.

Supervisor and Supervisory Committee

All thesis students must have a Supervisor (or co-supervisors) and a Supervisory Committee. The appointment of a supervisor is a prerequisite for admission into the graduate program. Students are not admitted until their research areas have been identified and faculty members have agreed to supervise them.

Supervisor

A thesis supervisor or co-supervisor must be a member of the Faculty of Graduate Studies, Dalhousie University. Members holding post-retirement appointments or active in research in retirement cannot normally take on new students to supervise, but they can co-supervise with a full-time member of the Faculty of Graduate Studies. The

supervisor is the person who will be most directly involved in overseeing the student's research program. The supervisor must obtain written approval from their Department Head for each M.Sc. student he/she intends to supervise. The following potential difficulty should be drawn to the attention of new students: Some restriction of students' freedom to follow their own lines of research may result from dependence upon supervisors' research grants for a significant portion of their income. When conflicts of interest arise, the graduate coordinator and the student's supervisory committee should play a significant role in overseeing the development of the research and in protecting the student against the loss of academic freedom.

The supervisor must meet with the student to select courses before classes commence. If the student is not on campus by this time, the meeting must take place within one or two days of arrival.

The responsibilities of the supervisor at the first meeting with a graduate student are:

- to check whether the student has registered and to advise on correct registration procedures, if necessary;
- to help the student plan course work and to advise on all requirements for the program;
- to determine which courses are required and whether any should be designated ancillary or audit;
- to ensure that the student has suitable working space and facilities for research;
- to assign any language or auxiliary skill requirement;
- to advise students as to where they can obtain information on matters such as health insurance, social insurance numbers, housing and finances.

If a supervisor is not available to assist the student (e.g., the supervisor takes a one-year sabbatical leave) he/she must arrange an alternative (interim) supervisor for the student. The name and the expected duration of tenure of the interim supervisor must be reported to the Graduate Coordinator in writing.

In addition to the responsibilities of supervisors outlined above, each supervisor consents to:

- guide and assist their graduate students;
- serve on examining committees for ATC and thesis defences;
- teach in a graduate module course or graduate course;
- contribute information to the annual reports of the Graduate Program; and
- encourage dissemination of results and interaction of graduate students with other students and faculty through research seminars and other means.

The supervisor and the student are responsible for recommending to the Graduate Coordinator the names of three potential suitable external examiners for the ATC examination and the names of three potential external examiners for the thesis defence.

Supervisors are responsible for initiating the thesis defence; they are also responsible for making arrangements for travel and accommodations of external examiners, and for hosting external examiners, if necessary. Supervisors are responsible for all costs associated with the thesis defence (e.g., travel costs of external examiners).

Supervisory Committee

A Supervisory Committee is recommended by the supervisor in consultation with the student, and should complement the expertise available to the student in completing their research program. This committee is responsible for guiding the graduate student through the program. It consists of the supervisor and other persons with expertise or interests relevant to the student's field of study. Its composition must be reported to the Graduate

Coordinator within the student's first academic term of study or when the student applies for admission to candidacy, whichever occurs first. All supervisory committees are approved by the Faculty of Graduate Studies, Dalhousie University.

The supervisory committee consists of the supervisor and at least two others. Supervisory committee members may be chosen from outside NSAC; however:

- where the supervisor is not a full-time faculty member of NSAC, a co-supervisor from NSAC must be appointed. This person is responsible to NSAC for the student's progress;
- the majority of committee members must be members of the Faculty of Graduate Studies, Dalhousie University and full-time faculty of NSAC. Additional members of the non-university/college community (such as practising professionals), may be appointed to the supervisory committee where their particular expertise makes it appropriate. The appointment of a non-member of the Faculty of Graduate Studies, including any non-regular appointments, requires permission from the Dean or Associate Dean of Graduate Studies, Dalhousie University, for the individual to become a formal member of the supervisory committee. Non-members of FGS must be approved as "External Scholars" by the Dean of Graduate Studies. Supervisors should contact the Graduate Coordinator for more information on the approval process.

Although the Admission to Candidacy (ATC) examination is the first *official* meeting of the supervisory committee, supervisory committees are strongly recommended to meet before the ATC examination. It is recommended that the supervisory committee meet with the student before the ATC examination to discuss the student's program (e.g., courses) and proposed research project.

Supervisory committees are to meet at least twice a year during the thesis research period and more often in the writing stages of the student's program. Normally the agreement of all committee members is required before a thesis is brought forward for examination.

Supervisory committees are responsible for reviewing the student's Annual Progress Report and assisting the student in completing the Annual Progress Report form, which is received and reviewed by the Graduate Coordinator prior to being submitted to the Faculty of Graduate Studies, Dalhousie University.

Supervisors should encourage students to consult other members of their supervisory committee, either individually or as a group, whenever it is useful. Students have the right to call a committee meeting at any time. The committee should also have opportunities to critique the work in progress and make alternative suggestions before it appears in thesis form. Students and supervisors are therefore encouraged to call the committee together to discuss research progress more often than the statutory once a year described above. (Note: at least one meeting per academic term is recommended.)

Supervisory Committee Member's Responsibilities

Each member of a supervisory committee is responsible for:

- providing guidance to allow for the student's intellectual growth to become a competent contributor to a field of knowledge. In this context, the supervisory committee must provide constructive criticism and provocative discussion of the student's ideas as the program develops. The committee should ensure that the student is exposed to a wider range of expertise and ideas than can be provided by the advisor alone;
- being reasonably accessible to the student for consultation and discussion of the student's academic progress and research problems, and directing the student, as appropriate, to consult with experts outside the committee;
- ensuring that a "program of study" is established with the

student's involvement and that it is formally approved by the committee, the student, and the Office of Research & Graduate Studies;

- identifying, as far as possible, current and anticipated problems that may arise in the student's program and helping to alleviate them;
- meeting regularly to review the student's progress and constructively advance the student's research. The frequency of meetings will vary according to the stage and nature of the student's program;
- confirming and approving annual progress reports to the Office of Research & Graduate Studies and Dalhousie University Faculty of Graduate Studies, and ensuring that progress reports include concerns or document when the progress being made is unsatisfactory;
- informing the student of the approximate time it will take for submitted written material to be returned with comments, with a normal maximum duration of two weeks;
- reading and commenting on drafts of written material and indicating whether or not a major paper is complete or a thesis ready for submission to the final examination committee;
- conforming to the basic principles of academic integrity and professionalism in the development of a mature and objective relationship with the student;
- respecting and conforming to the scholarly integrity and conflict of interest guidelines of NSAC and the Faculty of Graduate Studies, Dalhousie University.

REGISTRATION

It is the student's responsibility to register on the day(s) specified for graduate student registration. Registration is the process by which the student officially establishes with NSAC (through the Research & Graduate Studies Office) courses to be taken in the M.Sc. program and status (full-time, part-time), and pays the appropriate academic fees. Both aspects of the process (course registration/status and fee payment) must be completed before a student can be said to be registered.

Graduate students may take graduate courses offered at NSAC and at Dalhousie University. This provides graduate students in the M.Sc. program in Agriculture with a wide variety of courses from which to select. Graduate courses offered at NSAC are listed in this Calendar. Graduate courses offered at Dalhousie University are listed in the Dalhousie University Graduate Studies Calendar 2004/2005 and are available on the Dalhousie web site at *www.dalgrad.dal.ca*.

Students must register for each term (fall, winter and summer) at both Dalhousie University (carried out via the web at *www.dal.ca/online*) and NSAC (complete and sign "Course Form" available from the Graduate Coordinator). Students are reminded that they must keep their mailing address up to date.

To register, all graduate students in their first year of study must:

(i) meet with the Graduate Coordinator for a student interview to complete the relevant forms that indicate the student's presence on campus and intention to study for a graduate degree during the ensuing year. The student will be required to provide the following information at the student interview: 1) identify his/her supervisor and proposed supervisory committee members, and 2) provide a list of courses, approved by the student's supervisor or Committee as necessary to complete the student's M.Sc. requirements. The Graduate Coordinator will assist the

student with on-line registration procedures at NSAC and Dalhousie University and with the formal completion of the Program Approval form. The completed forms will be submitted by the Graduate Coordinator to the NSAC Registrar and the Dalhousie Dean of Graduate Studies. Any change in courses after the interview must be approved by the supervisor and the Graduate Coordinator; a Course Change form is required by the NSAC and Dalhousie Registries, and a Program Update form is required by the Dean of Graduate Studies.

(ii) arrange for medical insurance coverage. NSAC does not offer nor provide medical insurance for students. International students must have health insurance and are to apply for health insurance, through the NSAC Student Services Office, immediately upon their arrival in Canada. Fees for health insurance are billed directly to each international student's account at NSAC, and must be paid upon the student's arrival. International students must show proof of medical insurance prior to registration. Canadian students are not mandated to show proof of medical insurance prior to registration; however, they are responsible for ensuring that they have adequate medical insurance that meets their needs.

(iii) arrange for payment of fees.

(iv) obtain a student ID card (from NSAC Student Services).

Graduate students in their second year of the program and beyond will receive a registration package by mail. This package will contain:

- deadline dates by which registration must be completed;
- an NSAC course form for the student to sign and return to the NSAC Research & Graduate Studies Office;
- procedures to be followed to register at Dalhousie University via the on-line registration system;
- procedures for the payment of tuition fees; and
- specific information on procedures to follow to change academic status, program requirements, etc.

Continuing students who require an extension to their program or have an outstanding progress report will not be permitted to register until the extension or progress report has been officially approved by the Faculty of Graduate Studies.

Late registration is permitted until the last day for adding courses. Late fees are waived only in extenuating circumstances and at the discretion of the Vice President Administration. Registration after the final deadline is normally only permitted in unavoidable circumstances such as illness or required absence for research at the beginning of the next academic year (in September).

Any student who fails to register within the prescribed periods may neither submit a thesis nor obtain any services from NSAC or Dalhousie University during that semester. Continuing students who fail to register by the final deadline will be automatically withdrawn from their program and will have to apply for readmission by the next available admission date.

An individual program of study must be approved for every graduate student. The program of study for each graduate student must be approved by the Graduate Coordinator and submitted for final approval to the Faculty of Graduate Studies, Dalhousie University. The Graduate Coordinator will enter the proposed program and any other requirements and conditions on the Program Approval Form. The student, the supervisor and the Graduate Coordinator must sign this form prior to submission to the Faculty of Graduate Studies. **Once approved, the Program Form constitutes an agreed contract between the student and NSAC/Dalhousie University for the requirements to complete the M.Sc. program.**

Concurrent Registration

A student may, with the permission of the Faculty of Graduate Studies, register for two concurrent degrees, either at Dalhousie or one at Dalhousie and one elsewhere, for a maximum of twelve months, usually the first academic year of the graduate program. This does not apply to an NSAC/Dalhousie student finishing an M.Sc. degree who has been accepted into a Ph.D. program. In that case, the student must first complete the Master's degree and then register in the Ph.D. program in January, May or September as applicable and approved by the department. If the student fails to complete the Master's degree for a particular entry point, the onus is on the department to defer the admission to the next available start date.

Leave of Absence

Students who need to take leave from their program of study, because of illness or a serious problem outside the student's control, may apply in writing through the Graduate Coordinator for a Leave of Absence. If NSAC recommends to the Faculty of Graduate Studies, Dalhousie University that the Leave of Absence be granted, and if the Faculty of Graduate Studies is also satisfied that the need is justified, such leave will be granted. An official Leave of Absence does not count toward time in the program. Students may not hold stipends or scholarships during a Leave of Absence. During a leave of absence, a student cannot study elsewhere for credit at NSAC or Dalhousie University. **Leaves of Absence will not be approved retroactively.**

Leaves of Absence can be granted for the following periods: September to December; January to April; and May to August. Students may apply for successive term leaves up to a maximum of three terms (one year).

Applications for Leave of Absence (limited to a total of three terms during an individual's program) must be made by August 15 for a leave commencing September 1, December 8 for a leave commencing January 1, and April 16 for a leave commencing May 1.

A Leave of Absence not only frees the student from the necessity of paying tuition fees, it also releases NSAC and Dalhousie University from the obligation to provide the student with services. These include consultations with professors, library and computer privileges, health services, and other student services.

Suspension of Studies

Unexpected emergencies that arise during the term cannot be accommodated by a Leave of Absence. Such cases can be accommodated through a suspension of program but no fee rebate is possible. A student must apply in writing to the Faculty of Graduate Studies for a suspension of program stating the reasons and the length of time requested, and it must be supported by the NSAC Graduate Coordinator. A suspension relieves the student from responsibilities for completing classwork and other program requirements, but it does contribute to time in the program (i.e., the clock does not stop ticking). Normally, a suspension of studies shall be for no longer than one term. Disposition of courses registered for during a term of suspension of studies must be agreed upon by NSAC, and approved by FGS.

Parental Leave

Parental leave will be granted, without prejudice to academic standing, at the time of pregnancy, birth or adoption. A parent may request up to three terms of leave, which must be completed within twelve months of the date of birth or custody. Where both parents are graduate students seeking parental leave, the total number of terms may not exceed four. While on parental leave, students do not register or pay fees to NSAC. Any refund of fees will be governed by university regulations. Parental leave not only frees the student from the necessity of paying fees, it also releases Dalhousie University and NSAC from the obligation

to provide the student with services. These include consultations with professors, library and computer privileges, health services, and other student services. It is recommended that students planning to take parental leave not only give adequate notice to their supervisor but also discuss issues such as future plans and progress, stipend support, and research deadlines. Retroactive approval will not be given for parental leave.

Identification Cards

Full-time and part-time students will receive both NSAC and Dalhousie ID numbers. Students will receive NSAC ID cards that will entitle them to Novanet library services. The Novanet consortium comprises nine post-secondary institutions: Dalhousie, SMU, MSVU, St FX, UCCB, Kings, NSCC, NSCAD and NSAC. Students will have borrowing privileges at all of the above-listed institutions. Contact the NSAC MacRae Library for more information. Please note that because students are registered at Dalhousie University and are also given a Dalhousie ID number, NSAC graduate students can access the proxy server at Dalhousie University that allows access to the Dalhousie Library databases and electronic journals. Students will need their Dalhousie ID number to access their grades, and to update their personal information on Dalhousie's on-line access system at www.dal.ca/online.

Notification of Address

Correspondence from Dalhousie University and NSAC will be sent to the most recent address on file at these institutions. Students will be held responsible for complying with all notifications sent from both NSAC and Dalhousie University. Non-receipt of material because of failure to report a change of address will not excuse students from program responsibilities.

All students must report their local address while attending the M.Sc. program to the Research & Graduate Studies Office, on registration or as soon as possible thereafter, and subsequent changes must be reported promptly. Changes of address must be reported to the Graduate Coordinator and a 'Change of Address' form must be completed. The Graduate Coordinator will notify the NSAC Registry and Financial Services of the change in address.

Students are also required to ensure that Dalhousie University has their current mailing address. Students may update their address or phone number at Dalhousie on their on-line system at *www.dal.ca/online*. Select "Update Address(es) and Phones(s)" from the Personal Information menu and add a new address. Select the type to add and click the "Insert" button. Students will need their Dalhousie ID number and a password to enter the system.

E-mail

E-mail is an authorized means of communication for academic and administrative purposes within Dalhousie University and NSAC. All students will be assigned an official e-mail address. This address will remain in effect while the student remains a student. This e-mail address will be used for communication with students regarding all academic and administrative matters. Any redirection of e-mail will be at the student's own risk. Each student is expected to check his or her official e-mail address frequently in order to stay current with program communications.

Change of Name

Students who change their name while attending the M.Sc. program must provide proof of name change (e.g., marriage or divorce certificates, official name change form, etc.). Students are to contact the Research & Graduate Studies Office for additional information.

FULL-TIME, PART-TIME, AND OTHER CATEGORIES

A **full-time student** is a student who has been approved by NSAC and FGS as working full-time on a graduate degree and is registered for at least 3 full credits, excluding thesis, during the first twelve months, i.e., September to August. All NSAC courses are full credit courses. A student may register full-time and hold a job simultaneously only if the job involves no more than 16 hours' work per week, including the hours worked as a teaching assistant.

A **part-time student** is a student who has been approved by NSAC and FGS as working part-time on a graduate degree and is registered for fewer than 3 full credits, excluding thesis, during the first twelve months, i.e., September to August.

A **continuing student** is one who has completed the program fee and residency requirements but has not yet finished all the degree requirements (usually the thesis). The student is required to pay a continuing fee on a per-term basis.

A **qualifying student** is a person with a Bachelor's degree or its equivalent who meets normal admission standards and in whom NSAC has expressed an interest as a potential graduate student, but who is without sufficient academic background in a particular discipline to be enrolled directly into the Master's program. For example, a Qualifying Year may be used for a student to take an Honours equivalency certificate, or to take a year of senior undergraduate courses in an area of deficiency in their undergraduate degree. Only in exceptional circumstances may a student be admitted to a Qualifying Year to upgrade a below-standard undergraduate degree or academic record.

Qualifying students can be full-time or part-time. Because it is a prerequisite, a qualifying program cannot be used to reduce the length of a subsequent regular graduate program. Qualifying students are not eligible for scholarship or bursary support and must apply for admission to the graduate program in the usual way toward the end of the qualifying period. They must pass all classes with no grades below 'B-' and an average of at least 'B', and fulfill any other requirements in order to be considered for admission.

Special students are those students who are permitted to take a graduate class outside the Master's program. Such students, although they have not been admitted to the Master's program, may normally take a maximum of two full-credit classes with the permission of the class instructor and the Graduate Coordinator. Because all graduate classes must be taught at a consistent standard to graduate level students, non-program students must have records which meet the minimum entrance requirements for the graduate program (hence they must be approved by the Faculty of Graduate Studies, Dalhousie University, as admissible to the graduate program). Students are ineligible to apply for Special Student status in a class if they have been rejected from the program on account of academic standing, or have been withdrawn from the program. Students trying to qualify for entry to a graduate program must follow a different route: either a Qualifying Year program, if eligible, or a program of study as a Special Student in an undergraduate faculty. Classes completed as a Special Student may not be used for credits toward the formal graduate program unless approval has been granted by FGS at the time of admission.

A letter confirming a student's registration and/or scholarship or stipend status can be produced on request. Students should contact the NSAC Research & Graduate Studies Office for information on this service.

FEES

Graduate students pay "program fees" for fixed periods, either as full-time or part-time students, followed by "continuing fees" until all requirements have been completed. The current fee schedule is available each year in July. It can be obtained from the NSAC Research & Graduate Studies Office or the NSAC web site at *www.nsac.ns.ca/rgs/graduate/index.htm*.

Program Fees for Full-Time Students

Full-time graduate students pay program fees for a specific number of years depending on the program, after which they pay continuing fees until all the program requirements are completed. The one-year M.Sc. program involves a program fee requirement of one year (i.e., students admitted to the one-year program are required to pay three consecutive terms of full-time program fees). The two-year M.Sc. program involves a program fee requirement for the first two years of study. If students have to continue beyond the program fee requirement period to complete their degree, additional continuing fees are required.

Program Fees for Part-Time Students

Part-time graduate students pay the same program fee as full-time students, spread over three part-time years of study for every full-time year. If a part-time student completes the requirements for the degree before the full program fees have been paid, the balance of those fees must be paid prior to graduation.

In other words, a part-time student entering the one-year M.Sc. program will pay 9 consecutive terms of part-time fees, and a part-time student in the two-year program will pay 18 consecutive terms of part-time fees. Students who complete their part-time programs in less time will still be required to pay part-time program fees for the outstanding terms before they are approved for graduation.

Continuing Fees

Students who have completed the required program fee period and have paid all their fees, but are still short of completing their program, must pay a continuing fee until all the academic requirements of the program have been completed. Students are assessed continuing fees on a per-term fee basis. Usually, continuing fees are paid by students who are in the process of completing their thesis.

Graduate students must maintain continuous registration until their program requirements are complete, unless they are granted a formal leave of absence. Payment of fees is required for students to maintain their status in the program.

Procedures for Payment of Fees

Students will be billed in September for the Fall term; January for the Winter term; and May for the Summer term. Payment in full is due on the last day for registration (as published in the Graduate Program Procedures Manual) in the each of the Fall, Winter and Summer terms. Fees not paid by the last day for registration will be subject to interest charges, and the student's registration may be cancelled. In exceptional circumstances, graduate students may arrange with the Graduate Coordinator to pay tuition fees on a monthly basis. The first payment of a monthly payment plan is payable upon registration. NSAC has the right to deduct tuition fees directly from a student's NSERC PGS, IPS, or Canada Graduate Scholarship award (or any other outside scholarship paid to NSAC to administer on behalf of the funding agency) should the student's account go into arrears or not be paid by the last day of registration.

Graduate students may not submit their approved thesis to Dalhousie University for binding nor will they be granted their degree or official transcripts until outstanding fees are paid in full. Any late fees and interest charges that apply to undergraduate students also apply to graduate students.

Students who have outstanding balances and who have not received permission to register from the Vice President Administration are not permitted to register for a further term. Students with outstanding account balances are required to meet with the Vice President Administration to sign an Outstanding Fee Form detailing in what manner the fees are to be paid and from which sources the funds are expected to arrive.

COURSE SELECTION AND ENROLMENT

Selecting a Program

Students should meet with their supervisors before classes begin and design a complete program of suitable courses for each year of study. It is the student's responsibility to arrange this meeting. In selecting appropriate courses, the student must bear in mind the following:

- All graduate students must enroll for Thesis Research (AGRI9000) every semester even though they may expect to make little progress in that semester.
- Students in the one-year M.Sc. program are strongly encouraged to take all course work during their first year. However, if necessary, courses may be spread over more than one academic year.
- Graduate credit is obtained only for graduate courses, which are denoted by a 5000 number or above.

FINANCIAL SUPPORT

NSAC offers numerous **entrance scholarships** and **research assistantships** to eligible graduate students. All applicants to the Master of Science program are automatically considered for scholarship eligibility. The availability of research assistantships varies annually and from one area of research to another. Many research assistantships are posted on the Research & Graduate Studies web site at *www.nsac.ns.ca/rgs/graduate/index.htm*. We encourage you to check the site regularly for opportunities in an area of research that may be of interest to you.

Several **Differential Fee Waivers** are awarded to international students annually. All international applicants are automatically considered. Differential Fee Waivers are awarded on the basis of academic merit and financial need.

The M.Sc. program requires that students assist in the teaching of at least one undergraduate course. Not only do students gain teaching experience but they are also reimbursed financially in the form of a **Teaching Assistantship**.

Stipends (Research Assistantships)

All graduate student stipends will be classified as scholarships regardless of their source. Graduate students are to be informed of the rate of the stipend prior to registration. Once a stipend rate is selected, that rate normally remains in effect for the duration of the stipend payment (usually 24 months). However, the rate of the stipend may be renegotiated if there is any change in the student's official academic status (e.g. change from full-time to part-time status) or if the student receives a major scholarship (e.g. NSERC PGS A, NSERC IPS, etc.). NSERC scholarship holders are expected to adhere to NSERC's Award Holders Guidelines *(www.nserc.ca)*. Please note that these guidelines state that NSERC expects award holders to devote the majority of their time to the expeditious completion of their degree program. As a guideline in this context, NSERC strongly suggests that award holders limit the number of hours of employment per 12-month period to 450. You may not accept remuneration or supplements paid from other NSERC grants, whether paid as a scholarship or salary. Part-time NSERC PGS holders: No employment is permitted during tenure of the award without NSERC's prior authorization.

Stipend payments are managed by and distributed from the Research & Graduate Studies Office. Students

receiving stipend support will receive stipend cheques on a monthly basis at the beginning of each month. For these students, the first cheque will be issued 30 days following initial registration (i.e., if the program start date is Sept. 1, the first stipend cheque will be issued on October 1, etc.). Graduate students funded under national scholarships (e.g., Canada Graduate Scholarships, NSERC Postgraduate Scholarships (PGS), NSERC Industrial Postgraduate Scholarships (IPS), etc.) will also receive their scholarships on a monthly basis at the beginning of each month. NSAC has the right to deduct tuition fees directly from the student's scholarship should the student's account go into arrears. Students with questions regarding their stipend payments are encouraged to contact Marie Law at the Research & Graduate Studies Office (mlaw@nsac.ns.ca; 893-6502).

Stipends and scholarships are considered taxable income, and must be reported on annual income tax returns. Students will receive the forms necessary to complete their income tax returns (T4 and/or T4A slips, and tuition credit receipts) from NSAC Financial Services annually. For tax purposes, stipends are considered scholarships rather than payment for work, and income tax is not withheld. It is advised that students set aside a portion of their income to pay income taxes that may be owing.

Research Costs

A student's supervisor is responsible for costs directly associated with research for the thesis, but all costs associated with writing and presenting the thesis are the student's responsibility.

Self-support

On the few occasions when a student is accepted to the M.Sc. program with no financial support, NSAC requires that the student submit a letter waiving any responsibility on the part of NSAC for financial support for the duration of the given program. However, this does not negate the possibility that support funding may subsequently be procured during or after the initial year.

Conference Grants

Students planning to present their research at a scientific meeting may apply to the Graduate Coordinator for a grant towards their expenses. Application forms are available from the Graduate Coordinator. A student may expect only one conference grant up to a total of $500 during the course of the M.Sc. Program, subject to the approval of the Graduate Coordinator, as financing permits. Receipts for expenses are required.

THESIS REGULATIONS

Ethical Review

Research Involving the Use of Animals

Research involving the use of animals must be approved by the NSAC's Animal Care & Use Committee (ACUC). The two key functions of this committee are:

- to ensure that NSAC is in compliance with the Canadian Council on Animal Care (CCAC) with respect to standards and guidelines for the use of animals in research, teaching and testing; and
- to monitor the numbers of animals used in research, teaching and testing according to purpose and level of invasiveness. This latter information is compiled with information from other institutions across the country by CCAC to provide accurate reports on the use of animals in research, teaching and testing.

Graduate students wishing to work with animals must refer to the materials provided by the CCAC and consult with members of the ACUC as they design their experiments or field studies, and as they prepare for teaching laboratories. The CCAC "Guide to the care and use of experimental animals", "Guidelines on choosing an appropriate end-point in experiments using animals for research, teaching and testing" and several other documents are available in the library, and personal copies can be made available to interested individuals. The CCAC web site (*www.ccac.ca*) provides more detail on their mission, policies and available guidelines. Graduate students who will be working with animals are required to take the module entitled "Experimental Animal User Training". This module will be offered in October 2004 and January 2005. A description of this module can be obtained from the NSAC Research & Graduate Studies Office.

Approval by the ACUC is **required** for all animal use, on or off campus, in which NSAC faculty, staff or students are involved. **Any** teaching, research or testing use of animals requires an "Animal Care & Use Protocol", signed by an authorized representative of the ACUC, prior to assignment of animals to the project. This is true even if the procedures are non-invasive (for example, behavioural observations) or similar to routine management of the animals. All staff have the right to refuse to participate in animal use procedures not approved by ACUC. In addition, noncompliance with CCAC guidelines can result in withdrawal of funding across the campus by the national granting agencies.

Electronic copies of the Protocol forms (separate forms exist for teaching, research and renewals/extensions) are available from Mary Paquet in the Department of Plant and Animal Sciences (893-7998; mpaquet@nsac.ns.ca). Two versions of the completed forms, one electronic (via e-mail) and one hard copy signed by your supervisor, should be submitted to Laurel MacIntosh (lmacintosh@nsac.ns.ca), Secretary, NSAC Animal Care and Use Committee, Department of Plant and Animal Sciences, for review.

For further information, contact:

Dr. Jim Duston
Chair, Animal Care & Use Committee
Department of Plant and Animal Sciences
893-8639
jduston@nsac.ns.ca

Research Involving Human Subjects

All thesis research involving human subjects (including research that includes surveys or questionnaires of human subjects) must be approved by the NSAC Research Ethics Board (REB). Projects which might typically arise at NSAC and which would require REB review are questionnaires, surveys, or interviews of individuals, where the human being is the subject of the investigation and personal opinions and practices are documented. Graduate students are to submit their proposals to the Graduate Coordinator who will, in turn, forward it to the REB Chair. The REB will meet regularly. The schedule of REB meetings is available at

the Research & Graduate Studies Office. All proposals being submitted to the REB must be received at least 7 working days before the REB meeting in which they are reviewed. Meeting this deadline does not guarantee the review of the proposal at the next REB meeting; the REB is, however, committed to efficiently reviewing proposals. Students should allow six to eight weeks for processing. A copy of the NSAC letter of ethics approval will be forwarded to Ms. Lindley, Office of Research Services (Room 337, Arts and Administration Building, Dalhousie University, Halifax, NS, B3H 4H6) to put in the student's official file at Dalhousie University. Complete details on the NSAC's REB Policy and Process can be found on the Research & Graduate Studies Office website at *www.nsac.ns.ca/rgs/research/ethics.htm*. For further information contact the Research & Graduate Studies Office, Cumming Hall, NSAC (893-6360 or 893-6502) or Dr. Gary Grant, Chair of the NSAC Research Ethics Board (ggrant@nsac.ns.ca), Department of Business and Social Sciences, NSAC.

Research Involving Biohazards

Researchers, graduate students and instructors using or proposing to use biohazards must obtain certification from the NSAC Biosafety Officer that the laboratory procedures being employed comply with the safety precautions necessary for the level of containment required for the organisms used. The NSAC Biosafety Officer is Dr. Glenn Stratton, Department of Environmental Sciences (gstratton@nsac.ns.ca). Approval to acquire, purchase, and use biohazards at NSAC must be obtained from Dr. Stratton. Applications for an internal permit for the acquisition and use of biohazard materials may also be obtained from Dr. Stratton. These new regulations apply to all bacteria, fungi, viruses, parasites, recombinant DNA, and transgenic plants and animals ordered for either research or teaching purposes, regardless of their perceived pathogenicity. For additional information on biohazards, risk groups of pathogens, and containment level requirements, please refer to the Laboratory Biosafety Guidelines on Health Canada's Office of Laboratory Security website at *www.hc-sc.gc.ca/pphb-dgspsp/ols-bsl/index.html*. Further information on NSAC policies and procedures for working with biohazards can be obtained from Dr. Stratton.

Research Involving Radioactive Materials

Researchers, graduate students, and instructors using or proposing to use radioactive materials must obtain permission and approval from the NSAC Radiation Safety Officer. The NSAC Radiation Safety Officer is Dr. Robin Robinson, Department of Environmental Sciences (rrobinson@nsac.ns.ca); the Assistant Radiation Safety Officer is Anne Swan, Department of Environmental Sciences (aswan@nsac.ns.ca). The following forms are available from the Radiation Safety Office:

- Application for Internal Permit for Acquisition and use of Radioactive Materials
- Application for Internal Permit for use of Radioisotope Using Animals

All researchers, graduate students, and staff using radioactivity must provide proof of completion of a radiation use and safety training program to the NSAC Radiation Safety Office. For information on the radiation use and safety training program offered at NSAC please contact Anne Swan.

Preparation of the Thesis

An acceptable thesis will describe in clear and concise language a contribution to knowledge of sufficient value to merit publication. It must be prepared according to instructions published by the Faculty of Graduate Studies of Dalhousie University and conform to Dalhousie University requirements for thesis. The Faculty of Graduate Studies Regulations for the Submission of Theses is available from the NSAC Research & Graduate Studies Office and from the

Faculty of Graduate Studies (Dalhousie University) web site. All thesis students must obtain a copy of these regulations, and students are responsible for ensuring that their thesis complies with all aspects of these regulations. Failure to do so may cause delays in completion, and may even result in the cancellation of a scheduled defence. Students and supervisors are referred to the *CBE Style Manual for Authors, Editors and Publishers* as a possible resource for guidelines of thesis style.

The thesis must be written by the student, but advice and constructive criticism from members of the supervisory committee should be sought during its preparation. Students are also encouraged to present a synopsis for discussion and conditional approval before beginning to write, but formal approval by the supervisory committee is not mandatory. Responsibility for the document presented rests with the student. The examining committee, in judging the thesis, is concerned primarily with the quality of the work and evidence of research contributions to knowledge. Students are encouraged to publish the results of their work at any stage of their graduate program but must avoid conflict of copyright or contractual agreement. Students who have concerns regarding conflict of copyright or contractual agreement are urged to discuss these issues with their supervisor or to contact the NSAC Research & Graduate Studies Office for further information.

Thesis Originality and Editing

A thesis must present the student's own work and all students are advised to read the university's regulations on plagiarism (including self-plagiarism). Dalhousie University's regulations on plagiarism can be found in the FGS *Policy on Integrity in Scholarly Activity* (available from FGS, Dalhousie University).

All students are expected to write their theses (and indeed, all their papers) in excellent English. While editorial correcting occurs as part of the supervisory process (as sections of the thesis are read and commented upon by supervisory committee members), faculty are not expected to have to make excessive correction to the standard of English. A committee member may refuse to read materials if they are not of an adequate standard of writing and expression for a graduate-level program. Supervisors should identify English problems early on and ensure that the student takes corrective measures, such as attendance at writing workshops. Requirements to improve a student's standard of English can be made compulsory if the student's language deficiencies are problematic to the progress and success of the research.

Just as the academic content of the thesis must reflect the student's own work, so must the standard of writing and expression. While students are encouraged to make use of standard spelling and grammatical checkers within their word processing software and have individuals proofread their papers and draft manuscripts, the use of "professional" editorial services (other than strict proofreading and formatting) is prohibited. The use of editorial services which provide substantive rewriting and/or improvement of the written English within a thesis is a form of academic fraud (similar to plagiarism) because it presents a standard of work that has not been achieved by the student and is therefore giving a false impression of the quality of the student's work. If the use of any professional services is contemplated, students must consult with their supervisor and Graduate Coordinator before taking any action. The Graduate Coordinator will contact the FGS office for advice if needed.

Submission of Thesis for Examination: M.Sc. Thesis

All students must refer to the schedule of Academic Deadlines in the Dalhousie University *Graduate Studies Calender 2004/2005* for submission deadlines and registration deadlines. Students must be registered for the term in which they present their approved unbound theses

to FGS, Dalhousie University, and for the term in which they have their defence. Students will not be permitted to submit their theses or proceed to defence until they have appropriately registered and all fees have been paid. Deadlines for the submission of fully completed and approved theses (following examination and revision) are final in all cases. Failure to meet the deadlines will result in additional registration fees being applied. It is the responsibility of the student to ensure that all regulations have been met. Failure to comply with the regulations can result in delay in graduation.

Students must submit a completed Thesis Defense Planning Form, signed Supervisor Thesis Defense Signature Form, and sufficient copies of the M.Sc. thesis for each member of the examining committee (including the supervisor, supervisory committee members, external examiner, chair, and graduate coordinator) to the Graduate Coordinator before the date of the thesis defense is finalized. The thesis must be complete and suitable for printing, if accepted. The defense date is set for a minimum of three weeks following the receipt of the thesis and accompanying documentation at the Research & Graduate Studies Office. (See *Thesis Defense Guidelines* document available at the Research & Graduate Studies Office.) Graduate students are encouraged to meet with the Graduate Coordinator six weeks prior to their intended defense date to discuss preparations required for the defense and to obtain the necessary forms (Thesis Defense Planning Form and Supervisor Thesis Defense Signature Form).

Thesis Defence

Appointment of Examiners

The Thesis Examining Committee is usually the Supervisory Committee, an External Examiner and the Department Head, who chairs the examination. The external examiner is recommended by the student's supervisor in consultation with the student. In selecting the external examiner, the following priority should be used: (a) qualified scholars outside of NSAC (e.g., member of a graduate faculty of another university), (b) Honorary Research Associates and Adjunct Professors of NSAC, (c) NSAC Faculty from a department other than that with which the student is most closely associated, (d) NSAC Faculty from the department with which the student is most closely associated, but not on the student's supervisory committee. The external examiner must not have been involved with the supervision or direction of the thesis, and must be in a position to render an objective and impartial assessment of the quality of the work. The external examiner may be a non-faculty member (such as a practising professional who does not hold an Adjunct appointment with a university) when it is deemed that they have the appropriate professional and academic qualifications and expertise to assess a graduate thesis. In all cases, **the external examiner must be approved by the Vice President Academic, NSAC**. The external examiner does not necessarily attend the defence but may instead submit a written report and questions prior to the examination.

The main role of the Chair is to ensure that the procedures are carried out in an appropriate manner, to record the examiners' written comments and the results of the examination for inclusion in the student's file, and to inform the NSAC Research & Graduate Studies Office of the outcome.

Supervisors, in consultation with their students, are responsible for completing the Thesis Defence Planning Form (available from the Research & Graduate Studies Office). The Thesis Defence Planning Form must be submitted to the Graduate Coordinator at least four weeks prior to the intended defence date. The Thesis Defence Planning Form serves to:

- notify the Graduate Coordinator when the student is ready to defend;

- provide administration with the names of three potential External Examiners; and
- provide the Graduate Coordinator with all relevant information regarding the proposed date of the defence, and the availability of supervisory committee members.

Examination Format

The thesis shall be defended orally before the Thesis Examining Committee and any other interested persons who choose to attend. A public announcement of the examination shall normally be posted at least two weeks before the event. A defence consists of a 10- to 20-minute survey by the candidate of the scope of the problem and main achievements in the research. This is followed by questions and comments from the external examiner and the student's response. After the members of the Thesis Examining Committee and the audience have questioned the candidate, the Thesis Examining Committee deliberates in camera, basing the decision on both the quality of the thesis and the candidate's ability to defend it.

Examination Results

The outcome is decided by consensus of members of the Thesis Examining Committee present. Theses are either approved or not approved. The categories are:

- *Approved as submitted*
- *Approved upon specific corrections being made.* A clear timetable for completion of the revisions must be presented to the student, normally with a maximum of one month to complete the revisions. The supervisor is usually asked to monitor the required changes. Usually at least two members of the Examining Committee read the revised thesis to provide final approval.
- *Rejected but with permission to re-submit a revised thesis for re-examination.* A clear timetable for completion must be presented, normally with a maximum of one year to resubmit. Major revisions may be on grounds of form as well as content. When resubmitted, the thesis will be re-read by an examining committee, containing at least two members from the original Thesis Examining Committee. The thesis shall be sent to an external examiner who may be the original external examiner if the Chair of the examination considers this desirable. The revised thesis shall be defended in the usual way.
- *Rejected outright.* The rejection may be on grounds of form as well as content. The candidate or supervisor may appeal this decision to the Chair of the examination in writing within five working days of the decision. If the Chair deems the evidence to be sufficiently strong, the Chair of the examination shall initiate the procedure for a re-examination. No more than one appeal may be entertained and the examination Chair's decision shall be final. In all cases, all members of the Examining Committee must submit written examination reports, dated and signed, which shall become part of the candidate's file. The Chair's written report shall summarize the outcome of the examination process, the final decision, and any conditions attached. In the case of an outright failure or failure with a right to submit by a specific date, the Graduate Coordinator must send a written notification of failure to the Faculty of Graduate Studies, Dalhousie University.

Presentation of Thesis for Graduation

Deadlines

Students are responsible for presenting to the Faculty of Graduate Studies, Dalhousie University, one copy of the corrected and approved thesis for a formal check at least one week before the deadline date for submission of approved theses to the FGS (the deadline date is published annually in the Dalhousie University *Graduate Studies Calendar* and the NSAC *Graduate Program Procedures Manual*). Following a format approval by the FGS, students are responsible for presenting to the FGS six unbound copies of the corrected and approved thesis. Only good quality photocopies or printed copies will be accepted. In

addition, each student is to present a corrected and approved copy of the thesis to the Research & Graduate Studies Office.

Binding and Distribution

NSAC students must submit six copies (original plus five copies) of the approved unbound thesis to the Faculty of Graduate Studies, Dalhousie University. The Dalhousie Faculty of Graduate Studies will arrange for binding of the six copies of the thesis and its subsequent distribution as follows:

- one copy to the author
- one copy to the student's supervisor
- one copy to the student's department
- one copy to the NSAC Library
- one copy to the Dalhousie University Library
- one copy to the National Library of Canada

The Dalhousie University Library arranges for the production of a microform copy to be retained in the National Library, Ottawa, and listed in Dissertation Abstracts International or Masters Abstracts International. The National Library can then circulate such copy according to the International Inter-Library Loan Code, with full copyright protection; it also guarantees a permanent record of the thesis. The Dalhousie University Library retains one bound copy in the University Archives.

At the time of submitting the unbound, approved thesis (original and five copies) to the Faculty of Graduate Studies office, the student will present a cheque for $120* payable to the Faculty of Graduate Studies Office, Dalhousie University. This sum will cover the cost of binding. The cost of binding each additional copy of the thesis is $20*. An additional charge will be made (where appropriate) to cover mailing costs.

*Binding cost is subject to change without notice.

CONVOCATION

Graduate students have the option of attending convocation ceremonies at either NSAC or Dalhousie University. Convocation ceremonies are held at NSAC in May and at Dalhousie University in May and October. Students must fulfill all requirements including the payment of all fees prior to graduation. Applications to graduate are available at the Research & Graduate Studies Office and must be submitted to the Graduate Coordinator **by July 2 to graduate in October** and **by November 15 to graduate the following May**.

Any graduating student who is unable to appear at convocation is expected to notify the Graduate Coordinator in writing prior to April 15, for Spring convocation (or October 1 for Fall convocation at Dalhousie University). Students whose accounts are delinquent on April 15 will not receive their degree parchment or their transcripts. For October graduation the date is September 1.

When a student has fulfilled all the requirements for the degree (including payment of all program fee requirements and any continuing fees) in advance of the official graduation date, a letter to that effect can be obtained from the FGS Office, Dalhousie University. The Confirmation Letter Request form is located on the FGS website under "Forms and Documents of Students".

GRADUATE CURRICULUM LISTING

Graduate Courses

Graduate courses are intended 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.
AGRI5700: Communication Skills and Graduate Seminar
AGRI9000: Graduate Thesis

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.

AGRI5710: Module Course

AGRI5720: Applied Statistics and Experimental Design for Agriculture (The prerequisite for this course is AGRI5630 or STAT4000.)

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.

AGRI5270: Economic Entomology

AGRI5350: Animal Research Methods

AGRI5360: Protein Nutrition

AGRI5380: Quantitative Genetics

AGRI5390: Molecular Genetic Analysis of Populations

AGRI5440: Organic Environmental Analysis

AGRI5520: Plant Breeding Methods

AGRI5530: Nitrogen in Crop Production

AGRI5560: Advanced Crop Physiology

AGRI5705: Module Course II

AGRI5740: Advanced Studies in Food Chemistry

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.

AGRI5210: Special Topics in Environmental Microbiology

AGRI5220: Special Topics in Weed Science

AGRI5240: Special Topics in Environmental Impact

AGRI5260: Special Topics in Plant Pathology

AGRI5310: Special Topics in Applied Ethology

AGRI5320: Special Topics in Animal Nutrition

AGRI5340: Special Topics in Animal Physiology

AGRI5370: Special Topics in Animal Breeding and Genetics

AGRI5410: Special Topics in Soil Fertility

AGRI5430: Special Topics in Environmental Analysis

AGRI5460: Special Topics in Soil and Water Management

AGRI5470: Special Topics in Analytical Instrumentation for Researchers

AGRI5510: Special Topics in Plant Breeding

AGRI5540: Special Topics in Crop Physiology

AGRI5570: Special Topics in Agricultural Biotechnology

AGRI5610: Special Topics in Animal Product Technology

Cross-referenced Courses

Cross-references with undergraduate courses are shown in brackets ( ).

AGRI5250: Soil Microbiology (MICR4000)

AGRI5450: Environmental Soil Chemistry (SOIL4000)

AGRI5580: Plant Biotechnology (GENE4001)

AGRI5590: Biotechnology in Agriculture – Opportunities, Issues and Choices (GENE4002)

AGRI5620: Ruminant Digestive Physiology and Metabolism (NUTR4000)

AGRI5630: Intermediate Statistical Methods (STAT4000)

GRADUATE COURSE DESCRIPTIONS

AGRI5210 (AG521): Special Topics in Environmental Microbiology

Instructor: **Prof. Stratton**

This course will allow students to study a particular topic in the field of environmental microbiology 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.

AGRI5220 (AG522): Special Topics in Weed Science

Instructor: **Prof. Sampson**

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, mycoherbicides, and biorationals. Two term projects and a research critique will be required.
Winter semester – to be arranged with the instructor.

AGRI5240 (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.

AGRI5250 (AG525): Soil Microbiology

cross-referenced as MICR4000

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:

- 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;
- 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;
- give a seminar to the class on their term paper topic.

Fall semester – to be arranged with the instructor.

Offered in alternate years; next offered in 2004/2005.

AGRI5260 (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.

AGRI5270 (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 the 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 at certain relevant seminars may be required and directed readings may be assigned.

A case history of a major agricultural insect pest will be prepared 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.

AGRI5310 (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, and early rearing environment and the effect on later behaviour.
Fall or Winter semester – to be arranged with the instructor.

AGRI5320 (AG532): Special Topics in Animal Nutrition
Instructors: **Profs. Anderson** and **Fredeen**
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. Students are advised to consult with their supervisors to determine the specific scope of the topic to be studied.
Fall or Winter semester – to be arranged with the instructor.

AGRI5340 (AG534): Special Topics in Animal Physiology
Instructor: **Prof. MacLaren**
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 or Winter semester – to be arranged with the instructor.

AGRI5350 (AG535): Animal Research Methods
Instructors: **Dept. of Plant and Animal Sciences 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, and the analysis, 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.

AGRI5360 (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 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 2004/2005.

AGRI5370 (AG537): Special Topics in Animal Breeding and Genetics
Instructors: **Dept. of Plant and Animal Sciences Faculty**
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.

AGRI5380 (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 and 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.

AGRI5390 (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. Various DNA fingerprinting techniques, such as minisatellites, microsatellites, RAPD-PCR, FRLP-PCR and SSCP-PCR, and their applications in population genetic studies will be discussed. Students will acquire hands-on experience with some of these techniques. Analysis of molecular data to estimate intrapopulation populations (heterozygosity, Hardy-Weinberg equilibrium) and interpopulation parameters (test of heterogeneity of allele frequency distributions, genetic distances, phylogenetic analysis, bootstrapping, F-statistics) will be covered.

Fall or Winter semester – to be arranged with the instructor.

AGRI5410 (AG541): Special Topics in Soil Fertility

Instructor: **Prof. Percival**

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.

AGRI5430 (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.

AGRI5440 (AG544): Organic Environmental Analysis

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:

- write a major paper on an important topical issue;
- present that paper as a seminar before departmental faculty, staff, and students; and
- 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 2004/2005.

AGRI5450 (AG545): Environmental Soil Chemistry

cross-referenced as SOIL4000

Instructor: **TBA**

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 2004/2005.

AGRI5460 (AG546): Special Topics in Soil and Water Management

Instructors: **Profs. Havard, Madani**, and **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 of 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 instructors.

AGRI5470 (AG547): Special Topics in Analytical Instrumentation for Researchers

Instructors: **Profs. Crowe, Hoyle,** and **Stratton**

This course is 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 these instruments. The student will select either one of the following areas for detailed consideration, or two to three of the following areas for a more general coverage: gas chromatography, liquid chromatography, atomic analysis, DNA or protein electrophoresis, infrared or fluorometric analysis, NMR, mass spectrophotometry, and microscopy.

Fall or Winter semester – to be arranged with the instructors.

AGRI5510 (AG551): Special Topics in Plant Breeding

Instructors: **Dept. of Plant and Animal Sciences Faculty**

This course is 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.

AGRI5520 (AG552): Plant Breeding Methods

Instructors: **Dept. of Plant and Animal Sciences Faculty**

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.

AGRI5530 (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 2004/2005.

AGRI5540 (AG554): Special Topics in Crop Physiology (A)

Instructors: Profs. **Caldwell, Asiedu, Goodyear**, and **Martin**

This course is 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 instructors.

AGRI5560 (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 2005/2006.

AGRI5570 (AG557): Special Topics in Agricultural Biotechnology

Instructor: **Prof. MacLaren**

This course is 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.

AGRI5580 (AG558): Plant Biotechnology I

cross-referenced as GENE4001

Instructor: **Prof. Wang-Pruski**

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 2005/2006.

AGRI5590 (AG559): Biotechnology in Agriculture – Opportunities, Issues and Choices

cross-referenced as GENE4002

Instructor: **TBA**

This course will provide an 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. Seminars and class discussions will address socio-economic, environmental, and ethical considerations. Each student will give three seminars and write an essay on an assigned topic for submission for publication in *Farm Focus*.

Winter semester – 2 lecs and 3 seminars per week.

Offered in alternate years; next offered in 2005/2006.

AGRI5610 (AG561): Special Topics in Animal Product Technology

Instructors: **Dept. of Plant and Animal Sciences Faculty**

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.

AGRI5620 (AG562): Ruminant Digestive Physiology and Metabolism

cross-referenced as NUTR4000

Instructor: **Prof. Fredeen**

Prerequisites: NUTR3000, CHEM3006

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 2004/2005.

AGRI5630 (AG563): Intermediate Statistical Methods

cross-referenced as STAT4000

Instructor: **Prof. Astatkie**

Prerequisite: STAT3000, or permission of the instructor

Analysis of single-factor experiments, randomized blocks, latin squares, and factorial and two-level fractional factorial designs.

Fall semester – 3 lecs and 1 computer lab per week.

AGRI5700 (AG570): Communication Skills and Graduate Seminar

Instructors: **To Be Announced**

Through practical assignment, students will be able to test and develop their communication skills. Topics will include review, criticism, and writing of 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.

AGRI5705 (AG573): Module Course II

Coordinator: **Prof. Caldwell**

Prerequisite: AGRI5710

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.

AGRI5710 (AG571): Module Course I

Coordinator: **Prof. Caldwell**

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.

Fall semester – 2 three-hour lecs per week.

AGRI5720 (AG572): Applied Statistics and Experimental Design

Instructor: **Prof. Astatkie**

Prerequisite: STAT4000, or equivalent

This course is designed to provide practical skills in statistical methods and experimental designs, and an appreciation of situations when more complex models and methods are required. Topics include linear and nonlinear regression, split-plot designs, repeated measures, and response surface methods. Students will be expected to successfully complete practical exercises and a project 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.

AGRI5740 (AG574): Advanced Studies in Food Chemistry

Instructor: **Prof. Crowe**

Prerequisite: one undergraduate food science course or equivalent

This course is designed to allow graduate students to explore in detail various aspects of the chemical nature of agri-food products. This may include but is not limited to a study of naturally occurring components (functional foods and nutraceuticals), nutritional changes during value-added processing and product formulation. The exact focus of the course will depend on the expressed interest of students in the course.

Fall or Winter semester, to be arranged with the instructor – 1 lec and 1 discussion per week

AGRI9000 (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 duration of program.

Scholarships, Bursaries, and Prizes

Specific inquiries regarding scholarships and bursaries should be directed to the college's Awards Office located in the lower level of the Student Services Centre, 11 River Road on campus or by phone at (902) 893-6729, by e-mail at bcrouse@nsac.ns.ca, or by fax at (902) 895-4547.

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 students with the highest academic standing graduating each year in the Technical, Bachelor's (B.Sc.(Agr.) and B.Tech), and M.Sc. programs.

Scholarship

A scholarship is an award to a student based primarily on academic performance, although other criteria 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.

Notes

- In the descriptions of the various scholarships, bursaries, and prizes that follow, where the selection criteria is not specified the above guidelines apply. The following guidelines determine year of study in the B.Sc.(Agr) program:
  7 Credits = 2nd year
  18 Credits = 3rd year
  28 Credits = 4th year
- Selection of scholarship and bursary winners is made primarily based on the work of the previous year, with consideration also given to the cumulative average of the work done at NSAC. Generally students must be enrolled on a full-time basis to be considered for scholarship and bursary selection; preference will usually be given to students completing 8 courses per year with no fewer than 3 courses per semester.
- **Publicity Disclaimer:** It is the policy of the NSAC to publish the names, home town, photo and under some circumstances the addresses of recipients of scholarships, prizes, awards and bursaries. Those students who do not wish this information published must notify the Awards Office at the time of their acceptance of the award.
- **Scholarship Selection:** Scholarship selections are made by NSAC, the NSAC Scholarship Committee, or Donors or their Administrators.

Scholarships, Bursaries, and Prizes

PROCEDURE FOR APPEALS OF SCHOLARSHIP RENEWAL DECISIONS

Students may appeal scholarship renewal decisions based on extenuating circumstances. Generally, reasons must be severe and of a documentable nature. Other grounds may be considered at the discretion of the Scholarship Committee.

Appeals will generally be considered from students who have the following grounds for appeal:

- medically documented/supported personal illness or psychological/physical trauma
- documented/supported traumatic circumstances in immediate family such as death or serious illness.

Students must submit a letter in writing to the Chair of the Scholarship Committee requesting a review of a scholarship renewal decision. The letter should clearly demonstrate the extenuating circumstances. Documentation supporting any claims must also be included. All information contained in the letter will be kept confidential within the Committee. Students will be informed of the Committee's decision by letter. All decisions of the committee are final.

SCHOLARSHIP RENEWAL CRITERIA

- Renewable scholarships are renewed automatically at their initial value provided the student has maintained an average of 80% or greater (unless otherwise specified) for every year of study for which the scholarship was renewable. Renewable scholarships are renewed annually on a continuous basis, based on the work of the previous year (once forfeited cannot be re-instated).
- Scholarships are renewed based on an 80% average for the full year of study (80% is not required in each semester). A year of study is normally defined as September 1 to August 31; students who do not follow the normal year of study will be considered by the Scholarship Committee on an individual basis.
- To be eligible for scholarship renewal, students must maintain registration in at least 80% of the number of courses for the normal course load per semester for both the previous and the current year.
- For scholarship purposes, averages are calculated to the nearest whole number (if an average falls exactly between two whole numbers, the average is rounded up).
- The average is determined by all marks earned by the student in the previous year – non-credit courses (CHEM0050, MATH0050, and PHYS0050) are included in the calculation of the year's average for degree students.
- To be eligible for scholarship renewal, a student may not have any failed courses (including Drop Fails).
- A student who does not satisfy all the above criteria due to medical or other extenuating circumstances may appeal in writing to the Awards Office.

*The above criteria generally apply to all renewable scholarships (e.g. NS Department of Agriculture and Fisheries, NSAC Entrance Scholarships for CEC Students, NSAC Entrance Scholarships for International Students, Atlantic Scholars Awards, NS Power, Isgonish IODE.)

Scholarships, Bursaries, and Prizes

I. ENTRANCE SCHOLARSHIPS AND BURSARIES

The following scholarships and bursaries are available exclusively to students entering undergraduate or technical study at the Nova Scotia Agricultural College.

2004	***Nova Scotia Agricultural College Entrance Scholarships at a Glance***
$31,000* Atlantic Scholars Awards ($7,750 per year) *(Estimate of potential total value based on projected costs of a 4-year program)*	Five renewable scholarships (full tuition and residence at shared-room rate) to top students from Atlantic Canada with minimum average of 85% on required courses. Application deadline is March 10. **Value of scholarships dependent on number of courses taken and whether residence portion is accepted.*
$13,500 (Over four years)	Harrison McCain Scholarship is awarded to a Canadian student entering first year of any program with minimum 80% average. Selection based on academic performance, financial need, recognized initiative in funding own education, and leadership qualities. Application deadline is March 10.
$4,000 (Renewable)	Entrance scholarships for international students entering any program of study, minimum 80% admission average, 1100 SAT.
$2,500	scholarships to all students admitted with averages of 90% or greater. *Guaranteed scholarship offers based on admission average. No application required.*
$1,500	scholarships to all students admitted with averages between 85% and 89.4%** *Guaranteed scholarship offers based on admission average. No application required.*
$1,000	scholarships to all students admitted with averages between 80% and 84.4%** *Guaranteed scholarship offers based on admission average. No application required.*
Other Scholarships Ranging in Value from $500 to $1,500	Both application-based and non-application-based scholarships (various application deadlines). Selected and awarded in the fall.

**For scholarship purposes, averages are calculated to the nearest whole number.

See details of the various entrance scholarships on the following pages.

Scholarships, Bursaries, and Prizes

Guaranteed Entrance Scholarships to NSAC

All Canadian students with averages* of 80% or greater will receive an entrance scholarship from NSAC. Scholarships are awarded based on the high school averages of the courses required for admission.

- $2,500 scholarships to all students admitted with averages of 90% or greater
- $1,500 scholarships to all students admitted with averages between 85% and 89.4%
- $1,000 scholarships to all students admitted with averages between 80% and 84.4%

*For Entrance Scholarship purposes the determining average is based on either:

1. the average of the required courses for admission to the respective program of study from first term or final Grade 12 marks, or
2. the average of the final marks of the required courses for admission from first semester Grade 12 and the final marks of the remaining required courses from Grade 11.

Guaranteed Entrance Scholarship Eligibility:

- for high school students only
- must be entering full-time study
- automatic consideration
- no application is required
- tenable for one year
- students entering the first year of study in any undergraduate or technical program, with the following exception: students receiving Atlantic Scholars Awards or NSAC/CEC Entrance Scholarships.

Notes: For scholarship purposes, averages are calculated to the nearest whole number (if an average falls exactly between two whole numbers, the average is rounded up). Scholarships are awarded in two installments; to receive the second installment, full-time study must be maintained.

Atlantic Scholars Awards

NSAC annually awards five renewable entrance scholarships to students entering a full-time program of study either directly from high school or with no advanced standing from other post-secondary study. Atlantic Scholars Awards will provide tuition (for the respective program of study) and residence costs (at shared-room rate, for as long as the recipient chooses to live in residence). In order to qualify for the value of the shared-room portion of room and board fees, the recipient must reside in residence for the full academic year, each year the scholarship is held. Students entering either technical or degree programs at the college are eligible. Only those applicants who have achieved a minimum average of 85% on the courses required for admission shall be considered. Selection criteria include academic performance (on courses required for admission), geographic distribution (in most years at least one student from each of the Atlantic Provinces will be awarded a scholarship), extracurricular activity, and a recommendation from an official representative (e.g. Guidance Counsellor) of the high school or other previously attended post-secondary educational institution. The Atlantic Scholars Awards are tenable for a maximum of four years. These scholarships are renewed by maintaining an annual average of 85%. See information on criteria for renewable scholarships for additional renewal criteria. Recipients of Atlantic Scholars Awards are not eligible to receive other guaranteed entrance scholarships.

Recipients of renewed Atlantic Scholars Awards are also not eligible for internally selected In-Program scholarships. The Atlantic Scholars Awards are valued at approximately $7,750 for the first year and have a potential total value over four years of $31,000. The actual value is dependent on the number of courses taken and whether the residence portion is accepted.

Applications must be submitted to the NSAC Awards Office not later than the second Monday in March each year.

Scholarships, Bursaries, and Prizes

Atlantic Canada Bursaries

NSAC has established a fund which will provide $1,000 bursaries to assist students in need of financial assistance. To be eligible, students must be in good standing, will have spent at least one term of full-time study at NSAC, and must be registered on a full-time basis for both semesters of the academic year. Applications will be reviewed December 10.

Canadian Association of Agri-Retailers Bursary

The $1,000 Canadian Association of Agri-Retailers Bursary is awarded annually to an NSAC student in any year of any program whose course work, summer employment, home background and career plans reflect an interest in Agronomy and the Crop Input industry. Selection criteria will include interest and involvement in Agronomy/field crops and the crop input industry, and financial need. Applications must be submitted to the NSAC Awards Office not later than September 15.

Canard Conservation Undergraduate Scholarship

The $500 Canard Conservation Undergraduate Scholarship is awarded to a first- or second-year B.Sc.(Agr.) student from Kings County, NS, planning course and/or project work related to the environment. Selection criteria include: academic performance, demonstrated interest in the environment, and career plans. Applications must be submitted to the NSAC Awards Office not later than May 15.

Chicken Producers of Nova Scotia Bursary

The $1,000 Chicken Producers of Nova Scotia Bursary is awarded to an NS 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. Applications must be submitted to the NSAC Awards Office not later than September 15.

George & Lottie Cook Memorial Scholarship

The $500 George and Lottie Cook Memorial Scholarship is awarded annually to an NS student enrolled in the first or second year of any program of study at NSAC. Selection criteria include academic performance and financial need. Applications must be submitted to the NSAC Awards Office not later than September 15.

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 co-operative 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 15.

Kings County Federation of Agriculture Bursary

The $500 Kings County Federation of Agriculture Bursary is awarded to a resident of Kings County, NS, entering the first year of full-time study at NSAC. Selection criteria include financial need, academic performance, and contribution to and 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 May 30 at, the following address:

Kings County Federation of Agriculture
P.0. Box 14, Kentville, NS B4N 3V9

Scholarships, Bursaries, and Prizes

Kings Mutual Insurance Scholarship

In memory of Past Directors, the Kings Mutual Insurance Company awards three $1,000 scholarships to NS students, in any year of any program of study, at NSAC. At least one of the scholarships annually will be available to a student in a Technical program of study. Selection criteria include: financial need, academic performance, and demonstrated interest in a career in the Agri-food industry as reflected by summer employment and/or extracurricular involvement. This scholarship is not available to students receiving other scholarships totalling $1,000 or more. Applications must be submitted to the NSAC Awards Office not later than September 15.

Harrison McCain Scholarship

Valued at $13,500 over four years ($5,000 in year one, $3,500 in year two and $2,500 in years three and four), the Harrison McCain Scholarship will be awarded to a student entering the first year of any program of study at NSAC. This scholarship is open to Canadian high school graduates who are maintaining an 80% average in their senior year of high school. Selection is based on academic performance, financial need, recognized initiative in funding own education, and leadership qualities. The scholarship is renewed based on the recipient maintaining full-time study and carrying an academic average of 60% in year one, 70% in year two, and 75% in year three. The Harrison McCain Scholarship is tenable at NSAC for a maximum of four years of study and is not transferable. Recipients of the Harrison McCain Scholarship may also accept other scholarships, bursaries and awards but not to exceed a total of $7,500 in year one and a total of $5,000 in each of the following three years of study. Applications are due at the NSAC Awards Office not later than March 10.

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 $1,000 scholarships to Newfoundland and Labrador students (preferably one from the East Coast and one from the West Coast) entering studies at NSAC. Selection criteria include academic performance and financial need. Applications should be submitted to the NSAC Awards Office not later than September 15.

Newfoundland and Labrador Provincial Scholarships

The Newfoundland and Labrador government, through its Department of Education, awards three scholarships of $1,000 each to Newfoundland and Labrador students entering a degree program at NSAC. Selection will be based on academic performance. No application is required.

NSAC Entrance Scholarships to Cobequid Educational Centre Students

Scholarship Value: The NSAC Entrance Scholarship for students from the Cobequid Educational Centre will cover the full first-year tuition for the technical or degree program which the student has chosen. The first-year value of the scholarship is approximately $4,300 for degree students and $3,500 for technical students.

Eligibility: The top three students graduating from CEC and entering the first year of study in any NSAC program will be awarded the NSAC Entrance Scholarships for CEC Students. Selection will be based on the average from the required courses combined with the school's final rankings. A minimum average of 80% in the courses required for admission will be required. Renewability: The NSAC Entrance Scholarships for CEC Students will be renewed at the value of $1,500 per year. To be eligible for renewal the student must maintain an 80% average at NSAC and satisfy

the criteria for scholarship renewal as outlined. Presentation: The NSAC Entrance Scholarships for CEC Students will be announced at CEC's graduation and will be formally presented at NSAC's Autumn Assembly in October.

*In the case where one of the top three students from the Cobequid Educational Centre entering studies at NSAC receives an Atlantic Scholars Award, that student would not be eligible to receive an NSAC Entrance Scholarship for CEC Students. The scholarship would then be awarded to the student with next highest average coming from the Cobequid Educational Centre. Recipients of NSAC Entrance Scholarships for CEC students are not eligible to also receive one of the guaranteed entrance scholarships.

NSAC Entrance Scholarships for International Students
NSAC awards up to ten renewable entrance scholarships valued at $4,000 per year (Canadian funds) to top international students admitted. Students entering either technical or degree programs at the college are eligible. Preference will be given to those applicants who have achieved a SAT score of at least 1100 on the courses required for admission. Selection criteria include academic performance (admission average), extracurricular activity, and a letter of recommendation. The NSAC Entrance Scholarships for International Students are tenable for a maximum of four years. These scholarships are renewed by maintaining an average of 80% or greater in the work of the previous year. Other renewal criteria are outlined under Scholarship Renewal Criteria. No application is required.

Nova Scotia Agricultural College Alumni Association Scholarships
The NSAC Alumni Association awards two $1,000 scholarships to first-year students. Selection will be based on academic performance. No application is required.

Nova Scotia Federation of Agriculture 100th Anniversary Scholarship
In recognition of the 100th Anniversary of the Nova Scotia Federation of Agriculture in 1995, a $1,000 scholarship is awarded to an NS student with a farm background who has a solid academic record and financial need. Students studying in any year of any program who have not qualified for other significant awards are eligible. Applications must be submitted to the NSAC Awards Office not later than September 15.

Nova Scotia Power Inc. University Scholarship
The $1,500 Nova Scotia Power Inc. University Entrance Scholarship is awarded to an NS student entering on a full-time basis the first year of an undergraduate degree program at NSAC. The scholarship is tenable for up to four years (renewed by maintaining an 80% average in the previous year; other criteria may be considered for renewal). Selection criteria include academic performance and demonstrated involvement in extracurricular activities. Applications must be submitted to the NSAC Awards Office not later than September 15.

Nova Scotia Veterinary Medical Association Bursary
The $500 Nova Scotia Veterinary Medical Association Bursary will be awarded to an NS student in the first year of the Animal Health Technology program. Selection criteria include financial need and academic performance. Applications must be submitted to the NSAC Awards Office not later than September 15.

Scholarships, Bursaries, and Prizes

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 15.

Ted Rose Memorial Bursary
The $500 Ted Rose Memorial Bursary will be awarded to a student who plans to operate a livestock farm eventually. Selection criteria include a documented commitment to animal welfare, financial need, and sound academic performance. Applications must be submitted to the Awards Office by September 15.

RBC Financial Group Entrance Scholarship
RBC Financial Group, through the RBC Foundation, is sponsoring a $1,000 Entrance Scholarship to be awarded to a student from a farm family, entering the first year of the B.Sc.(Agr.) program at NSAC. Selection criteria include academic performance, extracurricular involvement, and career goals. Secondary consideration may also be given to geographic location. Applications must be submitted to the NSAC Awards Office not later than May 15.

Stewiacke Valley Garden Club Bursary
The $250 Stewiacke Valley Garden Club Bursary is awarded to a student from the Stewiacke Valley area of Nova Scotia studying at NSAC. Selection criteria include involvement in extracurricular and community affairs, financial need, and academic performance. Applications must be submitted to the NSAC Awards Office by September 15.

Taste of Nova Scotia Quality Food Program Scholarship
The Taste of Nova Scotia Quality Food Program offers a $1,000 scholarship to an NS student in any year of any program at NSAC whose course, project work, summer employment, and career plans reflect a commitment to rural communities. Selection criteria include interests in rural entrepreneurship and/or rural development as reflected through course and project work, and financial need. Applications must be submitted to the NSAC Awards Office not later than September 15.

F. W. Walsh Memorial Scholarship
In memory of the outstanding agriculturalist F. Waldo Walsh, this $400 scholarship is awarded to a student who is admitted to the first year of 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 15.

Eric Williams Memorial Scholarships
Four $500 scholarships sponsored by the Dairy Farmers of Newfoundland and Labrador are awarded to students from Newfoundland and Labrador entering studies at NSAC (two technical and two degree program). Selection will be based on academic performance. No application is required.

Woodside Memorial Scholarships
In memory of Harold and Mary Woodside, formerly of Alderbrook Farm, Margate, PEI, scholarships are awarded to first-year PEI students. Selection criteria include academic performance, financial need, future plans and career ambitions, and participation in sports, school, and community activities. Application forms are available from PEI high school guidance counsellors or the NSAC Awards Office, and must be submitted not later than August 15.

II. CONTINUATION SCHOLARSHIPS AND BURSARIES

The following scholarships and bursaries are available exclusively to students returning to studies beyond the first year of the various programs at NSAC. Students are encouraged as well to check the scholarship listings in Section VII (Other Continuing External Scholarships and Bursaries).

Animal Nutrition Association of Canada (Atlantic Division) Scholarship

The Atlantic Division of the Animal Nutrition Association of Canada (formerly known as 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. No application is required.

Ralph H. Armstrong Memorial Bursary

The family and friends of the late Ralph Hallett Armstrong award a memorial bursary of $500 to a student who has successfully completed a first 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 involvement in school, athletic, and/or community organizations. Applications must be submitted to the NSAC Awards Office not later than September 15.

Athletic Bursaries

Five awards will be presented to returning student athletes at NSAC. Selection criteria include financial need, involvement in/member of a college varsity team, recommendation from a coach, and satisfactory academic performance. Applications must be submitted to the NSAC Awards Office not later than September 15.

Atlantic Canada Bursaries

NSAC has established a fund which will provide $1,000 bursaries to students in need of financial assistance. To be eligible, students must be in good standing, will have spent at least one term of full-time study at NSAC, and will be registered on a full-time basis for both semesters of the academic year. Applications will be reviewed December 10.

Atlantic Farm Mechanization Show Undergraduate Scholarships

The Atlantic Farm Mechanization Show awards two $1,000 scholarships to students from the Atlantic Provinces who have completed at least one year of study at NSAC in the Engineering Diploma program or the Agricultural Mechanization option of the B.Sc.(Agr.) program. 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 $1,000 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 15.

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 must be submitted to the NSAC Awards Office not later than September 15.

Scholarships, Bursaries, and Prizes

Atlantic Land Improvement Contractors Association Bursary

The $800 Atlantic Land Improvement Contractors Association Bursary is available to Engineering degree 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 15 at the following address:

Gerry Kennie, President
Atlantic Provinces Hatchery Federation
43 Minas Warehouse Road, Suite 3
New Minas, NS B4N 5A5

A.B. Banks Memorial Scholarship

The $600 A.B. Banks Memorial Scholarship is awarded to the second-year B.Sc.(Agr.) student enrolled in the Animal Science option with the highest average from the first year of study. No application is required.

Bide Awhile Animal Shelter Scholarship

The $1,000 Bide Awhile Animal Shelter Scholarship will be awarded to a student entering the third year of the Animal Health Technology program at NSAC who plans to work in a small animal practice following graduation. Preference will be given to students from Metro Halifax. Selection criteria will include demonstrated community involvement in animal welfare (e.g. shelter volunteering), interest and experience in shelter medicine, and academic performance. Applications must be submitted to the NSAC Awards Office not later than September 15.

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 15.

Canadian Association of Agri-Retailers Bursary

The $1,000 Canadian Association of Agri-Retailers Bursary is awarded annually to an NSAC student in any year of any program whose course work, summer employment, home background and career plans reflect an interest in Agronomy and the Crop Input industry. Selection criteria will include interest and involvement in Agronomy/field crops and the crop input industry, and financial need. Applications must be submitted to the NSAC Awards office not later than September 15.

Canard Conservation Undergraduate Scholarship

The $500 Canard Conservation Undergraduate Scholarship is awarded to a first- or second-year B.Sc.(Agr.) student from Kings County, NS, planning course and/or project work related to the environment. Selection criteria include academic performance, demonstrated interest in the environment, and career plans. Applications must be submitted to the NSAC Awards Office not later than May 15.

Scholarships, Bursaries, and Prizes

Gerard Chiasson Memorial Bursary
The Inverness County Federation of Agriculture awards a $500 bursary to a Cape Breton student who has completed at least one year of study at NSAC. The bursary is 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 two or more students possess otherwise equal qualifications, preference will be given to a student from Inverness County. Applications must be submitted to the NSAC Awards Office not later than September 15.

Chartwells Scholarships
Compass Group Canada awards $4,000 in scholarships to outstanding students with high academic performance who, for one reason or another, have not qualified for other significant awards. Preference will be given to students living in residence. No application is required.

Chicken Producers of Nova Scotia Bursary
The $1,000 Chicken Producers of Nova Scotia Bursary is awarded to an NS 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. Applications must be submitted to the NSAC Awards Office not later than September 15.

Class of 1950 Bursary Fund
The Class of 1950, in commemoration of their fiftieth anniversary of graduation from NSAC, established a bursary fund to assist NSAC students in financial need. Applications must be submitted to the NSAC Awards Office by September 15.

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 $250 scholarship is awarded to a student in the final year of an Animal Science option. Selection criteria include academic performance, involvement and interest in poultry, and achievement in and contribution to 4-H. No application is required.

George & Lottie Cook Memorial Scholarship
The $500 George and Lottie Cook Memorial Scholarship is awarded annually to an NS student enrolled in the first or second year of any program of study at NSAC. Selection criteria include academic performance and financial need. Applications must be submitted to the NSAC Awards Office not later than September 15.

Co-op Atlantic Scholarship
Co-op Atlantic awards a $1,000 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 is tenable for two years. Applications must be submitted to the NSAC Awards Office not later than September 15.

Scholarships, Bursaries, and Prizes

Dorothy Creelman Cox Scholarship
A $150 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 Memorial Scholarship
In memory of Dr. Kenneth Cox, former Principal, this $100 scholarship is awarded to a student entering the final year of the B.Sc.(Agr.) program. No application is required.

Dairy Farmers of Nova Scotia Bursary
The Dairy Farmers of Nova Scotia awards a $1,000 bursary to an NS student doing project or course work related to the dairy industry. Students in the third or fourth year of the B.Sc.(Agr.) program (any option) or graduate students undertaking course or project work related to the dairy industry are eligible. Selection criteria include proven interest and experience in the dairy industry, the potential beneficial impact of study on the Nova Scotia dairy industry, and academic performance. Applications must be submitted to the NSAC Awards Office not later than September 15.

Dartmouth Horticultural Society Bursary
The $500 Dartmouth Horticultural Society Bursary is awarded to a student in the 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 15.

Eastern Veterinary Technicians Association Bursary
The Eastern Veterinary 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.

Ernest L. Eaton Memorial Scholarships
Two $500 scholarships, one for a male and one for a female, are awarded to non-Nova Scotian students entering the third year of the B.Sc.(Agr.) program. Selection is based on the students' averages in the second year of the program. No application is required.

Egg Producers Association of Newfoundland & Labrador Scholarship
The Egg Producers Association of Newfoundland and Labrador awards a $1,000 scholarship to a Newfoundland and Labrador 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 15.

Farm Credit Corporation Scholarship
The Atlantic Region of the Farm Credit Corporation awards a $1,000 scholarship to a Canadian student entering the fourth or final year of the B.Sc.(Agr.) program in the Agricultural Economics or Agricultural Business options. 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.

Scholarships, Bursaries, and Prizes

Farm Focus Bursary
The $200 Farm Focus Bursary is awarded to a student entering the second year of study. Selection is based on financial need and academic performance. No application is required.

Chuck Harrison Memorial Bursary
In memory of Chuck Harrison, Class of 1970, a $200 bursary is awarded to a final-year Agricultural Business Technician student. Selection criteria include leadership and involvement in athletic and other activities at NSAC, and a sound academic record. No application is required.

Bonnie R. Haviland Memorial Bursary
The $1,000 Bonnie R. Haviland Memorial Bursary is awarded annually to a student entering the second year of the Animal Health Technology program whose performance in the first year has demonstrated a caring attitude and a commitment to others. To be eligible, students must have done well in their first year and not won other scholarships of greater value. No application is required.

Isgonish Chapter Silver Anniversary IODE Bursary
The $400 Isgonish Chapter Silver Anniversary IODE bursary is awarded to a student entering the third year of the B.Sc.(Agr.) program in the Aquaculture major. Selection criteria include financial need, academic performance, and participation and leadership in extracurricular activities. The bursary is renewable by maintaining a 80% average. One award will be presented annually either to a third-year student or to a fourth-year student as a renewal to the previous year's recipient. Applications must be submitted to the NSAC Awards Office not later than September 15.

Kings Mutual Insurance Scholarships
In memory of Past Directors, the Kings Mutual Insurance Company awards three $1,000 scholarships to NS students, in any year of any program of study at NSAC. At least one scholarship will be awarded to a student in a Technical program. Selection criteria include financial need, academic performance, and demonstrated interest in a career in the Agri-food industry as reflected by summer employment and/or extracurricular involvement. This scholarship is not available to students receiving other scholarships totalling $1,000 or more. Applications must be submitted to the NSAC Awards Office not later than September 15.

Landscape Nova Scotia Bursary
Landscape Nova Scotia awards a $500 bursary to an NS student studying Environmental Horticulture. Selection criteria include academic performance and financial need. No application is required.

Lunenburg/Queens Federation of Agriculture Scholarship
The $300 Lunenburg/Queens Federation of Agriculture Scholarship is awarded to a student from Lunenburg or Queens County in Nova Scotia who have completed at least one year of study at NSAC. Selection criteria include 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 15.

Angus and Tena MacLellan Memorial Scholarship
This $600 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.

Scholarships, Bursaries, and Prizes

Joseph E. Mapplebeck Memorial Bursaries
In honour of Joseph E. Mapplebeck, who farmed for 50 years in Kings County, Nova Scotia, and in recognition of his appreciation for the importance of a good education, family members have established two $500 bursaries to be made available to Technical students at NSAC. Eligible candidates will have successfully completed the first year of a Technical program and demonstrate financial need. A letter of recommendation from a Faculty member must accompany this application. One of the two awards will be made available annually to a student in the Plant Science Technology program. Applications must be submitted to the NSAC Awards Office not later than September 15.

H.A.L. McLaughlin Memorial Scholarship
In memory of H.A.L. McLaughlin, who taught horticulture at NSAC from 1953 to 1971, this $300 scholarship is awarded to a student in horticulture. No application is required.

A.C. Neish Memorial Trust Scholarship
The A.C. Neish Memorial Trust awards a $1,700 scholarship to an NSAC student entering the final year of the B.Sc.(Agr.) program. Selection criteria include 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 15.

Nova Scotia Animal Breeders Co-operative Limited Scholarship
The Nova Scotia Animal Breeders Co-op awards four $1,250 scholarships (two to degree students and two to technical students) to returning NS students studying animal science whose home farm backgrounds, course and project work, and career interests reflect an interest in the dairy or beef industry. Students who have not received other major scholarships are eligible. Applications must be submitted to the NSAC Awards Office not later than September 15.

Nova Scotia Federation of Agriculture Bursaries
The Nova Scotia Federation of Agriculture awards two $300 bursaries to second-year NS students (one technical and one degree program). Selection criteria include financial need and academic performance. No application is required.

Nova Scotia Federation of Agriculture 100th Anniversary Scholarship
In recognition of the 100th Anniversary of the Nova Scotia Federation of Agriculture in 1995, a $1,000 scholarship is awarded to an NS student with a farm background, who has a solid academic record and financial need. Students studying in any year of any program who have not qualified for other significant awards are eligible. Applications must be submitted to the NSAC Awards Office not later than September 15.

Nova Scotia 4-H Council Award
A $200 scholarship will be awarded to a second-year NS student in any program. Selection criteria include academic performance, financial need, and participation in 4-H Club activities. Appiications must be submitted to the NSAC Awards Office no later than September 15.

Nova Scotia Institute of Agrologists Scholarship
The $1,000 NSIA Scholarship is awarded to an NS student entering the third year of the B.Sc.(Agr.) program at 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 must be submitted to the NSAC Awards Office not later than September 15.

Scholarships, Bursaries, and Prizes

NSERC Undergraduate Student Research Awards (USRA)

The Natural Sciences and Engineering Research Council of Canada sponsors a program of awards to outstanding undergraduate students. These summer research awards are meant to encourage undergraduate students to undertake graduate studies and pursue research careers in the natural sciences and engineering disciplines at NSAC. The purpose of the award is to supplement the salary of a summer student who is working on an individual research project, designed in conjunction with a faculty member who holds an NSERC research grant. The award is for a minimum of sixteen weeks on a full-time basis in research and development in natural sciences and engineering. To be eligible, a student must be a Canadian citizen or permanent resident, registered full-time as an undergraduate student in a natural science or engineering discipline, and have completed at least one year of study with a minimum 70% cumulative average. Applications must be submitted to the Office of Graduate Studies and Research by February 15.

Robert Parent Memorial Scholarship

In memory of Robert Parent, Class of 1921, this $1,000 scholarship will be awarded to an outstanding student studying in any year of any program who has not qualified for other significant awards. No application is required.

Pork Nova Scotia Prize

Pork Nova Scotia sponsors a $350 prize to an NS student with an interest and/or background in swine production. Selection criteria include demonstrated interest in the swine industry (through course or project work), academic performance, and financial need. Applications should be submitted to the NSAC Awards Office not later than September 15.

PEI Swine Breeders' Association Bursary

The PEI Swine Breeders' Association provides a $500 bursary to a PEI student who has successfully completed at least one year of study in an animal science discipline at NSAC. Selection criteria include financial need, demonstrated interest in swine, and involvement in community, 4-H, and student affairs. A student may not receive this bursary more than once. Applications must be submitted to the NSAC Awards Office no later than September 15.

Cliff Retson Memorial Bursary

In memory of Cliff Retson, Class of 1934, a $600 bursary is awarded to International students studying at NSAC. Students in any year of any program are eligible. Selection criteria include financial need, academic performance, and interest in and involvement in multicultural activities on campus. Applications must be submitted to the NSAC Awards Office not later than September 15.

Scholarships, Bursaries, and Prizes

Renewal Scholarships for Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland & Labrador Students

Students from Nova Scotia who were admitted September 2001 and earlier with renewable Nova Scotia Department of Agriculture and Fisheries Entrance Scholarships will have their scholarships renewed automatically at their initial value by maintaining an average of 80% or greater for every year of study and satisfying the other criteria outlined in the Scholarship Renewal Criteria section. The NSDAF scholarships are credited directly to student accounts in two installments. The recipient receives half of the award in September for the Fall semester and the other half of the scholarship is credited in January for the Winter semester, provided the student continues to meet the course registration requirements (criterion #3 of the Scholarship Renewal Criteria). NSDAF scholarships are tenable for the normal duration of the program of study the student began.

Students from New Brunswick, Prince Edward Island and Newfoundland and Labrador who were admitted in September 2001 with entrance scholarships will have them renewed on the following basis. The top three students from NB and the top two students each from PEI and NL will receive a renewal scholarship of $1,500 providing they maintained an 80% average in the work of the previous year and were enrolled in at least 80% of the normal course load for their program. These renewal scholarships will continue for the respective students through the normal completion of the student's program, providing the student continues to satisfy the scholarship renewal criteria outlined in the Scholarship Renewal Criteria section each successive year.

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 NS 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 15.

Dr. Robert G. 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.

J. Arnold Roberts Memorial Scholarship

In memory of J. Arnold Roberts, a $500 scholarship will be awarded to an outstanding student from Atlantic Canada studying in any year of any program and not receiving scholarships of greater value. No application is required.

Robin Hood Multifoods Inc. Bursary

Robin Hood Multifoods Inc. awards a $1,200 bursary to an Atlantic Canadian student entering the second year of a Business, 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 15.

Scholarships, Bursaries, and Prizes

Howard W. Roper Memorial Bursary
In memory of Howard W. Roper, a $500 bursary will be awarded annually by the Nova Scotia/Newfoundland Holstein Branch to a second-year Technician student at NSAC. Applicants must be residents of Nova Scotia or Newfoundland and Labrador and be members of Holstein Canada or members of families with Holstein Canada membership. Selection criteria include involvement in the dairy industry, extracurricular involvement through athletics and clubs on campus, involvement in farm organizations, financial need, and satisfactory academic performance in the first year of study at NSAC. Applications must be submitted to the NSAC Awards Office not later than September 15.

Ted Rose Memorial Bursary
The $500 Ted Rose Memorial Bursary will be awarded to a student who plans to operate a livestock farm eventually. Selection criteria include a documented commitment to animal welfare, financial need, and sound academic performance. Applications must be submitted to the NSAC Awards Office by September 15.

Rhonda Rae Rumbolt Memorial Scholarship
In memory of Rhonda Rae Rumbolt, a $2,000 scholarship is awarded to an outstanding final-year B.Sc.(Agr.) student. Selection criteria include leadership and involvement in the college community as displayed by participation in extracurricular activities, combined with an outstanding academic record. Applications must be submitted to the NSAC Awards Office not later than September 15.

Scholarships for In-Program Students
At the discretion of the Scholarship Committee, scholarships of variable amounts will be awarded to students who perform well in their studies at NSAC. Minimum requirement will be 80% average in work of previous year with no failed courses (including Drop Fails); preference will be given to students who have, in addition, maintained a cumulative average of 80%. The average is determined from the full year of study, which is normally defined as September 1 to August 31. The average is determined by all marks earned by the student in the previous year; non-credit courses (e.g. MATH0050 and PHYS0050) are included in the calculation of the year's average for degree students. For scholarship purposes averages are calculated to the nearest whole number (if an average falls exactly between two whole numbers, the average is rounded up). Students must maintain registration in at least 80% of the number of courses for the normal course load per semester in both the previous and current year to be eligible. In the event that a recipient is not able to complete the full year, on completion of the first semester on a full-time basis he/she would be entitled to receive half of the award announced at Autumn Assembly.

Shur-Gain Division/Maple Leaf Foods, Inc. Scholarship
Shur-Gain Division/Maple Leaf Foods, Inc. awards a $1,000 scholarship to a final-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 15.

Scholarships, Bursaries, and Prizes

G.G. Smeltzer Memorial Bursary
The $300 G.G. Smeltzer Bursary is awarded to a second-year student who excelled in the work of the first-year Plant Science Technology program. Preference will be given to students whose course and project work reflect an interest in Agronomy. No application is required.

Stewiacke Valley Garden Club Bursary
The $250 Stewiacke Valley Garden Club Bursary is awarded to a student from the Stewiacke Valley area of Nova Scotia studying at NSAC. Selection criteria include involvement in extracurricular and community affairs, financial need, and academic performance. Applications must be submitted to the NSAC Awards Office by September 15.

Syngenta Pest Management Awards
Syngenta awards two $500 scholarships to students at NSAC whose course and project work reflect an interest in the Maritime potato industry. Applicants will be required to submit an essay of 300-500 words expressing an opinion on a topic relating to the crop protection industry; suggested topics include the future of genetically modified plants/crops, or the future of crop protection products in Maritime agriculture (the fit and relevance of the agri-chemical industry to today's agri-food industry). Selection criteria include academic performance, interest in the Maritime potato industry, and potato farm experience or background. Applications must be submitted to the NSAC Awards Office not later than September 15.

Taste of Nova Scotia Quality Food Program Scholarship
The Taste of Nova Scotia Quality Food Program offers a $1,000 scholarship to an NS student in any year of any program at NSAC whose course and project work, summer employment, and career plans reflect a commitment to rural communities. Selection criteria include interests in rural entrepreneurship and/or rural development, and financial need. Applications must be submitted to the Awards Office not later than September 15.

Bruce Trenholm/Atlantic '86 Scholarship
A $500 prize is awarded to an Atlantic Canadian 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 15.

Vice-President's Scholarship
This $300 scholarship is awarded to a final-year B.Sc.(Agr.) student. No application is required.

Florence (Pineo) Ward Memorial Award
Three to five bursaries will be awarded annually in memory of Florence (Pineo) Ward to NSAC students in financial need. Recipients will have completed at least one year of study in a technical, B.Tech. or B.Sc.(Agr.) program. Preference will be given to students with sound academic background who have come to NSAC for technical training to enhance their employability but whose financial constraints are limiting their ability to continue their studies. In the event two or more candidates otherwise qualify equally for one of the awards, preference will be given to students from Boutilier's Point, Halifax County, or Advocate, Cumberland County. Application forms must be submitted to the NSAC Awards Office not later than September 15.

Raymond Webber Memorial Scholarship
Landscape Nova Scotia and the New Brunswick Horticultural Association jointly award a $600 scholarship to the most promising second-year Environmental Horticulture Technology student. Selection criteria include academic performance and practical work skills. No application is required.

Michael Whidden Memorial Award
The $2,000 Michael Whidden Memorial Award will be awarded to a student who has provided leadership on the College's Woodsmen Team, and has maintained a sound academic performance. No application is required.

Wild Blueberry Producers Association of Nova Scotia Scholarship
The Wild Blueberry Producers Association of Nova Scotia awards a $750 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 interest and experience in small fruits. Applications must be submitted to the NSAC Awards Office not later than September 15.

III. GRADUATE SCHOLARSHIPS/BURSARIES

The following scholarships are available exclusively to graduate students studying at the Nova Scotia Agricultural College.

Stuart F. Allaby Graduate Studies Scholarship
The $1,000 Stuart F. Allaby Graduate Studies Scholarship is awarded to an M.Sc. student at NSAC concentrating on animal research. No application is required.

Atlantic Farm Mechanization Show Graduate Scholarship in Engineering
The $1,000 Atlantic Farm Mechanization Show Graduate Scholarship in Engineering is awarded annually to an M.Sc. student at NSAC conducting research in engineering. No application is required.

Canard Graduate Conservation Fund
The Canard Conservation Fund provides a $1,000 scholarship to a graduate student at NSAC conducting research work on environmental issues. Selection criteria include research aptitude and experience relevant to the applicant's research on conservation issues, and sound academic performance. Only full-time students will be eligible, and preference will be given to students in the second year of study in the M.Sc. Program. Applications, including an essay on the importance of their research to conservation issues, a resume, and an official transcript, must be submitted to the NSAC Awards Office not later than July 22.

Dairy Farmers of Nova Scotia Bursary
The Nova Scotia Milk Producers Association awards a $1,000 bursary to an NS student doing project or course work related to the dairy industry. Students in the third or fourth year of the B.Sc.(Agr.) program (any option) or graduate students undertaking course or project work related to the dairy industry are eligible. Selection criteria include proven interest and experience in the dairy industry, the potential beneficial impact of study on the Nova Scotia dairy industry, and academic performance. Applications must be submitted to the NSAC Awards Office not later than September 15.

Scholarships, Bursaries, and Prizes

The Gordon B. Kinsman Memorial Graduate Scholarship

The $1,000 Gordon B. Kinsman Memorial Scholarship will be awarded to a graduate student in Horticulture at NSAC. The scholarship will be targeted to students conducting research work with berry crops, with preference given to students whose course and project work reflect an interest in the blueberry industry. Applications must be submitted to the NSAC Awards office not later than July 22.

Robert P. Longley Memorial Graduate Scholarships

Two $7,000 scholarships will be awarded to NS residents entering the M.Sc. degree program on a full-time basis at NSAC. The scholarships will be awarded on the basis of academic performance (cumulative GPA from undergraduate degree). Recipients of NSAC Graduate Entrance Scholarships will not be eligible. Students on employment leave with salary continuation are not eligible. No application is required.

NSAC Association of Graduate Students Bursary

Any graduate student of NSAC (any year; full-time or part-time) is eligible to apply. This award, valued at $400, is awarded at Autumn Assembly. Applications are available either from the NAGS Executive or at the NSAC Awards Office. Applications must be submitted to the Awards Office not later than September 15.

NSAC Graduate Entrance Scholarships

NSAC offers up to five scholarships of $5,000 to students approved (or conditionally approved) for admission to the NSAC/Dalhousie M.Sc. Program. Students who have applied for admission to the graduate program at NSAC by the end of June each year will be considered for these awards. Only those applicants who have achieved a minimum admission average of 80% (cumulative undergraduate average) or equivalent will be considered. Only students entering graduate studies on a full-time basis are eligible. Although academic performance will be the prime selection basis, consideration will also be given to the diversity of backgrounds of candidates (including gender, country of origin, institution of origin, minority groups, supervisors, and programs of study). No application is required.

NSERC Post-Graduate Scholarships

The Natural Sciences and Engineering Research Council of Canada provide post-graduate scholarships to high-calibre scholars who are engaged in Master's or Doctoral programs in the natural sciences and engineering disciplines at universities in Canada. To be eligible, a student must be a Canadian citizen or permanent resident of Canada who holds, or expects to hold at the time to take up the award, a degree in science or engineering from a university whose academic standing is acceptable to NSERC, who will pursue full-time graduate study and research at the Master's or Doctoral level in the natural sciences or engineering in the following year, and has an 80% average in each of the last two completed years of study. The value of the awards: $17,300 per year for students studying at the Master's level and $19,100 per year for students studying at the Doctoral level. The awards are tenable for a maximum of two years. Applications must be received at the office of Research and Graduate Studies by November 1.

Allan A. Saunders Memorial Graduate Scholarship
The $3,000 Allan A. Saunders Memorial Graduate Scholarship is awarded annually to a graduate student at NSAC who is conducting research relating to the dairy industry. Applicants who have completed their undergraduate degrees at NSAC and wish to pursue their Master's at another post-secondary institution will be considered. Selection criteria include academic performance, dairy farm background and/or demonstrated interest in the dairy industry, and financial need. Applications are due at the NSAC Awards Office not later than July 22.

Dr. Chesley E. Smith Memorial Graduate Scholarship
The $500 Dr. Chesley E. Smith Memorial Scholarship is awarded annually to a graduate student at NSAC. All full-time M.Sc. students will be considered. Preference will be given to students whose course and project work reflect an interest in Plant Science or Agronomy. Selection criteria include academic performance and financial need. Applications must be submitted to the NSAC Awards Office not later than July 22.

Graduate students are encouraged to look through the scholarship descriptions listed in Section II (Continuation Scholarships and Bursaries), Section V (Scholarships and Bursaries for Continuing Studies Beyond NSAC) and Section VII (Other Continuing External Scholarships and Bursaries) for awards available to students in any year of any program.

M.Sc. students are eligible for consideration for awards targeted to any year of any program.

IV. MEDALS & PRIZES

Canadian Agricultural Economics Association Prize
The Canadian Agricultural Economics Association presents a book prize at Spring Convocation to a graduating student from the Agricultural Economics or Agricultural Business option of the B.Sc.(Agr.) program. This award is selected on the basis of overall performance. No application is required.

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 or Aquaculture options of the B.Sc.(Agr.) program. This award is selected on the basis of outstanding scholarship. No application is required.

Canadian Society of Soil Science Book Prize
The Canadian Society of Soil Science annually awards a book prize, valued at approximately $100, to an undergraduate student whose course and project work reflect an interest in Soil Science. Students in any year of the B.Sc.(Agr) program are eligible. No application is required.

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 by February 14. The award is presented at the graduation class banquet prior to Convocation.

Scholarships, Bursaries, and Prizes

Farm Credit Canada Business Planning Awards

Sponsored by Farm Credit Canada, the purpose of this award program is to encourage agricultural students to apply their knowledge and create "real-life" farm business plans for their operations (home, existing or start-up). The awards are open to students in the final year of the Agricultural Business Technician, Agricultural Technology, or Farming Technology programs who complete farm business plans during business project courses (MGMT0201 Business Project, MGMT0300 Farm Project, MGMT0302 Economics and Business Technology Project). Projects will be evaluated on the following basis:

- 60% on content, including realistic basis and accurate calculations,
- 30% on writing, and
- 10% on format and presentation.

A student who has received an FCC Farm Business Planning Award is not eligible for a second one. Four cash prizes will be presented at Convocation (one $2,500, one $1,500, and two $1,000 awards). No application is required.

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 at Convocation 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

The gold Governor-General's Medal is awarded to the M.Sc. graduate from the current year with the highest compiled score of the thesis, thesis defence, graduate course record, and teaching performance. A silver Governor-General's Medal is awarded to the Bachelor's program graduate (B.Sc.(Agr.) or B.Tech) who achieves the highest cumulative academic standing in the program. A bronze Governor-General's Medal is awarded to the Technical (Technician and Technology) graduate who achieves the highest academic standing in the program. To be eligible, students must have completed at least one-half of their program at NSAC. No application is required.

Hill's Pet Nutrition Canada Inc. Small Animal Nutrition Prize

Hill's Pet Nutrition Canada Inc. awards a $200 prize to a final-year Animal Health Technology student who has demonstrated an interest in small animal nutrition. Selection is based on academic performance in the Hill's Nutrition component of course and project work involving small animal nutrition. Applications must be submitted to the NSAC Awards Office by February 1.

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.

Novartis Award

The Novartis Award is presented at Convocation to the top all-round student graduating from the Animal Health Technology program who has particularly excelled in the area of parasitology. No application is required.

Patterson Palmer Law Prize

Patterson Palmer offers a $500 prize to any full-time student enrolled at NSAC who has lived or worked on a farm. Applicants are required to submit an essay, 500–1,000 words in length, regarding any major issue facing the farming community. The student who receives the award will be chosen on the basis of the quality of the essay written. Essays will be evaluated on the basis of insight into issues, quality of writing and readability, and organization. Applications must be submitted to the NSAC Awards Office not later than September 15.

V. SCHOLARSHIPS AND BURSARIES FOR CONTINUING STUDIES BEYOND NSAC

APENS Award and Scholarship

The Association of Professional Engineers of Nova Scotia (APENS) provides awards valued at $500 and a scholarship valued at $2,000. One APENS Award is presented each year at each of the Associated Universities to that student, graduating with an Engineering Diploma, who best demonstrates the promise of using outstanding abilities to serve society in an ethical manner as a Professional Engineer. Selection criteria include: qualities of ethical conduct, extracurricular activities, industry and intelligence, scholastic achievement, service to fellow students, and application of technical skills in an unselfish manner to the benefit of society and the promotion of the engineering profession. The APENS Scholarship is awarded to one of the APENS Award recipients graduating from the Associated Universities who exhibits academic excellence.

Cobequid Dog Club Scholarship

The Cobequid Dog Club awards a $400 scholarship to an NS student from NSAC who is admitted to a veterinary college. No application is required.

Harney Estate Scholarships

Dr. Patricia Harney, NSAC Diploma Class of 1948 and OAC Professor in Horticultural Sciences, has made generous provision through her estate to support NSAC students who wish to pursue graduate studies in agriculture at the University of Guelph or at Macdonald College, McGill University. These scholarships are to be granted, based on high academic records, to students who are committed to research excellence.

Two $5,000 renewable scholarships from this fund serve to preserve the long-standing links between NSAC, Macdonald College, and Guelph. These awards are tenable for two years for a Master's degree program and three years for a Ph.D. program. Renewability will be based on maintaining scholarship standing in the program (will require A- or 80%).

To be eligible, NSAC graduates must be accepted or registered at Macdonald College or the University of Guelph for graduate work in agriculture. While registered at the University of Guelph or Macdonald College recipients may, with appropriate permission, pursue research at NSAC. Scholarship funds will be disbursed to the recipient through the institution in which the student is registered. Initial review of applications will take place March 31, following which applications will be reviewed as received, conditional on funds remaining.

Edith Main Memorial Bursary

In memory of Edith Main, the auxiliary to the Nova Scotia Veterinary Medical Association awards a $100 bursary to an NS student who has attended 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 $2,500 scholarship to a graduate in Animal Science from 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 March 31 to:

Chairman, Nova Scotia Fur Institute
Nova Scotia Agricultural College
PO Box 550, Truro, NS B2N 5E3

Nova Scotia Power Inc. Centennial Scholarships in Engineering

In 1967 Nova Scotia Power instituted four permanent scholarships as a continuing Centennial project. These scholarships are tenable only at Dalhousie University and are open to students completing engineering studies at the following associated universities: Acadia, Dalhousie, Mount Allison, St. Francis Xavier, Saint Mary's, the University College of Cape Breton, and NSAC. The scholarships are for a term of two years at $1,500 per year and are applicable to Electrical, Mechanical, Chemical, Civil and Industrial disciplines. Applicants must be Canadian citizens and residents of Nova Scotia for at least three years, two years of which are immediately prior to graduation. A selection board considers the academic excellence, personality, and involvement in extracurricular activities of applicants recommended by the Engineering Department at NSAC. Continuance of the scholarships will be conditional on maintaining a satisfactory academic record. Application deadline is April 30.

VI. OTHER ENTRANCE EXTERNAL SCHOLARSHIPS AND BURSARIES

Although not exclusive to NSAC students, the following scholarships/awards are available to students entering NSAC.

Canada Millennium Scholarship Program

The Canada Millennium Scholarship Foundation's Excellence Award Program provides scholarships to high school graduates entering their first year of full-time studies leading to a first post-secondary degree certificate or diploma. The excellence award program serves to recognize, support and encourage talented Canadians who make positive and significant contributions to the betterment of communities across the country, demonstrate capacity for leadership, and are committed to the pursuit of academic excellence and innovation. Applications are available at the NSAC Awards Office and from the Millennium Scholarship website (www.millenniumscholarships.ca). The deadline for receipt of applications is January 15.

Co-Operators 4-H Scholarship

The Co-Operators award ten $1,000 entrance scholarships (one per province) to students entering post-secondary study. To be eligible, applicants must have been 4-H members within the last 5 years and active members for at least 2 years. Selection criteria include personal background, goals and ambitions, community involvement and interest, and knowledge of accident prevention on the farm or in the home. A presentation in any medium (essay of 500–1000 words, video, speech, poster, etc.) with a theme of Farm Safety or Safety in the Home, focusing on accident prevention, must be made to the selection committee. Application details are available from the Provincial 4-H Office. Application deadline is April 15.

Co-op Alton McEwen Scholarship
Two university entrance awards of $1,000 are open to employees and dependents of members of Co-op Atlantic. These are four-year renewable scholarships. Selection criteria include academic performance, demonstrated leadership ability, and interest in co-operation and co-operatives. The application deadline is June 23.

Farm Credit Corporation 4-H Scholarship
Farm Credit Corporation awards ten $1,000 scholarships (one per province) to students across Canada, in any year of any program of post-secondary study, who had been registered 4-H members for at least two years in the last five years. Applicants must submit a completed application form and a detailed plan for a community project that will either improve safety or reduce hunger in their community. The project plan should be a maximum of three typed pages in length and answer the following questions:

- What community need does your project address? Is there any research, or are there any facts that you can include, that would prove your community needs this project? For instance, if you do a survey, include the results. Also make reference to any books you researched or people you interviewed.
- What do you hope to achieve with your project?
- How will you achieve this objective? Please include a budget of the anticipated costs and planned resources to achieve your project.
- How does your project address the community need?
- How many people would be involved in organizing this project?
- How would you measure the success of this project?
- Include a time frame for completing this project. The project must be completed by December.

Project plans will be judged on completeness of plan, creativity, originality, spelling, and grammar. Applications are due by February 28 at:

Canadian 4-H Council
930 Carling Avenue
Ottawa, ON K1A 0C6

Terry Fox Humanitarian Award Program
The program provides scholarships to students entering or attending post-secondary educational institutions within Canada. The successful applicants are recognized for dedication to community service, humanitarianism, perseverance and courage in the face of obstacles, and the pursuit of excellence in fitness and academics. The scholarship is a renewable award, subject to satisfactory progress. The value of each award is $4,000 per year, for a maximum of four years or until the first degree is obtained. The deadline for applications is February 1. Website: www.terryfox.org

Harvest Trust 4-H Scholarships
Harvest Trust awards $500 scholarships to twenty students (two per province) who had been active 4-H members for at least two years within the last five years and who are entering a degree program in Agriculture. Selection criteria include personal background, goals and ambitions, financial need, community involvement and interest, and knowledge of agricultural issues. Applicants must submit an essay of 500–1000 words addressing one of the following topics:

1. We are living in a global economy. What can individual producers do to ensure that Canadian products can compete in the competitive export markets?
2. How can producers become more proactive in the marketing of agricultural products?
3. What action must producers and producer organizations take to ensure sustainable agriculture?
4. What effect do sustainable agriculture, animal welfare, and environmental protection have on consumer attitudes and consumer consumption patterns?

For application details contact the Provincial 4-H Office. Application deadline is April 15.

Scholarships, Bursaries, and Prizes

Monsanto Canada Inc. Scholarships

Monsanto Canada Inc. awards sixty $1,500 scholarships to high school students from agricultural or forestry family farms across Canada who are entering the first year of Agriculture (any discipline), Forestry, Agri-Science, or Management (Marketing/Finance) programs (degree or diploma) at Canadian educational institutions. Selection criteria include academic performance and leadership in the community. Application forms are available at www.farmcentral.com. Graduating high school students can call 1-800-667-4944 for more information. Application forms must be postmarked not later than July 12.

New Brunswick Fruit Grower's Association Scholarship

The $300 New Brunswick Fruit Grower's Association Scholarship is awarded to an NB resident entering a program of study in horticulture or related courses at an agricultural college or university with the purpose of returning to, or working in, the New Brunswick tree fruit industry. Selection criteria include academic performance, involvement in community activities, volunteer work, farming or orchard experience, interests in the fruit-growing industry, and future career plans. Applications must be submitted not later than September 30 to:

NBFGA Scholarship Committee
1115 Regent Street, Suite 206
Fredericton, NB E3B 3Z2

Jamie Irving Memorial 4-H Scholarship

The Jamie Irving Memorial 4-H Scholarship is a $1,000 award presented to a PEI student with a 4-H background entering a recognized post-secondary institution. Selection criteria include 4-H background, community involvement, goals and ambitions, an interview, and an essay. Application deadline is April 15.

NS Department of Agriculture and Fisheries 4-H Scholarships

The Nova Scotia Department of Agriculture and Fisheries awards four $1,000 scholarships to NS students with 4-H backgrounds entering Bachelor's programs at recognized universities. At least one scholarship will be presented to a student enrolling in the first year of an agricultural or veterinary science program. Applicants must complete an essay of 2,500–4,000 words on the topic "The Importance of Nova Scotia's Agriculture" and submit a transcript of their marks with their application by April 15.

Nova Scotia 4-H Council Scholarship

The Nova Scotia 4-H Council awards a $1,000 scholarship to an NS student with a 4-H background entering post-secondary study. Applicants must provide a 1,500-word essay on "How I Have Benefited from My 4-H Career" to accompany their applications by April 15.

Nova Scotia Fruit Growers' Association Scholarship

The Nova Scotia Fruit Growers' Association awards a $500 bursary to a student entering or already in a post-secondary education program in the field of Tree Fruit Production or a related science program which might include the following: Biology, Chemistry, Food Science, Plant Science, Environmental Science, or Business or Agri-Business. Selection criteria include academic achievement, participation in school and community activities, and interest in the tree fruit industry. Applications, including a resume, university/college acceptance letter or transcript, and an essay outlining career and life goals, must be received no later than May 31 by:

Education Committee
Nova Scotia Fruit Growers' Association
Blair House, 32 Main Street, Kentville, NS B4N 1J5

Scholarships, Bursaries, and Prizes

Prince Edward Island 4-H Council Scholarship
The PEI 4-H Council awards a $1,000 scholarship to a PEI student with a 4-H background entering post-secondary study. Selection criteria include knowledge of 4-H history, community involvement, goals and ambitions, an essay, and an interview. The deadline for applications is April 15.

PEI Mutual Education Trust Fund Centennial Scholarship
Twenty $450 entrance scholarships are available to PEI students who are attending any post-secondary institution. Selection criteria are based on academic performance and financial need. Students are encouraged to check with high school guidance counsellors. The deadline for applications is May 31.

TD Canada Trust Scholarships
Twenty TD Canada Trust Scholarships are awarded honouring Canadian high school students for outstanding community leadership. The scholarships, worth $50,000, include full tuition to a Canadian university or college, an extra $3,500 a year for living expenses, and summer employment at TD Canada Trust for up to four years.
Website: www.tdcanadatrust.com/scholarships

TD 4-H Agriculture Scholarships
TD Bank Financial Group and the Canadian 4-H Council sponsor up to ten $1,000 scholarships for 4-H members in their last year of high school who are planning to enroll in post-secondary education in an agriculture or agri-business related discipline. Applications, including a transcript of marks, must be received by October 4 at:

Canadian 4-H Council
930 Carling Avenue
Ottawa, ON K1A 0C6

Robert Walker Memorial Scholarship
Established in 1975 as a memorial to Robert Walker, who lost his life in a farm accident, scholarships are awarded to students from NB entering the first year of post-secondary study. Applicants must have been active 4-H members in the Southern District in New Brunswick and have farm backgrounds. Application information is available from:

NB Department of Agriculture, Fisheries and Aquaculture
Sussex Provincial Building, 707 Main Street
PO Box 5305, Sussex, NB E4E 7H7
Phone: (506) 432-2150 Fax: (506) 432-2044

Western District (NB) Grain Growers Scholarship
This $300 scholarship is awarded to a student currently registered in the 4-H Program in the Western District of NB, entering post-secondary study in the fall. Selection criteria include financial need, academic record, and 4-H involvement. Application information is available from the NB Provincial 4-H office.

VII. OTHER CONTINUING EXTERNAL SCHOLARSHIPS AND BURSARIES

Although not exclusive to NSAC students, the following scholarships/awards are available to students studying at NSAC.

Agriculture and Agri-Food Canada Scholarship Program

The objective of the program is to provide incentives to encourage more students to pursue graduate degrees in agriculture and agri-food related disciplines so as to promote the development of sufficient expertise in the agri-food sector. Graduate studies may be in programs in the following areas: agri-food marketing and trade; agri-biotechnology; environmentally sustainable agricultural production systems; food technology; industrial uses of agricultural commodities; and information technology related to agriculture and agri-food. The scholarship provides $15,000 at the graduate level with a possibility to renew for one additional year, and $17,000 at the Doctoral level. Nomination must be received by July 2.

Dr. Kim Beck Memorial Scholarship

The Turkey Farmers of New Brunswick Marketing Board awards a $500 scholarship in memory of Dr. Kim Beck. The scholarship fund will be awarded annually to a resident of NB who is enrolled in a post-secondary agricultural program. Selection will be based on the following criteria: academic achievement, financial need, involvement in agriculture, and interest in the poultry or food industry. Applications must be received by October 31.

Canadian Association of Diplomas in Agriculture Programs (CADAP) Bursaries

The Canadian Association of Diplomas in Agriculture Programs (CADAP) is an organization of post-secondary educational institutions offering diploma programs in agriculture. Its membership consists of institutions from across the country with a variety of programs emphasizing the agriculture of their region.

To enable students from member institutions to benefit from this diversity in programs, the geographical variation, and the differing cultural backgrounds, CADAP will be offering, annually, $1,000 bursaries for two students from two different CADAP institutions to participate in an exchange between member institutions. Duration of the exchanges will be either one or two semesters or practical experience work sessions of at least 12 weeks. Students wishing to participate should make their interests known to the Vice-President Academic by December 15.

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 turf grass profession. The Scholars Fund is available to those currently enrolled in at least the second semester of a recognized turf grass 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 turf grass as a career. Applications are due by November 30 at:

Canadian Golf Superintendents Association
5580 Explorer Drive, Suite 509
Mississauga, ON L4W 4Y1

Scholarships, Bursaries, and Prizes

Canadian Federation of University Women (Truro Branch) Scholarship

Scholarships are awarded to women over the age of 25 attending a degree-granting university or college on a full-time basis. Applicants must be Canadian citizens and residents of the town of Truro or the County of Colchester in Nova Scotia. Applicants must have been out of school for at least five years before embarking on the present program of study. A candidate is eligible to apply during any year of a degree-granting program. If still eligible, an applicant may re-apply for this scholarship if the application during the previous year was unsuccessful. Application deadline is May 15.

Canadian Western Agribition Scholarships

The Canadian Western Agribition annually awards $1,000 scholarships to students who have participated in Canadian Western Agribition as exhibitors. Applicants must have completed at least one year of post-secondary study to be eligible. Application deadline is July 1.

Florence M. Christie Memorial Bursary for Women

The Greater Saint John Community Foundation awards annual $1,500 scholarships to women of Saint John, NB. Applicants must be mature female students (i.e. out of high school at least one year), with demonstrated financial need, entering or returning to full- or part-time studies at a post-secondary institution in September. The bursary must be applied to tuition. High academic standing is not a requirement. The application must include the completed application form, a statement of income and expenses, three letters of reference, a transcript of marks, volunteer experience/school participation, and future goals. Application deadline is March 28.

Farm Credit Corporation 4-H Scholarship

Farm Credit Corporation awards ten $1,000 scholarships (one per province) to students across Canada, in any year of any program of post-secondary study, who had been registered 4-H members in the last five years. The application must include general information, career plans, association involvement, and extracurricular involvement. In addition to a completed application form, applicants must submit a detailed plan for a community project that will either improve safety or reduce hunger in their community. The project plan should be a maximum of three typed pages in length. Project plans will be judged on completeness of plan, creativity, originality, spelling, and grammar. Application forms are due by February 28 at:

Canadian 4-H Council
930 Carling Avenue
Ottawa, ON K1A 0C6

Terry Fox Humanitarian Award Program

The program provides scholarships to students entering or attending post-secondary educational institutions within Canada. The successful applicants are recognized for dedication to community service, humanitarianism, perseverance and courage in the face of obstacles, and the pursuit of excellence in fitness and academics. The scholarships are renewable, subject to satisfactory progress. The value of each award is $4,000 annually for a maximum of four years or until the first degree is obtained. The deadline for application submissions is February 1. Website: www.terryfox.org

Scholarships, Bursaries, and Prizes

Keith Gilmore Foundation Scholarships

Four $1,500 scholarships are offered to individuals in undergraduate or post-graduate degree programs in agriculture, journalism, or communications at recognized universities. Successful applicants will already have completed a minimum of one year in their major fields of studies. Three $750 scholarships are offered to individuals enrolled in recognized diploma programs in agriculture and/or journalism or communications. The successful applicants will have already completed a minimum of one year in their diploma programs. 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

John Gyles Education Awards

The John Gyles Education Awards are available each year to students in both Canada and the United States. Full Canadian or American citizenship is a requirement. Awards are available to both male and female students for all areas of post-secondary study. A minimum GPA of 2.7 is required, but criteria other than strictly academic ability and financial need are considered in the selection process. Selected students will receive up to $3,000. Filing dates for applications are April 1, June 1 and November 15. To receive an application send only a stamped self-addressed envelope to:

John Gyles Education Awards, Attention: The Secretary
PO Box 4808, Station A, Fredericton, NB E3B 5G4

Hants County Exhibition Scholarship

This $1,000 scholarship is sponsored by the Windsor Agricultural Society. Applicants must be residents of Hants County, NS, entering any year of any program at a recognized agricultural or veterinary college and have aspirations of working in the agricultural industry. Selection criteria include academic performance, extracurricular activities, part-time employment, and career plans. Application forms, including copies of transcripts, must be received by August 26 at:

Windsor Agricultural Society
PO Box 368, Windsor, NS B0N 2T0

Anna Helvig Schousboe Scholarship

This $300 scholarship is awarded to a resident from Kings County, NB, working towards a degree or diploma in Agriculture, Veterinary Medicine, or Home Economics. Application deadline is August 31. Application information is available from:

NB Department of Agriculture, Fisheries and Aquaculture
Sussex Provincial Building, 707 Main Street
PO Box 5305, Sussex, NB E4E 7H7
Phone: (506) 432-2150; Fax: (506) 432-2044

Scholarships, Bursaries, and Prizes

Holstein Association of Canada Scholarships

Holstein Canada awards two $1,000 university scholarships and two $500 diploma 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 regular or junior members of Holstein Canada or children of members. Selection criteria include academic performance, future goals, 4-H experience and farm background. Website: www.holstein.ca/English/Youth/edaward. Applications must be submitted not later than June 28 to:

Jane N. Whaley, Scholarship Committee
Holstein Association of Canada
PO Box 610, 171 Colborne Street
Brantford, ON N3T 5R4

Ivomec 4-H Scholarships

The $1,000 Ivomec 4-H scholarships are awarded to students, in any year of post-secondary study, who had been registered 4-H members for at least two years within the last 5 years. As part of the selection process, applicants will be judged based on their degree of community and volunteer involvement. Additionally, all applicants are required to submit a presentation in any medium (essay of 500–750 words, video, speech on audio-cassette, poster, etc.) based on the following statement:

"Over the last few years, livestock and poultry producers have invested heavily in protecting the environment. Propose ideas or solutions that would further improve the existing systems, or provide new approaches to environmental protection in agriculture."

Applications, accompanied by essay, video or audiocassette or poster, must be received by the Canadian 4-H Council office not later than May 15.

Arlen Kerr Memorial Scholarship

The Canada Mink Breeders Association awards a $1,200 renewable scholarship to Canadian graduate students engaged in mink research and attending any Canadian university or veterinary college. Applicants should submit their education profiles and research proposals by January 15 to:

Karlene Hart, Executive Secretary
Canada Mink Breeders Assoc.
65 Skyway Avenue, Suite B
Rexdale, ON M9W 6C7

Kinsman and Kinettes Bursaries

The Hal Rogers Endowment Fund provides $1,600 bursaries to full-time Canadian students based on selection criteria of financial need, extracurricular involvement, high ideals, and qualities of citizenship. Applicants must not have already received a bursary from the Hal Rogers Endowment Fund. The deadline for applications is February 1. Website: www.kinclubs.ca

Scholarships, Bursaries, and Prizes

The Leonard Foundation

The Leonard Foundation is a private scholarship trust established in 1916 by the late Reuben Wells Leonard. The Foundation offers financial assistance to university students who are experiencing specific financial difficulties. Full-time students who are enrolled in an undergraduate or first professional degree program in a recognized Canadian college or university (AUCC) are eligible. All applicants will be considered but preference will be given to sons and daughters of clergy, teachers, military personnel, graduates of Royal Military College, members of the Engineering Institute of Canada, and members of the Mining and Metallurgical Institute of Canada. The amount of assistance may vary depending on the applicant's financial situation, but on average will be in the amount of $1,250. Applications must be submitted and an interview arranged with the Nominator nearest you (listed on insert in application) by March 15. Applications are available from:

The Provincial Nominator, The Leonard Foundation
1774 Pryor Street, Halifax, NS B3H 4G8
Website: www.leonardfind.org

Terry MacDonald Memorial Scholarship

This scholarship is awarded to a Southern District of NB 4-H member from a farm family, entering or enrolled in post-secondary study. An interview is part of the application process. The application deadline is July 31. Applications are available from:

Ron Menzies
RR #4, Norton, NB E0G 2N0

C.C. MacDougall Scholarship

This $250 scholarship is awarded to a student pursuing a degree or diploma in Agriculture, Home Economics, or Veterinary Medicine. Eligible students must have been 4-H members from Kings County, NB, or have parents who raise or breed Guernseys anywhere in NB. Application information is available from:

NB Department of Agriculture, Fisheries and Aquaculture
Sussex Provincial Building, 707 Main Street
PO Box 5305, Sussex, NB E4E 7H7
Phone: (506) 432-2150 Fax: (506) 432-2044

The Maritime Dairy Industry Scholarship

Two individual scholarships of $2,000 will be awarded. Students eligible to apply for this scholarship include any student currently attending a post-secondary education institution within Canada, who has completed at least three years of study in a program that has application to the dairy industry, and is a resident of NS, NB, or PEI. Applicants must show professional and academic promise, and a commitment to and interest in the dairy industry.

Applicants must provide a completed application form, a one-page letter stating their commitment to and interest in the dairy industry, an official transcript of marks for completed years in post-secondary education, and three reference letters (at least one from a professor). Selection criteria will be based on application requirements, academic standing, and potential contribution and commitment to the dairy industry. Applications must be submitted by January 31 to:

The Maritime Dairy Industry Scholarship Committee
c/o Milk Maritime Inc.
191 Halifax Street, Suite 3
Moncton, NB E1E 4E1

Scholarships, Bursaries, and Prizes

Douglas McRorie Memorial Scholarships

The Royal Bank Financial Group Foundation sponsors the Agricultural Institute of Canada Foundation (AICF) Douglas McRorie Memorial Scholarship, in recognition of the significant contribution Douglas McRorie, P.Ag., made to agricultural finance through his career with the Royal Bank and his professional involvement with the Agricultural Institute of Canada and AICF. The six annual $1,500 scholarships provide financial support to Master's program students specializing in agricultural business, finance, or trade. The scholarship is tenable for full-time study at any Canadian university with an agricultural program accredited by the AIC. Scholarship criteria include academic achievement, areas of study, leadership, and career interests. Additional information and applications are available at the AICF website (www.aic.ca/aicf/initiatives.html) or by contacting:

Education Committee
Agricultural Institute of Canada Foundation
141 Laurier Avenue West, Suite 1112
Ottawa, ON K1P 5J3.

John Miller Memorial Bursary

The $500 John Miller Memorial Bursary is awarded to an NS student in any year of any program at any agricultural university/college in Canada, whose course and project work and career plans reflect an interest in the hog industry, or whose application shows interest, understanding and appreciation for Nova Scotia's hog industry. The bursary is in memory of John Miller who served as Secretary/Manager of Pork Nova Scotia from 1983 to 1997. Applications must be submitted to the NSAC Awards Office not later than September 15.

Mine Action Student Essay Competition

Canada is committed to ensuring that the Ottawa Convention banning anti-personnel mines is universally accepted and effectively implemented. You can help offer your ideas through a student essay competition sponsored by the Canadian Department of Foreign Affairs and International Trade. The competition is open in a wide range of disciplines including social sciences, health sciences, humanities, and natural sciences. No prior knowledge of the landmine issue is required. Successful applicants will receive a $1,000 award and an opportunity for publication of their papers. Further details and application form are available at www.mines.gc.ca

National Association of United Church Men's Clubs

Harry Colnett Scholarship

The National Association of United Church Men's Clubs provide a $1,000 scholarship to a student of agriculture, fisheries, and/or food sciences who is interested in serving on the international scene. The scholarship is designed to encourage students to prepare for service in international agriculture and education, particularly in projects related to the production and distribution of food in developing countries. NSAC students who have taken the Tropical Agriculture course should make good candidates for this award. Application deadline is February 22.

New Brunswick Institute of Agrologists Scholarship

The New Brunswick Institute of Agrologists awards a $1,000 scholarship to a student from NB entering the third year of a degree course in Agriculture at a recognized Canadian agricultural education institution. Selection criteria include academic performance, participation in extracurricular activities, and financial need. Applications must be submitted not later than October 1 to:

Registrar, New Brunswick Institute of Agrologists
PO Box 3479, Station B, Fredericton, NB E3A 5H2

Scholarships, Bursaries, and Prizes

New Brunswick Milk Marketing Board Scholarship

The NB Milk Marketing Board awards a $750 scholarship to an NB resident who is enrolled in a Technician or Technology diploma or certificate program related to agriculture and the dairy industry at a recognized agricultural or community college. Selection is based on financial need, academic achievement, participation in community activities, and future plans. Application deadline is July 3.

Nova Scotia Fruit Growers' Association Scholarship

The Nova Scotia Fruit Growers' Association awards a $500 bursary to a student entering or already in a post-secondary education program in the field of Tree Fruit Production or a related science program which might include the following: Biology, Chemistry, Food Science, Plant Science, Environmental Science, or Business or Agri-Business. Selection criteria include academic achievement, participation in school and community activities, and interest in the tree fruit industry. Applications, including a resume, university/college acceptance letter or transcript, and an essay outlining career and life goals, must be received no later than May 31 by:

Education Committee
Nova Scotia Fruit Growers' Association
Blair House, 32 Main Street
Kentville, NS B4N 1J5

Nova Scotia Salmon Association Scholarships

The Nova Scotia Salmon Association annually awards $500 scholarships to NS residents who enhance or who propose to enhance by any endeavour the well-being of the Atlantic Salmon. For example an applicant may:

- have undertaken or be in the process of undertaking scholarly pursuit related to the enhancement or conservation of the Atlantic Salmon;
- propose to publish or have published an article or scientific paper in any field which furthers enhancement of the Atlantic Salmon;
- promote the cause of the Atlantic Salmon by outstanding leadership or participation;
- be engaged in endeavours of an Association that results in the conservation of the Atlantic Salmon.

Deadline for applications is March 12. Applications should be submitted to:

Chair of the Scholarship Committee, NSSA
PO Box 470, Port Williams, NS B0P 1T0

Nova Scotia Fur Institute Scholarship

The Nova Scotia Fur Institute awards a $2,500 scholarship to an NSAC graduate in Animal Science 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 March 31 to:

Chairman, Nova Scotia Fur Institute
Nova Scotia Agricultural College
PO Box 550, Truro, NS B2N 5E3

Scholarships, Bursaries, and Prizes

Prince Edward Island Potato Industry Scholarships

The Prince Edward Island Potato Board offers $500 scholarships to PEI students studying at the undergraduate level of an agriculture degree program at any recognized Canadian agricultural institution or to students in a post-graduate degree program at a recognized Canadian university, carrying out a research project related to potato production and utilization (including all disciplines, e.g. biotechnology, pathology, entomology, etc.). Undergraduate students must demonstrate through course work, summer employment and/or home farm background an interest in working in the potato industry. Selection criteria for potential undergraduate scholarships include academic performance, extracurricular activities and employment history. Graduate students will be considered on the basis of academic performance and relevance of the project to the improvement of the PEI potato industry. Applications must be submitted to the NSAC Awards Office not later than September 15.

Rotary Club of Truro Post-Secondary Entrance Educational Bursary

The Rotary Club of Truro offers two $1,500 post-secondary entrance educational bursaries to students wishing to pursue post-secondary studies at a college or university. The bursaries are tenable only at recognized post-secondary institutions and are awarded to students who reside in the geographic area served by the Rotary Club of Truro, Nova Scotia. These are non-renewable bursaries. Selection criteria include, but are not limited to, academic standing, community involvement, and need. Application deadline is May 1.

The Alvin Rowledge Bursary Award

The Atlantic Golf Superintendents Association (AGSA) has established the $1,000 Alvin Rowledge Bursary Award which is available to residents of Atlantic Canada who are members in good standing of the AGSA. Its intent is both to 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 of work experience in golf course maintenance, preferably be enrolled in at least the second semester of a recognized turf grass program, and be presently enrolled in a minimum of a two-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 16.

Saturn "Commitment to Excellence" Award

Saturn Canada recognizes five exceptional female students attending university or college in Canada. The $1,500 Saturn "Commitment to Excellence" Award honours female students who have made significant accomplishments in one or more of the following areas: academic, business, arts, athletics, philanthropy, or community. Application deadline is October 29. Website: www.saturncanada.com

George W. Slipp Memorial Scholarship

The Chicken Farmers of New Brunswick Marketing Board awards a $1,000 scholarship in memory of Mr. George W. Slipp. The scholarship fund will be awarded annually to an NB resident who is enrolled in a post-secondary agricultural program. Selection will be based on the following criteria: academic achievement, financial need, involvement in agriculture, and interest in the poultry or food industry. Applications must be received by October 31.

Scholarships, Bursaries, and Prizes

Southern District 4-H Council Scholarship
The Southern District 4-H Club Council in NB awards a $150 scholarship to a Southern District NB 4-H member attending a post-secondary institution. Application details are available from the NB Provincial 4-H Office.

Norah Stephen Oncology Scholar Awards
Ten awards will be granted each spring. Five of these awards will be dedicated to cancer-related research projects including basic science, cancer informatics, epidemiology, outcomes and socio-behavioural research. The remaining five awards will be dedicated to clinical training and experience projects. Each award, worth $5,000, covers stipend support for the student for up to 14 weeks. Interested candidates and their supervisors are invited to complete applications outlining their projects or practical experience directly related to the study of cancer. Materials must be submitted to Cancer Care Nova Scotia along with academic transcripts, a resume, and supervisor's resume by February 14. Applications are available at the NSAC Awards Office.

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 NB. Applicants must be NB 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, and agricultural economics. Selection will be based on financial need, academic performance, involvement in community, and future plans. Applications including an essay of 300–500 words, 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
PO Box 490, Sussex, NB E0E 1P0

Continuing and Distance Education

THE CENTRE FOR CONTINUING AND DISTANCE EDUCATION

The NSAC Centre for Continuing and Distance Education delivers educational programs and courses to clients who wish to pursue:

- certificate programs that are not part of a College credit program
- studies that are part of a College credit program, but that are delivered in a non-traditional manner, or
- studies that are of general interest to the public.

The Centre focuses its attention on traditional agriculture, aquaculture, related and value-added enterprises, and other land-based activities such as environmental horticulture, which includes landscape design and installation, turf management and arboriculture.

The Centre tailors its offerings to meet the needs of its clients. We believe that one of the key educational components of the new economy is life-long learning, and we consider it a central part of our mandate to accommodate professionals seeking to upgrade their skills and training.

The Centre also provides custom training, making the extensive knowledge base of NSAC faculty and staff available to clients with specific industry needs.

The Centre offers a number of credit and non-credit courses to students. Students who wish to attend NSAC but lack specific qualifications for admission have an opportunity to upgrade their pre-university math or sciences by enrolling in the Introductory Studies courses.

A number of credit courses are held in the Spring semester. These offerings are based on students' needs. Contact us for a list of scheduled courses.

Distance Education: The Centre is actively involved in the development of the NSAC's distance education capacity and supports the use of WebCT for both on-campus and distance courses. The Centre coordinates the development and delivery of web-based credit courses. The following courses are currently available:

ANSC1000 Organic Livestock Production
ECON1000 Principles of Microeconomics
ENVS1000 Basic Composting Skills
AGRI1000 Agricultural Ecosystems
AGRI1001 Food Security
AGRI1002 Transition to Organic Agriculture
AGRN1000 Organic Field Crop Management
HORT2001 Principles of Organic Horticulture

For descriptions of these courses, please see the Description of Courses section of this calendar.

For more information or for a copy of our calendar, contact:

Centre for Continuing & Distance Education
Nova Scotia Agricultural College
PO Box 550
Truro, NS B2N 5E3
Phone: (902) 893-6666
Fax: (902) 895-5528
E-mail: cde@nsac.ns.ca
Web site: www.nsac.ns.ca/cde

On campus, the Centre's main office is located in Room 276 of the Haley Institute.

CHURCHES

Churches representing a wide range of denominations are located in Truro and Bible Hill.

DAY CARE

The NSAC Day Care is a non-profit organization governed by a Board of Advisors appointed by the President. The day care is open five days a week from 7:30 a.m. to 6:00 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, a B.Tech (Environmental Horticulture), B.Tech in Applied Science, two technician programs, five technology programs, and numerous 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 with a further two years in any engineering discipline at Dalhousie University's Faculty of Engineering or may apply to any other institution.

Two-year programs leading to Technician diplomas are offered in Agricultural Business and Animal 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, Environmental Horticulture, Plant Science, and Farming.

The Nova Scotia Agricultural College via a unique cooperation with Dalhousie University offers a Master of Science program. The M.Sc. degree is granted by Dalhousie University in association with NSAC, 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 2004/2005 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 fulfill a specific need. The choice of courses will be limited to those that do not conflict when scheduled.

General Information

FACILITIES

The Nova Scotia Agricultural College is located on a 165-hectare property at Bible Hill, a kilometer 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, Haley Institute, the Dairy 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 Fisheries. Fraser House, Trueman House, Chapman House, and Jenkins Hall provide excellent accommodation and dining facilities for male and female students.

Post Office Address

Nova Scotia Agricultural College
PO Box 550
Truro, NS B2N 5E3

Telephone

Registry Office: (902) 893-6722
Toll-free: 1-888-700-6722

Website

www.nsac.ns.ca

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 Atlantic Colleges Athletic Association, which includes ten 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 and women's woodsmen and rugby 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 the Dairy Building. 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 that 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 and students 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-educational 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 basic furnishings such 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.

An alternative student accommodation is offered at Trueman House, which features apartment-like living in large, bright, recently renovated rooms. Each 11-bedroom section (apartment) includes a fully equipped kitchen, sitting room with cable TV, high-speed Internet, microwave, laundry room, storage area, and private washrooms and showers.

Dining Services for on-campus students 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.

General Information

Computing Services

Academic Computing Services is responsible for managing the computing resources found on the NSAC Academic Network. The mandate of Academic Computing Services is to:

- provide a consistent, state-of-the-art academic computing environment;
- provide broad and flexible access;
- provide an equitable distribution of academic computing resources to meet the demands of the College community;
- ensure that graduating students are equipped to meet the challenges of new communications technology; and
- provide efficient and effective management of academic computing resources.

Academic Computing Services manages over 160 workstations running Windows environments. The workstations are distributed among seven general-access labs and connected through a campus-wide network. Microsoft and Corel Suite applications, mathematical, statistical, and CAD software, as well as discipline-specific software, are available from any workstation. Students have full access to both Internet and e-mail services from any lab.

The ACS Media Centre provides students with access to digital cameras, multimedia projectors, scanners, imaging software, and colour printing.

The MacRae Library catalogue and library catalogues from other educational institutions are available through the campus network.

Internet and e-mail services are available to students living in residence. For further information about residence connections please contact Student Services at 893-6672.

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Appendix I: Old Course Numbers to New Course Numbers

This appendix lists the old course number and course title, followed by the new course number/course title and the course designations. Designations include: A for Agriculture Courses, H for Humanities Courses, AS for Animal Science Courses, PS for Plant Science Courses, PDN for Plant Science Production Courses, and DE for Distance Education Courses. These designations will assist students in determining program requirements as described in the program syllabi.

OLD COURSE	NEW COURSE	DESIGNATION
AE14: Surveying	ENGN0100: Surveying	
AE28: Wood Construction Techniques	no longer offered	
AE38: Horticultural Engineering	ENGN0101: Horticultural Engineering	
AE46: Soil and Water Resources Management	ENGN0102: Soil and Water Resources Management	
AE52: Agricultural Power Systems	ENGN0103: Agricultural Power Systems	
AE101: Computer Aided Graphics and Projection	ENGN1000: Computer Aided Graphics and Projection	
AE102: Design and Graphics	ENGN1001: Design and Graphics	
AE110: Statics	ENGN1002: Statics	
AE120: Properties and Mechanics of Materials	ENGN1003: Properties and Mechanics of Materials	
AE200: Environmental Impacts and Resource Management (A)	ENGN2000: Environmental Impacts and Resource Management	(A)
AE202: Agricultural Machinery	ENGN2001: Agricultural Machinery	
AE204: Introduction to Systems Analysis	ENGN2002: Introduction to Systems Analysis	
AE206: Design Project	ENGN3017: Design Project	
AE207: Food Processing Systems (A)	ENGN2003: Food Processing Systems	(A)
AE215: Aquatic Environment (A)	ENGN2004: Aquacultural Environment	(A)
AE230: Dynamics	ENGN2005: Dynamics	
AE260: Surveying	ENGN2006: Surveying	
AE300: Electric Circuits	ENGN3000: Electric Circuits	
AE305: Engineering Measurements and Controls (A)	ENGN3001: Engineering Measurements and Controls	(A)
AE310: Thermodynamics	ENGN3002: Thermodynamics	
AE311: Technology for Precision Agriculture	ENGN3003: Technology for Precision Agriculture	
AE312: Digital Circuits	ENGN3004: Digital Circuits	
AE314: Fundamentals of Chemical Engineering	ENGN3005: Fundamentals of Chemical Engineering	
AE315: Strength of Materials	ENGN3006: Strength of Materials	
AE320: Structures and Their Environment (A)	ENGN3007: Structures and Their Environment	(A)
AE332: Circuit Analysis	ENGN3008: Circuit Analysis	
AE335: Materials Handling and Processing (A)	ENGN3009: Materials Handling and Processing	(A)
AE340: Soil and Water (A)	ENGN3010: Soil and Water	(A)
AE350: Fluid Mechanics	ENGN3011: Fluid Mechanics	
AE355: Principles of Agricultural Machinery (A)	ENGN3012: Principles of Agricultural Machinery	(A)
AE360: Aquatic Engineering (A)	ENGN3013: Aquacultural Engineering	(A)

Appendix I: Old Course Numbers to New Course Numbers

AE365: Principles of Engineering in Landscape Horticulture	ENGN3014: Principles of Engineering in Landscape Horticulture
AE370: Irrigation and Drainage	ENGN3015: Irrigation and Drainage
AE380: Engineering Economy	ENGN3016: Engineering Economy
AE410: Water and Water Quality Management (A)	ENGN4000: Water and Water Quality Management (A)
AE412: Water Quality Issues (A)	ENGN4001: Water Quality Issues (A)
AE415: Directed Studies in Agricultural Engineering (A)	SPEC4012: Directed Studies in Agricultural Engineering (A)
AE420: Management of Mechanized Agricultural Systems (A)	ENGN4002: Management of Mechanized Agricultural Systems (A)
AE440: Senior Design Project for Engineers I	ENGN4003: Senior Design Project for Engineers I
AE449: Project-Seminar I (A)	RESM4000: Bioenvironmental Systems Management Project-Seminar I (A)
AE450: Project-Seminar II (A)	RESM4001: Bioenvironmental Systems Management Project-Seminar II (A)
AG521: Special Topics in Environmental Microbiology	AGRI5210: Special Topics in Environmental Microbiology
AG522: Special Topics in Weed Science	AGRI5220: Special Topics in Weed Science
AG524: Special Topics in Environmental Impact	AGRI5240: Special Topics in Environmental Impact
AG525: Soil Microbiology	AGRI5250: Soil Microbiology
AG526: Special Topics in Plant Pathology	AGRI5260: Special Topics in Plant Pathology
AG527: Economic Entomology	AGRI5270: Economic Entomology
AG531: Special Topics in Applied Ethology	AGRI5310: Special Topics in Applied Ethology
AG532: Special Topics in Animal Nutrition	AGRI5320:Special Topics in Animal Nutrition
AG534: Special Topics in Animal Physiology	AGRI5340:Special Topics in Animal Physiology
AG535: Animal Research Methods	AGRI5350: Animal Research Methods
AG536: Protein Nutrition	AGRI5360: Protein Nutrition
AG537: Special Topics in Animal Breeding and Genetics	AGRI5370: Special Topics in Animal Breeding and Genetics
AG538: Quantitative Genetics	AGRI5380: Quantitative Genetics
AG539: Molecular Genetic Analysis of Populations	AGRI5390: Molecular Genetic Analysis of Populations
AG541: Special Topics in Soil Fertility	AGRI5410: Special Topics in Soil Fertility
AG543: Special Topics in Environmental Analysis	AGRI5430: Special Topics in Environmental Analysis
AG544: Organic Environmental Analysis	AGRI5440: Organic Environmental Analysis
AG545: Environmental Soil Chemistry	AGRI5450: Environmental Soil Chemistry
AG546: Special Topics in Soil and Water Management	AGRI5460: Special Topics in Soil and Water Management
AG547: Special Topics in Analytical Instrumentation for Researchers	AGRI5470: Special Topics in Analytical Instrumentation for Researchers
AG551: Special Topics in Plant Breeding	AGRI5510: Special Topics in Plant Breeding
AG552: Plant Breeding Methods	AGRI5520: Plant Breeding Methods
AG553: Nitrogen in Crop Production	AGRI5530: Nitrogen in Crop Production
AG554: Special Topics in Crop Physiology (A)	AGRI5540: Special Topics in Crop Physiology (A)
AG556: Advanced Crop Physiology	AGRI5560: Advanced Crop Physiology
AG557: Special Topics in Agricultural Biotechnology	AGRI5570: Special Topics in Agricultural Biotechnology
AG558: Plant Biotechnology cross-referenced as PS475	AGRI5580: Plant Biotechnology I

Appendix I: Old Course Numbers to New Course Numbers

AG559: Biotechnology in Agriculture - Opportunities, Issues and Choices	AGRI5590: Biotechnology in Agriculture - Opportunities, Issues and Choices
AG561: Special Topics in Animal Product Technology	AGRI5610: Special Topics in Animal Product Technology
AG562: Ruminant Digestive Physiology and Metabolism	AGRI5620: Ruminant Digestive Physiology and Metabolism
AG563: Intermediate Statistical Methods	AGRI5630: Intermediate Statistical Methods
AG570: Communication Skills and Graduate Seminar	AGRI5700: Communication Skills and Graduate Seminar
AG571: Module Course I	AGRI5710: Module Course I
AG572: Applied Statistics and Experimental Design for Agriculture	AGRI5720: Applied Statistics and Experimental Design
AG573: Module Course II	AGRI5705: Module Course II
AG574: Advanced Studies in Food Chemistry	AGRI5740: Advanced Studies in Food Chemistry
AG900: Graduate Thesis	AGRI9000: Graduate Thesis
AS12: The Farm Workplace I	ANSC0100: The Farm Workplace I
AS13: Farm Animal Production and Practices I	ANSC0101: Farm Animal Production and Practices I
AS14: Farm Animal Production and Practices II	ANSC0102: Farm Animal Production and Practices II
AS16: Farm Animal Production I	ANSC0103:Farm Animal Production I
AS18: Farm Animal Biology I	ANSC0104: Farm Animal Biology I
AS20: Farm Animal Breeding	ANSC0105: Farm Animal Breeding
AS22 : The Farm Workplace II	ANSC0106: The Farm Workplace II
AS24: Principles of Disease	AHVT0202: Principles of Disease
AS25: Animal Nursing and Clinical Procedures I	no longer offered
AS26: Farm Animal Biology and Practices I	ANSC0107: Farm Animal Biology and Practices I
AS27: Farm Animal Biology and Practices II	ANSC0108: Farm Animal Biology and Practices II
AS36: Principles of Pharmacology	AHVT0203: Principles of Pharmacology
AS37: Laboratory Animal Care I	AHVT0204: Laboratory Animal Care I
AS39: Veterinary Laboratory Techniques I	AHVT0205: Veterinary Laboratory Techniques I
AS40: Support Services in Veterinary Practice	AHVT0206: Support Services in Veterinary Practice
AS46: Animal Nursing and Clinical Procedures II	no longer offered
AS49: Veterinary Laboratory Techniques II	AHVT0207: Veterinary Laboratory Techniques II
AS59: Veterinary Laboratory Techniques III	AHVT0303: Veterinary Laboratory Techniques III
AS60: Animal Nursing - Clinical Practices I	AHVT0100: Animal Nursing - Clinical Practices I
AS61: Animal Nursing - Clinical Practices II	AHVT0101: Animal Nursing - Clinical Practices II
AS62: Animal Nursing - Clinical Practices III	AHVT0200: Animal Nursing - Clinical Practices III
AS63: Animal Nursing - Clinical Practices IV	AHVT0201: Animal Nursing - Clinical Practices IV
AS64: Animal Nursing - Clinical Practices V	AHVT0302: Animal Nursing - Clinical Practices V
AS65: Project-Seminar	ANSC0111: Project-Seminar
AS66: Farm Animal Production II	ANSC0109: Farm Animal Production II
AS68: Farm Animal Biology II	ANSC0110: Farm Animal Biology II
AS71: Laboratory Animal Care II	AHVT0305: Laboratory Animal Care II

Appendix I: Old Course Numbers to New Course Numbers

AS75: Animal Nursing and Clinical Procedures III	AHVT0300: Animal Nursing and Clinical Procedures III	
AS76: Farm Animal Production III	ANSC0200: Farm Animal Production III	
AS77: Farm Animal Production III Practices	ANSC0201: Farm Animal Production III Practices	
AS86: Farm Animal Production IV	ANSC0202: Farm Animal Production IV	
AS87: Farm Animal Production IV Practices	ANSC0203: Farm Animal Production IV Practices	
AS90: Technology Project	ANSC0300: Technology Project	
AS95: Animal Health Technology Project	AHVT0304: Animal Health Technology Project	
AS99: Practicum - Animal Health Technology	AHVT0301: Practicum - Animal Health Technology	
AS200: Animal Agriculture I (A)	ANSC2000: Animal Agriculture I	(A, AS)
AS201: Animal Agriculture II (A)	ANSC2001: Animal Agriculture II	(A, AS)
AS202: Organic Livestock Production (A) *DE	ANSC1000: Organic Livestock Production	(A, AS) *DE
AS210: Introduction to Aquaculture (A)	AQUA2000: Introduction to Aquaculture	(A, AS)
AS230: Physiological Systems of Farm Animals	BIOL2006:Mammalian Physiology	(AS)
AS240: The Horse: Its Biology and Use (A)	ANSC2002: The Horse: Its Biology and Use	(A, AS)
AS241: Introduction to Applied Ethology	ANSC2003: Companion Animal Behaviour	(AS)
AS305: Animal Nutrition	NUTR3000: Animal Nutrition	(AS)
AS310: Animal Breeding (A)	ANSC3000: Animal Breeding	(A, AS)
AS320: Animal Health (A)	ANSC3001: Animal Health	(A, AS)
AS325: Applied Animal Nutrition (A)	NUTR3001: Applied Animal Nutrition	(A, AS)
AS330: Growth, Reproduction and Lactation (A)	BIOL3008: Growth, Reproduction and Lactation	(A, AS)
AS335: Environmental Physiology (A)	BIOL3004: Environmental Physiology	(A, AS)
AS341: Domestic Animal Behavior (A)	ANSC3002: Domestic Animal Behaviour	(A, AS)
AS345: Eggs and Dairy Products (A)	ANSC3003: Eggs and Dairy Products	(A, AS)
AS350: Meat Science (A)	ANSC3004: Meat Science	(A, AS)
AS365: Fish Nutrition (A)	NUTR3002: Fish Nutrition	(A, AS)
AS370: Fish Health (A)	AQUA3000: Fish Health	(A, AS)
AS375: Aquatic Ecology	BIOL3006: Aquatic Ecology	(AS)
AS380: Physiology of Aquatic Animals (A)	BIOL3005: Physiology of Aquatic Animals	(A, AS)
AS421: Special Topics in Animal Science or Aquaculture	SPEC4000: Special Topics in Animal Science or Aquaculture	(AS)
AS440: Finfish Production	AQUA4000: Finfish Production	(AS)
AS445: Shellfish Production	AQUA4001: Shellfish Production	(AS)
AS449: Project-Seminar I (A)	RESM4002: Animal Science Project-Seminar I	(A)
AS449: Project-Seminar I (A)	RESM4010: Aquaculture Project-Seminar I	(A)
AS450: Project-Seminar II (A)	RESM4003: Animal Science Project-Seminar II	(A)
AS450: Project-Seminar II (A)	RESM4011: Aquaculture Project-Seminar II	(A)
AS460: Avian Biology (A)	BIOL4000: Avian Biology	(A, AS)
AS465: Molecular Applications to Animal Production	GENE4000: Molecular Applications to Animal Production	(AS)

Appendix I: Old Course Numbers to New Course Numbers

AS470: Animal Cell Culture	BIOL4001: Animal Cell Culture	(AS)
AS475: Ruminant Digestive Physiology and Metabolism	NUTR4000: Ruminant Digestive Physiology and Metabolism	(AS)
AS490: Topics in Animal Production I (A)	ANSC4000: Topics in Animal Production I	(A, AS)
AS492: Topics in Animal Production I (A)	ANSC4001: Topics in Animal Production I	(A, AS)
AS494: Topics in Animal Production I (A)	ANSC4002: Topics in Animal Production I	(A, AS)
B15: Animal Anatomy	BIOL0100: Animal Anatomy	
B40: Plant Pathology	BIOL0101: Plant Pathology	
B41: Plant Physiology	no longer offered	
B43: Entomology	BIOL0200: Entomology	
B46: Weed Science	BIOL0103: Weed Science	
B100: Botany	BIOL1000: Botany	
B110: Zoology	BIOL1001: Zoology	
B200: Cell Biology	BIOL2000: Cell Biology	
B201: Cell Biology Laboratory	BIOL2001:: Cell Biology Laboratory	
B225: Microbiology	MICR2000: Microbiology	
B240: Genetics I	GENE2000: Genetics	
B260: Plant Physiology	BIOL2002: Plant Physiology	
B265: Systematic Botany	BIOL2003: Systematic Botany	
B270: Structural Botany	BIOL2004: Structural Botany	
B300: Principles of Plant Pathology (A)	BIOL2005: Principles of Plant Pathology	(A)
B320: General Entomology (A)	BIOL3000: General Entomology	(A)
B330: Ecology	BIOL3001: Ecology	
B335: Weed Science (A)	BIOL3002: Weed Science	(A)
B340: Comparative Vertebrate Anatomy	BIOL3003: Comparative Vertebrate Anatomy	
B355: Food Microbiology (A)	MICR3000: Food Microbiology	(A)
B365: Environmental Impact	ENVS3000: Environmental Impact	
B370: An Introduction to Molecular Genetics	GENE3000: An Introduction to Molecular Genetics	
B375: Population and Quantitative Genetics	GENE3001: Population and Quantitative Genetics	
B385: Principles of Pest Management (A)	ENVS3004: Principles of Pest Management	(A)
B400: Soil Microbiology (A)	MICR4000: Soil Microbiology	(A)
B405: Pesticides in Agriculture (A)	ENVS4000: Pesticides in Agriculture	(A)
B406: Economic Plant Pathology (A)	ENVS4001: Economic Plant Pathology	(A)
B421: Special Topics in Agribiology I (A)	SPEC4001: Special Topics in Agribiology I	(A)
B422: Special Topics in Agribiology II (A)	SPEC4002: Special Topics in Agribiology II	(A)
B425: Economic Entomology (A)	ENVS4002: Economic Entomology	(A)
B435: Conservation Biology	BIOL4002: Conservation Biology	
B445: Applied Weed Science (A)	ENVS4003: Applied Weed Science	(A)

Appendix I: Old Course Numbers to New Course Numbers

CS12: Principles of Soil Science	SOIL0100: Principles of Soil Science
CS13: Soil Management	SOIL0200: Soil Management
CS14: Agricultural Chemistry	CHEM0100: Agricultural Chemistry
CS89: Preparatory Chemistry	CHEM0050: Preparatory Chemistry
CS101: General Chemistry I	CHEM1000: General Chemistry I
CS102: General Chemistry II	CHEM1001: General Chemistry II
CS110: Organic Chemistry	no longer offered
CS200: Biochemistry I	CHEM2005: Biochemistry I
CS201: Organic Chemistry I	CHEM2000: Organic Chemistry I
CS202: Organic Chemistry II	CHEM2001: Organic Chemistry II
CS205: Biochemistry II	no longer offered
CS212: Analytical Chemistry I	CHEM2002: Analytical Chemistry I
CS220: Introduction to Soil Science (A)	SOIL2000: Introduction to Soil Science (A)
CS230: Introduction to Geology	GEOL2000: Introduction to Geology
CS275: Food Chemistry I (A)	CHEM2003: Food Chemistry I (A)
CS276: Introductory Food Chemistry (A)	CHEM2004: Introductory Food Chemistry (A)
CS301: Biochemistry	CHEM3000: Biochemistry
CS302: Biochemical Pathways	CHEM3001: Biochemical Pathways
CS310: Radiotracers in Agriculture (A)	CHEM3002: Radiotracers in Agriculture (A)
CS316: Advanced Organic Chemistry	no longer offered
CS318: Advanced Integrated Chemistry Laboratory I	CHEM3003: Advanced Integrated Chemistry Laboratory I
CS320: Soil Fertility (A)	SOIL3000: Soil Fertility (A)
CS341: Instrumental Analytical Chemistry II	CHEM3004: Instrumental Analytical Chemistry II
CS342: Instrumental Analytical Chemistry III	CHEM3005: Instrumental Analytical Chemistry III
CS345: Soil Conservation in Agriculture (A)	SOIL3001: Soil Conservation in Agriculture (A)
CS360: Mammalian Biochemistry	CHEM3006: Mammalian Biochemistry
CS375: Food Chemistry II (A)	CHEM3007: Food Chemistry II (A)
CS376: Intermediate Food Chemistry (A)	CHEM3008: Intermediate Food Chemistry (A)
CS380: Food Quality Assurance (A)	FOOD3000: Food Quality Assurance (A)
CS415: Special Topics in Chemistry and Soil Science I (A)	SPEC4003: Special Topics in Chemistry and Soil Science I (A)
CS425: Special Topics in Chemistry and Soil Science II (A)	SPEC4004: Special Topics in Chemistry and Soil Science II (A)
CS436: Advanced Integrated Chemistry Laboratory II	CHEM4000: Advanced Integrated Chemistry Laboratory II
CS440: Environmental Soil Chemistry	SOIL4000: Environmental Soil Chemistry
CS457: The Science of Composting & Its Application (A)	ENVS4004: The Science of Composting & Its Application (A)
EB10: Accounting	MGMT0100:Accounting
EB11: Applied Accounting and Taxation	MGMT0101: Applied Accounting and Taxation
EB12: Macroeconomics	ECON0101: Introductory Macroeconomics

Appendix I: Old Course Numbers to New Course Numbers

EB13: Microeconomics	ECON0100:Introductory Microeconomics	
EB40: Marketing Practices	MGMT0102: Agricultural Marketing	
EB41: Business Law	MGMT0103: Business Law	
EB42: Applied Farm Management	MGMT0200: Applied Farm Management	
EB65: Business Project	MGMT0201: Business Project	
EB72: Farm Project	MGMT0300: Farm Project	
EB90: Technology Project	MGMT0302: Economics and Business Technology Project	
EB95: Practicum - Farming Technology	MGMT0301: Practicum - Farming Technology	
EB110: Agricultural Economics (A)	ECON1000: Principles of Microeconomics	(A) *DE
EB200: Microeconomics I	ECON2000: Intermediate Microeconomics	
EB205: Microeconomics II	no longer offered	
EB210: Financial Accounting I	MGMT2004: Financial Accounting I	
EB215: Financial Accounting II	MGMT2005: Financial Accounting II	
EB220: Production Economics (A)	ECON2002: Production Economics	(A)
EB221: Topics in Economics and Business Management (A)	SPEC2000: Topics in Economics and Business Management	(A)
EB225: Introduction to Small Business Entrepreneurship	MGMT1000: Small Business Entrepreneurship	
EB230: Introduction to Business Law	MGMT2001: Introduction to Business Law	
EB255: Macroeconomics I	ECON1001: Principles of Macroeconomics	
EB260: Mathematical Economics	ECON3000: Mathematical Economics	
EB300: Environmental and Resource Economic Policy	no longer offered	
EB305: Macroeconomics II	ECON2001:Intermediate Macroeconomics	
EB315: Management Accounting	MGMT3000: Management Accounting	
EB320: Agricultural and Food Policy I (A)	ECON3002: Agricultural and Food Policy	(A)
EB325: Operations Research	ECON3003: Mathematical Programming	
EB330: Agricultural Markets and Prices (A)	ECON3004: Agricultural Markets and Prices	(A)
EB335: Business Marketing	MGMT2002: Marketing	
EB340: Farm Management I (A)	MGMT2003: Farm Management	(A)
EB360: Econometrics	ECON3005: Econometrics	
EB400: Resource and Environmental Economics	no longer offered	
EB410: Strategic Management in Agribusiness (A)	MGMT4000: Strategic Management	
EB419: Agrifood Policy Analysis (A)	ECON4001: Agrifood Policy Analysis	(A)
EB421: Special Topics in Agricultural Economics and Business I (A)	SPEC4005: Special Topics in Agricultural Economics and Business I	(A)
EB422: Special Topics in Agricultural Economics and Business II (A)	SPEC4006: Special Topics in Agricultural Economics and Business II	(A)
EB425: Research Methods (A)	RESM4004: Research Methods for Economics and Business	(A)
EB430: International Marketing	MGMT3001: International Marketing	
EB435: Consumer Behaviour and Food Marketing (A)	MGMT3002: Consumer Behaviour	
EB441: Topics in Advanced Farm Management (A)	ECON4002: Topics in Advanced Farm Management	(A)

Appendix I: Old Course Numbers to New Course Numbers

EB445: Agribusiness Entrepreneurship (A)	MGMT4001: Advanced Entrepreneurship (A)
EB450: Project-Seminar (A)	RESM4005: Project-Seminar for Economics and Business (A)
ES60: Landscape Plants I	HORT0100: Landscape Plants I
ES61: Landscape Plants II	HORT0101: Landscape Plants II
ES62: Landscape Plants III	HORT0204: Landscape Plants III
ES200: Environmental Studies I (A)	ENVS2000: Environmental Studies I (A)
ES201: Environmental Studies II (A)	ENVS2001: Environmental Studies II (A)
ES202: Basic Composting Skills (A) *DE	ENVS1000: Basic Composting Skills (A) *DE
ES312: Environmental Chemistry	CHEM3009: Environmental Chemistry
ES330: Environmental Sampling and Analysis	ENVS3001: Environmental Sampling and Analysis
ES333: Waste Reduction and Site Remediation (A)	ENVS3002: Waste Treatment and Site Remediation (A)
ES350: Environmental Studies Field Course	ENVS3003: Environmental Studies Field Course
ES370: Environmental Processes and Natural Landscape Functions	HORT3000: Environmental Processes and Natural Landscape Functions
ES380: Landscape Project Management	HORT3001: Landscape Project Management
ES401: Special Topics in Environmental Studies I (A)	SPEC4007: Special Topics in Environmental Studies I (A)
ES402: Special Topics in Environmental Studies II (A)	SPEC4008: Special Topics in Environmental Studies II (A)
ES449: Project-Seminar I (A)	RESM4006: Environmental Sciences Project-Seminar I (A)
ES450: Project-Seminar II (A)	RESM4007: Environmental Sciences Project-Seminar II (A)
ES470: Urban Tree Management	HORT4000: Urban Tree Management
H10: Technical Writing	ENGL0100: Technical Writing
H45: Technical Communications	CMMT0100: Veterinary Practice Communication
H60: Communication Techniques	CMMT0101: Communication Skills
H101: The English and American Novel	ENGL1001: The Novel (H)
H102: Nature in English and American Literature	ENGL1002: Nature in English and American Literature (H)
H113: Composition	ENGL1000: Composition (H)
H130: Introductory French	FREN1000: French Language I (H)
H131: French Language II	FREN1001: French Language II (H)
H135: Basic Spanish I	SPAN1000: Basic Spanish I (H)
H136: Basic Spanish II	SPAN1001: Basic Spanish II (H)
H140: Personnel Management	MGMT2000: Human Resource Management (H)
H150: Agriculture Today	AGRI1003: Agriculture Today (H)
H160: Introductory Sociology	SOCI1000: Introductory Sociology (H)
H170: Introductory Human Geography	GEOG1000: Introductory Human Geography (H)
H230: Nature's Image: A Survey of Landscape Art	ARTS2000: Nature's Image: A Survey of Landscape Art (H)
H301: Rural History	HIST3000: Rural History (H)
H310: Literature of Atlantic Canada	ENGL3000: Literature of Atlantic Canada (H)
H320: Extension Education in the Rural Community	EXTE3000: Extension Education in the Rural Community (H)

Appendix I: Old Course Numbers to New Course Numbers

H321: Leadership Development and the Social Action Process	EXTE3001: Leadership Development and the Social Action Process	(H)
H325: Technology in Agricultural Communications	no longer offered	(H)
H350: Environmental and Agricultural Ethics	PHIL3000: Environmental and Agricultural Ethics	(H)
H360: Rural Sociology	SOCI3000: Rural Sociology	(H)
H370: Rural Geography	GEOG3000: Rural Geography	(H)
H401: Humanities Research Seminar I	no longer offered	(H)
H402: Humanities Research Seminar II	no longer offered	(H)
H403: Special Topics in Humanities	SPEC4009: Special Topics in Rural Studies	(H)
IN89: Academic Resources	CMMT0050: Academic Resources	
IN100: Agricultural Ecosystems (A) *DE	AGRI1000: Agricultural Ecosystems	(A) *DE
IN101: Food Security (A) *DE	AGRI1001: Food Security	(A) *DE
IN202: Transition to Organic Agriculture (A) *DE	AGRI1002 Transition to Organic Agriculture	(A) *DE
IN205: Food Systems in the Tropics (A)	INTD2000: Food Systems in the Tropics	(A)
IN206: Agricultural Systems of Central Europe	INTD2001: Agricultural Systems of Central Europe	
IN390: Microbial Biotechnology	MICR3001: Microbial Biotechnology	
IN395: Applied Biochemistry	CHEM3010: Applied Biochemistry	
IN397: Advanced Biochemistry	CHEM3011: Advanced Biochemistry	
IN400: Issues in Agriculture (A)	AGRI4000: Contemporary Issues in Agriculture	(A)
IN449: Agricultural Biotechnology Project-Seminar I (A)	RESM4012: Agricultural Biotechnology Project-Seminar I	(A)
IN450: Agricultural Biotechnology Project-Seminar II	RESM4013: Agricultural Biotechnology Project-Seminar II	
IN475: Biotechnology in Agriculture (A)	GENE4002: Biotechnology in Agriculture	(A)
MP14: Computational Methods	CSCI0100: Computational Methods	
MP70: Basic Statistics	no longer offered	
MP85: Functions	MATH0050: Functions	
MP90: Introductory Physics	PHYS0050: Introductory Physics	
MP100: Calculus and Analytic Geometry I	MATH1000: Calculus and Analytic Geometry I	
MP105: Calculus and Analytic Geometry II	MATH1001: Calculus and Analytic Geometry II	
MP140: Physics I	PHYS1002: Physics I	
MP145: Physics II	PHYS1003: Physics II	
MP150: Biophysics I	PHYS1000: Physics for the Life Sciences I	
MP210: Introduction to Statistics	STAT2000: Introduction to Statistics	
MP211: Introduction to Planned Studies: Surveys and Experiments	STAT3000: Introduction to Planned Studies: Surveys and Experiments	
MP212: Probability and Statistics for Engineering	STAT2001: Probability and Statistics for Engineering	
MP220: Computer Science	CSCI2000: Computer Science	
MP222: Computer Methods	CSCI1000: Computer Methods	
MP230: Multivariable Calculus	MATH2000: Multivariable Calculus	
MP236: Differential Equations	MATH2001: Differential Equations	

Appendix I: Old Course Numbers to New Course Numbers

MP250: Biophysics II: Perception	PHYS1001: Physics for the Life Sciences II
MP330: Agrometeorology	AGRI3000: Agrometeorology
MP335: Applied Linear Algebra	MATH3000: Applied Linear Algebra
MP336: Data Structures and Numerical Methods	CSCI3000: Data Structures and Numerical Methods
MP420: Intermediate Statistical Methods	STAT4000: Intermediate Statistical Methods
MP460: Agricultural Modelling	MATH4000: Agricultural Modelling
PS35: Utilization of Plant Resources	PLSC0100: Utilization of Plant Resources
PS38: Nursery Crop Production	HORT0200: Nursery Crop Production
PS39: Greenhouse Crop Management	HORT0201: Greenhouse Crop Management
PS43: Small Fruit Crops	HORT0202: Small Fruit Crops
PS44: Tree Fruit Crops	HORT0203: Tree Fruit Crops
PS45: Plant Physiology and Stress Management	BIOL0102: Plant Physiology and Stress Management
PS47: Turfgrass Production and Management	HORT0102: Turfgrass Production and Management
PS49: Potato Production	AGRN0200: Potato Production
PS50: Landscape Horticulture I	HORT0103: Landscape Horticulture I
PS51: Residential Landscape Design and Construction	HORT0205: Residential Landscape Design and Construction
PS52: Cropping Systems I: Cereal-Based Systems	AGRN0201: Cropping Systems I: Cereal-Based Systems
PS55: Plant Propagation	PLSC0200: Plant Propagation
PS56: Cropping Systems II: Forage-Based Systems	AGRN0202:: Cropping Systems II: Forage-Based Systems
PS62: Landscape Plant Materials III	no longer offered
PS70: Landscape Techniques	HORT0206: Landscape Techniques
PS71: Arboriculture	HORT0207: Arboriculture
PS72: Landscape Maintenance	HORT0208: Landscape Maintenance
PS73: Landscape Horticulture II	HORT0209: Landscape Horticulture II
PS74: Landscape Design and Construction	HORT0210: Landscape Design and Construction
PS76: Plant Products Physiology	PLSC0203: Plant Products Physiology
PS90: Technology Project	PLSC0201: Technology Project
PS99: Plant Science Techniques	PLSC0202: Plant Science Techniques
PS147: Farm Woodlot Management (A)	PLSC1000: Farm Woodlot Management (A, PDN)
PS200: Vegetable Production (A)	HORT2000: Vegetable Production (A, PDN)
PS202: Organic Field Crop Management (A) *DE	AGRN1000: Organic Field Crop Management (A, PS) *DE
PS210: Principles of Organic Horticultural Crop Production (A)	HORT2001: Principles of Organic Horticulture (A, PDN) *DE
PS211: Specialty Crops	PLSC2000: Specialty Crops (PDN)
PS270: Landscape Horticulture Work Program I	HORT2004: Introduction to Viticulture (PS)
PS280: Introduction to Viticulture	HORT2002: Landscape Horticulture Work Program I (PS)
PS290: The British Garden	HORT2003: The British Garden (PS)
PS300: Forage Crops (A)	AGRN3000: Forage Crops (A, PDN)

Appendix I: Old Course Numbers to New Course Numbers

PS305: Grain Production (A)	AGRN3001: Grain Production	(A, PDN)
PS315: Tree Fruit Crops (A)	HORT3002: Tree Fruit Crops	(A, PDN)
PS320: Small Fruit Crops (A)	HORT3003: Small Fruit Crops	(A, PDN)
PS325: Potato Production (A)	AGRN3002: Potato Production	(A, PDN)
PS330: Greenhouse Crop Production and Floriculture (A)	HORT3004 Greenhouse Crop Production and Floriculture	(A, PDN)
PS335: Landscape Plant Production (A)	HORT3005: Landscape Plant Production	(A, PDN)
PS355: Tropical Agriculture (A)	INTD3000: Tropical Agriculture	(A, PS)
PS360: Landscape Horticulture Project I	HORT3007: Environmental Horticulture Project I	(PS)
PS370: Landscape Horticulture Work Program II	HORT3006: Landscape Horticulture Work Program II	(PS)
PS390: Insects and Diseases of Landscape Plants	BIOL3007 Insects and Diseases of Landscape Plants	(PS)
PS400: Plant Breeding (A)	PLSC4000: Plant Breeding	(A, PS)
PS405: Agronomy (A)	AGRN4000: Agronomy	(A, PS)
PS410: Horticulture (A)	HORT4001: Horticulture	(A, PS)
PS415: Crop Adaptation (A)	PLSC4001: Crop Adaptation	(A, PS)
PS421: Special Topics in Plant Science I (A)	SPEC4010: Special Topics in Plant Science I	(A, PS)
PS422: Special Topics in Plant Science II (A)	SPEC4011: Special Topics in Plant Science II	(A, PS)
PS440: Management of Specialized Turf	HORT4002: Management of Specialized Turf	(PS)
PS449: Plant Science Project-Seminar I (A)	RESM4008: Plant Science Project-Seminar I	(A, PS)
PS450: Plant Science Project-Seminar II (A)	RESM4009: Plant Science Project-Seminar II	(A, PS)
PS460: Landscape Horticulture Project II	HORT4004: Environmental Horticulture Project II	(PS)
PS470: Tree Management	HORT4003: Tree Management	(PS)
PS475: Plant Biotechnology (A)	GENE4001: Plant Biotechnology	(A, PS)

Appendix II: New Course Numbers to Old Course Numbers

This appendix lists the new course number/course title, followed by the old course number/course title and course designations. Designations include: (A) for Agriculture Courses, (H) for Humanities Courses, (AS) for Animal Science Courses, (PS) for Plant Science Courses, (PDN) for Plant Science Production Courses. These designations will assist students in determining program requirements as described in the program syllabi.

NEW COURSE	OLD COURSE	DESIGNATION
AGRI1000: Agricultural Ecosystems	IN100: Agricultural Ecosystems *DE	(A) *DE
AGRI1001: Food Security	IN101: Food Security *DE	(A) *DE
AGRI1002: Transition to Organic Agriculture	IN202: Transition to Organic Agriculture*DE	(A) *DE
AGRI1003: Agriculture Today	H150: Agriculture Today	(H)
AGRI3000: Agrometeorology	MP330: Agrometeorology	
AGRI4000: Contemporary Issues in Agriculture	IN400: Issues in Agriculture	(A)
AGRI5210: Special Topics in Environmental Microbiology	AG521: Special Topics in Environmental Microbiology	
AGRI5220: Special Topics in Weed Science	AG522: Special Topics in Weed Science	
AGRI5240: Special Topics in Environmental Impact	AG524: Special Topics in Environmental Impact	
AGRI5250: Soil Microbiology	AG525: Soil Microbiology	
AGRI5260: Special Topics in Plant Pathology	AG526: Special Topics in Plant Pathology	
AGRI5270: Economic Entomology	AG527: Economic Entomology	
AGRI5310: Special Topics in Applied Ethology	AG531: Special Topics in Applied Ethology	
AGRI5320:Special Topics in Animal Nutrition	AG532: Special Topics in Animal Nutrition	
AGRI5340:Special Topics in Animal Physiology	AG534: Special Topics in Animal Physiology	
AGRI5350: Animal Research Methods	AG535: Animal Research Methods	
AGRI5360: Protein Nutrition	AG536: Protein Nutrition	
AGRI5370: Special Topics in Animal Breeding and Genetics	AG537: Special Topics in Animal Breeding and Genetics	
AGRI5380: Quantitative Genetics	AG538: Quantitative Genetics	
AGRI5390: Molecular Genetic Analysis of Populations	AG539: Molecular Genetic Analysis of Populations	
AGRI5410: Special Topics in Soil Fertility	AG541: Special Topics in Soil Fertility	
AGRI5430: Special Topics in Environmental Analysis	AG543: Special Topics in Environmental Analysis	
AGRI5440: Organic Environmental Analysis	AG544: Organic Environmental Analysis	
AGRI5450: Environmental Soil Chemistry	AG545: Environmental Soil Chemistry	
AGRI5460: Special Topics in Soil and Water Management	AG546: Special Topics in Soil and Water Management	
AGRI5470: Special Topics in Analytical Instrumentation for Researchers	AG547: Special Topics in Analytical Instrumentation for Researchers	
AGRI5510: Special Topics in Plant Breeding	AG551: Special Topics in Plant Breeding	
AGRI5520: Plant Breeding Methods	AG552: Plant Breeding Methods	
AGRI5530: Nitrogen in Crop Production	AG553: Nitrogen in Crop Production	
AGRI5540: Special Topics in Crop Physiology	AG554: Special Topics in Crop Physiology (A)	(A)
AGRI5560: Advanced Crop Physiology	AG556: Advanced Crop Physiology	

Appendix II: New Course Numbers to Old Course Numbers

AGRI5570: Special Topics in Agricultural Biotechnology	AG557: Special Topics in Agricultural Biotechnology
AGRI5580: Plant Biotechnology 1	AG558: Plant Biotechnology cross-referenced as PS475
AGRI5590: Biotechnology in Agriculture – Opportunities, Issues and Choices	AG559: Biotechnology in Agriculture – Opportunities, Issues and Choices
AGRI5610: Special Topics in Animal Product Technology	AG561: Special Topics in Animal Product Technology
AGRI5620: Ruminant Digestive Physiology and Metabolism	AG562: Ruminant Digestive Physiology and Metabolism
AGRI5630: Intermediate Statistical Methods	AG563: Intermediate Statistical Methods
AGRI5700: Communication Skills and Graduate Seminar	AG570: Communication Skills and Graduate Seminar
AGRI5705: Module Course II	AG573: Module Course II
AGRI5710: Module Course I	AG571: Module Course I
AGRI5720: Applied Statistics and Experimental Design	AG572: Applied Statistics and Experimental Design for Agriculture
AGRI5740: Advanced Studies in Food Chemistry	AG574: Advanced Studies in Food Chemistry
AGRI9000: Graduate Thesis	AG900: Graduate Thesis
AGRN0200: Potato Production	PS49: Potato Production
AGRN0201: Cropping Systems I: Cereal-Based Systems	PS52: Cropping Systems I: Cereal-Based Systems
AGRN0202:: Cropping Systems II: Forage-Based Systems	PS56: Cropping Systems II: Forage-Based Systems
AGRN1000: Organic Field Crop Management	PS202: Organic Field Crop Management *DE (A, PS) *DE
AGRN3000: Forage Crops	PS300: Forage Crops (A, PDN)
AGRN3001: Grain Production	PS305: Grain Production (A, PDN)
AGRN3002: Potato Production	PS325: Potato Production (A, PDN)
AGRN4000: Agronomy	PS405: Agronomy (A, PS)
AHVT0100: Animal Nursing – Clinical Practices I	AS60: Animal Nursing – Clinical Practices I
AHVT0101: Animal Nursing – Clinical Practices II	AS61: Animal Nursing – Clinical Practices II
AHVT0200: Animal Nursing – Clinical Practices III	AS62: Animal Nursing – Clinical Practices III
AHVT0201: Animal Nursing – Clinical Practices IV	AS63: Animal Nursing – Clinical Practices IV
AHVT0202: Principles of Disease	AS24: Principles of Disease
AHVT0203: Principles of Pharmacology	AS36: Principles of Pharmacology
AHVT0204: Laboratory Animal Care I	AS37: Laboratory Animal Care I
AHVT0205: Veterinary Laboratory Techniques I	AS39: Veterinary Laboratory Techniques I
AHVT0206: Support Services in Veterinary Practice	AS40: Support Services in Veterinary Practice
AHVT0207: Veterinary Laboratory Techniques II	AS49: Veterinary Laboratory Techniques II
AHVT0300: Animal Nursing and Clinical Procedures III	AS75: Animal Nursing and Clinical Procedures III
AHVT0301: Practicum – Animal Health Technology	AS99: Practicum – Animal Health Technology
AHVT0302: Animal Nursing – Clinical Practices V	AS64: Animal Nursing – Clinical Practices V
AHVT0303: Veterinary Laboratory Techniques III	AS59: Veterinary Laboratory Techniques III
AHVT0304: Animal Health Technology Project	AS95: Animal Health Technology Project
AHVT0305: Laboratory Animal Care II	AS71: Laboratory Animal Care II
ANSC0100: The Farm Workplace I	AS12: The Farm Workplace I

Appendix II: New Course Numbers to Old Course Numbers

ANSC0101: Farm Animal Production and Practices I	AS13: Farm Animal Production and Practices I	
ANSC0102: Farm Animal Production and Practices II	AS14: Farm Animal Production and Practices II	
ANSC0103:Farm Animal Production I	AS16: Farm Animal Production I	
ANSC0104: Farm Animal Biology I	AS18: Farm Animal Biology I	
ANSC0105: Farm Animal Breeding	AS20: Farm Animal Breeding	
ANSC0106: The Farm Workplace II	AS22 : The Farm Workplace II	
ANSC0107: Farm Animal Biology and Practices I	AS26: Farm Animal Biology and Practices I	
ANSC0108: Farm Animal Biology and Practices II	AS27: Farm Animal Biology and Practices II	
ANSC0109: Farm Animal Production II	AS66: Farm Animal Production II	
ANSC0110: Farm Animal Biology II	AS68: Farm Animal Biology II	
ANSC0111: Project-Seminar	AS65: Project-Seminar	
ANSC0200: Farm Animal Production III	AS76: Farm Animal Production III	
ANSC0201: Farm Animal Production III Practices	AS77: Farm Animal Production III Practices	
ANSC0202: Farm Animal Production IV	AS86: Farm Animal Production IV	
ANSC0203: Farm Animal Production IV Practices	AS87: Farm Animal Production IV Practices	
ANSC0300: Technology Project	AS90: Technology Project	
ANSC1000: Organic Livestock Production	AS202: Organic Livestock Production *DE	(A, AS) *DE
ANSC2000: Animal Agriculture I	AS200: Animal Agriculture I	(A, AS)
ANSC2001: Animal Agriculture II	AS201: Animal Agriculture II	(A, AS)
ANSC2002: The Horse: Its Biology and Use	AS240: The Horse: Its Biology and Use	(A, AS)
ANSC2003: Companion Animal Behaviour	AS241: Introduction to Applied Ethology	(AS)
ANSC3000: Animal Breeding	AS310: Animal Breeding	(A, AS)
ANSC3001: Animal Health	AS320: Animal Health	(A, AS)
ANSC3002: Domestic Animal Behaviour	AS341: Domestic Animal Behavior	(A, AS)
ANSC3003: Eggs and Dairy Products	AS345: Eggs and Dairy Products	(A, AS)
ANSC3004: Meat Science	AS350: Meat Science	(A, AS)
ANSC3005: Animal Welfare	new course	(A, AS)
ANSC4000: Topics in Animal Production I	AS490: Topics in Animal Production I	(A, AS)
ANSC4001: Topics in Animal Production I	AS492: Topics in Animal Production I	(A, AS)
ANSC4002: Topics in Animal Production I	AS494: Topics in Animal Production I	(A, AS)
ANSC4003: Avian Production Systems	new course	(AS)
AQUA2000: Introduction to Aquaculture	AS210: Introduction to Aquaculture	(A, AS)
AQUA3000: Fish Health	AS370: Fish Health	(A, AS)
AQUA4000: Finfish Production	AS440: Finfish Production	(AS)
AQUA4001: Shellfish Production	AS445: Shellfish Production	(AS)
ARTS2000: Nature's Image: A Survey of Landscape Art	H230: Nature's Image: A Survey of Landscape Art	(H)
BIOL0100: Animal Anatomy	B15: Animal Anatomy	

Appendix II: New Course Numbers to Old Course Numbers

BIOL0101: Plant Pathology	B40: Plant Pathology	
BIOL0102: Plant Physiology and Stress Management	PS45/B41: Plant Physiology and Stress Management	
BIOL0103: Weed Science	B46: Weed Science	
BIOL0200: Entomology	B43: Entomology	
BIOL1000: Botany	B100: Botany	
BIOL1001: Zoology	B110: Zoology	
BIOL2000: Cell Biology	B200: Cell Biology	
BIOL2001: Cell Biology Laboratory	B201: Cell Biology Laboratory	
BIOL2002: Plant Physiology	B260: Plant Physiology	
BIOL2003: Systematic Botany	B265: Systematic Botany	
BIOL2004: Structural Botany	B270: Structural Botany	
BIOL2005: Principles of Plant Pathology	B300: Principles of Plant Pathology	(A)
BIOL2006:Mammalian Physiology	AS230: Physiological Systems of Farm Animals	(AS)
BIOL3000: General Entomology	B320: General Entomology	(A)
BIOL3001: Ecology	B330: Ecology	
BIOL3002: Weed Science	B335: Weed Science	(A)
BIOL3003: Comparative Vertebrate Anatomy	B340: Comparative Vertebrate Anatomy	
BIOL3004: Environmental Physiology	AS335: Environmental Physiology	(A, AS)
BIOL3005: Physiology of Aquatic Animals	AS380: Physiology of Aquatic Animals	(A, AS)
BIOL3006: Aquatic Ecology	AS375: Aquatic Ecology	(AS)
BIOL3007 Insects and Diseases of Landscape Plants	PS390: Insects and Diseases of Landscape Plants	(PS)
BIOL3008: Growth, Reproduction and Lactation	AS330: Growth, Reproduction and Lactation	(A, AS)
BIOL4000: Avian Biology	AS460: Avian Biology	(A, AS)
BIOL4001: Animal Cell Culture	AS470: Animal Cell Culture	(AS)
BIOL4002: Conservation Biology	B435: Conservation Biology	
CHEM0050: Preparatory Chemistry	CS89: Preparatory Chemistry	
CHEM0100: Agricultural Chemistry	CS14: Agricultural Chemistry	
CHEM1000: General Chemistry I	CS101: General Chemistry I	
CHEM1001: General Chemistry II	CS102: General Chemistry II	
CHEM2000: Organic Chemistry I	CS201: Organic Chemistry I	
CHEM2001: Organic Chemistry II	CS202: Organic Chemistry II	
CHEM2002: Analytical Chemistry I	CS212: Analytical Chemistry I	
CHEM2003: Food Chemistry I	CS275: Food Chemistry I	(A)
CHEM2004: Introductory Food Chemistry	CS276: Introductory Food Chemistry	(A)
CHEM2005: Biochemistry I	CS200: Biochemistry I	
CHEM3000: Biochemistry	CS301: Biochemistry	
CHEM3001: Biochemical Pathways	CS302: Biochemical Pathways	

Appendix II: New Course Numbers to Old Course Numbers

CHEM3002: Radiotracers in Agriculture	CS310: Radiotracers in Agriculture	(A)
CHEM3003: Advanced Integrated Chemistry Laboratory I	CS318: Advanced Integrated Chemistry Laboratory I	
CHEM3004: Instrumental Analytical Chemistry II	CS341: Instrumental Analytical Chemistry II	
CHEM3005: Instrumental Analytical Chemistry III	CS342: Instrumental Analytical Chemistry III	
CHEM3006: Mammalian Biochemistry	CS360: Mammalian Biochemistry	
CHEM3007: Food Chemistry II	CS375: Food Chemistry II	(A)
CHEM3008: Intermediate Food Chemistry	CS376: Intermediate Food Chemistry	(A)
CHEM3009: Environmental Chemistry	ES312: Environmental Chemistry	
CHEM3010: Applied Biochemistry	IN395: Applied Biochemistry	
CHEM3011: Advanced Biochemistry	IN397: Advanced Biochemistry	
CHEM4000: Advanced Integrated Chemistry Laboratory II	CS436: Advanced Integrated Chemistry Laboratory II	
CMMT0050: Academic Resources	IN89: Academic Resources	
CMMT0100: Veterinary Practice Communication	H45: Technical Communications	
CMMT0101: Communication Skills	H60: Communication Techniques	
CMMT3000: Communication Theory and Skills	new course	(H)
CSCI0100: Computational Methods	MP14: Computational Methods	
CSCI1000: Computer Methods	MP222: Computer Methods	
CSCI2000: Computer Science	MP220: Computer Science	
CSCI3000: Data Structures and Numerical Methods	MP336: Data Structures and Numerical Methods	
ECON0100:Introductory Microeconomics	EB13: Microeconomics	
ECON0101: Introductory Macroeconomics	EB12: Macroeconomics	
ECON1000: Principles of Microeconomics	EB110: Agricultural Economics	(A) *DE
ECON1001: Principles of Macroeconomics	EB255: Macroeconomics I	
ECON2000: Intermediate Microeconomics	EB200: Microeconomics I	
ECON2001:Intermediate Macroeconomics	EB305: Macroeconomics II	
ECON2002: Production Economics	EB220: Production Economics	(A)
ECON3000: Mathematical Economics	EB260: Mathematical Economics	
ECON3001: Environmental Economics	new course	
ECON3002: Agricultural and Food Policy	EB320: Agricultural and Food Policy I	(A)
ECON3003: Mathematical Programming	EB325: Operations Research	
ECON3004: Agricultural Markets and Prices	EB330: Agricultural Markets and Prices	(A)
ECON3005: Econometrics	EB360: Econometrics	
ECON4000: Advanced Microeconomics	new course	
ECON4001: Agrifood Policy Analysis	EB419: Agrifood Policy Analysis	(A)
ECON4002: Topics in Advanced Farm Management	EB441: Topics in Advanced Farm Management	(A)
ECON4003: Resource Economics	new course	
ENGL0100: Technical Writing	H10: Technical Writing	

Appendix II: New Course Numbers to Old Course Numbers

ENGL1000: Composition	H113: Composition	(H)
ENGL1001: The Novel	H101: The English and American Novel	(H)
ENGL1002: Nature in English and American Literature	H102: Nature in English and American Literature	(H)
ENGL3000: Literature of Atlantic Canada	H310: Literature of Atlantic Canada	(H)
ENGN0100: Surveying	AE14: Surveying	
ENGN0101: Horticultural Engineering	AE38: Horticultural Engineering	
ENGN0102: Soil and Water Resources Management	AE46: Soil and Water Resources Management	
ENGN0103: Agricultural Power Systems	AE52: Agricultural Power Systems	
ENGN1000: Computer Aided Graphics and Projection	AE101: Computer Aided Graphics and Projection	
ENGN1001: Design and Graphics	AE102: Design and Graphics	
ENGN1002: Statics	AE110: Statics	
ENGN1003: Properties and Mechanics of Materials	AE120: Properties and Mechanics of Materials	
ENGN1004 Wood Construction Technology I	new course	
ENGN1005 Metal Construction Technology I	new course	
ENGN2000: Environmental Impacts and Resource Management	AE200: Environmental Impacts and Resource Management	(A)
ENGN2001: Agricultural Machinery	AE202: Agricultural Machinery	
ENGN2002: Introduction to Systems Analysis	AE204: Introduction to Systems Analysis	
ENGN2003: Food Processing Systems	AE207: Food Processing Systems	(A)
ENGN2004: Aquacultural Environment	AE215: Aquatic Environment	(A)
ENGN2005: Dynamics	AE230: Dynamics	
ENGN2006: Surveying	AE260: Surveying	
ENGN2007 Fluid Power Technology	new course	
ENGN2008 Digital Electronics and Computer Interfacing	new course	
ENGN2009 Metal Construction Technology II	new course	
ENGN2010 Wood Construction Technology II	new course	
ENGN3000: Electric Circuits	AE300: Electric Circuits	
ENGN3001: Engineering Measurements and Controls	AE305: Engineering Measurements and Controls	(A)
ENGN3002: Thermodynamics	AE310: Thermodynamics	
ENGN3003: Technology for Precision Agriculture	AE311: Technology for Precision Agriculture	
ENGN3004: Digital Circuits	AE312: Digital Circuits	
ENGN3005: Fundamentals of Chemical Engineering	AE314: Fundamentals of Chemical Engineering	
ENGN3006: Strength of Materials	AE315: Strength of Materials	
ENGN3007: Structures and Their Environment	AE320: Structures and Their Environment	(A)
ENGN3008: Circuit Analysis	AE332: Circuit Analysis	
ENGN3009: Materials Handling and Processing	AE335: Materials Handling and Processing	(A)
ENGN3010: Soil and Water	AE340: Soil and Water	(A)
ENGN3011: Fluid Mechanics	AE350: Fluid Mechanics	

Appendix II: New Course Numbers to Old Course Numbers

ENGN3012: Principles of Agricultural Machinery	AE355: Principles of Agricultural Machinery	(A)
ENGN3013: Aquacultural Engineering	AE360: Aquatic Engineering	(A)
ENGN3014: Principles of Engineering in Landscape Horticulture	AE365: Principles of Engineering in Landscape Horticulture	
ENGN3015: Irrigation and Drainage	AE370: Irrigation and Drainage	
ENGN3016: Engineering Economy	AE380: Engineering Economy	
ENGN3017: Design Project	AE206: Design Project	
ENGN3018 Technology Modules	new course	
ENGN3019 Communications Technology	new course	
ENGN4000: Water and Water Quality Management	AE410: Water and Water Quality Management	(A)
ENGN4001: Water Quality Issues	AE412: Water Quality Issues	(A)
ENGN4002: Management of Mechanized Agricultural Systems	AE420: Management of Mechanized Agricultural Systems	(A)
ENGN4003: Senior Design Project for Engineers I	AE440: Senior Design Project for Engineers I	
ENVS1000: Basic Composting Skills	ES202: Basic Composting Skills *DE	(A) *DE
ENVS2000: Environmental Studies I	ES200: Environmental Studies I	(A)
ENVS2001: Environmental Studies II	ES201: Environmental Studies II	(A)
ENVS3000: Environmental Impact	B365: Environmental Impact	
ENVS3001: Environmental Sampling and Analysis	ES330: Environmental Sampling and Analysis	
ENVS3002: Waste Treatment and Site Remediation	ES333: Waste Reduction and Site Remediation	(A)
ENVS3003: Environmental Studies Field Course	ES350: Environmental Studies Field Course	
ENVS3004: Principles of Pest Management	B385: Principles of Pest Management	(A)
ENVS4000: Pesticides in Agriculture	B405: Pesticides in Agriculture	(A)
ENVS4001: Economic Plant Pathology	B406: Economic Plant Pathology	(A)
ENVS4002: Economic Entomology	B425: Economic Entomology	(A)
ENVS4003: Applied Weed Science	B445: Applied Weed Science	(A)
ENVS4004: The Science of Composting & Its Application	CS457: The Science of Composting & Its Application	(A)
EXTE3000: Extension Education in the Rural Community	H320: Extension Education in the Rural Community	(H)
EXTE3001: Leadership Development and the Social Action Process	H321: Leadership Development and the Social Action Process	(H)
FOOD3000: Food Quality Assurance	CS380: Food Quality Assurance	(A)
FREN1000: French Language I	H130: Introductory French	(H)
FREN1001: French Language II	H131: French Language II	(H)
GENE2000: Genetics	B240: Genetics I	
GENE3000: An Introduction to Molecular Genetics	B370: An Introduction to Molecular Genetics	
GENE3001: Population and Quantitative Genetics	B375: Population and Quantitative Genetics	
GENE4000: Molecular Applications to Animal Production	AS465: Molecular Applications to Animal Production	(AS)
GENE4001: Plant Biotechnology	PS475: Plant Biotechnology	(A, PS)
GENE4002: Biotechnology in Agriculture	IN475: Biotechnology in Agriculture	(A)
GEOG1000: Introductory Human Geography	H170: Introductory Human Geography	(H)

Appendix II: New Course Numbers to Old Course Numbers

GEOG3000: Rural Geography	H370: Rural Geography (H)
GEOL2000: Introduction to Geology	CS230: Introduction to Geology
HIST1000: Introduction to Canadian History I:1000–1867	new course (H)
HIST1001: Introduction to Canadian History II:1867–Present	new course (H)
HIST3000: Rural History	H301: Rural History (H)
HORT0100: Landscape Plants I	ES60: Landscape Plants I
HORT0101: Landscape Plants II	ES61: Landscape Plants II
HORT0102: Turfgrass Production and Management	PS47: Turfgrass Production and Management
HORT0103: Landscape Horticulture I	PS50: Landscape Horticulture I
HORT0200: Nursery Crop Production	PS38: Nursery Crop Production
HORT0201: Greenhouse Crop Management	PS39: Greenhouse Crop Management
HORT0202: Small Fruit Crops	PS43: Small Fruit Crops
HORT0203: Tree Fruit Crops	PS44: Tree Fruit Crops
HORT0204: Landscape Plants III	ES62: Landscape Plants III
HORT0205: Residential Landscape Design and Construction	PS51: Residential Landscape Design and Construction
HORT0206: Landscape Techniques	PS70: Landscape Techniques
HORT0207: Arboriculture	PS71: Arboriculture
HORT0208: Landscape Maintenance	PS72: Landscape Maintenance
HORT0209: Landscape Horticulture II	PS73: Landscape Horticulture II
HORT0210: Landscape Design and Construction	PS74: Landscape Design and Construction
HORT2000: Vegetable Production	PS200: Vegetable Production (A, PDN)
HORT2001: Principles of Organic Horticulture	PS210: Principles of Organic Horticultural Crop Production (A) (A, PDN) *DE
HORT2002: Landscape Horticulture Work Program I	PS270: Landscape Horticulture Work Program I (PS)
HORT2003: The British Garden	PS290: The British Garden (PS)
HORT2004: Introduction to Viticulture	PS280: Introduction to Viticulture (PS)
HORT3000: Environmental Processes and Natural Landscape Functions	ES370: Environmental Processes and Natural Landscape Functions
HORT3001: Landscape Project Management	ES380: Landscape Project Management
HORT3002: Tree Fruit Crops	PS315: Tree Fruit Crops (A, PDN)
HORT3003: Small Fruit Crops	PS320: Small Fruit Crops (A, PDN)
HORT3004 Greenhouse Crop Production and Floriculture	PS330: Greenhouse Crop Production and Floriculture (A, PDN)
HORT3005: Landscape Plant Production	PS335: Landscape Plant Production (A, PDN)
HORT3006: Landscape Horticulture Work Program II	PS370: Landscape Horticulture Work Program II (PS)
HORT3007: Environmental Horticulture Project I	PS360: Landscape Horticulture Project I (PS)
HORT4000: Urban Tree Management	ES470: Urban Tree Management
HORT4001: Horticulture	PS410: Horticulture (A, PS)
HORT4002: Management of Specialized Turf	PS440: Management of Specialized Turf (PS)
HORT4003: Tree Management	PS470: Tree Management (PS)

Appendix II: New Course Numbers to Old Course Numbers

HORT4004: Environmental Horticulture Project II	PS460: Landscape Horticulture Project II (PS)
INTD2000: Food Systems in the Tropics	IN205: Food Systems in the Tropics (A)
INTD2001: Agricultural Systems of Central Europe	IN206: Agricultural Systems of Central Europe
INTD3000: Tropical Agriculture	PS355: Tropical Agriculture (A, PS)
MATH0050: Functions	MP85: Functions
MATH1000: Calculus and Analytic Geometry I	MP100: Calculus and Analytic Geometry I
MATH1001: Calculus and Analytic Geometry II	MP105: Calculus and Analytic Geometry II
MATH2000: Multivariable Calculus	MP230: Multivariable Calculus
MATH2001: Differential Equations	MP236: Differential Equations
MATH3000: Applied Linear Algebra	MP335: Applied Linear Algebra
MATH4000: Agricultural Modelling	MP460: Agricultural Modelling
MGMT0100:Accounting	EB10: Accounting
MGMT0101: Applied Accounting and Taxation	EB11: Applied Accounting and Taxation
MGMT0102: Agricultural Marketing	EB40: Marketing Practices
MGMT0103: Business Law	EB41: Business Law
MGMT0200: Applied Farm Management	EB42: Applied Farm Management
MGMT0201: Business Project	EB65: Business Project
MGMT0300: Farm Project	EB72: Farm Project
MGMT0301: Practicum – Farming Technology	EB95: Practicum – Farming Technology
MGMT0302: Economics and Business Technology Project	EB90: Technology Project
MGMT1000: Small Business Entrepreneurship	EB225: Introduction to Small Business Entrepreneurship
MGMT2000: Human Resource Management	H140: Personnel Management (H)
MGMT2001: Introduction to Business Law	EB230: Introduction to Business Law
MGMT2002: Marketing	EB335: Business Marketing
MGMT2003: Farm Management	EB340: Farm Management I (A)
MGMT2004: Financial Accounting I	EB210: Financial Accounting I
MGMT2005: Financial Accounting II	EB215: Financial Accounting II
MGMT3000: Management Accounting	EB315: Management Accounting
MGMT3001: International Marketing	EB430: International Marketing
MGMT3002: Consumer Behaviour	EB435: Consumer Behaviour and Food Marketing
MGMT4000: Strategic Management	EB410: Strategic Management in Agribusiness
MGMT4001: Advanced Entrepreneurship	EB445: Agribusiness Entrepreneurship (A)
MICR2000: Microbiology	B225: Microbiology
MICR3000: Food Microbiology	B355: Food Microbiology (A)
MICR3001: Microbial Biotechnology	IN390: Microbial Biotechnology
MICR4000: Soil Microbiology	B400: Soil Microbiology (A)
NUTR3000: Animal Nutrition	AS305: Animal Nutrition (AS)

Appendix II: New Course Numbers to Old Course Numbers

NUTR3001: Applied Animal Nutrition	AS325: Applied Animal Nutrition	(A, AS)
NUTR3002: Fish Nutrition	AS365: Fish Nutrition	(A, AS)
NUTR4000: Ruminant Digestive Physiology and Metabolism	AS475: Ruminant Digestive Physiology and Metabolism	(AS)
PHIL3000: Environmental and Agricultural Ethics	H350: Environmental and Agricultural Ethics	(H)
PHYS0050: Introductory Physics	MP90: Introductory Physics	
PHYS1000: Physics for the Life Sciences I	MP150: Biophysics I	
PHYS1001: Physics for the Life Sciences II	MP250: Biophysics II: Perception	
PHYS1002: Physics I	MP140: Physics I	
PHYS1003: Physics II	MP145: Physics II	
PLSC0100: Utilization of Plant Resources	PS35: Utilization of Plant Resources	
PLSC0200: Plant Propagation	PS55: Plant Propagation	
PLSC0201: Technology Project	PS90: Technology Project	
PLSC0202: Plant Science Techniques	PS99: Plant Science Techniques	
PLSC0203: Plant Products Physiology	PS76: Plant Products Physiology	
PLSC1000: Farm Woodlot Management	PS147: Farm Woodlot Management	(A, PDN)
PLSC2000: Specialty Crops	PS211: Specialty Crops	(PDN)
PLSC2001: Theory and Practice of Plant Propagation	new course	(PS)
PLSC4000: Plant Breeding	PS400: Plant Breeding	(A, PS)
PLSC4001: Crop Adaptation	PS415: Crop Adaptation	(A, PS)
POLS1000: Introduction to Political Science	new course	(H)
POLS1001: Structure and Function of Government	new course	(H)
RESM4000: Bioenvironmental Systems Management Project-Seminar I	AE449: Project-Seminar I	(A)
RESM4001: Bioenvironmental. Systems Management Project-Seminar II	AE450: Project-Seminar II	(A)
RESM4002: Animal Science Project-Seminar I	AS449: Project-Seminar I	(A)
RESM4003: Animal Science Project-Seminar II	AS450: Project-Seminar II	(A)
RESM4004: Research Methods for Economics and Business	EB425: Research Methods	(A)
RESM4005: Project-Seminar for Economics and Business	EB450: Project-Seminar	(A)
RESM4006: Environmental Sciences Project-Seminar I	ES449: Project-Seminar I	(A)
RESM4007: Environmental Sciences Project-Seminar II	ES450: Project-Seminar II	(A)
RESM4008: Plant Science Project-Seminar I	PS449: Plant Science Project-Seminar I	(A, PS)
RESM4009: Plant Science Project-Seminar II	PS450: Plant Science Project-Seminar II	(A, PS)
RESM4010: Aquaculture Project-Seminar I	AS449: Project-Seminar I	(A)
RESM4011: Aquaculture Project-Seminar II	AS450: Project-Seminar II	(A)
RESM4012: Agricultural Biotechnology Project-Seminar I	IN449: Agricultural Biotechnology Project-Seminar I	(A)
RESM4013: Agricultural Biotechnology Project-Seminar II	IN450: Agricultural Biotechnology Project-Seminar II	
SOCI1000: Introductory Sociology	H160: Introductory Sociology	(H)
SOCI1001: Introductory Sociology II	new course	(H)

Appendix II: New Course Numbers to Old Course Numbers

SOCI3000: Rural Sociology	H360: Rural Sociology	(H)
SOIL0100: Principles of Soil Science	CS12: Principles of Soil Science	
SOIL0200: Soil Management	CS13: Soil Management	
SOIL2000: Introduction to Soil Science	CS220: Introduction to Soil Science	(A)
SOIL3000: Soil Fertility	CS320: Soil Fertility	(A)
SOIL3001: Soil Conservation in Agriculture	CS345: Soil Conservation in Agriculture	(A)
SOIL4000: Environmental Soil Chemistry	CS440: Environmental Soil Chemistry	
SPAN1000:Basic Spanish I	H135: Basic Spanish I	(H)
SPAN1001: Basic Spanish II	H136: Basic Spanish II	(H)
SPEC2000: Topics in Economics and Business Management	EB221: Topics in Economics and Business Management	(A)
SPEC4000: Special Topics in Animal Science or Aquaculture	AS421: Special Topics in Animal Science or Aquaculture	(AS)
SPEC4001: Special Topics in Agribiology I	B421: Special Topics in Agribiology I	(A)
SPEC4002: Special Topics in Agribiology II	B422: Special Topics in Agribiology II	(A)
SPEC4003: Special Topics in Chemistry and Soil Science I	CS415: Special Topics in Chemistry and Soil Science I	(A)
SPEC4004: Special Topics in Chemistry and Soil Science II	CS425: Special Topics in Chemistry and Soil Science II	(A)
SPEC4005: Special Topics in Agricultural Economics and Business I	EB421: Special Topics in Agricultural Economics and Business I	(A)
SPEC4006: Special Topics in Agricultural Economics and Business II	EB422: Special Topics in Agricultural Economics and Business II	(A)
SPEC4007: Special Topics in Environmental Studies I	ES401: Special Topics in Environmental Studies I	(A)
SPEC4008: Special Topics in Environmental Studies II	ES402: Special Topics in Environmental Studies II	(A)
SPEC4009: Special Topics in Rural Studies	H403: Special Topics in Humanities	(H)
SPEC4010: Special Topics in Plant Science I	PS421: Special Topics in Plant Science I	(A, PS)
SPEC4011: Special Topics in Plant Science II	PS422: Special Topics in Plant Science II	(A, PS)
SPEC4012: Directed Studies in Agricultural Engineering	AE415: Directed Studies in Agricultural Engineering	(A)
STAT2000: Introduction to Statistics	MP210: Introduction to Statistics	
STAT2001: Probability and Statistics for Engineering	MP212: Probability and Statistics for Engineering	
STAT3000: Introduction to Planned Studies: Surveys and Experiments	MP211: Introduction to Planned Studies: Surveys and Experiments	
STAT4000: Intermediate Statistical Methods	MP420: Intermediate Statistical Methods	

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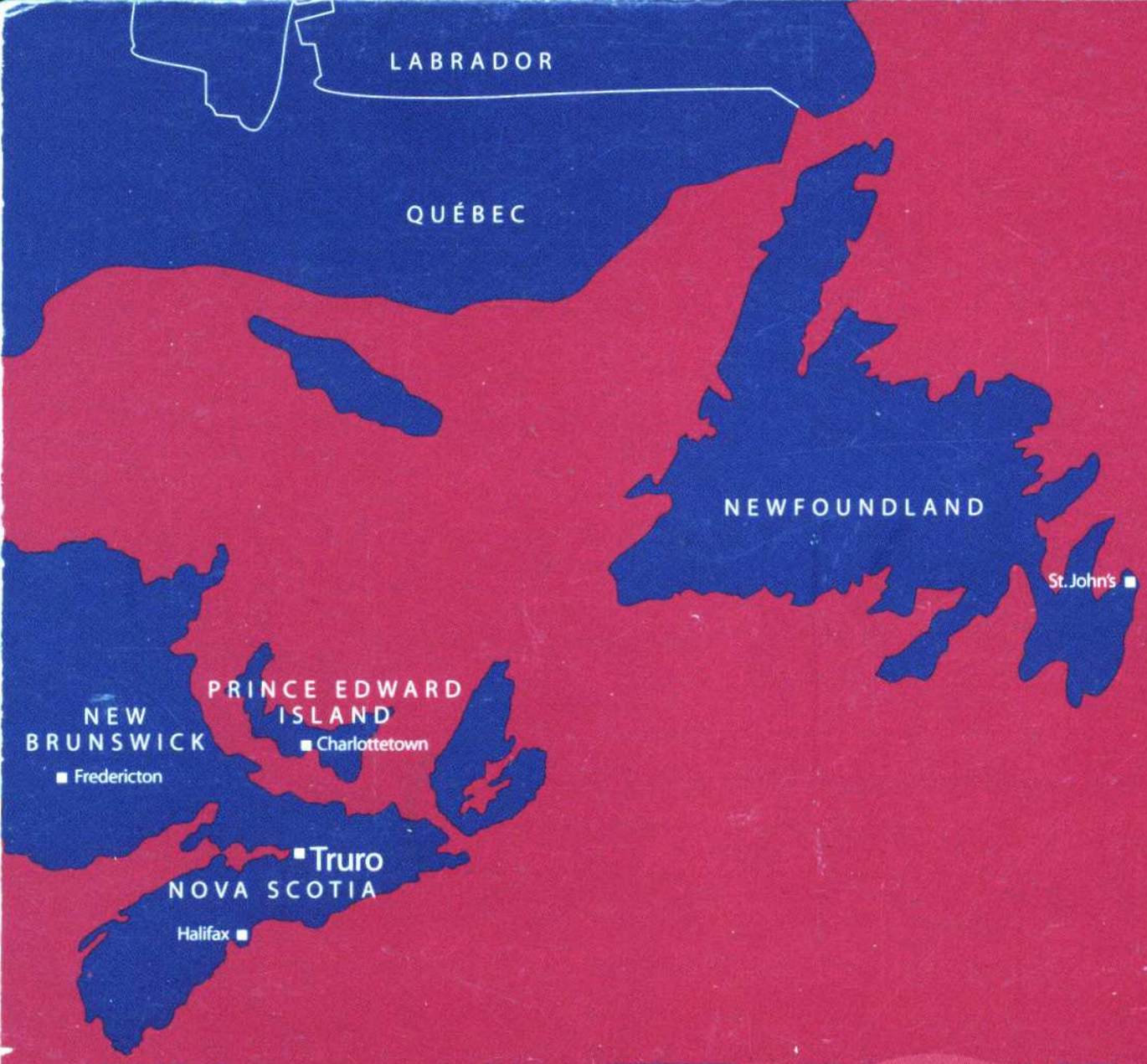

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