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2001/2002 Calendar



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Your Atlantic University College
of Agriculture



EDUCATION FOR LIFE



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Link to the Future

Ninety-sixth Calendar 2001/2002

MAILING ADDRESS

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*The Nova Scotia Agricultural College reserves the right
to make changes to this Calendar without notice.*

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Mission Statement

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

STATEMENT OF VALUES

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

Excellence

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

Leadership

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

Cooperation

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

Accessibility

We strive to make our programs accessible to all.

Community

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

Accountability

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

Environmental Responsibility

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

Respect and Fairness

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

September 5, 2001	Fall Registration/Orientation
September 6, 2001	Classes Begin
September 19, 2001	Last day to register for a course – Fall semester
October 8, 2001	Thanksgiving (no classes)
October 19, 2001	Last day to drop a course without academic penalty
October 20, 2001	Open House
October 24, 2001	Autumn Assembly
November 12, 2001	No classes in lieu of November 11
November 16, 2001	Last day to apply for Drop Fail Status
December 3, 2001	Application to graduate from Master's program in May 2002 due
December 7, 2001	Last day of classes (Fall semester)
December 10-18, 2001	Exams (to begin at 1 pm on 10th and finish at noon on 18th)
December 15, 2001	Applications to graduate in May 2002 due (undergraduates)
January 7, 2002	Classes begin
January 18, 2002	Last day to register for a course – Winter semester
February 6, 2002	Principal's List Function
February 15, 2002	Last day to drop a course without academic penalty
February 18-22, 2002	Mid-term Study Break
February 28, 2002	Deadline for applications to Animal Health Technology program
March 22, 2002	Last day to apply for Drop Fail Status
March 29, 2002	Good Friday (no classes)
April 1, 2002	Easter Monday (no classes)
April 9, 2002	Last day of classes – Winter semester
April 10-11, 2002	Study Days
April 12-19, 2002	Winter semester examinations
May 3, 2002	Convocation
June 24, 25, 26, 2002	Supplemental examinations
June 30, 2002	Last day to cancel registration and residence application and receive refund

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.

Foreign

Students who do not have Canadian citizenship or permanent residence in Canada may be admitted as foreign students. Foreign students must produce proof of a student visa before permission to register will be granted.

Admissions Information

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.

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

Minimum score of 550 on the Test of English as a Foreign Language (TOEFL) is required.

Application Deadlines

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**.

Entrance Requirements

NSAC ENTRANCE REQUIREMENTS, BY PROGRAM, 2001-2002

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

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
	NF 3101 & 3201	NF 3201 or 3200 ¹	NF 3202		NF 3201 or 3202	NF 3000 level
B.Sc. (Agr.)	NS 12	NS PreCal 12 or Academic 12 ¹	NS 12	NS Biology 12 or Physics12 ²		NS 12
	NB 122 or 121	NB 120	NB122 or 121	NB Biology 120, 121, or 122 or Physics 120, 121, or 122 ²		NB 122
	PE 621	PE 621	PE 621	PE Biology 621 or Physics 621 ²		PE 621
	NF 3101 & 3201	NF 3201 or 3200 ¹	NF 3202	NF Biology 3201 or 3202 or Physics 3201 or 3202 ²		NF 3000 level
Pre-Vet	NS 12	NS PreCal 12 or Academic 12 ¹	NS 12	NS Biology 12 or Physics12 ²		NS 12
	NB 122 or 121	NB 120	NB122 or 121	NB Biology 120, 121, or 122 or Physics 120, 121, or 122 ²		NB 122
	PE 621	PE 621	PE 621	PE Biology 621 or Physics 621 ²		PE 621
	NF 3101 & 3201	NF 3201/ 3200 ¹	NF 3202	NF Biology 3201 or 3202 or Physics 3201 or 3202 ²		NF 3000 level
Technician No minimum average req'd	NS 12	NS 11	NS 11	NS 10 or Integrated Sci.	N/A	N/A
	NB 122 or 121	NB 112 & 122	NB 111 or 112	NB102		
	PE 621	PE 521	PE 521	PE 521		
	NF 3101 & 3201	NF 2201	NF 2201	NF 2201 or 2202		
Technology (Animal Health)	NS 12	NS PreCal 12 or Academic 12 ¹	NS 12	NS 12	N/A	NS 12
	NB122 or 121	NB 120	NB 122	NB 122 or 120		NB 122
	PE 621	PE 621	PE 621	PE 621		PE 621
	NF 3101 & 3201	NF 3201 or 3202	NF 3202	NF 3201 or 3202		NF 3000 level
Technology (Landscape Horticulture)	NS 12	NS PreCal 12 or Academic 12 ¹	NS 11	NB 12	N/A	NS 12
	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
	NF 3101 & 3201	NF 3201 or 3200	NF 2202	NF 3201		NF 3000 level
Technology (Agricultural)	Satisfactory completion of Technician Diploma.					
Technology (Farming)	Satisfactory completion of first year of a Technician program.					
Bachelor of Technology (Landscape Horticulture)	Years 1 and 2 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

² Students entering without grade 12 Physics are required to take MP90 Introductory Physics, a non-credit course, in their first year.

Key NS = Nova Scotia NB = New Brunswick PE = Prince Edward Island NF = Newfoundland

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

Entrance Requirements

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

All candidates for admission to the program leading to a B.Sc. (Agr.) and to the Pre-Vet 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 Mathematics 12 or NF 3200 is acceptable), and Biology or Physics*. Students who are accepted but who have not successfully completed Physics at the grade 12 university preparatory level must take Physics MP90, a non-credit course, in their first year at NSAC. **Possession of the minimum entrance requirements does not guarantee admission.**

All candidates for admission to the Engineering program must present high school graduation certificates showing an average of at least 60%, with no mark below 50%, in grade 12 university preparatory subjects: English, Pre-Calculus Mathematics (70% in NS Mathematics 12 or NF 3200 is acceptable), Chemistry, Physics*, and one other subject, preferably Biology. **Possession of the minimum entrance requirements does not guarantee admission.**

Graduates of Newfoundland 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 (CS089) in their first term. Prior approval must be given from the Registrar before enrolling for this course.

***Note:** Students who have not completed grade 12 Physics must take Physics MP90, a non-credit course, in their first year at NSAC.

ADMISSION REQUIREMENTS FOR BACHELOR OF TECHNOLOGY DEGREE (B.TECH)

The B.Tech is a four-year program that will require applicants to have completed a minimum of two years of post-secondary education. In general, these two years could be at either the technical or community college level, or at the undergraduate degree level in the arts and/or sciences. However, each specific B.Tech major has specific entrance requirements.

Landscape Horticulture

The Landscape 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 preparation courses.

*formerly Landscape Horticulture Technology

Entrance Requirements

ADMISSION REQUIREMENTS FOR TECHNICIAN PROGRAMS

Agricultural Business, Animal Science, and Plant 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 12 or NF 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 five grade 12 university preparatory subjects: Biology, English, Pre-Calculus Mathematics (70% in NS Academic 12 or NF Math 3200 acceptable), and two other courses. Additionally, the applicant must have passed one senior high school Chemistry course. Applicants may be required to attend a selection interview. **Possession of the minimum entrance requirements does not guarantee admission.**

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 Agricultural Business, Animal Science, or Plant Science Technician 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 the following five grade 12 courses: English, Pre-Calculus Mathematics, Chemistry, Physics* or Biology, and one additional university preparatory 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 must take Physics MP90, 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 6, 2001 for the Fall semester and January 7, 2002 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.

The following rates are in effect until April 30, 2002:

Program	Price per Course
Credit (Degree level)	\$410
Non-Credit (Technical level)	\$290
Audit* (Degree level)	\$410
Audit* (Technical level)	\$290

*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 undergrads are permitted to register for graduate courses, the graduate tuition fee will be applied.

TUITION FEES (NON-CANADIAN CITIZENS)

Program	Price per Course
Credit (Degree level)	\$800
Non-Credit (Technical level)	\$800

WORK TERM (PRACTICUM) FEES

All practicums are charged the equivalent of at least three course fees.

Students enrolled in a practicum are regarded as full-time students. As such, they are eligible for financial assistance.

BOOKS

Full-time students (approx./year)	\$800
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STUDENT FEES

A 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.

Schedule of Fees

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.

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 government; financial assistance; residence development; study abroad, and broad-based student development.

Student Fee (per semester)	\$127
Medical insurance (required for all non-Canadian students) (est.)	\$650

Part-time Students (per semester)

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

Student Union Fee	\$10/course
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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 of \$75 per semester. This fee is payable at registration. For a complete list of supplies and services that are provided to Animal Health Technology students in return for this fee, contact the Department of Plant and Animal Science.

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 to graduate by November 15 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.

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 the 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,

Schedule of Fees

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.

Transcript Fee – No transcript fee will be charged.

SUPPLEMENTAL EXAMINATIONS

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

Each exam	\$150
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REGISTRATION DEPOSIT

New Students \$200

The final admission step for new students is to submit the \$200 Registration Fee 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 \$50

All returning students must submit a \$50 Registration Deposit by June 30 to confirm their registrations. Students who do not submit the deposit by June 30 will be removed from all courses and have their Permit to Register revoked. They may again register for courses by submitting the \$50 late fee in addition to a \$50 deposit, but will not be guaranteed enrolment in any class.

Note: Students with an outstanding balance will not be permitted to register for the Fall or Winter semester without making arrangements to settle their account with the Dean of Student Services or the Vice-Principal, Administration.

Students who submit **written cancellation** of their registration by June 30 will be refunded the Registration Deposit. After June 30, the deposit is non-refundable and is applied to the student's tuition fees, if applicable. No Registration Deposits received after June 30 are refundable.

RESIDENCE

Residence Deposit \$125

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. Deposits are applied to total residence fees. Note: students with outstanding balances on their accounts will not be permitted to enter the room draw.

The residence deposit will be refunded, up to but not after June 30, for returning 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 30 will result in a charge of not less than \$300.

New Students

New students wishing to apply for accommodation in residence should submit the Residence Deposit of \$190 when they submit the Registration Deposit. Deposits are applied to total residence fees.

The residence deposit will be refunded, up to but not after June 30, for new 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 30 will result in a charge of not less than \$300.

Schedule of Fees

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 full-year rates are in effect in 2001–2002:

Plan	Price
Shared room and 19 meals	\$4566
Shared room and 14 meals	\$4482
Private room and 19 meals	\$5029
Private room and 14 meals	\$4945
Large private room and 19 meals	\$5441
Large private room and 14 meals	\$5357

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

House Fee	\$30/year
Laundry Fee	\$60/year
Key Deposit	\$25/year

Graduate/Mature Student Housing

NSAC is now offering alternative student accommodation at Fundy Residence, AgriTECH Park. AgriTECH Park is located approximately 3.5 km from the main campus. Fundy features apartment-like living with your peer group (of 10) in large, bright, newly renovated rooms. Each section (apartment) includes a fully equipped kitchen/sitting room with cable TV, microwave, laundry room, storage area, and private washrooms and showers.

Prices are \$275–310 (monthly) for private rooms. This includes daily cleaning of common area, parking, garbage removal, and utilities. All student rooms are equipped with cable and phone hook-up. Individual hook-ups are the responsibility of the student.

Interested students should contact the Conference Centre Office by writing to NSAC Conference Centre, AgriTECH Park, PO Box 550, Truro, NS B2N 5E3 or by calling (902) 893-4145 to find out more about this residence. A security deposit of \$125 accompanied by an application will reserve a room for you in this 29-bed co-educational environment.

REFUNDS

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

Student 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.

Schedule of Fees

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

Residence Fees

Room fees are charged from the first day residences officially open. Students who accept a place in residence and fail to cancel their application prior to August 30 or who withdraw from residence will be charged room fees as follows:

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

From the end of the 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 the Dean of Student Services or the Vice-Principal Administration 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

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

The application should be completed and filed with the issuing authority during the early summer, so that an eligibility form can be issued before Registration Day. The applicant then presents the Certificate of Eligibility at registration 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	April 1
January admission	August 1

Costs

(Note: all costs are in Canadian dollars)

Tuition Fees

(based on 10 credits):

Degree	\$8000
Technician/Technology	\$8000

Estimated Expenses

Books and instruments	\$800
Health insurance for a visa student (single coverage)	\$650

Compulsory Non-Refundable Fees

(Compulsory non-refundable fees include athletic, caution/development fund, student union, health service, key deposit, laundry, and house fees.)

	\$369
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Residence Plus Meal Plans	\$4,566–\$5,357
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For more details see Schedule of Fees on page 14.

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 web site:
<http://www.nsac.ns.ca/stuserv/>

Non-Resident Meal Plans

(Tax included)

10 meals (lunches only)	\$50.99
10 meals (lunches & suppers)	\$61.19

Personal Expenses

Clothing and amusement (approx.):	\$1600
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Entrance Requirements

Please contact the Nova Scotia Agricultural College Registrar's Office for details on entry requirements from specific countries.

English Language Requirements

A minimum score of 550 on the Test of English as a Foreign Language (TOEFL) is required.

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

All test scores must be sent directly from the respective testing agency to the Nova Scotia Agricultural College Registrar's Office.

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.

Regulations and Procedures

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

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

<http://www.nsac.ca/stuserv/>

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

ACADEMIC ADVISING

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

ACADEMIC STANDING

Technical Program

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

Those students failing two or more courses but fewer than 50% of total courses taken in a semester may be placed on Academic Probation. Students who have been placed on Academic Probation for the second time in a row may be required to terminate their studies.

The Standards and Admissions Committee may place students on Academic Probation upon appeal of the "Required to Withdraw" status.

Students will be placed on Academic Probation if their last full-time enrolment at any institution has resulted in dismissal for academic reasons.

Regulations and Procedures

Bachelor of Technology (B.Tech) Program

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

A student with a cumulative average below 60% will be placed on Academic Probation.

A student on Academic Probation who, in the semester following, does not achieve a Semester Grade Average (SGA) of 60 or above, *may* be required to withdraw.

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

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

Those students failing two or more courses but fewer than 50% of total courses taken in a semester may be placed on Academic Probation. Students who have been placed on Academic Probation for the second time in a row may be required to terminate their studies.

Bachelor of Science [B.Sc. (Agr.)] and Engineering Program

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

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

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

The Cumulative Grade Average is calculated using only one grade for each course taken at NSAC. The grade used in the calculation will be the latest grade earned for the course. A student on Academic Probation who, in the semester following, does not raise his/her Cumulative Grade Average (CGA) to the minimum level or does not achieve a Semester Grade Average (SGA) of 60 or above, *may* be required to withdraw.

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

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

Regulations and Procedures

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 requesting that their status be appealed to the Chairperson of the Standards and Admissions Committee. The letter should clearly demonstrate that the appeal is in accordance with the Grounds for Appeal in 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 the 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.

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*. Copies 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:

- The course (or courses) must be at the same academic level as the one it is replacing.
- The course (or courses) 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.

Regulations and Procedures

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 credits 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 students are eligible to play for teams representing the College, subject to conditions established by NSAC, the Nova Scotia College Athletic Association, and the Canadian Colleges Athletic Association.

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

ATTENDANCE IN CLASS

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

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.

Regulations and Procedures

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 per cent 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 courses may be accumulated by Challenge for Credit.
- A student challenging for credit will be charged 50% of the course fee.

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 19, 2001 for the Fall semester and February 15, 2002 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.

Regulations and Procedures

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 16, 2001 for the Fall semester and March 22, 2002 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 a supplemental examination are responsible for contacting the instructor for information about the method of evaluation and scope of course content to be covered by the examination or other evaluating exercise.

Students must apply in writing to the Registrar's Office to write a supplemental examination and must include the fee of \$150 for each supplemental examination by June 2. No supplemental examination is to be written until the required fee has been paid. If an applicant does not write a supplemental examination, the fee is forfeited.

The supplemental fee will be reimbursed only if the student notifies the Registrar's Office of the decision not to write by June 9. There is to be no refund for supplementals with passing grade.

Regulations and Procedures

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:

- 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

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 the NSAC please contact the International Centre.

Technical Exchange Program

Students who wish to do a technical exchange program at another institution must have that program approved by the NSAC Technical Curriculum Working Group. 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 Technical Curriculum Working Group 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.

Regulations and Procedures

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 nonrefundable 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-Principal 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-Principal Academic will appoint an alternate. The committee will consider written submissions from the student and the instructor and may request either to meet with it. 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-Principal 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.

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.

Regulations and Procedures

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 (provided they fit the program) toward the NSAC B.Sc. (Agr.) program.

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

With High Honours

Cumulative average of 80% or higher

With Honours

Cumulative average of 75–79%

Second Diploma

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

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.

Regulations and Procedures

HEALTH INSURANCE REQUIREMENTS

Students *not* covered by a Canadian provincial health insurance plan (those who are not Canadian citizens/landed immigrants) are required to arrange for a health insurance policy acceptable to the College. Proof of this coverage is required before students are permitted to register for courses. Details and application forms are available from Health Services.

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

Specific programs of study may require additional 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.

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

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.

PRINCIPAL'S LIST

The top 10 per cent of students within a program of study (Degree, Engineering, Technician, Technology) will be included on the Principal's List. These students must have an average of 80% or higher, have been enrolled in four or more courses and must 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 Principal's List.

Regulations and Procedures

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

Returning Students

Returning students will register for Fall courses in March. Registration must be confirmed by payment of a \$50 registration deposit by June 30. This fee is applied against the student's Fall tuition and will be refunded if the student submits a written notice of withdrawal by June 30.

Students who have not paid their deposit by June 30 will be removed from all courses and have their Permit to Register revoked. They may again register for courses by submitting the \$50 late fee in addition to a \$50 deposit, but will not be guaranteed enrolment in any class.

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.

Computerized Registration

Undergraduate Degree and Technical diploma students who have a Permit to Register can carry out their registration by means of the Telephone Registration System or the Student On-Line Registration System. Directions and course codes are issued to new and returning students prior to the registration period.

The Telephone Registration System is a computerized facility that is directly connected to the Student Information System (SIS). Changes made over the telephone are instantly effected in SIS. The telephone cannot report to the caller that a change is made until it is complete. Therefore, this is an authoritative source of information on a student's registrations.

The Student On-Line Registration System (SOS) is a computerized facility that is also directly connected to the Student Information System (SIS). Changes made on the computer are instantly effected in SIS. The SOS is also an authoritative source of information on student's registrations.

A log is made of every transaction that occurs with the Telephone Registration System as well as the Student On-Line System.

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. If there is any doubt concerning whether a course has been dropped or added,

Regulations and Procedures

the student should phone the system and use the "List Courses" option from the menu to confirm course enrolments.

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.

STUDENT STATUS

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 a five-character code, which consists of two alpha and three numeric characters. The two-character prefix identifies the main subject area. The following three digits identify the specific course.

Examples

- ES330 refers to course 330 (Environmental Sampling and Analysis), an advance-level credit course in Environmental Studies.
- H010 refers to course 010 (Technical Writing), a non-credit technical course in Humanities.

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

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.

Three first-year core courses are offered by distance delivery as well as by traditional delivery. These courses are denoted by **DE**. For information on distance courses see page 175.

PROGRAM CODES

- BT Bachelor of Technology (B.Tech)
- D Degree (B.Sc. (Agr.))
- E Engineering
- M Masters
- TN Technician
- TY Technology

Degree

Major

- AB Agricultural Business
- AM Agricultural Mechanization
- AQ Aquaculture
- AS Animal Science
- EB Agricultural Economics
- ES Environmental Studies
- LH Landscape Horticulture
- PS Plant Science
- PV Pre-Veterinary
- NP No Program, University

Engineering

- E Engineering

Technician

Major

- AB Agricultural Business
- AS Animal Science
- PS Plant Science

Minor

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

Technology

- AH Animal Health
- AT Agricultural Technology
- EH Environmental Horticulture
- FT Farming Technology

Undergraduate Degree Programs

GENERAL INFORMATION

Bachelor of Technology

The Bachelor of Technology (B.Tech) 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 engineering disciplines and a two-year pre-veterinary program are also offered.

Students in Engineering at NSAC who successfully complete the prescribed 22 courses and have the required Cumulative Grade Average are granted an Engineering Diploma.

Engineering students who complete the two-year Engineering Diploma program are admitted to the third year in the engineering discipline of their choice at 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 option. Transfer to other options of the B.Sc. (Agr.) program is possible, but it may take three more years to complete the B.Sc. (Agr.) program.

NSAC students in the Agricultural Sciences who successfully complete the prescribed courses and number of credits 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.).

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 80%.

Professional Organizations for Agrologists and Engineers

Agrology is "the profession of applying science and scientific principles to the business and art of agriculture." University graduates who are skilled in the science and business of agriculture are encouraged to join their provincial Institute of Agrologists. Provincial Institutes offer the opportunity to get to know and exchange ideas with other professional agrologists in the province and other parts of Canada through membership in the Agricultural Institute of Canada. Membership in 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 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

Undergraduate Degree Programs

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 – B.Sc. (AGR.)

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

The first academic year (two semesters) of this program is the same for all Majors. Normally, students select a Major before the commencement of the third semester and continue in that field of study until they graduate.

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 Mathematics 12 or NF Math 3200 acceptable), and Biology or Physics. Students who are accepted but who have not successfully completed Physics at the grade 12 university preparatory level must take Physics MP90, a non-credit course, in their first year at NSAC. **Possession of the minimum entrance requirements does not guarantee admission.**

Majors Offered at NSAC

Agricultural Business

Agricultural Economics

Agricultural Environmental Studies

Agricultural Mechanization

Animal Science

Aquaculture

Plant Science

Syllabus

All Programs

Year 1

Semester I

B100 Botany

CS100 Chemical Principles

EB110* Agricultural Economics (A) **DE**

IN100 Agricultural Ecosystems (A) **DE**

MP100 Calculus & Analytical Geometry I

Semester II

B110 Zoology

CS110 Organic Chemistry

EB110* Agricultural Economics (A) **DE**

IN101 Food Security (A) **DE**

MP105 Calculus & Analytical Geometry II

and one of:

H101 The English and American Novel

H102 Nature in English and American Literature

H160 Introductory Sociology

H170 Introductory Human Geography

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

Undergraduate Degree Programs

College Core Past the First Year

(required of all students)

CS200 [†]	Biochemistry I
MP140 [¥]	Physics I or
MP150 [¥]	Biophysics I
MP210	Introduction to Statistics
MP222	Computer Methods
XX449 [§]	Project-Seminar I (A)
XX450 [§]	Project-Seminar II (A)

plus two Humanities electives, one of which must be at the 300 or 400 level.

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

¥ MP140 or MP150 is not required for Agricultural Business or Agricultural Economics majors.

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

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

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.

DE – indicates that the course is offered by Distance Education as well as by traditional methods of delivery.

Agricultural Business

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

Major

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

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

Undergraduate Degree Programs

Recommended Syllabus for a Major in Agricultural Business

Year 2

Semester III

EB200	Microeconomics I
EB210	Financial Accounting I
EB260	Mathematical Economics
MP210	Introduction to Statistics
MP* or	<i>Elective</i>

Semester IV

EB205	Microeconomics II
	or
EB220	Production Economics (A)
EB215	Financial Accounting II
EB255	Macroeconomics I
MP211	Intro to Planned Studies: Surveys & Experiments
MP* or	<i>Elective</i>

Year 3

Semester V

EB315	Management Accounting (A)
EB335	Business Marketing (A)
EB340	Farm Management I (A)
	<i>Elective</i>
	<i>Elective</i>

Semester VI

EB320	Agricultural & Food Policy I
EB325	Operations Research
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

Year 4

Semester VII

EB410	Strategic Management in Agribusiness (A)
EB425	Research Methods (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

Semester VIII

EB445	Agribusiness Entrepreneurship (A)
EB450	Project-Seminar (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

MP* – MP222 should be completed in semester III or IV. Electives must include two Humanities courses, one of which must be at the 300 or 400 level, and three 'A' courses (two 'A' courses if EB220 is selected instead of EB205).

Undergraduate Degree Programs

Agricultural Economics

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

Major

EB200	Microeconomics I
EB205	Microeconomics II
EB210	Financial Accounting I
EB255	Macroeconomics I
EB260	Mathematical Economics
EB305	Macroeconomics II
EB320	Agricultural and Food Policy I (A)
EB325	Operations Research
EB330	Agricultural Markets and Prices (A)
EB335	Business Marketing
EB340	Farm Management I (A)
EB360	Econometrics
EB419	Agrifood Policy Analysis (A)

Electives must include four 'A' courses.

Recommended Syllabus for a Major in Agricultural Economics

Year 2

Semester III

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

Semester IV

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

Year 3

Semester V

EB305	Macroeconomics II
EB335	Business Marketing
EB340	Farm Management I (A)
EB360	Econometrics
	Elective

Semester VI

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

Year 4

Semester VII

EB419	Agrifood Policy Analysis
EB425	Research Methods (A)
	Elective
	Elective
	Elective

Semester VIII

EB450	Project-Seminar (A)
	Elective
	Elective
	Elective
	Elective

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

Electives must include two Humanities courses, one of which must be at the 300 or 400 level, and four 'A' courses.

Undergraduate Degree Programs

Agricultural Environmental Studies

Major

AE410	Water and Water Quality Management (A)
B225	Microbiology
B330	Ecology
CS220	Introduction to Soil Science (A)
EB200	Microeconomics I
EB300	Environmental and Resource Economic Policy*
ES200	Environmental Studies I (A)
ES201	Environmental Studies II (A)
ES330	Environmental Sampling and Analysis
ES333	Waste Reduction and Site Remediation (A)
MP211	Introduction to Planned Studies: Surveys and Experiments

plus one of the following two courses:

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

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

*EB300 may be substituted by EB400 Resource and Environmental Economics for those students who elect to take EB400 and its prerequisite courses – see the instructor of EB300 for further information. **Note:** students cannot receive credit for both EB300 and EB400.

Recommended Syllabus for a

Major in Agricultural Environmental Studies

Year 2

Semester III

CS200	Biochemistry I
CS220	Introduction to Soil Science (A)
EB200	Microeconomics I
ES200	Environmental Studies I (A)
MP210	Introduction to Statistics

Semester IV

B225	Microbiology
ES201	Environmental Studies II (A)
MP140*	Physics I or Elective
MP211	Intro to Planned Studies: Surveys & Experiments
MP222	Computer Methods

Year 3

Semester V

B330	Ecology
EB300	Environmental & Resource Economic Policy
ES330	Environmental Sampling & Analysis
MP150*	Biophysics I or MP140* or <i>Elective</i> <i>Elective</i>

Semester VI

AE410	Water & Water Quality Management (A)
ES333	Waste Reduction & Site Remediation (A) <i>Elective</i> <i>Elective</i> <i>Elective</i>

Undergraduate Degree Programs

Year 4

Semester VII

ES449	Project-Seminar I
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

Semester VIII

ES450	Project-Seminar II
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

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

*Students may take *either* MP140 or MP150 *but not both* for credit.

Electives must include one Humanities course at the 300 or 400 level, one additional Humanities course at any level, and two 'A' courses. However, if AE200 is taken, then only one additional 'A' course is required.

Agricultural Mechanization

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

Major

AE102	Design and Graphics
AE120	Properties and Mechanics of Materials
AE135	Fundamentals of Food Processing (A)
AE200	Environmental Impacts and Resource Management (A)
AE305	Engineering Measurements and Controls
AE320	Structures and Their Environment (A)
AE335	Materials Handling and Processing (A)
AE340	Soil and Water (A)
AE355	Principles of Agricultural Machinery (A)
AE410	Water and Water Quality Management (A)
AE420	Management of Mechanized Agricultural Systems (A)
EB210	Financial Accounting I
EB340	Farm Management I (A)

Recommended Syllabus for a Major in Agricultural Mechanization

Year 2

Semester III

EB210	Financial Accounting I
MP* or	<i>Elective</i>
MP* or	<i>Elective</i>
MP* or	<i>Elective</i>
	<i>Elective</i>

Undergraduate Degree Programs

Semester IV

AE102	Design and Graphics
AE120	Properties and Mechanics of Materials
MP* or	<i>Elective</i>
MP* or	<i>Elective</i>
MP* or	<i>Elective</i>

Year 3

Semester V

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

Semester VI

AE135	Fundamentals of Food Processing (A)
AE305	Engineering Measurements & Controls (A)
AE449	Project-Seminar (A) <i>Elective</i> <i>Elective</i>

Year 4

Semester VII

AE200	Environmental Impacts and Resource Management (A)
AE450	Project-Seminar II (A)
EB340	Farm Management I (A) <i>Elective</i> <i>Elective</i>

Semester VIII

AE410	Water and Water Quality Management
AE420	Management of Mechanized Agricultural Systems (A) <i>Elective</i> <i>Elective</i> <i>Elective</i>

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

MP222 should be completed in either Semester III or IV.

Electives must include two Humanities courses, one of which must be at the 300 or 400 level.

Undergraduate Degree Programs

Animal Science

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

AS200	Animal Agriculture I (A)
AS201	Animal Agriculture II (A)
AS230	Physiological Systems of Farm Animals
AS305	Animal Nutrition
AS310	Animal Breeding (A)
AS330	Growth, Reproduction, and Lactation (A)
B240	Genetics I

plus

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

Recommended Syllabus for a Major in Animal Science

Year 2

Semester III

AS200	Animal Agriculture I (A)
B240	Genetics I
CS200	Biochemistry I
MP* or	<i>Elective</i>
	<i>Elective</i>

Semester IV

AS201	Animal Agriculture II (A)
AS230	Farm Animal Physiology
MP222	Computer Methods
MP* or	<i>Elective</i>
MP* or	<i>Elective</i>

Year 3

Semester V

AS305	Animal Nutrition
AS310	Animal Breeding (A)
AS330	Growth, Reproduction & Lactation (A)
	<i>Elective</i>
	<i>Elective</i>

Semester VI

Elective
Elective
Elective
Elective
Elective

Year 4

Semester VII

AS449	Project-Seminar I (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

Semester VIII

AS450	Project-Seminar II (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

MP* – Students must complete the combination of MP140 or MP150 and MP210 in Semester III & IV. If MP140/MP150 is done in Semester III, then MP210 will be done in Semester IV. If MP210 is done in Semester III, then MP140/MP150 will be done in Semester IV.

MP222 should be completed in either Semester III or IV.

Undergraduate Degree Programs

Electives must include two Humanities courses, one of which must be at the 300 or 400 level; two 300- or 400-level Animal Science courses; and one 400-level Animal Science course (three of these must be 'A' courses).

Aquaculture

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

Major

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

and one of:

EB210	Financial Accounting I
EB225	Introduction to Small Business Entrepreneurship
EB335	Business Marketing
EB441	Topics in Advanced Farm Management (A)

Electives must include one 'A' course (none if EB441 is taken).

Recommended Syllabus for a Major in Aquaculture

Year 2

Semester III

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

Semester IV

AE215	Aquatic Environment (A)
B225	Microbiology
MP* or	<i>Elective</i>
MP* or	<i>Elective</i>
MP* or	<i>Elective</i>

Year 3

Semester V

AS305	Animal Nutrition
AS310	Animal Breeding (A)
AS375	Aquatic Ecology
AS380	Physiology of Aquatic Animals (A)
EB340	Farm Management I (A)

Semester VI

AE360	Aquatic Engineering (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

Undergraduate Degree Programs

Year 4

Semester VII

AS449 Project-Seminar (A)

Elective

Elective

Elective

Elective

Semester VIII

AS450 Project-Seminar (A)

Elective

Elective

Elective

Elective

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

MP222 should be completed in either Semester III or IV.

Electives must include two Humanities courses, one of which must be at the 300 or 400 level, one additional 'A' course (unless EB441 is taken), and one of EB210, EB335 or EB441.

Plant Science

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

Major

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

plus

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

Undergraduate Degree Programs

Recommended Syllabus

Year 2

Semester III

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

Semester IV

B260	Plant Physiology
MP* or	<i>Elective</i>
MP* or	<i>Elective</i>
MP* or	<i>Elective</i>
	<i>Elective</i>

Year 3

Semester V

B300	Principles of Plant Pathology (A)
B320	General Entomology
B335	Weed Science (A)
	<i>Elective</i>
	<i>Elective</i>

Semester VI

PS449	Project-Seminar (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

Year 4

Semester VII

PS415	Crop Adaptation (A)
PS450	Project-Seminar II (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

Semester VIII

PS405	Agronomy (A)
	or
PS410	Horticulture (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

MP* – Students must complete the combination of MP140 or MP150 and MP210 in Semester III & IV. If MP140/MP150 is done in Semester III, then MP210 will be done in Semester IV. If MP210 is done in Semester III, then MP140/MP150 will be done in Semester IV.

MP222 should be completed in either Semester III or IV.

Electives must include two Humanities courses, one of which must be at the 300 or 400 level, two Plant Science Production courses and one additional Plant Science course. (Two of the electives must be 'A' courses.)

Undergraduate Degree Programs

ENGINEERING DIPLOMA

The Engineering Diploma program is the 22-course Associated Universities program given in conjunction with Dalhousie University, Sexton Campus (formerly DalTech). 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 two. They will be granted placeholder status on the basis of their averages and the availability of seats in the discipline. These placeholders will assure continuance if the standards for promotion are met by the student at the AU in year two. 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

AE110	Statics
CS100	Chemical Principles I
H102	Nature in English and American Literature
MP100	Calculus and Analytical Geometry I
MP140	Physics I

Semester II

AE102	Design & Graphics
CS110	Organic Chemistry
EB110	Agricultural Economics (A)
MP105	Calculus and Analytical Geometry II
MP145	Physics II

Year 2

Semester III

AE300	Electric Circuits
AE310	Thermodynamics
MP220	Computer Science
	<i>Discipline-specific</i>
	<i>Discipline-specific</i>
	<i>Discipline-specific</i>

Semester IV

MP212	Probability & Statistics for Engineering
MP236	Differential Equations
	<i>Discipline-specific</i>
	<i>Discipline-specific</i>
	<i>Discipline-specific</i>

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

Undergraduate Degree Programs

Engineering Diploma Program – Required Discipline-Specific Courses

Semester III

Biosystems (Agricultural)	AE315 Strength of Materials	Humanities	B100 Botany
Chemical	AE200 Envmtl. Impacts & Resource Mgt.	Humanities	MP230 Multivariable Calculus
Civil	AE315 Strength of Materials	Humanities	MP230 Multivariable Calculus
Electrical	N/A (Digital Circuits)	Humanities	N/A (Applied Linear Algebra)
Environmental	AE200 Envmtl. Impacts & Resource Mgt.	Humanities	B100 Botany
Industrial	AE315 Strength of Materials	Humanities	MP230 Multivariable Calculus
Mechanical	AE315 Strength of Materials	Humanities	Humanities
Metallurgical	AE315 Strength of Materials	Humanities	MP230 Multivariable Calculus
Mining	AE315 Strength of Materials	Humanities	MP230 Multivariable Calculus

Semester IV

Biosystems (Agricultural)	AE230 Dynamics	AE350 Fluid Mechanics	B110 Zoology	Elective
Chemical	N/A (Industrial Chemistry)	AE350 Fluid Mechanics	N/A (Fund. Of Chemical Eng.)	Humanities
Civil	AE230 Dynamics	AE350 Fluid Mechanics	AE380 Engineering Economy	CS230 Intro. to Geology
Electrical	N/A (Vector Calculus)	N/A (Elect. Eng. Design I)	AE380 Engineering Economy	N/A (Data Struct. & Num. Analysis) or Humanities
Environmental	Elective	AE350 Fluid Mechanics	B110 Zoology	CS230 Intro. to Geology
Industrial	AE230 Dynamics	AE350 Fluid Mechanics	AE380 Engineering Economy	Humanities
Mechanical	AE230 Dynamics	AE350 Fluid Mechanics	AE380 Engineering Economy	AE206 Design Project
Metallurgical	AE230 Dynamics or AE206 Design Project	AE350 Fluid Mechanics	AE380 Engineering Economy	Humanities
Mining	AE230 Dynamics	AE350 Fluid Mechanics	AE380 Engineering Economy	Humanities

Notes: Humanities may be any H course except H130, H135 and H136.

Prior to graduation from Dalhousie University, Sexton Campus (formerly DalTech), students must complete two writing courses (H101, H102, H113, H160 and H170 are acceptable).

N/A – Required course is not available at NSAC and must be completed at Dalhousie University, Sexton Campus or elsewhere.

Biosystems (Agricultural) Engineering and Environmental Engineering

These two disciplines of engineering are taught and administered jointly by the Agricultural Engineering Department of NSAC and the Biological Engineering Department, Dalhousie University, Sexton Campus (formerly DalTech). 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 one of the B.Sc. (Agr.) program into year two of these engineering programs.

Students in these disciplines who complete the two-year engineering diploma enter Dalhousie University, Sexton Campus (formerly DalTech) 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.

Undergraduate Degree Programs

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:

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

Science courses will normally have a laboratory component.

Recommended Syllabus

Year 1

Semester I

B100	Botany
CS100	Chemical Principles
IN100	Agricultural Ecosystems (A)* DE
H113	Composition
MP100	Calculus & Analytic Geometry I

Semester II

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

Year 2

Semester III

AS200	Animal Agriculture I (A)*
B240	Genetics I
CS200	Biochemistry I
MP1**	Physics or
MP210	Introduction to Statistics Humanities/SS Elective

Semester IV

AS230	Physiological Systems of Farm Animals*
B225	Microbiology
H101	The English & American Novel
MP1**	Physics or
MP210	Introduction to Statistics Humanities/SS Elective

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

**MP140 Physics I or MP150 Biophysics I

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, Animal Science, and Plant 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%.

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

Agricultural Colleges Exchange Program

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

Other colleges participating with NSAC in this program are:

- Ontario Agricultural College, University of Guelph, Guelph, Ontario
- Eastern College, Newfoundland
- 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 Technical Curriculum Working Group. 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 Technical Curriculum Working Group 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

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

Semester II

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

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

Year II

Semester III

AS16	Farm Animal Production I
AS18	Farm Animal Biology I
EB40	Marketing Practices
EB65	Business Project
EB340	Farm Management I (A)
AS12	Farm Workplace I (<i>Optional</i>)

Semester IV

AS66	Farm Animal Production II
AS68	Farm Animal Biology II
EB42	Applied Farm Management
EB220	Production Economics (A)
EB65	Business Project
	<i>Humanities Elective</i>

Agricultural Business with a Minor in Plant Science

Year I

Semester I

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

Semester II

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

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

Technician Programs

Year 2

Semester III

AS16	Farm Animal Production I
B43	Entomology
EB40	Marketing Practices
EB65	Business Project
EB340	Farm Management I (A)
PS200	Vegetable Production (A) ¹
	<i>Humanities Elective</i>

Semester IV

B40	Plant Pathology
EB42	Applied Farm Management
EB65	Business Project
EB220	Production Economics (A)
PS49	Potato Production ¹
PS76	Plant Products Physiology

¹May substitute PS43 or PS44 if timetable permits.

Agricultural Business with a Minor in Agricultural Engineering

Year 1

Semester I

AE101	Computer Aided Graphics & Projection
CS12	Principles of Soil Science
CS14	Agricultural Chemistry
EB10	Accounting
EB12	Macroeconomics
H10	Technical Writing

Semester II

CS13	Soil Management
EB11	Applied Accounting & Taxation
EB13	Microeconomics
EB41	Business Law
MP14	Computational Methods
	<i>Humanities Elective</i>

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

Year 2

Semester III

AS16	Farm Animal Production I
EB40	Marketing Practices
EB65	Business Project
EB340	Farm Management I (A)
MP15	Introductory Physics
PS36	Field Crops

Semester IV

AE38	Horticultural Engineering
AE52	Agricultural Power Systems
AE202	Agricultural Machinery
EB42	Applied Farm Management
EB65	Business Project
EB220	Production Economics (A)
PS37	Field Crop Management

Technician Programs

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.

There is a limited number of students accepted into the program. 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.

Syllabus¹

Year 1

Semester I

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

Semester II

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

Year 2

Semester III

AS76	Farm Animal Production III
AS77	Farm Animal Production III Practices
PS36	Field Crops
	<i>Economics Elective²</i>
	<i>Elective³</i>

Semester IV

AS86	Farm Animal Production IV
AS87	Farm Animal Production IV Practices
PS37	Field Crop Management
	<i>Economics Elective²</i>
	<i>Elective³</i>

Technician Programs

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

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

² Students must choose two of the following four economics courses: EB10, EB340 (offered in the Fall semester), EB11, and 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.

Technician Programs

PLANT SCIENCE

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

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

Syllabus

Plant Science with Specialization in Agronomy

Year 1

Semester I

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

Semester II

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

Year 2

Semester III

AS12	Farm Workplace I
EB340	Farm Management I
MP15	Introductory Physics
PS36	Field Crops
	<i>Plant Science Elective</i>
	<i>Humanities Elective</i>

Semester IV

AE52	Agricultural Power Systems
AE202	Agricultural Machinery
B40	Plant Pathology
EB41	Business Law
PS37	Field Crop Management
PS65	Plant Science Project ¹

¹May substitute PS38 or PS44 if timetable permits.

Technician Programs

Plant Science with Specialization in Horticulture

Year 1

Semester I

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

Semester II

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

Year 2

Semester III

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

Semester IV

B40	Plant Pathology
PS37	Field Crop Management
PS38	Nursery Crop Production
PS44	Tree Fruit Crops
PS76	Plant Products Physiology
	<i>Humanities Elective</i>

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

Plant Science with Specialization in Ornamental Horticulture

Year 1

Semester I

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

Semester II

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

Year 2

Semester III

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

Semester IV

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

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

Technology Programs

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

A candidate for these programs may qualify for admission with high school completion or equivalent. See syllabus of each program for specific admission requirements.

Accepted students are asked to complete and submit medical information on the form provided.

Each candidate must be available for an interview, if requested.

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

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

Technology Programs

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.

Admission Requirements

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

Syllabus

Year 1

Semester I

AS10	Orientation to Animal Health
AS200	Animal Agriculture I (A)
B15	Animal Anatomy
B200	Cell Biology
CS14	Agricultural Chemistry
H10	Technical Writing

Semester II

AS11	Animal Handling
AS201	Animal Agriculture II (A)
AS230	Physiological Systems of Farm Animals
AS241	Intro to Applied Ethology
B225	Microbiology
MP14	Computational Methods

Year 2

Semester III

AS24	Principles of Disease
AS25	Animal Nursing and Clinical Procedures I
AS37	Laboratory Animal Care I
AS39	Veterinary Lab Techniques I
AS40	Support Services in Veterinary Practice

Semester IV

AS36	Principles of Pharmacology
AS46	Animal Nursing and Clinical Procedures II
AS49	Veterinary Lab Techniques II
AS320	Animal Health (A)
H45	Technical Communications

Year 3

Semester V (Summer-Fall)

AS99	Practicum – Animal Health Technology
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Semester VI

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

Technology Programs

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 Certificate with pass marks and an average of at least 60% in Biology, English, Pre-Calculus Mathematics, and two other courses, all at the following provincial levels: New Brunswick 120 or 121; Newfoundland Academic 3; Nova Scotia Academic 12 (70% required in Mathematics 12 if Pre-Calculus Math is not taken); Prince Edward Island Academic XII. Additionally, the applicant must have passed one senior high school Chemistry course. Applicants may be required to attend a selection interview.

Syllabus

Year 1

Semester I

B43	Entomology
CS12	Principles of Soil Science
MP222	Computer Methods
PS47	Turfgrass Production and Management
PS50	Landscape Horticulture I
PS60	Landscape Plant Materials I

Semester II

AE38	Horticultural Engineering
B40	Plant Pathology
B41	Plant Physiology
B46	Weed Science
CS13	Soil Management
PS61	Landscape Plant Materials II

Spring Session

PS70	Landscape Techniques – 12 weeks
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Year 2

Semester III

AE14	Surveying
H10	Technical Writing
PS62	Landscape Plant Materials III
PS71	Arboriculture
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

Semester IV

H60	Communication Techniques
H140	Personnel Management
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

Recommended Electives:

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

AE28	Wood Construction Techniques
AE46	Soil and Water Resources Management
AE101	Computer Aided Graphics & Projection
EB10	Accounting
EB41	Business Law
PS38	Nursery Crop Production
PS39	Greenhouse Crop Management
PS43	Small Fruit Crops
PS44	Tree Fruit Crops
PS51	Residential Landscape Design and Construction
PS55	Plant Propagation
PS72	Landscape Maintenance
PS74	Landscape Design & Construction
PS73	Landscape Horticulture II
PS76	Plant Products Physiology
PS90	Technology Project

Technology Programs

TECHNOLOGY PROGRAMS ENTERED FROM TECHNICIAN PROGRAMS

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

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

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

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

Agricultural Technology

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

The program of study including a Technology Project course (AE90, AS90, EB90, or PS90) must first be approved by the corresponding department. In doing so, the department will consider the appropriateness and feasibility of the specific project idea, as well as the student's ability to pursue an independent project, based on

performance in the previous technician or equivalent program. Other courses may include those normally taken by other technical or degree students, provided all prerequisites are met.

Farming Technology

The Nova Scotia Agricultural College offers this program to help students prepare for a career as a farmer on a self-employed basis, or as a manager on a commercial farm. Students wishing to pursue studies leading to a Diploma of Technology in Farming register for the first year of the Agricultural Business, Animal Science, or Plant Science Technician program. After successful completion of the first year, their applications are considered for the Farming Technology program. Students with equivalent prerequisites from other College programs can also be considered.

If accepted, the student's program of studies includes a minimum of three semesters of prescribed courses, four months of approved farm experience, and seven months of on-farm training under the direction of a farming instructor.

In order to satisfactorily complete the requirements for a Diploma of Technology in Farming, a student must complete all required courses, the on-farm training, and 1/3 of the approved electives, and must fulfil the experience requirement.

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

Technology Programs

Syllabus

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

Year 1

Semester I

AS12	Farm Workplace I
CS14	Agricultural Chemistry
EB10	Accounting
EB40	Marketing Practices
EB340	Farm Management I (A)
MP15	Introductory Physics
PS36	Field Crops

Semester II

AE52	Agricultural Power Systems
CS13	Soil Management
EB11	Applied Accounting & Taxation
EB220	Production Economics (A)
MP14	Computational Methods
PS37	Field Crop Production

Semester III

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

EB42	Applied Farm Management
EB72	Farm Project
	13 Electives

Recommended Electives:

Semester I

AE14	Surveying
AE28	Wood Construction Techniques
AE101	Computer Aided Graphics
AE202	Agricultural Machinery
AS16	Farm Animal Production I
AS18	Farm Animal Biology I
AS76	Farm Animal Production III
B43	Entomology
EB12	Macroeconomics
PS39	Greenhouse Crop Management
PS43	Small Fruit Crops
PS55	Plant Propagation
PS76	Plant Production Physiology
PS147	Farm Woodlot Management
PS200	Vegetable Production (A)
PS210	Principles of Organic Horticultural <i>Crop Production</i>

Humanities Course

Semester II or IV

AE29	Metal Construction Techniques
AE38	Horticultural Engineering
AE39	Tractor Overhaul
AS66	Farm Animal – Production II
AS68	Farm Animal Biology II
AS87	Farm Animal – Production IV Practices
B40	Plant Pathology
B41	Plant Physiology
B46	Weed Science
EB13	Microeconomics
EB41	Business Law
PS30	Introduction to Plant Science
PS38	Nursery Crop Production
PS44	Tree Fruit Crops
PS49	Potato Production

Technology Programs

BACHELOR OF TECHNOLOGY (LANDSCAPE 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 Landscape 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 preparation courses.

Year 3

Spring Semester

PS270 Landscape Horticulture Work Program I
(12 weeks)

Semester V

B100 Botany
CS100 Chemical Principles
CS345 Soil Conservation in Agriculture (A)

Semester VI

AE365 Principles of Engineering in Landscape Horticulture

Year 4

Semester VII

B330 Ecology
PS360 Landscape Horticulture Project I

Semester VIII

PS390 Insects and Diseases of Landscape Plants

Other Required Courses:

CS457 The Science of Composting and Its Application (A)*
Humanities Elective at the 200 level or above

Students must take 11 additional degree course electives, four of which must be Landscape electives chosen from the following list:

AE370 Irrigation and Drainage
PS290 The British Garden
PS370 Landscape Horticulture Work Program II
PS380 Landscape Construction and Estimating
PS440 Management of Specialized Turf
PS460 Landscape Horticulture Project II
PS470 Tree Management

* Offered in alternate years. Please see calendar description for next scheduled session.

Description of Courses – Undergraduate and Technical

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

AGRICULTURAL ENGINEERING

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.

AE16: Fluid Power Control

Instructor: **Prof. Rifai**

Introduction to concepts of control of pressure and flow of fluids used in industry. Concepts of pressure and flow with respect to pumps, compressors, actuators, flow, and pressure control valves are discussed. Emphasis is placed on understanding complete systems and being able to accurately troubleshoot a system failure. Proper selection, maintenance, and repair procedures and consideration of material compatibilities and fluid conditioning are included. Winter semester – 2 lecs and 2 labs per week.

AE22: Engineering Principles

Instructor: **Prof. Cunningham**

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

Winter semester – 3 lecs and 1 lab per week.

Description of Courses – Undergraduate and Technical

AE28: Wood Construction Techniques

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 safety will be emphasized in safeguarding of machines, use of abrasive power tools and portable power tools, and equipment isolation and lock-out. Students are required to develop plans and produce a project.
Fall Semester – 2 lecs and 3 labs per week.

AE29: Metal Construction Techniques

Instructor: **TBA**

An introductory course in the selection, operation, and maintenance of metalworking hand and power tools. The principles of oxyacetylene welding, cutting, and brazing of mild steel will be examined. Electric arc and MIG welding techniques are presented. Students will be required to present seminars on various fabrication techniques and construction tools. Occupational safety will be emphasized in safeguarding of machines, use of abrasive power tools, welding, cutting, burning, soldering, and equipment isolation and lock-out. Students are required to develop plans and produce a project.
Winter Semester – 2 lecs and 3 labs per week.

AE33: Agricultural Structures

Instructor: **TBA**

This course includes a study of the space requirements, environmental requirements, materials, and methods of construction of structures utilized in agricultural production and processing systems. Environmental principles and products, livestock and operators. Properties of common construction materials are investigated with emphasis on

their efficient utilization. Students gain familiarity with construction drawings, material lists and building codes.
Winter semester – 2 lecs and 3 labs per week.

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.

AE39: Tractor Overhaul

Instructors: **TBA**

Prerequisite: AE16

Preparatories: AE29, AE52

Complete diagnosis, cost estimating, and overhaul of tractor engines and power trains. The theory and knowledge gained in previous courses are used along with the overhaul techniques introduced.
Winter semester – 1 lec and 6 labs per week.

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.

Description of Courses – Undergraduate and Technical

AE50: Electronic Instrumentation

Instructor: **Prof. Adsett**

Basic electrical and electronic theories are examined and applied to instruments and measurement systems. Low-voltage control circuits are included, and electronic components and software are introduced as they apply to measurement systems. Laboratory assignments deal with electrical and electronic circuitry, and the collection of data using several types of measurement systems. Winter semester – 3 lecs and 3 labs per week.

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.

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.

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 “graphics language” will culminate in the presentation of design projects and solutions. Winter semester – 2 lecs and 3 labs per week.

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.

Fall semester – 3 lecs and 3 labs per week.

Text: Hibbeler, *Engineering Mechanics*.

AE120: Properties and Mechanics of Materials

Instructor: **Prof. Havard**

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.

Description of Courses – Undergraduate and Technical

AE135: Fundamentals of Food Processing (A)

Instructor: **Prof. Blanchard**

The theory and application of food processing equipment is discussed. Theory includes fluid mechanics, heat transfer thermodynamics, and measurement applied to food material. Equipment such as pumps, fans, size reducers, conveyors, driers, refrigeration, and heaters are examined. Process conditions and methods as applied to various food products will be covered. Field trips will supplement lectures and labs. Winter semester – 3 lecs and 3 labs per week.

AE200: Environmental Impacts & Resource Management (A)

Instructor: **Prof. Blanchard**

Prerequisites: B100, CS110

This course addresses the issues associated with the safe and ecologically appropriate handling, processing, storage, and utilization of the by-products of agricultural and bio-resource production systems. Physical, chemical, and biological treatment process for solid and liquid wastes will be reviewed. Reduction of air and water impacts will be considered. Structural, energy, and climatic limitations on waste management techniques will be included. Labs will include visits to treatment and storage sites. Fall semester – 3 lecs and 3 labs per week.

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. Laboratories will emphasize safety, basic maintenance, adjustment, calibration, and performance testing. Winter semester – 3 lecs and 3 labs per week.

AE206: Design Project

Instructor: **TBA**

Prerequisites: AE102, AE315

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.

AE215: Aquatic Environment (A)

Instructor: **Prof. Blanchard**

Engineering principles are studied in the context of requirements for environmental management of intensive aquaculture of finfish, molluscs, crustaceans, and marine plants of commercial importance. Topics in water habitat management will be emphasized, including: water properties in both fresh and salt water systems, water quality and water purification, fluid dynamics and statics, and control of the aquatic environment. Winter semester – 3 lecs and 3 labs per week.

AE230: Dynamics

Instructor: **Prof. Rifai**

Prerequisites: MP105, MP140 or MP150

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. Winter semester – 3 lecs and 3 labs per week.

Description of Courses – Undergraduate and Technical

AE260: Surveying

Instructor: **Prof. Havard**

An introduction to the use of surveying instruments and practices. Distance measurements; differential, profile, and cross-sectional leveling; transit traverses and construction surveying are covered. Error calculating is introduced, and principles of surveying for construction are developed. Time – 2 weeks following winter semester.

AE300: Electric Circuits

Instructor: **Prof. Havard**

Prerequisite: MP145

Includes theory of circuits and power engineering; DC circuits; AC currents and voltages, phasors and complex algebra; AC circuits; current-voltage; power; frequency response; polyphase circuits; transients; magnetic circuits; si phase transformers; electrical machinery; DC machines; alternators; and induction and synchronous motors. Fall semester – 3 lecs and 2 labs per week.

AE305: Engineering Measurements and Controls (A)

Instructor: **Prof. Havard**

Prerequisite: MP140 or MP150

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.

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.

Text: Moran and Shaaro, *Fundamentals of Engineering Thermodynamics*.

AE315: Strength of Materials

Instructor: **TBA**

Prerequisites: AE110, MP105, MP140 or MP150

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.

Fall semester – 3 lecs and 2 labs per week.

Text: Hibbeler, *Mechanics of Materials*.

AE320: Structures & Their Environment (A)

Instructor: **TBA**

This is a general agricultural structures course covering topics of building materials and introduction to design process. Ventilation principles are presented. Functional layouts of storage and production buildings are considered. Field trips supplement the lecture material. A term paper is required. Fall semester – 3 lecs and 3 labs per week.

Text: Agriculture Canada, *Canadian Farm Buildings Handbook*.

Description of Courses – Undergraduate and Technical

AE335: Materials Handling & Processing (A)

Instructor: **Prof. Adsett**

Prerequisite: MP105

Preparatory: MP140 or MP150

Basic operations in on-farm materials handling and processing are covered. Operations are described mathematically and discussed in relation to material flow rates and energy requirements. Electric power is discussed with respect to on-farm distribution, demand sizing, controls, and safety. Laboratory topics include electric circuits, motors, pumps, grain drying, solid materials conveyors, and milking systems.

Fall semester – 3 lecs and 3 labs per week.

Text: Agriculture Canada, *Agricultural Materials Handling Manual*.

AE340: Soil and Water (A)

Instructor: **Prof. Madani**

Prerequisite: MP105

This course covers the hydrologic cycle and its components; basic soil-water-plant relationships; drainage theory and design; and irrigation systems and design including crop water requirements, water supply and quality, water conveyance, and salinity control. The concept of water table management and its application in the Maritime region is also covered. Special problems inherent in Atlantic agriculture are studied, such as marsh reclamation, erosion control practices, and stream bank stabilization. Laboratory periods cover design problems, measurements of soil moisture and soil moisture-related properties, flow measurement, and field trips.

Fall semester – 3 lecs and 3 labs per week.

Text: Schwab et al., *Soil and Water Conservation Engineering*.

AE350: Fluid Mechanics

Instructor: **Prof. Madani**

Prerequisite: AE230 or Instructor's permission

A study of physical properties of liquids and gases, fluid statics, and fluid flow including pressure, manometry, hydrostatic forces, stream lines and tubes, continuity, momentum, Bernoulli equation, energy equation, flow measurement, viscous flow, and dimensionless numbers. Winter semester – 3 lecs and 2 labs per week.

Text: Robertson and Crowe, *Engineering Fluid Mechanics (4th edition)*.

AE355: Principles of Agricultural Machinery (A)

Instructor: **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.

Text: Svivastava, Goering and Rohrback, *Engineering Principles of Agricultural Machines*.

AE360: Aquatic Engineering (A)

Instructor: **Prof. Blanchard**

Support facilities, equipment, and systems for aquaculture operations will be examined. Topics studied will include: selection of component materials and structures suitable for confinement, protection, and support of aquaculture species; selection and application of mechanical/electrical support equipment such as pumps, motors, feeders, aerators, water heating systems, waste management systems and monitoring equipment; and engineering

Description of Courses – Undergraduate and Technical

aspects of facilities for harvesting, handling, processing, packaging, and preservation of aquatic production.
Winter semester – 3 lecs and 3 labs per week.

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.

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.

Fall semester – 2 lecs and 3 labs per week.

Offered in alternate years; next offered in 2001–2002.

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.

AE410: Water & Water Quality Management (A)

Instructor: **Prof. Madani**

Principles of soil and water management including control of the plant-soil-water environment, monitoring and evaluation of principles and structures applied to irrigation and drainage, and methods of controlling non-point source pollution in agriculture are discussed. Water table management models and their evaluations for Atlantic Canada conditions are also discussed.

Winter semester – 3 lecs and 3 labs per week.

AE412: Water Quality Issues (A)

Coordinator: **Prof. Madani**

Prerequisites: AE410

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; first offered in 2001–2002.

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.

AE420: Management of Mechanized Agricultural Systems (A)

Instructor: **Prof. Adsett**

Prerequisite: MP105 or MP140 or MP150

Preparatory: EB340

Principles of engineering economics are applied to agricultural investment alternatives, primarily as related to mechanized systems. Field operations from soil tillage to crop harvest are examined with respect to machine

Description of Courses – Undergraduate and Technical

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.

AE440: Senior Design Project for Engineers I

Instructors: **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.

AE449: Project-Seminar I (A)

Coordinator: **Prof. Cunningham**

Prerequisite: Agricultural Mechanization student in third year or consent of the coordinator.

A specific project in Agricultural Mechanization will be studied and researched by the student. Each student will present periodic written and oral reports on the subject of investigation. Other written and seminar topics will be assigned.

The research project and faculty advisor will be chosen, in consultation with the course coordinator, during Semester VI; this will enable students to work on their projects during the summer preceding their final year, if necessary.

Winter semester – 1 scheduled seminar session per week.

AE450: Project-Seminar II (A)

Coordinator: **Prof. Blanchard**

Prerequisite: AE449

Restricted to Agricultural Mechanization students in their final year.

Students will continue with their projects and seminars as assigned by their advisor. The course will culminate with written reports and oral presentations of their scientific reports.

Fall semester – 4 labs per week.

ANIMAL SCIENCE

AS10: Orientation to Animal Health

Instructor: **Prof. Ramsay**

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

Fall semester – 4 lecs and 1 lab per week.

Description of Courses – Undergraduate and Technical

AS11: Animal Handling

Instructor: **Prof. Ramsay**

Prerequisites: AS10, B15

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

Winter semester – 1 lec and 3 labs per week.

AS12: The Farm Workplace I

Instructors: **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.

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.

AS17: Farm Animal Production I Practices

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

Coordinator: **Mr. Nicholson**

Corequisites: AS16, AS19

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

Fall semester – 6 labs per week.

AS18: Farm Animal Biology I

Instructors: **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.

Description of Courses – Undergraduate and Technical

Diverse aspects of Animal Biology will be covered, but the focus will be on providing a general background, rather than on specific disciplines or on specific types of livestock production.

Fall Semester – 3 lecs and 2 labs per week.

AS19: Farm Animal Biology I Practices

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

Coordinator: **Mr. Nicholson**

Corequisites: AS17, AS18

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

Fall semester – 6 labs per week.

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 Engineering Department.

Fall semester – 3 lecs and 2 labs per week.

AS22 :The Farm Workplace II

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

Coordinator: **Mr. Nicholson**

Prerequisite: AS12

Diverse aspects of the livestock farm as a workplace will be covered with the major emphasis on occupational health and safety, workplace ethics, proper attention to protocols and 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.

AS24: Principles of Disease

Instructor: **Prof. Ramsay**

Prerequisites: AS10, B15, B225

This classroom course is intended to lay a base for the student to continue to learn about disease in animals throughout the program and after graduation. The principles of pathology and pathophysiology are covered, and samples of diseases are used to demonstrate how AHTs should approach the study of diseases encountered in other courses and later in their careers. The terminology used in describing disease states is stressed.

Fall semester – 3 lecs per week.

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AS25: Animal Nursing and Clinical Procedures I

Coordinator: **Prof. Ramsay**

Prerequisite: AS10

Corequisite: AS24

This combined classroom and clinical course outlines the principles and methods associated with drug administration, anaesthesiology, surgical preparation, sample collection, and radiography in addition to the application of simple bandages and splints. The major animal types used are the dog and cat, but certain clinical periods will deal with procedures performed on livestock. Student performance should demonstrate observance of principles and good manual skills.

Fall semester – 4 lecs and 5 labs per week.

AS36: Principles of Pharmacology

Instructor: **Prof. Ramsay**

Prerequisite: AS25

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

Winter semester – 3 lecs per week.

AS37: Laboratory Animal Care I

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.

AS39: Veterinary Laboratory Techniques I

Coordinator: **Prof. Ramsay**

Prerequisite: B225, CS14

Corequisite: AS24

In classroom and lab practical sessions this course covers a variety of techniques commonly required of the AHT in the veterinary hospital laboratory. Operation and maintenance of the microscope is reviewed; the skills required in the clinical laboratory pertinent to microbiology, parasitology, urinalysis, and certain aspects of blood analysis are practised. 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.

AS40: Support Services in Veterinary Practice

Instructor: **Prof. Ramsay**

Prerequisites: AS10, MP14

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

Fall semester – 4 lecs per week.

AS46: Animal Nursing and Clinical Procedures II

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

Prerequisites: AS24, AS25, AS37

This course re-examines topics similar to those covered in Animal Nursing and Clinical Procedures I with emphasis on more advanced AHT involvement and problem-solving in both classroom and clinical periods. Physical assessment of

Description of Courses – Undergraduate and Technical

the small animal and livestock patient is also dealt with, and intensive-care practices are included with special attention to administration of fluids, the EKG, and resuscitative measures. The student is expected to perform with minor supervision and should demonstrate observance of principles and good manual skills.

Winter semester – 4 lecs and 5 labs per week.

AS49: Veterinary Laboratory Techniques II

Coordinator: **Prof. Ramsay**

Prerequisites: AS39, AS24

Corequisite: AS46

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.

AS59: Veterinary Laboratory Techniques III

Coordinator: **Prof. Ramsay**

Prerequisite: AS49

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.

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.

AS66: Farm Animal Production II

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

Coordinator: **Mr. Nicholson**

Prerequisite: AS16

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.

AS67: Farm Animal Production II Practices

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

Coordinator: **Mr. Nicholson**

Prerequisites: AS17, AS19

Corequisites: AS66, AS69

This course will require Animal Science Technician students to expand on the concepts covered in Farm Animal Production II, and to further develop their livestock management skills. Coverage of topics will emphasize competence in stockmanship and management skills, livestock measurements and evaluation, data collection and recording, observation, and facilities maintenance. Diverse aspects of animal production will be covered, but the focus will be on providing a general background, rather than on specific disciplines or on specific types of livestock production.

Winter semester – 6 labs per week.

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AS68: Farm Animal Biology II

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

Coordinator: **Mr. Nicholson**

Prerequisite: AS18

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.

AS69: Farm Animal Biology II Practices

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

Coordinator: **Mr. Nicholson**

Prerequisites: AS17, AS19

Corequisites: AS67, AS68

This course will require Animal Science Technician students to expand on the biological concepts covered in Farm Animal Biology II, to relate these concepts to the producing animal, and to develop competency in the skills necessary for an application of biological principles to livestock management 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. Diverse aspects of animal biology will be covered, but the focus will be on providing a general background in biology, rather than on specific disciplines or on specific types of livestock production.

Winter semester – 6 labs per week.

AS71: Laboratory Animal Care II

Coordinator: **Prof. Ramsay**

Prerequisites: AS37, AS15, AS46

This course is designed to prepare Animal Health Technology (AHT) students to successfully complete the Canadian Association for Laboratory Animal Science provisional registration examination. The student will be instructed in special procedures involved in the maintenance and operation of an animal care facility. This will include: environmental control, monitoring animal health, maintaining animal and facility records, and procurement of feeds, supplies, and animals. Students are required to complete assigned periods of duty in the College's animal facility. Introductory techniques in laboratory animal anaesthesia and surgery are covered. This course stresses compliance with the Canadian Council on Animal Care Guidelines.

Winter semester – 3 lecs and 3 labs per week.

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.

AS76: Farm Animal Production III

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

Coordinator: **Mr. Nicholson**

Prerequisites: AS16, AS18, AS66, AS68 A detailed study of selected areas in farm animal production, with the major emphasis on the principles and theory underlying current management practices. Students will be expected to

Description of Courses – Undergraduate and Technical

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.

AS77: Farm Animal Production III Practices

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

Coordinator: **Mr. Nicholson**

Prerequisites: AS12, AS17, AS19, AS22, AS67, AS69

Corequisites: AS76

A detailed study of selected areas in farm animal production, with the major emphasis on production and farm operation skills. Students will be expected to achieve competence in the skills, farm operations, and routines associated with reproduction and breeding, animal genetics, feeding and applied animal nutrition, housing and environmental physiology, animal health, and livestock marketing. The course will cover individual subject areas as they coincide chronologically with the normal management activities on the College farm. The subject areas will also represent the divisions important in commercial production systems. Fall semester – 16 labs per week.

AS86: Farm Animal Production IV

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

Coordinator: **Mr. Nicholson**

Prerequisites: AS16, AS18, AS66, AS68

A detailed study of selected areas in farm animal production, with the major emphasis on the principles and theory underlying current management 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.

AS87: Farm Animal Production IV Practices

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

Coordinator: **Mr. Nicholson**

Prerequisites: AS12, AS17, AS19, AS22, AS67, AS69

Corequisite: AS86

A detailed study of selected areas in farm animal production, with the major emphasis on production and farm operation skills. Students will be expected to achieve competence in the skills, farm operations and routines associated with reproduction and breeding, animal genetics, feeding and applied animal nutrition, housing and environmental physiology, animal health, and 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.

Description of Courses – Undergraduate and Technical

AS90: Technology Project

Coordinator: **Prof. Anderson**

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

AS95: Animal Health Technology Project

Coordinator: **Prof. Ramsay**

Corequisite: Enrolment in the final semester of AHT Program, eligible to graduate if all courses passed in this semester. This project is intended to be of a technical and/or minor research nature and allow the student to demonstrate skills, planning ability, and the attention to detail required in project work. The details are worked out with faculty in the program, but essentially the semester's work in this course is intended to result in a paper of suitable quality for presentation to other AHT students. A product from the project is expected to be of value as a teaching or informational aid. The project may be shared, in which case students who collaborate must show clearly defined duties within the group working on the project. Winter semester – 1 lec and 3 labs per week.

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 Science. 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 six or seven weeks long and is operated in the early part of the summer. Students attend this externship in one or two sections. Room and board during the externship and transportation to the Atlantic Veterinary College are the responsibility of the student.

During this period, students are given training in clinical areas of the AVC Veterinary Teaching Hospital (VTH). A rotation through various areas of the VTH typically includes assignments in: Small and Large Animal Medicine, Surgery and Anesthesiology; Theriogenology and the Ambulatory Clinic.

Students work with and learn from AHTs and other paraprofessional staff. 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 of at least 10 weeks 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.

Description of Courses – Undergraduate and Technical

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.

AS200: Animal Agriculture I (A)

Instructors: **Profs. Farid and Fredeen**

Prerequisites: IN100, IN101

An introductory course dealing with the major animal industries and production systems in animal agriculture today, with emphasis on systems relevant to Atlantic Canada. A key objective of this course is to let students see how real farms and real agribusinesses work. Emphasis will be placed on management and production of beef cattle, sheep, and 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.

AS201: Animal Agriculture II (A)

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

Prerequisites: IN100, IN101

Recommended: AS200

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

Winter semester – 3 lecs and 3 labs per week.

AS210: Introduction to Aquaculture (A)

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

Coordinator: **Prof. Enright**

Prerequisites: IN100, IN101

The history and the current status of world aquaculture production are discussed, with emphasis on species with potential in Atlantic Canada. Advances in fresh water 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.

AS230: Physiological Systems of Farm Animals

Instructor: **Prof. MacLaren**

Prerequisites: B110, CS200

Suggested corequisite: B200

An introduction to the body systems and how they function. The student should develop a basic understanding of physiological processes and how they are regulated and integrated by the nervous and endocrine systems. Topics covered include cardiovascular, renal, gastrointestinal, reproductive, metabolic, and respiratory physiology.

Winter semester – 3 lecs and 3 labs per week.

AS240: The Horse: Its Biology and Use (A)

Instructor: **Prof. Tennesen**

Prerequisite: Second-year standing or equivalent.

This course is an introduction to the behaviour, anatomy, nutrition, and history of horses. What behaviour principles underlie horse training? How is their performance influenced by their conformation? What is unique about their digestive system? How did horses evolve? 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.

Description of Courses – Undergraduate and Technical

AS241: Introduction to Applied Ethology

Instructor: **Prof. Tennessen**

This course is an introduction to the study of animal behaviour. Emphasis is on applied ethology, the application of ethological principles to solve animal behaviour problems in agriculture and veterinary medicine. Students will learn the fundamentals of animal learning and how those principles affect success in animal training. Attention will be given to solving behaviour problems in companion animals, especially dogs, cats and horses (e.g., separation anxiety, dominance, aggression, fighting, and behavioural stereotypes).
Winter semester – 3 lecs per week.

AS305: Animal Nutrition

Instructor: **Prof. Firth**

Prerequisite: CS200

Preparatory: CS205

A study of the principles of nutrition, including the digestion, absorption, and metabolism of nutrients by domestic animals. Functions of protein, lipids, carbohydrates, vitamins, and minerals are studied.

Fall semester – 3 lecs and 2 labs per week.

Text: Maynard, Loosli, Hintz, Warner, *Animal Nutrition*.

AS310: Animal Breeding (A)

Instructor: **Prof. Patterson**

Prerequisites: B240, MP210, MP222

The course covers variation in animal performance and the techniques whereby genetic superiority can be recognized and improved. Goals and programs of improvement are discussed with reference to commercial farm species. The emphasis is on programs in current use but applications of new technologies are included. Laboratories deal primarily with data collection, analysis, and computer applications.
Fall semester – 3 lecs and 2 labs per week.

AS320: Animal Health (A)

Instructor: **TBA**

Prerequisite: B225

Preparatory: CS205

Seeks to impart an understanding of animal health and its importance in livestock production enterprises. Students are taught to recognize signs of health and ill-health and to understand the principles and practices of disease prevention and treatment. Conditions of disease and ill-health common in Atlantic Canada are studied. The need for veterinary collaboration is emphasized, and the circumstances in which this should be sought are discussed.
Winter semester – 2 lecs and 2 labs per week.

AS325: Applied Animal Nutrition (A)

Instructors: **Profs. Firth and Anderson**

Prerequisite: AS305

Feedstuff classification, characteristics, and regulations governing their use are described. Methodology for evaluating the relative merits of typical feedstuffs is discussed. The principles of nutrition are applied in the formulation of rations for monogastric, avian, and ruminant species.
Winter semester – 3 lecs and 2 labs per week.
Text: Church, *Livestock Feeds and Feeding*.

AS330: Growth, Reproduction and Lactation (A)

Instructor: **Prof. MacLaren**

Prerequisite: AS230

A continuation of AS230, emphasizing physiological systems relevant to animal production. Major topics include growth and development as it applies to meat and brood animal production, and the physiology and management of reproduction and lactation in domestic species.
Fall semester – 3 lecs and 2 labs per week.

Description of Courses – Undergraduate and Technical

AS335: Environmental Physiology (A)

Instructor: **Prof. Tennessen**

Prerequisite: AS230

A study of animals in relation to their environment. The influence of environmental factors on body processes and their relationship to productive efficiency in intensive production systems are examined. Major topics include temperature regulation and body homeostasis, biological rhythms, photoperiodism, and environmental and hormonal interrelationships.

Winter semester – 2 lecs and 2 labs per week.

AS341: Domestic Animal Behaviour (A)

Instructor: **Prof. Tennessen**

Prerequisite: AS230

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 agricultural agriculture.

Fall semester – 3 lecs and 2 labs per week.

AS345: Eggs and Dairy Products (A)

Instructor: **Prof. Firth**

Prerequisites: B225, CS200, IN100, and IN101, or consent of the instructor

The nature and composition of eggs and milk and their products such as cheese and yogurt; hygiene, processing, and storage.

Fall semester – 2 lecs and 2 labs per week.

AS350: Meat Science (A)

Instructor: **Prof. Firth**

Prerequisites: B225, CS200, IN100, and IN101, or consent of the instructor

Growth of meat animals and the nature of muscle, bone, and fat; conversion of muscle to meat; quality and grading of fresh meat; hygiene and storage; meat processing, meat products, and by-products.

Winter semester – 2 lecs and 2 labs per week.

AS365: Fish Nutrition (A)

Instructor: **Prof. Anderson**

Prerequisite: AS305

Nutrients required by finfish, shellfish, crustaceans, and molluscs are discussed in context with current and future sources of these nutrients. Digestive physiology and specific feeding problems of aquatic species are addressed. Diet formulations and feeding strategies for maintenance, growth, and reproductive performance of fish are covered.

Winter semester – 3 lecs and 2 labs per week.

AS370: Fish Health (A)

Instructor: **Prof. Duston**

Prerequisite: AS380

This course outlines concepts of disease with special reference to fish. Diseases of various etiological types are considered, with emphasis on those in the aquaculture environment. The relationships of management and economics to disease in cultured fish are detailed, and public health concerns are addressed. Diagnostic, prophylactic, and treatment methods are outlined and practised.

Winter semester – 3 lecs and 3 labs per week.

Description of Courses – Undergraduate and Technical

AS375: Aquatic Ecology

Instructor: **Prof. Enright**

Prerequisite: AE215

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.

AS380: Physiology of Aquatic Animals (A)

Instructor: **Prof. Duston**

Prerequisite: B110

The form, function, physiological integration, and behaviour of major types of aquatic animals is considered. Emphasis is placed on Classes of organisms, using commercially important species as primary examples.

Fall semester – 3 lecs and 3 labs per week.

AS440: Finfish Production

Instructor: **Prof. Duston**

Prerequisites: AS365, AS370, AS380

Aspects of breeding and genetics, fish management, financial management, economics, marketing, housing systems, and water management are presented in an integrated approach to provide a sound understanding of this aspect of aquaculture. Management of finfish throughout the life cycle is presented.

The course includes a weekend field trip to commercial farms; attendance is obligatory.

Fall semester – 3 lecs and 3 labs per week.

AS445: Shellfish Production

Instructor: **Prof. Enright**

Prerequisites: AS365, AS370, AS380

Factors affecting profitable production of shellfish are discussed in the context of developing a sound industry with potential to address future opportunities. A survey of culture techniques used in shellfish production is undertaken.

Winter semester – 3 lecs and 3 labs per week.

AS449: Project-Seminar I (A)

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

Coordinator: Prof. Tennessen

Prerequisite: Animal Science major in final year, or consent of the instructor In consultation with a faculty advisor, Animal Science majors in their final year 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.

Fall semester – 2 labs per week.

AS450: Project-Seminar II (A)

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

Coordinator: **Prof. Tennessen**

Prerequisite: AS449

Winter semester – 2 labs per week.

AS460: Avian Biology (A)

Instructor: **Prof. Rathgeber**

Prerequisites: AS201, B200, B240, CS200

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.

Description of Courses – Undergraduate and Technical

AS465: Molecular Applications to Animal Production

Instructors: **Prof. Farid**

Prerequisites: B240, CS200

This upper-level course is designed for students interested in the molecular and cellular techniques that are being applied to animal production systems and research. Topics include molecular techniques used in research, DNA fingerprinting, marker-assisted selection, embryo IVF/sexing/nuclear transfer, recombinant protein production, the use of recombinant microbes in ruminants, and stem cell and transgenic animal production.

Fall semester – 3 lecs and 1 3-period lab or tutorial per week.

AS470: Animal Cell Culture

Coordinator: **Prof. MacLaren**

Prerequisite: B201, IN395

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.

Not offered in 2001–2002.

AS475: Ruminant Digestive Physiology & Metabolism

Instructor: **Prof. Fredeen**

Prerequisites: AS230, AS305, CS360

This course is designed to provide an intensive study of food intake and digestion, and nutrient absorption and metabolism, in the ruminant animal. The course details current knowledge and focuses on aspects of future research interest. Students are expected to contribute to discussions and present reviews to the class on various aspects of the subject.

Fall semester – 3 lecs and 2 labs per week.

Offered in alternate years; next offered in 2002–2003.

AS480: Animal Product Design and Marketing (A)

Coordinator: **Prof. Firth**

Prerequisites: AS305, AS310, AS330

This course is offered with the co-operation of the Marketing Branch of the Nova Scotia Department of Agriculture and Fisheries. It looks at the connection between the technology of animal products (meat, fish, milk, eggs) and meeting the desires of the market.

Fall semester – 3 lecs and 2 labs per week.

AS485: Sustainable Animal Systems Design (A)

Instructor: **Prof. Fredeen**

Prerequisites: AS200, AS201, AS305, AS310, AS330

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

Winter semester – 3 lecs and 3 labs per week.

Not offered in 2001–2002.

Description of Courses – Undergraduate and Technical

AS490, AS492, AS494: Topics in Animal Production I (A)

Coordinator: **Prof. Tennessen**

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

Prerequisites: AS305, AS310, AS330

This is a series of applied production courses which may be taken as early as semester six of the 3rd 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. For example, the first time a student takes this production course, it will be AS490; the second time, AS492; and the third time, AS494.

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.

BIOLOGY

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.

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.

B41: Plant Physiology

Instructor: **TBA**

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

Winter semester – 3 lecs and 3 labs per week.

B43: Entomology

Instructor: **Prof. Le Blanc**

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

Fall semester – 2 lecs and 2 labs per week.

Text: Pedigo, *Entomology and Pest Management (2nd edition)*.

Description of Courses – Undergraduate and Technical

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.

B100: Botany

Instructor: **Prof. Olson**

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

Fall semester – 3 lecs and 3 labs per week.

B110: Zoology

Instructor: **Prof. Crosby**

A general introduction to zoology. Topics include animal cells and tissues, animal form and function, reproduction and development, evolution, and the diversity of both the Animalia and Protista.

Winter semester – 3 lecs and 3 labs per week.

B200: Cell Biology

Instructor: **Prof. Crosby**

An introduction to cell biology. Topics include cell metabolism, the structure and function of organelles of the eucaryotic cell, cell growth, cell movement, and the procaryotic cell. Specialized cell functions will also be discussed.

Fall semester – 3 lecs per week.

B201: Cell Biology Laboratory

Instructor: **TBA**

This course combines the lectures of B200 with a laboratory section. Students will participate fully in B200 and, as well, complete laboratory sessions to complement lecture material. Students may receive credit for only one of B200 or B201.

Fall semester – 3 lecs and 3 labs per week.

B225: Microbiology

Instructor: **Prof. Stratton**

Preparatories: B100, B110

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

Winter semester – 3 lecs and 3 labs per week.

B240: Genetics I

Instructor: **TBA**

Study of heredity and variation in plants and animals, including man; the relationships of genetics to evolution and breeding practices.

Fall semester – 3 lecs and 2 labs per week.

B260: Plant Physiology

Instructor: **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.

Description of Courses – Undergraduate and Technical

B265: Systematic Botany

Instructor: **Prof. Olson**

Preparatory: B100 or equivalent

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

Fall semester – 3 lecs and 3 labs per week.

B270: Structural Botany

Instructor: **Prof. Olson**

The basic morphology and anatomy of the seed plants are presented from a developmental perspective. The structural aspects of the various modes of plant reproduction are also included. 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.

B300: Principles of Plant Pathology (A)

Instructor: **TBA**

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.

B320: General Entomology

Instructor: **Prof. Le Blanc**

Preparatory: B110

An introduction to the science of entomology from an agricultural perspective. Insect anatomy, physiology, and taxonomy are considered; also included are discussions on insect behaviour, reproduction, life cycles, and population ecology. Basics of monitoring techniques and population dynamics are illustrated.

Fall semester – 3 lecs and 3 labs per week.

Text: Borror et al., *Introduction to the Study of Insects* (6th edition).

B330: Ecology

Instructor: **Prof. Nams**

Prerequisites: B100, B110

An introduction to the principles and general concepts of ecosystem structure and function is presented. The dynamics of populations and community interactions are considered in relation to various biotic and abiotic environmental influences. The laboratory reinforces topics covered in the lectures and readings by emphasizing the importance of field observation and interpretation.

Fall semester – 3 lecs and 3 labs per week.

B335: Weed Science (A)

Instructor: **Prof. Sampson**

Prerequisite: B100

Preparatory: B260

Deals with the principles of weed science. Included are discussions on weed recognition, 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.

Description of Courses – Undergraduate and Technical

B340: Comparative Vertebrate Anatomy

Instructor: **Prof. Crosby**

Prerequisite: B110

An introduction to comparative anatomy. Emphasis is placed on analyzing vertebrate structure. Comparisons of form and function within the Vertebrata are discussed with an evolutionary perspective. This is supplemented in the laboratory by detailed dissections of representative vertebrates.

Fall semester – 3 lecs and 3 labs per week.

Offered in alternate years; next offered in 2002–2003.

B355: Food Microbiology (A)

Instructor: **TBA**

Prerequisite: B225

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

Fall semester – 3 lecs and 3 labs per week.

B365: Environmental Impact

Instructor: **Prof. Stratton**

Prerequisites: ES200 and ES201

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 2001–2002.

B370: An Introduction to Molecular Genetics

Instructor: **Prof. Wang-Pruski**

Prerequisites: B240 and one course in biochemistry

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

Winter semester – 3 lecs and 3 labs per week.

Offered in alternate years; next offered in 2002–2003.

B375: Population and Quantitative Genetics

Instructor: **TBA**

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

Winter semester – 3 lecs and 3 labs per week.

Offered in alternate years; next offered in 2001–2002.

Description of Courses – Undergraduate and Technical

B385: Principles of Pest Management (A)

Instructor: **Prof. Sampson**

Prerequisites: B100, B110

An investigation of the philosophy of pest management. Topics will include the study of different approaches to pest management and an assessment of the use of single versus integrated pest control options. Costs of pest control from economic, social, and environmental perspectives will be discussed.

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

B400: Soil Microbiology (A)

Instructor: **Prof. Stratton**

Prerequisites: B225, CS220

A study of the biology of the various classes of microorganisms in soil, including bacteria, blue-green algae, fungi, algae, protozoa, and viruses. This course includes details of biochemical transformation of carbon, nitrogen, sulfur, and phosphorous, as well as pesticides and wastes in the environment.

Fall semester – 3 lecs and 3 labs per week.

Offered in alternate years; next offered in 2002–2003.

B405: Pesticides in Agriculture (A)

Coordinator: **Prof. Sampson**

Preparatories: B300, B320, B335

A course dealing with various aspects of pesticides used in agriculture. The course will look at pesticides from their origin and development to their registration, sale, distribution, and use. Also included are discussions of safety and toxicology.

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

B406: Economic Plant Pathology (A)

Instructor: **Prof. Gray**

Prerequisite: B300

An in-depth study of the important plant diseases representative of the major groups of pathogens, with particular attention to diseases affecting field crops, fruit and vegetable crops, turfgrasses, and greenhouse crops. Labs deal with advanced techniques used in plant pathology, such as photomicroscopy, DIBA for virus identification, ELISA for fungal identification, and advanced mycological techniques. Winter semester – 2 lecs and 3 labs per week.

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.

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.

Description of Courses – Undergraduate and Technical

B425: Economic Entomology (A)

Instructor: **Prof. Le Blanc**

Prerequisite: B320

Preparatory: B110

An introduction to the study of economic entomology from an agricultural perspective. Principles of insect control (natural, mechanical, physical, cultural, biological, and legal) are covered. Includes chemical and biochemical control, and insecticide development, formulation, and application. This course stresses the theory of integrated pest management (IPM).

Winter semester – 3 lecs and 3 labs per week.

B435: Conservation Biology

Instructor: **Prof. Nams**

Prerequisite: B330

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.

B445: Applied Weed Science (A)

Instructor: **Prof. Sampson**

Prerequisite: B335

Deals with principles of weed science from an ecological perspective. Included are discussions on ecology and management of weeds in traditional 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.

CHEMISTRY AND SOIL SCIENCE

CS12: Principles of Soil Science

Instructor: **Prof. Miller**

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

Fall semester – 3 lecs and 2 labs per week.

CS13: Soil Management

Instructor: **Prof. Miller**

Prerequisite: CS12

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

Winter semester – 3 lecs and 2 labs per week.

CS14: Agricultural Chemistry

Instructor: **Prof. Miller**

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

Fall semester – 3 lecs and 2 labs per week.

Text: Jones et al., *Chemistry and Society (5th edition)*.

Description of Courses – Undergraduate and Technical

CS89: Preparatory Chemistry

Instructor: **TBA**

Prerequisite: approval of the Registrar and the instructor

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 basis materials

necessary for entrance into CS100 including review of the

Periodic Table, nomenclature, stoichiometry, and other

topics as determined by a review of the class. CS89 is not

intended to duplicate or replace grade 12 Chemistry.

Contact Registry for specific dates.

CS100: Chemical Principles

Instructor: **Prof. Crowe**

Prerequisite: University preparatory grade 12 Chemistry (NS 12, NB 121 or 122)

A study of atomic theory, periodicity, chemical reactions, thermochemistry, geometrical forms of molecules, chemical equilibrium, and oxidation-reduction reactions. Also included is an extensive study of the chemistry of solutions of weak electrolytes.

Fall semester – 3 lecs and 3 labs per week.

CS110: Organic Chemistry

Instructor: **Prof. Hoyle**

Prerequisite: CS100

A study of basic classes of organic compounds, including alkanes, alkynes, petroleum and petrochemicals, aromatic compounds, alcohols, aldehydes, ketones, alkyl halides, monocarboxylic acids, acid anhydrides, salts, amides, ethers, and amines.

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

CS200: Biochemistry I

Instructor: **Prof. Robinson**

Prerequisite: CS110

This course consists of a study of biological elements, buffers,

amino acids and peptides, proteins, lipids, membrane structures, carbohydrates, nucleic acids, and enzymes.

Fall semester – 3 lecs and 3 labs per week.

CS205: Biochemistry II

Instructor: **Prof. Robinson**

Prerequisite: CS200

Includes a study of enzyme kinetics, mechanisms of enzyme action, vitamins and coenzymes, digestion and absorption, bioenergetics, catabolism of carbohydrates, lipids and nitrogen compounds, selected biosyntheses, nitrogen fixation, and metabolism control mechanisms.

Winter semester – 3 lecs and 3 labs per week.

CS211: Advanced General and Inorganic Chemistry

Instructor: **Prof. Hoyle**

Prerequisite: CS100

This course is a continuation of CS100 and covers general and inorganic chemistry topics such as the theories of bonding, redox, and electrochemistry, the factors that affect chemical reaction rates, descriptive inorganic chemistry, and the formation of metal coordination compounds. Wherever possible, examples will be drawn from the fields of environmental science and agriculture.

Fall semester – 3 lecs per week.

Offered in alternate years; next offered in 2002–2003.

CS220: Introduction to Soil Science (A)

Instructor: **Prof. Brewster**

Prerequisite: CS100

General principles of soil science relating to the origin, development, and classification of soils; the biological, physical, and chemical properties of soils and their relation to proper soil and crop management, land use, and soil conservation.

Fall semester – 3 lecs and 3 labs per week.

Text: Brady, Weil, *The Nature and Properties of Soils*.

Description of Courses – Undergraduate and Technical

CS225: Quantitative Analytical Chemistry

Instructor: **Prof. Crowe**

Prerequisite: CS100

This course includes evaluation of analytical data; sampling and preparation of samples for analysis; wet chemistry methods including redox chemistry and electrodes; electrochemical methods including potentiometry, conductivity and polarography; and theoretical aspects of spectrophotometry including basic optics concepts and UV-visible and infrared techniques.

Winter semester – 3 lecs and 3 labs per week.

Text: Underwood and Day, *Quantitative Analysis*.

CS230: Introduction to Geology

Instructor: **Prof. Brewster**

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

Winter semester – 3 lecs and 3 labs per week.

Text: Thompson and Turk, *Modern Physical Geology*.

CS275: Food Chemistry I (A)

Instructor: **Prof. Hoyle**

Prerequisites: CS100, 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.

Fall semester – 3 lecs and 3 labs per week.

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 CS275.

Fall semester – 3 lecs per week.

CS310: Radiotracers in Agriculture (A)

Instructor: **Prof. Robinson**

Prerequisites: CS200 and MP100

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.

CS316: Advanced Organic Chemistry

Instructor: **Prof. Hoyle**

Prerequisite: CS110

This course will cover advanced topics in the field of organic chemistry. Whenever possible these topics will be picked from the fields of environmental science or agriculture. In particular, the chemistry of aromatics, esters, amides, and bifunctional compounds will be covered. The use of spectroscopic techniques for the identification of organic compounds will be studied where appropriate.

Fall semester – 3 lecs per week.

Offered in alternate years; first offered in 2001–2002.

Description of Courses – Undergraduate and Technical

CS318: Advanced Integrated Chemistry Laboratory I

Instructor: **Prof. Hoyle**

Prerequisite: CS211 or 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; first offered in 2001–2002.

CS320: Soil Fertility (A)

Instructor: **Prof. Warman**

Prerequisites: CS220

Preparatory: B260

Includes essential plant nutrients in the soil, influence of soil chemical and physical properties on nutrient absorption and plant growth, methods of evaluating soil fertility and composition, and use of organic and inorganic sources of nutrients.

Winter semester – 3 lecs and 3 labs per week.

Offered in alternate years; next offered in 2001–2002.

CS340: Instrumental Analytical Chemistry I

Instructor: **Prof. Crowe**

This course will provide students with an introduction to the theory and application of liquid chromatography, gas chromatography (packed and meaga-bore) and atomic absorption/flame emission spectrophotometry.

Fall semester – 3 lecs and 3 labs per week.

CS341: Instrumental Analytical Chemistry II

Coordinator: **Prof. Hoyle**

Prerequisite: CS340

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.

CS342: Instrumental Analytical Chemistry III

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

Coordinator: **Prof. Hoyle**

Prerequisite: CS341

Students who have successfully completed four modules as part of CS341 may opt to take another four modules for a credit in CS342.

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.

CS345: Soil Conservation in Agriculture (A)

Instructor: **Prof. Miller**

Prerequisites: IN100, IN101

A study of the processes of soil degradation and its prevention or amelioration. A major part of the course concerns the erosion of agricultural soils and its control. Other topics include soil compaction and soil acidification,

Description of Courses – Undergraduate and Technical

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.

CS360: Mammalian Biochemistry

Instructor: **Prof. Robinson**

Prerequisites: AS230, CS205

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.

CS375: Food Chemistry II (A)

Instructor: **Prof. Crowe**

Prerequisite: CS275 or CS276

This course, which builds on CS275 (or CS276) 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 CS376.

Winter semester – 3 lecs and 3 labs per week.

CS376: Intermediate Food Chemistry

Instructor: **Prof. Crowe**

Prerequisite: CS275 or CS276

This course, which builds on CS275 (or CS276), will provide an in-depth study of selected 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 as time permits.

Offered concurrently with CS375, and may not be taken for credit by students who have credit for CS375.

Winter semester – 3 lecs per week.

CS380: Food Quality Assurance (A)

Instructor: **Prof. Crowe**

Prerequisites: CS110, MP100

The various quality philosophies (QC, QA, TQM) will be studied with respect to their industrial application. The course will center on the use of control charts to monitor processes and to evaluate the quality of both in-coming raw materials and the finished product. Students will gain first-hand experience in the design and implementation of ISO 9000 and HACCP systems in the 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.

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

Description of Courses – Undergraduate and Technical

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.

CS425: Special Topics in Chemistry and Soil Science II (A)

Coordinator: **Prof. Hoyle**

Prerequisite or corequisite: CS415

An optional course for Agricultural Chemistry and Soil Science students who want to do a second in-depth study of a special topic in their final year. The topic selected by a student may be in an area of interest similar to that studied in CS415 but must pertain to a distinctly different aspect of that field of Chemistry or Soil Science. Course material will be arranged with Chemistry and Soil Science faculty. This course will involve special tutorials, assigned readings, and independent lab work where appropriate.

Fall or Winter semester – as arranged.

CS430: Soil Survey and Land Evaluation (A)

Instructor: **Prof. Brewster**

Principles of the field study and mapping of soils as well as the more general land evaluation techniques including land classification based on inherent characteristics, present land use/land cover, and land capabilities for alternative uses. Preparation of soil, land use, and other interpretive maps in association with the interpretation of aerial photographs and methods of soil cartography. There is a mandatory field component.

Fall semester – 3 lecs and 3 labs per week.

Offered in alternate years; next offered in 2002–2003.

CS436: Advanced Integrated Chemistry Laboratory II

Instructor: **Prof. Hoyle**

Prerequisites: CS211 or CS316 and CS318

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; first offered in 2001–2002.

CS440: Environmental Soil Chemistry

Instructor: **Prof. Warman**

Prerequisite: CS220

Chemical composition of soils (soil acidity, oxidation-reduction, ion exchange, adsorption-desorption reactions, clay mineralogy and organic matter transformations) in the context of environmental soil chemistry. Labs and 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 2001–2002.

CS457: The Science of Composting and Its Application (A)

Instructor: **Prof. Warman**

Prerequisite: 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.

Fall semester – 3 lecs and 3 labs per week.

Description of Courses – Undergraduate and Technical

Offered in alternate years; next offered in 2001–2002.

Text: Warman and Taylor, *Proceedings of the International Composting Symposium*.

Lab Methods for Compost Quality Evaluation

ECONOMICS AND BUSINESS

EB10: Accounting

Instructor: **TBA**

An introduction to accounting topics useful to managers. Topics include recording transactions, forms of business organization, cash and accrual basis of accounting, financial statements, internal control, payrolls, bank reconciliation, and types of accounting systems, with an introduction to microcomputer applications.

Fall semester – 3 lecs and 2 labs per week.

EB11: Applied Accounting and Taxation

Instructor: **TBA**

Prerequisite: EB10

The basic principles and procedures relevant to the accounting function of a business. Topics discussed include recording business transactions, year-end adjustments, and preparation of financial statements. Considerable time will be spent on Canadian income tax and a computerized accounting project.

Winter semester – 3 lecs and 2 labs per week.

EB12: Macroeconomics

Instructor: **Prof. Yiridoe**

An introduction to the study of macroeconomics in a Canadian context. Topics covered include national accounts, public finance, money and banking, and international trade. Current problems in the Canadian economy are examined to emphasize the theory.

Fall semester – 3 lecs per week.

EB13: Microeconomics

Instructor: **Prof. 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. Winter semester – 3 lecs per week.

EB40: Marketing Practices

Instructor: **Prof. Russell**

Preparatory: EB13

Current practices involved in marketing farm products produced in the Atlantic Provinces are studied. The conditions affecting these practices and the groups of people that can bring about changes are identified. Special attention is paid to consumer behaviour, supplier behaviour, market structures, price determination, marketing boards, and marketing commissions.

Fall semester – 2 lecs and 3 labs per week.

EB41: Business Law

Instructor: **TBA**

Introduces several legal topics relevant to the management of a business. Topics discussed are: legal structure in Canada, Law of Torts, contracts, sale of goods, consumer protection legislation, creditors, employment, forms of business organization, insurance, and real estate.

Winter semester – 3 lecs per week.

EB42: Applied Farm Management

Instructor: **Prof. Tait**

Prerequisite: EB340

Designed to transfer classroom teaching to real farm situations. Students have an opportunity to apply the principles of farm management on production farms. Some of the requirements involve analyzing farm records, credit

Description of Courses – Undergraduate and Technical

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.

EB65: Business Project

Coordinator: **Prof. Tait**

An opportunity to examine, in detail, specific agricultural topics of interest. Projects are organized and carried out by the students under the supervision of various staff members.
Fall semester – 5 labs per week.

EB72: Farm Project

Coordinator: **Prof. Tait**

The farm project relates the course program to the on-farm training. It stresses the application of information to a specific farm situation. For this project, the farm may be the home farm or any other farm. An intimate knowledge of the farm is necessary. The student, therefore, must have access to the farm and to detailed information about it. The prepared project consists of three sections: an analysis of the present farm operation, including a detailed inventory of land, buildings, machinery, and all other farm resources; an outline of the student's objectives and projected plans for the farm; and a practical step-by-step (year-by-year) program for the changes necessary to reach these goals.

The farm project is introduced in the first technology year, before the beginning of the seven months of on-farm training. All the required data for the farm inventory are collected during the on-farm training period. The final work on the prepared project is done in the last College semester. Though most of the work is done outside of the scheduled class time, one afternoon per week is scheduled for special instruction and for presentations. Each student is required to present a minimum of one seminar on his or her farm plan to the project class and the instructor committee.

Winter semester – 5 labs per week.

EB90: Technology Project

Coordinator: **Prof. Tait**

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

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.

Description of Courses – Undergraduate and Technical

EB110: Agricultural Economics (A) DE

Instructor: **Prof. Dunlop**

This course is designed to introduce students to the structure and organization of agriculture and economic theory as it applies to agriculture. The course strives to make the agricultural reality more understandable for all students, regardless of major, and provides the necessary background for more advanced agricultural economics, agribusiness and economics courses.

Fall and Winter semesters – 3 lecs per week.

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

EB200: Microeconomics I

Instructor: **Prof. Yiridoe**

Prerequisites: EB110, MP100

Introduces the principles of neoclassical microeconomic theory using graphical and mathematical analysis. Areas of emphasis include: the competitive market model, measurement and interpretation of elasticities, the theory of consumer preferences, and the theory of production.

Fall semester – 3 lecs and 2 labs per week.

EB205: Microeconomics II

Instructor: **Prof. Clarke**

Prerequisites: EB200, EB260

A continuation of the principles presented in Microeconomics I. This course examines the theory of the firm under perfect and imperfect market conditions, and general equilibrium of production and exchange. These principles are presented using graphical and mathematical analysis.

Winter semester – 3 lecs and 2 labs per week.

EB210: Financial Accounting I

Instructor: **TBA**

A study of the basic principles and procedures relevant to the accounting function of a business firm. Topics discussed include recording transactions, 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.

EB215: Financial Accounting II

Instructor: **TBA**

Prerequisite: EB210

Continues the study of financial accounting with emphasis on special topics and reporting of accounting information. Includes a brief introduction to income tax.

Winter semester – 3 lecs and 2 labs per week.

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, 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.

EB220: Production Economics (A)

Instructor: **Prof. Tait**

An introduction to the study of economic principles used to analyze production and resource use in agriculture. Areas of emphasis include economic examination of the factor-factor, factor-product, and product-product relationships of the farm production system. Practical examples and lab

Description of Courses – Undergraduate and Technical

exercises are used to illustrate and reinforce the concepts presented in the classroom.

Winter semester – 2 lecs and 3 labs per week.

EB225: Introduction to Small Business Entrepreneurship

Instructor: **Prof. Russell**

Prerequisite: 10 university or college courses, or permission of the instructor

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

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.

EB255: Macroeconomics I

Instructor: **Prof. Clark**

An introduction to the study of macroeconomics. The course is designed to acquaint the student with the main elements of macroeconomic theory. Emphasis is placed on the application of theories to current Canadian economic problems. Topics covered include national income analysis, monetary policy, and fiscal policy.

Winter semester – 3 lecs and 1 tutorial per week.

EB260: Mathematical Economics

Instructor: **TBA**

Prerequisite: MP100

Introduction to the frequently used mathematical methods of economic analysis. The course provides the student with the basics required in more advanced economics courses. Areas of concentration include: elements of mathematical economics models, linear models and matrix algebra, applications of calculus to economic problems, and optimization theory.

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

EB300: Environmental and Resource Economic Policy

Instructor: **Prof. Clark**

Prerequisite: EB200 or permission of the instructor

This course will introduce the student to the field of environmental protection and resource conservation from an economic perspective. Topics will include the theory of externalities and market failure, the Coase theorem, renewable and non-renewable resources, open access resources, and forestry economics. The efficiency of the use of quotas, taxes, and tradeable pollution rights will be explored. Various policies introduced by various countries to control pollution and resource depletion will be discussed. The economic implications of global climate change will also be considered.

Students may not receive credit for both this course and EB400; EB300 cannot be taken for credit by students majoring in Agricultural Business or Agricultural Economics.
Fall semester – 3 lecs and 1 lab per week.

EB305: Macroeconomics II

Instructor: **Prof. Grant**

Prerequisite: EB255

Development of an integrated aggregate model of the Canadian economy, which includes consideration of money, product, and labour markets, and aggregate demand and supply.

Fall semester – 3 lecs per week.

Description of Courses – Undergraduate and Technical

EB315: Management Accounting

Instructor: **Prof. Russell**

Prerequisite: EB210 or permission of the instructor.

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.

EB320: Agricultural and Food Policy I (A)

Instructor: **Prof. Dunlop**

Prerequisites: EB110 and 20 degree courses

This course introduces students to the structure of the 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.

EB325: Operations Research

Instructor: **Prof. Yiridoe**

Prerequisite: EB260

An introduction to mathematical programming. Major emphasis is placed on linear programming and the role of matrix algebra in determining linear programming solutions. The information requirements, organization, and skills of model building are also developed.

Winter semester – 4 lecs and 1 lab per week.

EB330: Agricultural Markets and Prices (A)

Instructor: **Prof. Grant**

Prerequisite: EB205

Designed to introduce students to agricultural market and price analysis. In general, course topics include econometric estimation of supply and demand relationships for agricultural commodities, applications of price theory, and discussion of pricing institutions in the agricultural industry.

Winter semester – 3 lecs and 2 labs per week.

EB335: Business Marketing

Instructor: **Prof. Whalen**

Designed to introduce basic marketing principles and their application to marketing problems. Topics such as promotion, pricing, distribution, and marketing research are examined. The case method of instruction is used extensively. Class participation is a vital component of this course.

Fall semester – 3 lecs and 2 labs per week.

EB340: Farm Management I (A)

Instructor: **Prof. Tait**

Principles and methods of organizing and analyzing farm businesses are examined. Practical problems associated with financial analysis, planning, capital budgeting, resource use, and credit acquisition are included. The role of the farm manager is identified throughout.

Fall semester – 2 lecs and 3 labs per week.

Description of Courses – Undergraduate and Technical

EB360: Econometrics

Instructor: **Prof. Clark**

Prerequisites: EB260, MP210

An applied course in statistics and economic theory using the classical linear regression model. Topics covered include a review of probability theory, estimation and specification of single and simultaneous equation models, violations of the assumptions of the classical linear model, hypothesis testing, and tests of significance. Exercises illustrating the statistical concepts developed in the lectures and applications of econometric techniques to agricultural economics problems and economic theory are provided and fully explained in the labs.

Fall semester – 3 lecs and 2 labs per week.

EB400: Resource and Environmental Economics

Instructor: **Prof. Clark**

Prerequisite: EB205

Advanced microeconomics applied to issues of environmental quality and resource use. Topics include welfare economics, market failure, externalities, pricing of renewable and non-renewable resources, and cost-benefit analysis.

Fall semester – 3 lecs per week.

EB410: Strategic Management in Agribusiness (A)

Instructor: **Prof. Whalen**

Prerequisites: Students will normally be Agricultural Business majors who have successfully completed the first three years of the program. Other students may seek permission of the instructor.

This is a capstone course that will integrate all the business disciplines (marketing, finance, accounting, etc.) and prepare the student to formulate and implement strategy in an 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.

EB419: Agrifood Policy Analysis (A)

Instructor: **Prof. Dunlop**

Prerequisites: EB320, EB325, EB330, EB360

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; will attempt their own analysis on policy issues; and critique the existing literature. Topics covered include: influential doctrines in agricultural policy; fundamentals of welfare theory; partial equilibrium analysis of agricultural and trade policy; social choice theory; basics of trade theory; export and import protection; and the political economy of agricultural and trade policy.

Fall semester – 3 lecs and 2 labs per week.

Description of Courses – Undergraduate and Technical

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 – as arranged.

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 – as arranged.

EB425: Research Methods (A)

Instructor: **Prof. Grant**

Prerequisites: EB325, EB360

The lectures cover general methodological issues within economics, specific analytical methods utilized by agricultural economists, and principles and guidelines for researching and writing fourth-year projects. It is required that progress on the fourth-year project (to be completed in EB450) include a precise statement of the topic, a literature review, a detailed outline, a well-defined methodology, and demonstration of data availability.

Fall semester – 2 lecs and 2 labs per week.

EB430: International Marketing

Instructor: **Prof. Whalen**

Prerequisite: EB335 or permission of the instructor

This course provides an introduction to international marketing and the international trading system. Students will be exposed to the unique aspects of international market research, selection, entry, pricing, and communications 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.

EB435: Consumer Behaviour and Food Marketing (A)

Instructor: **Prof. Whalen**

Prerequisite: EB335 or permission of the instructor

The course introduces the student to the basics of consumer behaviour and then applies this knowledge to the food marketing system. Topics covered include external influences on consumer behaviour, motivation, perception, learning, and decision-making. Historic and recent trends in product marketing, pricing, and advertising also form part of the course. Cases are used extensively and class participation is vital.

Fall semester – 3 lecs per week.

Description of Courses – Undergraduate and Technical

EB441: Topics in Advanced Farm Management (A)

Instructor: **Prof. Yiridoe**

Prerequisites: EB205, and one of EB325, EB360, or MP211

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.

EB445: Agribusiness Entrepreneurship (A)

Instructor: **Prof. Russell**

Prerequisites: EB335, EB340, and 20 degree courses

This course will apply the concepts of entrepreneurship to creating and managing a small business. Students will investigate opportunities for new 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.

EB450: Project-Seminar (A)

Instructors: **Dept. of Business and Social Sciences Faculty**

Coordinator: Prof. Grant

Prerequisite: EB425

Under the supervision of faculty, students complete the research projects begun in EB425. The student is required to submit the first draft for evaluation by faculty. The student presents a final report and participates in peer evaluation of the presentations of the other students. Winter semester – 2 seminars per week.

ENVIRONMENTAL STUDIES

ES200: Environmental Studies I (A)

Instructors: **Profs. Nams, Hoyle, and Madani**

Coordinator: **Prof. Stratton**

Prerequisites: 8 degree 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. Each issue will first have its scientific principles 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.

ES201: Environmental Studies II (A)

Coordinator: **Prof. Stratton**

Prerequisite: ES200, or permission of the coordinator

This is the second of a two-semester course sequence that deals with environmental issues from both an agricultural and 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.

Description of Courses – Undergraduate and Technical

ES312: Environmental Chemistry

Instructor: **Prof. Hoyle**

Prerequisites: CS110, ES201

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, coordinator, ion exchange, hydrolysis, ionization, and freezing point depression will be covered.

Fall semester – 3 lecs per week.

Offered in alternate years; first offered in 2001–2002.

ES330: Environmental Sampling and Analysis

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

Coordinator: **Prof. Nams**

Prerequisites: CS110 and MP211

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.

ES333: Waste Reduction and Site Remediation (A)

Instructors: **Profs. Warman and Stratton**

Prerequisite: ES201

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. Text: Warman and Taylor, *Proceedings of the International Composting Symposium*.

ES350: Environmental Studies Field Course

Coordinator: **Prof. Hoyle**

Prerequisites: 30 degree credits, including ES200 and ES201, or permission of the instructor

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.

ES401: Special topics in Environmental Studies I (A)

Instructors: **NSAC Faculty**

Coordinator: **Prof. Stratton**

Prerequisites: 30 degree credits, including ES200 and ES201, or permission of the Agricultural Environmental Studies Program Advisor

This is an opportunity to study a special topic in the area of agricultural environmental studies 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 the Agricultural Environmental Studies Program and must be approved by the Program Advisor.

Fall or Winter semester – as arranged.

Description of Courses – Undergraduate and Technical

ES402: Special Topics in Environmental Studies II (A)

Instructors: **NSAC Faculty**

Coordinator: **Prof. Stratton**

This is an additional opportunity to study a special topic in the area of agricultural environmental 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 Agricultural Environmental Studies Program and must be approved by the Program Advisor.

Fall or Winter semester – as arranged.

ES449: 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 or Winter semester – as arranged.

ES450: Project-Seminar II (A)

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

Coordinators: **Profs. Le Blanc and Nams**

Prerequisite: ES449

A continuation of ES449. 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.

HUMANITIES

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. H10 is not equivalent to any H100-level course.

Fall semester – 3 lecs per week.

H45: Technical Communications

Instructor: **Prof. Sanderson**

This course will focus on improving interpersonal communication skills. It will be designed specifically for students planning careers where contact with the public is essential. This course will deal with such topics as listening and interviewing skills, group dynamics, conflict management, meeting management, and basic teaching skills. Evaluation for the course will be based primarily on projects.

This course 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.

Description of Courses – Undergraduate and Technical

H60: Communication Techniques

Instructor: **Prof. Sanderson**

This course has limited enrolment.

The purpose of this course is to encourage the development of students' communication skills. The course will concentrate on improving students' speaking 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.

H101: The English and American Novel

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.

H102: Nature in English and American Literature

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.

H113: Composition

Instructor: **Prof. Stiles**

This course has two primary objectives: to improve the student's basic writing ability and to offer training in research report writing. The structure of the course will consist of a lecture and a two-period tutorial. The tutorials will focus on enhancing skills in grammar and mechanics, as well as furthering composition skills through essay writing. The lectures will teach students the structure of an essay with emphasis on paraphrasing and citing. The students will be required to write extensively throughout the term. A significant part of evaluation will be based upon written work done under examination conditions during tutorials.

Fall Semester – 1 lec and 1 tutorial per week.

H130: Introductory French

Instructor: **TBA**

Prerequisite: Grade 12 French, or permission of the instructor and of the Department Head.

This course is designed to provide the student with opportunities to actively use the language through various sociocultural settings and language functions. As part of a communicative approach, a video production component centred on publicity will be integrated in the program. A variety of culturally relevant authentic materials such as video recordings, audio-cassettes, guest speakers, and literature will be used to supplement the text book and to facilitate learning through reading, writing, and listening skills. This course is designed for anglophone students or for students whose French is being learned as a foreign language. Students whose first language is French will not be eligible.

Winter semester – 3 lecs per week.

Description of Courses – Undergraduate and Technical

H135: Basic Spanish I

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.

H136: Basic Spanish II

Instructor: **TBA**

Prerequisite: Basic Spanish I

This course will be offered subject to minimum enrolment.

This course is designed for anglophone, francophone and international students. It is a continuation of Basic Spanish I with emphasis on comprehension, conversation, reading, and writing.

Winter semester – 3 lecs per week.

H140: Personnel Management

Instructor: **TBA**

An introduction to the human side of business organizations. The course focuses on the challenges of motivation, recruitment and selection, performance evaluation, compensation, and labour-management relations.

Fall and Winter semesters – 3 lecs per week.

H150: Agriculture Today

Instructor: **TBA**

The course offers a basic overview of the agricultural industry in the Atlantic Provinces. Production trends and limiting factors, agricultural research, farm organizations, and government role in the industry are studied to provide an awareness and appreciation of Atlantic agriculture, the

major things happening in it, and the new technology associated with it. The progress of the local industry and current issues are followed up through weekly reading assignments and class presentations. Commodity updates are presented through student seminars. This is a discussion-based course requiring class participation. Winter semester – 3 lecs per week.

H160: Introductory Sociology

Instructor: **Prof. Beesley**

An introduction to the field of modern sociology. Themes addressed in the course are sociological theory and method, social process, social organization, social institutions, social differentiation, and social change.

Discussion will include social issues, e.g., rural-urban conflict, an aging society, and family changes. Some emphasis will be given to rural social problems.

Fall semester – 3 lecs per week.

H170: Introductory Human Geography

Instructor: **Prof. Beesley**

This course is an introduction to the field of Human Geography. The objectives of the course are to present the spatial point of view on human-land interactions. Lectures, readings, and assignments consider geographical patterns, processes, and problems in rural and urban settings.

Some emphasis will be given to the Canadian and Atlantic region contexts.

Winter semester – 3 lecs per week.

H230: Nature's Image: A Survey of Landscape Art

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.

Description of Courses – Undergraduate and Technical

Students will develop skills in composition and will gain an increased appreciation for landscape art traditions.

Fall semester – 3-hour lecture/studio, once per week.

H301: Rural History

Instructor: **Prof. Stiles**

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-à-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.

H310: Literature of Atlantic Canada

Instructor: **Prof. Stiles**

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.

H320: Extension Education in the Rural Community

Instructor: **Prof. Sanderson**

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 2002–2003.

H321: Leadership Development and the Social Action Process

Instructor: **Prof. Sanderson**

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 2001–2002.

H325: Technology in Agricultural Communications

Instructor: **Prof. Sanderson**

This course is designed to provide students with an understanding of the basic concepts involved in communicating ideas in an agricultural setting. The adult as a learner is featured in a discussion of the basic concepts involved in planning adult programs. Emphasis is placed on gaining practical experience in the use of media. Various types of media, such as radio, newspapers, television, and film, are examined. Assignments include: preparing advertising or publicity, using photography, and developing scripts. The term project requires the student to produce an audiovisual presentation with integrated sound track.

Winter semester – 3 lecs and 2 labs per week.

Description of Courses – Undergraduate and Technical

H350: Environmental and Agricultural Ethics

Instructor: **TBA**

Prerequisite: third- or fourth-year standing, or permission of the instructor and the Business and Social Sciences

Department Head

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 – 1 seminar, 2 hours per week.

H360: Rural Sociology

Instructor: **Prof. Beesley**

Prerequisites: H160 and H101 or H102, or permission of the instructor

This course provides a focus on rural sociological themes, particularly in the Canadian and Atlantic region context. Themes addressed include the theory and nature of rural social change, rural communities and response to forces of change, problems and issues in rural society (e.g., crime, aging, health care), environmental issues and their links to society, and the social implications of economic and political change for rural Canada.

Winter semester – 3-hour seminar per week.

H370: Rural Geography

Instructor: **Prof. Beesley**

Prerequisites: H170 and H101 or H102, or permission of the instructor

This course focuses on rural geographic problems in Canada and the Atlantic region. Discussion will include, for example, rural land use issues, settlement dynamics, rural resource problems, urban-rural interaction, agricultural change, rural well-being, and rural planning. The geographic perspective emphasizes spatial variability and human/land interactions.

Fall semester – 3 seminar hours per week.

H401: Humanities Research Seminar I

Instructors: **Dept. of Business and Social Sciences Faculty**

Prerequisites: at least 30 degree-course credits

This course is designed to serve as an opportunity for senior students with interests in Humanities-related subjects to explore particular research topics in some depth. Research projects will emphasize one or more of the following themes: Rural Life in Literature, Rural and Agricultural History, Agricultural and Environmental Philosophy, Agricultural and Rural Environmental Issues. The course will require seminar presentation(s) and written work (e.g., an annotated bibliography and a literature review paper). The literature review must be a substantial paper able to stand alone as a research document, and will comprise a major component of the course evaluation. Students will work under the supervision of individual Humanities faculty, but will present their seminars to a wider audience.

Fall semester – meeting schedule to be arranged.

Description of Courses – Undergraduate and Technical

H402: Humanities Research Seminar II

Instructors: **Dept. of Business and Social Sciences Faculty**

Prerequisite: H401

This course is designed as a sequel to H401 for senior students with major interests in Humanities-related subjects. Research projects, as for H401, will emphasize one or more of the following themes: Rural Life in Literature, Rural and Agricultural History, Agricultural and Environmental Philosophy, Agricultural and Rural Extension Education, Rural Sociology, Rural Geography, Rural Environmental Issues. The second (winter) semester will require seminar presentation(s) and written work (e.g., a substantial research paper). The research paper will be an original contribution to the selected area of research, developed from the work initiated in H401. Students will work under the supervision of individual Business and Social Sciences faculty, but will present their seminars to a wider audience.

Winter semester – meeting schedule to be arranged.

H403: Special Topics in Humanities

Instructors: **Dept. of Business and Social Sciences Faculty**

Prerequisites: 20 degree courses

Special Topics courses are 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.

INTERDEPARTMENTAL

IN100: Agricultural Ecosystems (A) DE

Coordinator: **Prof. Martin**

This course is an introduction to agriculture and food systems. The principles of agricultural production as studied in the disciplines of animal science, plant science, agricultural engineering and soil science will be integrated to give a comprehensive view of agricultural ecosystems. Course work will include lectures, laboratories, problem-solving exercises, and small group work. There will be a farm tour for all IN100 students on October 17, 2001, 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 career.

Along with the goal of providing the students with a knowledge of the application of science to agriculture, this course will assist students to understand the integrated nature of agriculture and food systems in both regional and global contexts. Associated course goals are to develop communication and independent learning skills and the ability to function effectively in team situations, and to stimulate students to think critically, logically, and quantitatively while respecting the values and ideas of others.

Fall semester – 3 lecs, 2 labs and/or tutorials per week.

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

IN101: Food Security (A) DE

Coordinator: **Prof. Fredeen**

This course is structured similarly to IN100. The emphasis will be on food security and recycling resources. Topics will include global population, food production and distribution; globalization of agricultural trade; agricultural ethics; and rural sustainability. Course work will include lectures, laboratories, problem-solving exercises, and small group work. The course will expose students to issues and raise questions for students to answer during the remainder of their undergraduate career.

Description of Courses – Undergraduate and Technical

Along with the goal of providing the students with a knowledge of the application of science to agriculture, this course will assist students to understand the integrated nature of agriculture and food systems in both regional and global contexts. Associated course goals are to develop communication and independent learning skills and the ability to function effectively in team situations, and to stimulate students to think critically, logically, and quantitatively while respecting the values and ideas of others. Winter semester – 3 lecs, 2 labs and/or tutorials per week. **DE** – also offered as a web-based distance education course.

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).

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 at the Svent Istvan University in Budapest, Hungary. Additional fees for travel, meals, and accommodations apply.

Registration is through the Centre for Continuing and Distance Education.

Spring semester – following exams in April.

IN390: Microbial Biotechnology

Instructors: **Prof. Blanchard**

Prerequisites: B225, 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 and material covered in other biotechnology courses.

Fall semester – 3 lecs and 3 labs per week.

Description of Courses – Undergraduate and Technical

IN395: Applied Biochemistry

Instructors: **TBA**

Prerequisite: CS205

Corequisite: IN390

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.

IN397: Advanced Biochemistry

Instructor: **TBA**

Prerequisites: B201, IN395

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.

IN400: Issues in Agriculture (A)

Instructors: **Profs. Tennessen & Warman**

Prerequisite: third- or fourth-year standing, or permission of instructors

This course has a limited enrolment (20).

This course allows senior students in all disciplines to discuss current topics of interest to agricultural professionals. These topics could include: soil degradation, integrated pest management, antibiotics in feed, the occupation of farming, animal welfare, etc. Students will be given weekly required readings.

Fall semester – 3-period seminar weekly.

Offered in alternate years; next offered in 2002–2003.

IN475: Biotechnology in Agriculture (A)

Instructor: **TBA**

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 bio-resource and waste management. Seminars and class discussions will address socio-economic, environmental, and ethical considerations. Each student will give two seminars and write an essay on an assigned topic.

Winter semester – 2 lecs and 3 seminars per week.

Offered in alternate years; next offered in 2001–2002.

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. This is part one of the two-semester series IN449/IN450.

Winter semester – 2 seminars per week.

IN450: Agricultural Biotechnology Project-Seminar II

Instructor: **TBA**

Prerequisite: IN449

A continuation of IN449.

Winter semester – 2 seminars per week.

Description of Courses – Undergraduate and Technical

MATHEMATICS AND PHYSICS

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.

MP15: Introductory Physics

Instructor: **Prof. Pearson**

A survey course in classical physics, designed to provide technicians with the principles of physics that are important to the study and practice of agriculture. Content and instruction are at the grade 12 level. The major areas of study include: measurement, dynamics, statics, materials and electricity. The laboratory sessions consist of student-performed experiments and problems tutorials. Students who are required to take MP15 as part of their program may receive an exemption if they have 60% or higher in senior high school Physics.

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

Text: *Introductory Physics*, available at NSAC Bookstore.

MP70: Basic Statistics

Instructor: **TBA**

Methods for data summary and presentation; measures of centre and variation; graphic exploration of relationships between variables; transformation (purpose and commonly used transformations); the t-, F-, and χ^2 - distribution; basics of statistical inference for 1 and 2 means; one-way ANOVA (running, interpreting results and means comparison).

Students will learn to use PC SAS.

Winter semester – 3 lecs and 2 labs and 1 tutorial per week.

MP75: College Intermediate Algebra

Instructor: **TBA**

This course is designed for students needing to strengthen their background in mathematics. It begins with a review of algebra, the use of variables, solving equations and inequalities, working with exponents, and basic graphing techniques. Emphasis will be placed on the use of mathematics to solve application problems appropriately related to agriculture. This is a non-credit course.

Fall semester – 3 lecs and 1 tutorial per week.

MP85: Functions

Instructor: **TBA**

Prerequisite: MP75, if required as a result of performance on a mathematics diagnostic test

This is a one-semester course (which is in effect the second half of the MP75/MP85 sequence) 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. This is a non-credit course.

Fall semester – 3 lecs and 1 tutorial per week.

MP90: Introductory Physics

Instructor: **TBA**

An introductory course for entering students who do not have the equivalent of NS grade 12 Physics. Course topics include dynamics, statics, fluids, and heat. A non-credit course.

Winter semester – 2 lecs and 2 tutorials per week.

MP100: Calculus & Analytic Geometry I

Instructors: **Profs. Madigan and Georgallas**

Prerequisite: Academic-level grade 12 Pre-Calculus Mathematics or MP85

A study of limit and the derivative, with maxima and minima, velocity and acceleration, and differentiation of the

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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 MP85.

Fall and Winter semesters – 3 lecs and 1 tutorial per week.

MP105: Calculus and Analytic Geometry II

Instructors: **Profs. Madigan and Georgallas**

Prerequisite: MP100

A continuation of MP100 dealing mainly with the integral calculus. Both definite and indefinite integrals are studied, with application to areas, volumes, hydrostatic pressure, and work. As in the case of MP100, topics from analytic geometry are covered at appropriate stages of the course. Fall and Winter semesters – 3 lecs and 1 tutorial per week.

MP140: Physics I

Instructor: **Prof. Pearson**

Prerequisite: Academic-level grade 12 Physics (NS Physics 12, NB 121 or 122, PE 621, NF 3201 or 3202) or NSAC MP90

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 & Winter semesters – 3 lecs, 1½ labs, and 1 tutorial per week.

Text: Haliday, Resnick and Walker, *Fundamentals of Physics* (5th Edition), Volume 1. (Students in Engineering should purchase the combined volume, which will also be used in MP145.)

Students may take *either* MP140 *or* MP150 *but not both* fo credit.

MP145: Physics II

Instructor: **Prof. Pearson**

Prerequisite: MP140

A continuation of MP140. 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.

Text: Haliday & Resnick, *Fundamentals of Physics* (5th Edition), Volume 2, Extended.

MP150 Biophysics I

Instructor: **Prof. Georgallas**

Prerequisite Academic-level grade 12 Physics (NS Physics 12, NB 121 or 122, PE 621, NF 3201 or 3202) or NSAC MP90

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 semester – 3 lecs per week, 1½ labs/tutorials per week (alternating weekly).

Students may take *either* MP140 *or* MP150 *but not both* fo credit.

MP210: Introduction to Statistics

Instructor: **Prof. Astatkie**

An introduction to the basic statistical concepts of data summarization, probability, random variables, estimation and hypothesis testing of parameters from discrete and continuous probability distributions. These concepts will be applied to problems from agricultural, biological, and environmental research.

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Fall and Winter semesters – 3 lecs, 1 tutorial, and 1 computer lab per week.

MP211: Introduction to Planned Studies: Surveys and Experiments

Instructor: **Prof. Astatkie**

Prerequisite: MP210

This course is a continuation of MP210. 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.

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.

Text: Lapin, *Modern Engineering Statistics*.

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.

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.

MP230: Multivariable Calculus

Instructor: **Prof. Madigan**

Prerequisites: MP100, MP105

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.

MP236: Differential Equations

Instructor: **Prof. Madigan**

Prerequisites: MP100, MP105

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.

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MP250: Biophysics II: Perception

Instructor: **Prof. Georgallas**

Prerequisite: MP140 or MP150

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, 1½ labs/tutorials per week (alternating weekly).

MP330: Agrometeorology

Instructor: **Prof. Gordon**

Prerequisite: MP140 or MP150

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 2001–2002.

MP420: Intermediate Statistical Methods

Instructor: **Prof. Astatkie**

Prerequisite: MP210, MP211, or permission of 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.

MP460: Agricultural Modelling

Instructor: **Prof. Georgallas**

Prerequisites: MP105 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.

PLANT SCIENCE

PS30: Introduction to Plant Science

Instructor: **Prof. Goodyear**

A survey course to introduce students to the principles and practices involved in the production of crop plants. Labs will give the students an opportunity to become familiar with the skills and techniques involved in growing agronomic and horticultural crops.

Fall semester – 3 lecs and 2 labs per week.

Text: Barden, Halfacre and Parish, *Plant Science*.

PS36: Field Crops

Instructor: **TBA**

A study of grasses, legumes, and other crops grown for forage or grain; factors influencing adaptation and distribution of these crops. Emphasis is placed on crops and conditions in the Atlantic Provinces.

Fall semester – 3 lecs and 2 labs per week.

PS37: Field Crop Management

Instructor: **Prof. Martin**

Preparatory: PS30 or CS12

A study of the production management of forage and grain crops. Soil conservation, crop rotations, and other multiple

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cropping systems are assessed. The course will provide a basis for sound feed-production decisions on Atlantic livestock farms and the ability to critically read publications pertaining to field crop management.

Winter semester – 3 lecs and 2 labs per week.

PS38: Nursery Crop Production

Instructor: **Prof. Mapplebeck**

The course examines site selection; types of nurseries; nursery layout, facilities and equipment; and the production of field-grown and container-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.

PS39: Greenhouse Crop Management

Instructor: **Prof. Mapplebeck**

This course covers site selection, types of greenhouses, heating systems, ventilation, growing media, watering and fertilization, environmental controls in the greenhouse, and the production of bedding plants, pot plants, cut flowers, greenhouse vegetables, and herbs. The laboratory section of this course includes visits to commercial greenhouse operations.

Fall semester – 3 lecs and 2 labs per week.

PS43: Small Fruit Crops

Instructor: **Prof. Ju**

Berry crops studied include strawberries, raspberries, cranberries, blueberries, currants, gooseberries, grapes, and kiwis. All aspects of berry production, from planting to marketing, are covered. Course also includes visits to small fruit farms and certified strawberry nurseries.

Fall semester – 3 lecs and 2 labs per week.

PS44: Tree Fruit Crops

Instructor: **Prof. Ju**

The culture and handling of apples, pears, peaches, plums, and cherries. Topics studied are soil management, propagation, training systems, pruning, harvesting, pest control, grafting and budding, storage, and marketing.

Winter semester – 3 lecs and 2 labs per week.

PS47: Turfgrass Production and Management

Instructor: **Prof. Daniels**

A study of cool-season turfgrasses, their characteristics, and proper usage. The establishment, maintenance, and renovation of turfgrass will be studied. Cultural topics covered will emphasize proper fertilizing, watering, and pest control.

Fall semester – 3 lecs and 2 labs per week.

PS49: Potato Production

Instructor: **Prof. Goodyear**

Cultural practices involved in production are discussed in relation to the botanical characteristics of the potato plant. Physiological changes involved in sprouting, tuber initiation, crop development, and storage are considered in detail. Seed potato production is given particular attention.

Winter semester – 3 lecs and 2 labs per week.

PS50: Landscape Horticulture I

Instructor: **Prof. Goodwin**

An introduction to landscape horticulture, including the history of Old World influences on North American horticulture development. Plant-environment interaction and the fundamental principles governing plant growth are discussed, as well as the functional uses of ornamental plants in the contemporary landscape. Laboratory exercises will concentrate on the basic skills associated with the use of plants in the landscape.

Fall semester – 3 lecs and 3 labs per week.

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PS51: Residential Landscape Design and Construction

Instructor: **Prof. MacKenzie**

Prerequisites: AE101, PS50, PS60

Residential landscape design and construction are studied.

A systematic and practical approach to design is emphasized. Sketching is a component of this course.

Students are taught both computer and conventional drafting to facilitate their design work.

Winter semester – 3 lecs and 3 labs per week.

Text: Hannebeum, *Landscape Design*.

PS55: Plant Propagation

Instructor: **TBA**

Physiological and anatomical basis of plant propagation and techniques of sexual and asexual propagation of agricultural and horticultural crops as well as landscape plant material and herbaceous perennials. Propagation structures, containers, media, and sanitation, pedigreed seed production, and in vitro techniques for micropropagation are also components of this course.

Fall semester – 3 lecs and 3 labs per week.

Text: Hartmann, Kester, Davis and Geneve, *Plant Propagation*.

PS60: Landscape Plant Materials I

Instructors: **Profs. Olson and Morton**

Deciduous trees, shrubs, and vines are studied with respect to their identification and landscape value. The lab involves the study of plant families, plant morphology, use of plant keys, plant collecting, and preparation of herbarium specimens. A plant collection is required.

Fall semester – 3 lecs and 3 labs per week.

Texts: Dirr, *Manual of Woody Landscape Plants*; Roland and Smith, *Flora of Nova Scotia*; Smith, *Vascular Plant Families*.

PS61: Landscape Plant Materials II

Instructors: **Prof. Morton and Mr. Gibb**

Landscape plant materials, narrow-leaf and broad-leaf evergreens, and annual bedding plants are studied. The recognition of deciduous trees by their winter wood characteristics is also covered. Sketching of deciduous and evergreen plants will be covered.

Winter semester – 3 lecs per week.

Text: Dirr, *Manual of Woody Landscape Plants*.

PS62: Landscape Plant Materials III

Instructor: **Prof. Goodwin**

During the fall semester, herbaceous plants are studied with respect to their identification and landscape use. This includes annuals, perennials, ferns, grasses, and spring and summer flowering bulbs. Additional cultivars of woody landscape species will be studied.

During the winter semester, the winterwood of deciduous trees and shrubs is studied with respect to plant identification. Foliage plants for interior landscapes will be studied as well as aquatic plants and additional woody plant cultivars. This course involves self-directed study.

Fall and Winter semesters – 1 lec per week.

PS65: Plant Science Project

Coordinator: **Prof. Asiedu**

A study of an agronomic or horticultural topic, which usually includes plant-growing experimentation, that the student pursues in much more detail than is possible in lecture or laboratory course presentations. Students learn principles of agricultural experimentation and are evaluated on initiative in developing the project and on quality of oral and written reports. The work should commence in the Fall semester.

Fall and Winter semesters – 2 lecs per week.

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PS70: Landscape Techniques

Instructor: **Prof. Goodwin**

Prerequisites: PS47, PS51

This is a Spring semester course. Students will be required to work under contract in the landscape horticulture trade with an approved employer for a period of 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.

Summer and Fall semesters – 12 weeks.

PS71: Arboriculture

Instructor: **Prof. MacKenzie**

Prerequisite: PS50

Emphasis is placed on arboriculture theory and practice. Tree problems arising from pest and disease injury, as well as environmental and non-parasitic injury of trees will be addressed. The course will focus on the tree in an urban environment. Laboratory exercises concentrate on specific arboriculture skills and techniques.

Fall semester – 3 lecs and 3 labs per week.

Text: Lily, *Tree Climbers Guide*.

PS72: Landscape Maintenance

Instructor: **Prof. Goodwin**

Prerequisites: AE38, PS47, PS50

Provides an overview of site management. Time studies, scheduling of horticultural work and management techniques are included. Plant health care strategies, including pesticides and their application are discussed, and provincial pesticide 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.

Text: Hiratsuka et al, *A Field Guide to Forest Insects and Diseases of the Prairie Provinces*.

PS73: Landscape Horticulture II

Instructor: **Prof. Goodwin**

Prerequisites: PS51, PS61

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.

PS74: Landscape Design and Construction

Instructor: **Prof. MacKenzie**

Corequisite: AE101 or permission of the instructor

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.

Fall semester – 3 lecs and 3 labs per week.

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.

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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.

PS147: Farm Woodlot Management (A)

Instructor: **TBA**

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.

PS200: Vegetable Production (A)

Instructor: **Prof. Goodyear**

Preparatories: IN100, IN101, or PS30

Production technology for the major vegetables grown in the Atlantic region are studied in detail, including botanical and horticultural characteristics, soil and fertility requirements, cultivar selection, pest management, and harvest and storage requirements. Commercial vegetable enterprises are visited.

Fall semester – 3 lecs and 2 labs per week.

PS210: Principles of Organic Horticultural Crop Production (A)

Instructor: **Prof. Goodyear**

Preparatories: IN100 and IN101, or PS30

Study of the principles that form the basis for organic production systems. Special attention is given to soil fertility, organic soil amendments, compost and mulches, crop rotation, plant health, management of diseases and pests, companion planting, 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.

PS270: Landscape Horticulture Work Program I

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 (Land Hort.) students.

Spring semester – 12 weeks.

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PS290: The British Garden

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.

PS300: Forage Crops (A)

Instructor: **Prof. Martin**

Prerequisites: IN100, IN101

Preparatories: B260, B265

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 2001–2002.

PS305: Grain Production (A)

Instructor: **Prof. Caldwell**

Prerequisites: IN100, IN101, B100

Preparatories: B260, B265

Study of cereals, pulses, oilseeds, and other grains; their classification, adaptation, distribution, culture, improvement, seed production, handling, grading, and utilization.

Fall semester – 3 lecs and 2 labs per week.

Offered in alternate years; next offered in 2002–2003.

PS315: Tree Fruit Crops (A)

Instructor: **Prof. Ju**

Prerequisites: IN100, IN101, B100

Preparatories: B260, B265

Origins, history, biosystematics, adaptation, distribution, and culture of tree fruits. Propagation, pruning, training, harvesting and storage, pest control, and breeding of new cultivars and marketing of these crops are included in the course.

Winter semester – 3 lecs and 2 labs per week.

Offered in alternate years; next offered in 2001–2002.

PS320: Small Fruit Crops (A)

Instructor: **Prof. Ju**

Prerequisites: IN100, IN101, B100

Preparatories: B260, B265

Principles and practices of small fruit production, history, biosystematics, adaptation, distribution, pest control, breeding of new cultivars, and propagation, storage, and marketing are studied.

Fall semester – 3 lecs and 2 labs per week.

Offered in alternate years; next offered in 2002–2003.

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PS325: Potato Production (A)

Instructor: **Prof. Asiedu**

Preparatory: B260

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.

PS330: Greenhouse Crop Production and Floriculture (A)

Instructor: **Prof. Mapplebeck**

Prerequisites: IN100, IN101, B100

Preparatories: B260, B265

Construction and equipment of greenhouses and related structures. Physiological principles involved in the growing and correct timing of vegetables and flower crops are studied and related to commercially viable plant production. Plant nutrition, propagation, and greenhouse management are also considered.

Fall semester – 3 lecs and 2 labs per week.

Offered in alternate years; next offered in 2001–2002.

PS335: Landscape Plant Production (A)

Instructor: **Prof. Mapplebeck**

Prerequisites: IN100, IN101, B100

Preparatories: B260, B265

Production of landscape plant materials is studied in detail. More specifically, this course covers plant propagation techniques, nursery culture and equipment, harvesting, storage, transportation, and garden centre handling and sales of plants.

Winter semester – 3 lecs and 2 labs per week.

Offered in alternate years; next offered in 2002–2003.

PS340: Turfgrass Management Principles and Practices (A)

Instructor: **Prof. Daniels**

Prerequisites: IN100, IN101, B100

A study of the most current practices employed in the production of commercial turf. Emphasis is placed on the scientific principles involved in the maintenance of turf in intensively used areas.

Fall semester – 3 lecs and 2 labs per week.

Offered in alternate years; next offered in 2002–2003.

PS355: Tropical Agriculture (A)

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.

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PS360: Landscape Horticulture Project I

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 (Land Hort.) students.

Fall, Winter, and Summer semesters – 1 lec per week.

PS370: Landscape Horticulture Work Program II

Instructor: **Prof. Goodwin**

This is a spring semester course. Students are required to work under contract in the landscape trade. The type of employment must be different than that experienced in previous work experience courses. Available only to B.Tech (Land Hort.) students.

Spring semester – 12 weeks.

PS380: Landscape Construction and Estimating

Instructor: **Prof. MacKenzie**

This is an advanced course in landscape design, construction, and estimating. Large landscape projects will be utilized. Principles and processes for cost estimating will be studied. Computers will be utilized in the process.

Fall semester – 3 lecs per week.

PS390: Insects and Disease of Landscape Plants

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.

PS400: Plant Breeding (A)

Instructor: **TBA**

Prerequisites: B240, MP210, 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 2001–2002.

PS405: Agronomy (A)

Instructors: **Prof. Caldwell**

Prerequisites: PS300, PS305, PS415

The objective is to review and integrate material from prerequisite subjects on field crop production, soils, climate, and basic sciences into crop management systems.

Students successfully completing this course will qualify to be identified as agronomists.

Winter semester – 3 lecs per week.

PS410: Horticulture (A)

Instructor: **Prof. Daniels**

Prerequisites: PS415 and three horticultural production courses

The objective is to review and integrate material from prerequisite courses on horticultural crops production, soil, climate, and basic sciences into crop management systems.

Students successfully completing this course will qualify to be identified as horticulturalists.

Winter semester – 3 lecs per week.

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PS415: Crop Adaptation (A)

Instructor: **Prof. Caldwell**

Prerequisite: one crop production course

Preparatory: B260, B330

The course is designed to stimulate interest, critical thinking, and investigative processes for the understanding of crop adaptation to abiotic influences such as light, soil, and water and biotic factors such as other plants, mycorrhizae, and Rhizobia. Agricultural practices will be related to economic and environmental responsibilities.

Fall semester – 3 lecs per week.

PS421: Special Topics in Plant Science I (A)

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

Prerequisite: 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.

PS422: Special Topics in Plant Science II (A)

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

Prerequisite: 20 degree credits or enrolment in the B.Tech program

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 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.

PS440: Management of Specialized Turf

Instructor: **Prof. Daniels**

Prerequisite: PS47 or PS340

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.

Offered in alternate years; next offered in 2002–2003.

PS449: Plant Science Project – Seminar I (A)

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

Coordinators: **TBA**

Involves the selection of an appropriate project and the preparation of a research plan to investigate the chosen subject. Fundamentals of experimental design and data analysis are covered in lectures. Under the supervision of a faculty advisor, each student will select a topic, conduct a detailed literature review, and prepare an experimental plan for implementation in PS450. 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.

PS450: Plant Science Project – Seminar II (A)

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

Coordinator: **TBA**

Prerequisite: PS449

The continuation and conclusion of the subject selected in PS449. This consists of both a written and an oral presentation of the project.

Fall semester – 2 lecs per week.

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PS460: Landscape Horticulture Project II

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 (Land Hort.) students. Fall, Winter, and Summer semester – 1 lab per week.

PS470: Tree Management

Instructor: **Prof. Goodwin**

Prerequisite: PS71

Enrolment restricted; preference given to B.Tech (Land 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.

PS475: Plant Biotechnology (A)

Instructor: **TBA**

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 2002–2003.

Texts: Lindsay and Jones, *Plant Bio-technology in Agriculture*; Debergh and Zimmerman, *Micropropagation, Technology and Application*.

Graduate Program

MASTER OF SCIENCE IN AGRICULTURE

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

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 Dalhousie University and thus are subject to the academic regulations and rules of the Faculty of Graduate Studies, Dalhousie University.

For all non-academic matters, including the payment of tuition and other fees, scholarships, bursaries, research and conference funding and non-academic discipline, students are deemed to be students of the NSAC. Graduate students are referred to the *NSAC Community Standards 2001–2002* document 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*.

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

Agricultural Environmental Sciences

Waste Management
Ecology
Environmental Microbiology
Water Quality
Environmental Chemistry
Pest Management
Environmental Water Table Management

Agricultural Chemistry

Agricultural Chemistry
Food Science

Animal Science

Nutrition
Behaviour
Genetics & Breeding
Physiology
Product Technology
Management
Aquaculture

Plant Science

Crop Physiology
Plant Breeding
Plant Biotechnology
Agronomy
Botany
Horticulture

Soil Science

Soil Chemistry
Soil Fertility
Nutrient Management

Graduate Program

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 Baccalaureate 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 the Nova Scotia Agricultural College 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 TOEFL is 237. The following other tests will also be accepted with the following minimum scores: MELAB (Michigan English Language Assessment Battery), 90; IELTS (International English Language Testing System), 7; CanTest, 4.5 (pending approval).

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:

TOEFL

Education Testing Service
PO Box 6151
Princeton, NJ USA 08541-6151

MELAB

English Language Institute (ELI)
University of Michigan
Ann Arbor, Michigan USA 48109-1057

IELTS

University of Cambridge Local Examinations Syndicate
1 Hills Road
Cambridge, UK CB12EU

All applications will be reviewed at the Nova Scotia Agricultural College (NSAC) based on the academic qualifications and record of the applicant. Recommendations regarding admission will then be forwarded from the NSAC to the Dean of Graduate Studies, Dalhousie University. Official acceptance is achieved when the recommendation has been approved by the Faculty of Graduate Studies, 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. Successful applicants will also receive a letter from the Dean of Graduate Studies. 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.

Students with full-time employment are not accepted for full-time graduate study but may apply for a part-time M.Sc. program.

Graduate Program

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) 897-9399

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.

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 2001–2002*. 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 October 1

(Non-Canadian students August 1)

May 1 is February 1

(Non-Canadian students December 1)

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 AG570 (Communication Skills and Graduate Seminar). 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 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 are numbered in the 500 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).

Advanced Standing

Graduate courses completed before admission to graduate studies and not credited to another degree may be presented **at the time of admission** for consideration for credit towards the degree sought. Courses taken during a qualifying year are not included in this category. The maximum number of graduate courses taken prior to registration in the M.Sc. program and to be granted advanced standing is normally restricted to 25 per cent of the course requirements.

Graduate Program

Letter of Permission

The maximum number of courses taken outside of the NSAC/Dalhousie University Master's program shall normally be restricted to 25 per cent of the class requirements.

Courses approved by Dalhousie University (after examination of class descriptions) can be taken at other universities on a "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.**

Grades below 'B-' (70%) received for courses taken on a Letter of Permission at another institution will be recorded as a failing grade on the student's record. Students must achieve a mark of 70% or better in order to achieve a pass standing at NSAC/Dalhousie University. 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 may render him/her liable to academic withdrawal). Students who fail a class may not replace that class on a Letter of Permission.

Ancillary Courses

A student may be directed by his/her Supervisor or Supervisory Committee to take undergraduate courses that are ancillary in nature to the student's specific area of study. 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 on these ancillary courses is 60%. Ancillary classes must be listed on the Program Approval Form but do not count towards the required number of credits for the M.Sc. degree.

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.

Passing Grade for Required Courses

All courses (graduate or undergraduate) not designated "audit" or "ancillary" at the admissions interview are designated "required" and must be passed with a grade of **at least 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

Regulations stipulate that graduate students must achieve a minimum grade of 'B-' in all classes required as part of their degree program. Any lower grade will be recorded as a failure. The following grading scheme is used:

Graduate Program

Letter Grade	Numerical (%) Equivalent
A+	90–100
A	85–89
A–	80–84
B+	77–79
B	73–76
B–	70–72
F	<69

The academic transcript is a reflection of academic progress and therefore reflects passes, failures, and late withdrawals.

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.

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 "Fail". However, where circumstances warrant it, a grade of "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	June 1
Summer term classes	October 1

After these deadlines, an "Incomplete" grade cannot be changed without permission of the Faculty of Graduate Studies, Dalhousie University, and will appear on the official academic record of the student.

Where the formal deadline for completion of work is beyond the Incomplete deadline, the instructor can request permission from the Faculty of Graduate Studies to extend

the Incomplete 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.

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. Students who wish to continue in the graduate program must apply in writing immediately to the Graduate Coordinator for readmission. Readmission to the program must be supported by the Graduate Coordinator and the Department Head, and must be approved in writing by the Faculty of Graduate Studies. Note that any academic withdrawal and readmission will be recorded on the student's transcript.

Length of Program and Extensions

Usual Time Limits

Usual time limits for the completion of degrees are:

- One-year M.Sc., full-time: two years
- One-year M.Sc., part-time: four years

Upper Time Limits

Upper time limits for the completion of degrees are:

- One-year M.Sc., full-time: four years
- One-year M.Sc., part-time: five years

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Two-year M.Sc., full-time: five years

Two-year M.Sc., part-time: seven years

Students may apply for extensions to 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. 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. 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.

Withdrawal from Program

A student who decides to withdraw from the graduate program must 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 the Dalhousie 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 Faculty of Graduate Studies, Dalhousie University, and is received in the Registrar's Office. Under no circumstances will the Faculty of Graduate Studies, Dalhousie University, back-date a withdrawal notice.

Required Withdrawal

A student may be required to withdraw from the program for a breach of an NSAC or Dalhousie University regulation (e.g., class failure, plagiarism, etc.). The student will be notified by the Vice Principal Academic 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 may apply for readmission within 10 years of initial registration. A student may be readmitted only once during the course of his/her program. Application for readmission must meet normal application deadlines. A student who has not maintained registration is 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 the thesis Supervisor, before he/she can be readmitted.

Readmitted students must pay fees for the years they were not registered, at the current fee rate.

Other Program Components

Demonstrating

As part of their graduate training, all students must spend at least one academic term demonstrating in an undergraduate class. The demonstrating will normally occupy six hours per week and will be paid for by the department at the prevailing rate (~\$900) unless payment is disallowed by the terms of a scholarship. Supervisors, in consultation with their department heads, are responsible for ensuring that each graduate student is assigned a demonstrating position. Students are encouraged to discuss this requirement with their Supervisor early in their program. However, the demonstrating requirement can be completed in the student's first or second year of the

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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 Demonstrating 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 examination early in the program, normally within the first four to six months in which a student is registered.

A Research Proposal must be prepared by all students as a requirement for Admission to Candidacy (ATC).

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.

The ATC examination is based on the presentation of an acceptable research proposal for the M.Sc. thesis and successful defence 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 and the literature, as well as 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 a Department Head. 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 Examination 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; the four alternatives are (1) unconditional pass, (2) conditional pass, (3) repeat, (4) fail. The Chair will vote only if the committee vote is tied. A conditional pass will be given if the student requires further background preparation. Appropriate classes or remedial effort must be assigned for the following academic year. The Graduate Coordinator will verify that these assignments are completed. Students whose performance is unsatisfactory but capable of improvement will be asked to repeat the examination by a specified date. As far as possible, they will be re-examined by the same committee. 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 beyond the usual time.

Thesis

A satisfactory thesis embodying contributions to research must be presented and successfully defended in a public oral examination.

Graduate Program

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. A faculty member becomes the graduate student's supervisor upon signing the "Confirmation of Intention to Supervise" form.

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 the 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 over-specialization.

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 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 the student as to where to obtain information on matters such as health insurance, social insurance numbers, housing, and finances;

Note: If a Supervisor is not available to assist the student (e.g., the Supervisor takes a one-year sabbatical leave, etc.) 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.

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

The Supervisor and the student are responsible for recommending the names of three potential suitable external examiners for the ATC examination and the thesis defence.

Supervisors are responsible for initiating the thesis defence and they are responsible for making arrangements for travel, accommodations, and hosting of external examiners, if necessary.

Supervisory Committee

A Supervisory Committee is selected by the supervisor in consultation with the student, and should complement the

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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 when the student applies for admission to candidacy. 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 the NSAC for the student's progress.
- The majority of committee members must be members of the Faculty of Graduate Studies, Dalhousie University, or 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 specific permission from the Dean or Associate Dean of Graduate Studies, Dalhousie University, for the individual to become a formal member of the supervisory committee.

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 Supervisory Committees meet with the student before the ATC examination to discuss the student's program (e.g., courses) and proposed research project.

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. Supervisory Committees must meet with continuing students not later than mid-October, each year, to consider the student's Progress Report.

Supervisors should encourage students to consult other members of their Supervisory Committee, either individually or as a group, whenever it would be 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.

REGISTRATION

It is the student's responsibility to register on the day(s) specified for graduate student registration.

To register, all graduate students must, each year, contact the Graduate Coordinator to schedule 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. At the student interview, the student will be required to identify his/her Supervisor and proposed Supervisory Committee members, and provide a list of courses, approved by the student's Supervisor as being necessary to complete the student's M.Sc. requirements.

The Graduate Coordinator will assist the student in the formal completion of a Course Approval form and a Program Approval form. The completed forms will be submitted by the Graduate Coordinator to the NSAC Registrar and the Dalhousie Dean of Graduate Studies, respectively. Any change in courses after the interview must

Graduate Program

be approved by the Supervisor and the Graduate Coordinator; a Course Change Form is required by the Registrar and a Program Update Form is required by the Dean of Graduate Studies.

The student must also:

- arrange for medical insurance coverage (forms are available from the Graduate Coordinator)
- arrange for payment of fees
- obtain a student ID card

Note: 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, at the discretion of the Vice Principal Administration or the Dean of Student Services, only in extenuating circumstances. 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 the 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 during the next available admissions period.

An individual program of studies 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. This form must be signed by the student, the

Supervisor, and the Graduate Coordinator prior to submission to the Faculty of Graduate Studies. **Once approved, the Program Approval 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 12 months, usually the first academic year of the graduate program.

Leave of Absence

A student who needs to take leave from the 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 for a period of between 4 and 12 months. An official Leave of Absence does not count towards time in the program. Students may not hold stipends or scholarships during a Leave of Absence.

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 (normally limited to one leave period during an individual's program) must be made by August 31 for a leave commencing September 1, December 20 for a leave commencing January 1, and April 20 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

Graduate Program

Dalhousie University from the obligation to provide the student with services. These include consultations with professors, student library and computer privileges, health services, and other student services.

Leaves of Absence will not be approved retroactively.

Suspension of Studies

Unexpected circumstances and short-term emergencies that do not warrant a Leave of Absence can be accommodated through a suspension of program, but no fee rebate is possible in such cases. 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 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.

Maternity Leave

Maternity leave of one to three terms will be granted by Dalhousie University and will not count towards time in program. A student needing to take maternity leave must apply in writing for a Leave of Absence. It is recommended that a student planning to take maternity leave not only give adequate notice to her supervisor but also discuss issues such as future plans and progress, stipend support, research deadlines, etc., with her supervisor.

Paternity leave of four months may be granted.

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. Novanet is a consortium of 10 post-secondary institutions: Dalhousie, SMU, MSVU, St FX, UCCB, KINGS, NSCC, AST,

NASCAD, and NSAC. Students will have borrowing privileges at all of the above listed institutions. Contact the MacRae Library at NSAC for more information and to get your NSAC card activated.

Notification of Address

Students are required to keep the Research & Graduate Studies Office up to date on changes 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.

FEES

Graduate students pay "program fees" for fixed periods, either as full-time or part-time students, followed by "continuing fees" until all program requirements have been completed.

Program Fees for Full-Time Students

The one-year M.Sc. program involves a program fee requirement of one year. 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 a maximum of three part-time years of study for each full-time year. If a part-time student completes the requirements for the degree before the normal full program fees have been paid, the balance of those fees must be paid prior to graduation.

Graduate Program

Continuing Fees

After students have completed the required program fee period and have paid all their fees, but are still short of completing their program, they pay a Continuing Fee until all the academic requirements of the program have been completed. Usually, Continuing Fees are paid by students who are in the process of completing their thesis.

Graduate students must remain registered continuously throughout their entire period of study, and 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 date of each student's registration interview, in the Fall, Winter, and Summer semesters, with the Coordinator of Research & Graduate Studies. Fees not paid at the registration interview will be subject to interest charges and the student's registration cancelled.

Graduate students will not be granted their degrees nor be permitted to participate in convocation 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 Principal Administration are not permitted to register for a further semester. Students with outstanding account balances are required to meet with the Vice Principal 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.

The 2001–2002 fee schedule is available from the Research & Graduate Studies Office, Cumming Hall (902-893-6502).

FULL-TIME, PART-TIME, AND OTHER CATEGORIES

A **full-time student** is one who is registered for at least three full credits, excluding thesis during the first 12 months, i.e., September to August. All NSAC courses are full credit courses. A student may register in the full-time program and hold a job simultaneously only if the job involves no more than 16 hours per week.

A **part-time student** is one who is registered for fewer than three full credits, excluding thesis, during the first 12 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.

A **qualifying student** is a person with a Bachelor's degree or its equivalent who meets normal admission standards and in whom the NSAC has expressed an interest as a potential graduate student, but who is lacking a sufficiently strong 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 must pass all classes with no grades below a 'B-' and an average of at least 'B', and fulfil 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

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students, who 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.

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 (AG900) every semester even though they may expect to make little progress in that semester.
- Students in the one-year M.Sc. program are encouraged strongly 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 500 number or above.

FINANCIAL SUPPORT

Scholarships

The Nova Scotia Agricultural College offers several entrance scholarships to applicants approved (or conditionally approved) for admission to the M.Sc. program. Scholarships range in value from \$5,000 to \$7000. All potential new registrants are automatically considered for these scholarships.

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 re-negotiated 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).

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

Students with no financial support are also accepted to the M.Sc. program. Self-funded students must submit a letter waiving any responsibility for financial support on the part of NSAC 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.

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
- 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 are encouraged to use the educational materials provided by the CCAC and to 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 details on their mission, policies, and available guidelines.

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.

Word-processing copies of the *Protocol* forms (separate forms exist for teaching, research and renewals/extensions) are available from Mary Paquet in the Department of Animal and Plant Sciences (phone: 893-6644, e-mail: 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
Phone: 893-8639
E-mail: 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). The following is a sample of projects which might typically arise at NSAC and which would require REB review: 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 Coordinator, Research and Graduate Studies, who will in turn forward it to the REB Chair. The REB will meet regularly. The schedule of review meetings is available at the Research & Graduate Studies Office. All proposals being submitted to the REB must be received at least seven 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, Art and Administration Building, Dalhousie University, Halifax, NS, B3H 4H6 to put in the student's official file at Dalhousie University. Complete details on NSAC's REB Policy and Process can be found on the Research & Graduate Studies Office web site at www.nsac.ns.ca/rgs/research/ethhics.htm For further information contact the Research & Graduate Studies Office, Cumming Hall, NSAC (893-6360 or 893-6502) or Dr. Nancy Crowe, REB Chair, at ncrowe@nsac.ns.ca or 893-6621.

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. All thesis students are responsible for ensuring that their theses comply with all aspects of these regulations. 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 College and University regulations on plagiarism (including self-plagiarism). Dalhousie University's regulations on plagiarism can be found in the Faculty of Graduate Studies' *Policy on Integrity in Scholarly Activity* (available from Dalhousie University Faculty of Graduate Studies).

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.

Submission of Thesis for Examination: M.Sc. Thesis

Sufficient copies of a M.Sc. thesis for all members of the examining committee must be submitted to the Research and Graduate Studies Office before the date of the thesis defence is finalized. The thesis must be complete and suitable for printing, if accepted. The intent to defend must be communicated to the Graduate Coordinator six weeks prior to the desired defence date. This information is to be communicated in writing by the graduate student’s supervisor along with the names of three potential External Examiners. The defence date is set for a minimum of three weeks following the receipt of the thesis at the Research & Graduate Studies Office. (See the *Thesis Defense Guidelines* document available at the Research & Graduate Studies Office.)

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 selecting the External Examiner the Supervisory Committee should follow a priority of : (a) qualified scholars outside of NSAC, (b) Honorary Research Associates and Adjunct Professors of the 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 be approved by the Vice Principal Academic.** The External Examiner does not necessarily attend the defence but may instead submit a written report and questions prior to the examination.

Examination Formats

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 10–20–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.

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- *Rejected but with permission to re-submit a revised thesis for re-examination.* 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 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 Faculty of Graduate Studies (the deadline date is published annually in the Dalhousie Graduate Calendar). Following a format approval, by Linda Sanford, Thesis Coordinator, Dalhousie University, students are responsible for

presenting to the Faculty of Graduate Studies six unbound copies of the corrected and approved thesis. Only good quality photocopies or printed copies will be accepted.

Binding and Distribution

NSAC students must submit six copies (original plus five copies) of their 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 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 their unbound, approved thesis (original and five copies) to the Faculty of Graduate Studies Office, students will present a cheque for \$120.00* 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 \$20.00*. An additional charge will be made (where appropriate) to cover mailing costs.

*Binding cost is subject to change without notice.

Graduate Program

CONVOCAATION

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 fulfil 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 **December 1 to graduate the following May**.

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.

AG570: Communication Skills & Graduate Seminar

AG900: 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.

AG571: Module Course

AG572: Applied Statistics & Experimental Design for Agriculture

Other Regular Courses

Where an undergraduate student wishes to take one of these graduate courses, the following signatures are required for approval: the instructor(s), the relevant

Department Head(s), and the Graduate Coordinator.

AG527: Economic Entomology

AG535: Animal Research Methods

AG536: Protein Nutrition

AG538: Quantitative Genetics

AG539: Molecular Genetic Analysis of Populations

AG552: Plant Breeding Methods

AG553: Nitrogen in Crop Production

AG556: Advanced Crop Physiology

AG573: Module Course II

Special Topics Courses

Special Topics Courses may be taken by undergraduate students only under exceptional circumstances. The following signatures are required for approval: the instructor(s), the relevant Department Head(s), and the Graduate Coordinator.

AG521: Special Topics in Environmental Microbiology

AG522: Special Topics in Weed Science

AG524: Special Topics in Environmental Impact

AG526: Special Topics in Plant Pathology

AG531: Special Topics in Applied Ethology

AG532: Special Topics in Animal Nutrition

AG534: Special Topics in Animal Physiology

AG537: Special Topics in Animal Breeding and Genetics

AG541: Special Topics in Soil Fertility

AG543: Special Topics in Environmental Analysis

AG546: Special Topics in Soil and Water Management

AG547: Special Topics in Analytical Instrumentation for Researchers

AG551: Special Topics in Plant Breeding

AG554: Special Topics in Crop Physiology

AG557: Special Topics in Agricultural Biotechnology

AG561: Special Topics in Animal Product Technology

Graduate Program

Cross-referenced Courses

Cross-references with undergraduate courses are shown in brackets ().

AG525: Soil Microbiology (B400)

AG544: Organic Environmental Analysis (CS420)

AG545: Environmental Soil Chemistry (CS440)

AG558: Plant Biotechnology (PS475)

AG559: Biotechnology in Agriculture – Opportunities, Issues and Choices (IN475)

AG562: Ruminant Digestive Physiology & Metabolism (AS475)

AG563: Intermediate Statistical Methods (MP420)

GRADUATE COURSE DESCRIPTIONS

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.

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.

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.

AG525: Soil Microbiology *cross-referenced as B400*

Instructor: **Prof. Stratton**

This course is designed to provide an intensive study of the microbiology of soils and will emphasize nutrient cycling and biodegradation. Topics covered include the relationships between the abiotic and biotic components of soils, the microbial biochemistry of the carbon, nitrogen, sulphur, phosphorus, and selected micronutrient cycles, heavy metal cycling, and the microbial degradation of industrial wastes and pesticides. The laboratory classes will concentrate on techniques to monitor the microbial biomass in soil and the microbial components of nutrient cycles. These include new advances in bacterial taxonomy

and identification and the use of gas chromatography and high-performance liquid chromatography in quantitating nutrient cycling. In addition to a major term paper, a comprehensive laboratory report on the entire term's lab work, and a single take-home examination, graduate students will be required to:

- 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 2002–2003.

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.

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.

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 semester – to be arranged with the instructor.

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.

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 semester – to be arranged with the instructor.

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.

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 2002–2003.

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.

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.

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 semester – to be arranged with the instructor.

AG541: Special Topics in Soil Fertility

Instructor: **Prof. Warman**

The course is designed to provide an opportunity to study specific aspects of soil fertility. Topics may include the influence of soil biological, chemical, and physical properties and processes on nutrient absorption and plant growth, with emphasis on essential plant nutrients in the soil and methods for evaluation, as well as the use of inorganic and organic amendments.

Winter semester – to be arranged with the instructor.

AG543: Special Topics in Environmental Analysis

Instructor: **Prof. Hoyle**

Students may apply to undertake either a specially designed course in environmental analysis, or to undertake additional work further to Organic Environmental Analysis. This may be facilitated with written consent from the instructor who then assumes personal responsibility for supervising the work.

Fall or Winter semester – to be arranged with the instructor.

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 & 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 2002–2003.

AG545: Environmental Soil Chemistry

cross-referenced as CS440

Instructor: **Prof. Warman**

The course is designed to provide an opportunity to study specific aspects of environmental soil chemistry. Topics may include the chemical composition of soils with special attention to soil biochemistry and soil organic matter with an emphasis on organic matter–clay interactions, soil organic N, P and S, and soil enzymology. Graduate students will be expected to participate in lecture/discussion sessions and complete required reading assignments. In addition, graduate students will be required to complete research papers and present their findings at in-class seminars.

Winter semester – to be arranged with the instructor.

Offered in alternate years; next offered in 2002–2003.

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 instructor.

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 instructor.

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.

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.

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 2002–2003.

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 instructor.

Offered in alternate years; next offered in 2001–2002.

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 2001–2002.

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.

AG558: Plant Biotechnology *cross-referenced as PS475*

Instructor: **TBA**

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 2002–2003.

AG559: Biotechnology in Agriculture – Opportunities, Issues and Choices *cross-referenced as IN475*

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 2001–2002.

Text: Baumgardt and Marshall, *Agricultural Biotechnology, Issues and Choices*.

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.

AG562: Ruminant Digestive Physiology & Metabolism

cross-referenced as AS475

Instructor: **Prof. Fredeen**

Prerequisites: AS305, CS360

This course is designed to provide an intensive study of food intake and digestion, and nutrient absorption and metabolism, in the ruminant animal. The course details current knowledge and focuses on aspects of future research interest. Students are expected to contribute to discussions and present reviews to the class on various aspects of the subject.

Fall semester – 3 lecs and 2 labs per week.

Offered in alternate years; next offered in 2002–2003.

AG563: Intermediate Statistical Methods *cross-referenced as MP420*

Instructor: **Prof. Astatkie**

Prerequisite: MP210, MP211, 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.

Graduate Program

AG570: Communication Skills & Graduate Seminar

Instructors: **Prof. Gordon**

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.

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.

AG572: Applied Statistics & Experimental Design for Agriculture

Instructor: **Prof. Astatkie**

Prerequisite: MP420, 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.

AG573: Module Course II

Coordinator: **Prof. Caldwell**

Prerequisite: AG571

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.

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 Dairy Building, by phone at (902) 893-6729, by fax at (902) 895-4547, or by e-mail at bcrouse@nsac.ns.ca • The college's Scholarship Committee reserves the right to authorize changes at any time to the selection criteria and awarding of scholarships, bursaries, and prizes.

DEFINITION OF TERMS

Award

An award is a general term used to mean any presentation made to a student.

Governor General Medal

The Governor General Medals are awarded to the 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 selection by the donor.

Notes

- Where the selection criteria are not specified in the descriptions of the various scholarships, bursaries, and prizes that follow, the guidelines above 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 eight courses per year with no fewer than three 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.

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.

Atlantic Region Scholarship and Bursary Program NSAC Entrance Scholarships to Prince Edward Island Students

Each of the 10 high schools in PEI will be awarded a one-time \$1,500 entrance scholarship to be awarded to the graduate from that school who applies to NSAC with the highest average on the courses required for admission. Minimum average for scholarship recipients will be 80% on the courses required for admission to the NSAC program. In the case that one or more schools do not have a successful

applicant, the Scholarship Committee may offer additional awards to other PEI schools on the basis of highest academic achievement (with 80% as the minimum). Recipients must maintain registration in at least 80% of the normal course load for their programs.

In the second year, the 2 highest-ranked students of the 10 PEI entrance scholars for the previous year will receive a renewal scholarship of \$1,500, provided they achieve a term average of at least 80% on all courses taken, and were enrolled in at least 80% of the normal course load for their programs. The renewal scholarship will continue through the normal completion of the student's program, provided the student maintains the minimum required average (80%), maintains enrolment in at least 80% of the normal course load, and has not failed any courses in the previous year. (See additional renewal guidelines.)

Students receiving major NSAC Entrance Scholarships will not be eligible.

NSAC Entrance Scholarships to New Brunswick Students

Each year \$1,500 entrance scholarships will be awarded to 15 New Brunswick students demonstrating academic excellence who apply to NSAC. Selection will be based on high school academic performance. Minimum average for scholarship recipients will be 80% on the courses required for admission to the NSAC program. Recipients must maintain enrolment in at least 80% of the normal course load of their programs.

In the second year, the 3 highest-ranked students of the 15 NB entrance scholars from the previous year will receive a renewal scholarship of \$1,500, provided they achieve a term average of at least 80% on all courses taken and were enrolled in at least 80% of the normal course load for their programs. The renewal scholarship will continue through the normal completion of the student's program, provided the student maintains the minimum required average

Scholarships, Bursaries, and Prizes

(80%), maintains enrolment in at least 80% of the normal course load, and has not failed any courses in the previous year. (See additional renewal guidelines.)

Students receiving major NSAC Entrance Scholarships will not be eligible.

NSAC Entrance Scholarships to Newfoundland & Labrador Students

Each year \$1,500 entrance scholarships will be awarded to 10 Newfoundland and Labrador students demonstrating academic excellence who apply to NSAC. Selection will be based on high school academic performance. Minimum average for scholarship recipients will be 80% on the courses required for admission to the NSAC program. Recipients must maintain enrolment in at least 80% of the normal course load of his or her program.

In the second year, the 2 highest-ranked students of the 10 Newfoundland and Labrador entrance scholars for the previous year will receive a renewal scholarship of \$1,500, provided they achieve a term average of at least 80% on all courses taken and were enrolled in at least 80% of the normal course load for their programs. The renewal scholarship will continue through the normal completion of the student's program, provided the student maintains the minimum required average (80%), maintains enrolment in at least 80% of the normal course load, and has not failed any courses in the previous year. (See additional renewal guidelines.)

Students receiving major NSAC Entrance Scholarships will not be eligible.

NSAC Entrance Scholarships to Nova Scotia Students

The Nova Scotia Department of Agriculture and Fisheries provides entrance scholarships to NS students entering post-secondary study at NSAC for the first time or NS students entering programs with no advanced standing (carrying no credits from other post-secondary institutions). NSDAF scholarships are also awarded to NS students entering study at NSAC with a post-secondary record – students' high school marks must still have met the eligibility requirements and they must have maintained first-class standing (80% average) in post-secondary study. NS recipients of the major NSAC Entrance Scholarships are not eligible to receive the NS Department of Agriculture and Fisheries Entrance Scholarships.

- \$2,000 renewable scholarships are awarded to the top three NS students entering degree programs (based on averages of the five subjects required for admission to the respective programs of study)
- \$1,500 renewable scholarships are awarded to all other NS students entering degree programs with 85% averages in five required courses for admission to the respective program of study
- \$2,000 renewable scholarships are awarded to the top three NS students entering technical programs – technician and technology (based on the averages of subjects required for admission to the respective programs of study)
- \$1,500 renewable scholarships are awarded to all other NS students entering technical programs – technician and technology with 80% averages in the subjects required for admission for the respective programs of study.

The NSDAF entrance scholarships are renewable for the normal duration of the program of study to which students are admitted, based on the renewal criteria outlined.

Scholarships, Bursaries, and Prizes

Atlantic Canada Bursaries

NSAC has established a bursary fund that will be available to assist:

1. students graduating from an Atlantic Canadian high school, who have an average of at least 75% and who are nominated by school counsellors to receive the bursary; and
2. students from Atlantic Canada who have spent at least one term at NSAC, who have achieved an average of at least 75% in their previous term and who are in need of financial assistance in order to continue with their programs.

Typically, students awarded bursaries would not be able to enter or continue with their programs without financial assistance.

The bursaries awarded in this program will be \$1,000 in value. In the first year of the program (2001–2002), the College will award at least 30 bursaries to new and ongoing students if applications justify this number of awards.

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 17.

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 Farmers of Nova Scotia Bursary

The \$1,000 Chicken Farmers of Nova Scotia Bursary is awarded to a 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. A letter of application must be submitted not later than September 17 to:

Janet Kennedy
c/o Chicken Producers Association of Nova Scotia
PO Box 338
Canning, NS B0P 1H0

George & Lottie Cook Memorial Scholarship

The \$500 George and Lottie Cook Memorial Scholarship is awarded annually to a 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 17.

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 enrolment. Applications must be submitted to the NSAC Awards Office not later than September 17.

Scholarships, Bursaries, and Prizes

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 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 April 30 at the following address:

Kings County Federation of Agriculture
PO Box 14
Kentville, NS B4N 3V9

Kings Mutual Insurance Scholarship

In memory of Past Directors, the Kings Mutual Insurance Company awards two \$1,000 scholarships to NS students, in any year of any program of study, at NSAC. 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 extra-curricular 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 17.

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 a research career 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 16 weeks on a full-time basis in research and development in natural sciences and engineering. To be eligible, students must be Canadian citizens or permanent residents, registered full-time as undergraduate students in natural science or engineering disciplines, 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 the end of February each year.

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 students (preferably one from the East Coast and one from the West Coast) entering studies at the NSAC. Selection criteria include academic performance and financial need. Applications must be submitted to the NSAC Awards Office not later than September 17.

Newfoundland Provincial Scholarships

The Newfoundland government, through its Department of Education, awards three scholarships of \$1000 each to NF students entering a degree program at NSAC. Selection will be based on academic performance. No application is required.

Nova Scotia Agricultural College Entrance Scholarships

NSAC annually awards 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. NSAC Entrance Scholarships 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

Scholarships, Bursaries, and Prizes

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 scholarship will be awarded to a student from each of the Atlantic Provinces), 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 NSAC Entrance Scholarships are tenable for a maximum of four years. These scholarships are renewed by maintaining an annual average of 80%. See Section II on renewable scholarships for additional renewal criteria. NS recipients of NSAC Entrance Scholarships are not eligible to receive the NSDAF Entrance Scholarships. Applications must be submitted to the NSAC Awards Office not later than March 10.

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. For the 2000/2001 year the typical charge would be \$4,000 for degree programs and \$3,500 for technical programs.

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. These three scholarships will be based upon a minimum average of 80% in the courses required for admission.

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 in the College Calendar.

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 NSAC Entrance Scholarship, that student would not be eligible to receive the NSAC Entrance Scholarship for CEC Students. The scholarship would then be awarded to the student with the next highest average coming from the Cobequid Educational Centre. Recipients of NSAC Entrance Scholarships for CEC students are not eligible to also receive NS Department of Agriculture and Fisheries scholarships.

NSAC Entrance Scholarships for U. S. Students

NSAC awards up to 10 renewable entrance scholarships valued at \$3,000 per year (in Canadian funds) to top students admitted from the United States. Students entering either technical or degree programs at the college are eligible. Only those applicants who have achieved an SAT score of at least 1100 on the courses required for admission shall be considered. Selection criteria include academic performance (admission average), extracurricular activity, and a letter of recommendation. The NSAC Entrance Scholarships for U. S. 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 in the College Calendar. Applications must be submitted to the NSAC Awards Office not later than June 30.

Scholarships, Bursaries, and Prizes

Nova Scotia Agricultural College Alumni Association Scholarships

The NSAC Alumni Association awards two \$700 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 a 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 17.

Nova Scotia Power Inc. University Scholarship

The \$1,500 Nova Scotia Power Inc. University Entrance Scholarship is awarded to a 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 17.

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 17.

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 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 17.

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, two \$1,000 scholarships and one \$500 scholarship 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.

CONTINUATION SCHOLARSHIPS AND BURSARIES

The following scholarships and bursaries are available to students returning to studies beyond the first year of the various programs at NSAC.

Scholarships, Bursaries, and Prizes

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. Applications must be submitted to the NSAC Awards Office not later than September 17.

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 County in NS 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 17.

Athletic Bursaries

Five \$100 awards will be presented to returning students 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 17.

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 17.

Atlantic Fertilizer Institute Bursary

The Atlantic Fertilizer Institute awards a \$500 bursary to a second-year student in the technician or farming technology program. Selection criteria include farm interests, leadership qualities within the college community, and academic performance. Applications should be submitted to the NSAC Awards Office not later than September 17.

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.

Scholarships, Bursaries, and Prizes

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 17 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.

Compass Group Canada 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.

Blueberry Producers Association of Nova Scotia Scholarship

The 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 17.

Bravo 500 Pest Management Scholarship

ZENECA AGRO INC. 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 a 300–500–word essay expressing 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 to 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 17.

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 17.

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 17.

Scholarships, Bursaries, and Prizes

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.

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 more than two 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 17.

Chicken Farmers of Nova Scotia Bursary

The \$1,000 Chicken Farmers of Nova Scotia Bursary is awarded to a 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. A letter of application must be submitted not later than September 17 to:

Janet Kennedy
c/o Chicken Producers Association of Nova Scotia
PO Box 338
Canning, NS B0P 1H0

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 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 a 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 17.

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 17.

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.

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 17.

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 their programs. No application is required.

Egg Producers of Newfoundland & Labrador Scholarship

The Egg Producers Association of Newfoundland and Labrador (formerly known as the Newfoundland Egg Marketing Board) awards a \$1,000 scholarship to a NF 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 17.

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.

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.

Scholarships, Bursaries, and Prizes

Bonnie R. Haviland Memorial Bursary

The \$500 Bonnie R. Haviland Memorial Bursary will be 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 the 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 17.

Kings Mutual Insurance Scholarship

In memory of Past Directors, the Kings Mutual Insurance Company awards two \$1,000 scholarships to NS students, in any year of any program of study, at NSAC. 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 17.

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 NS 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 17.

A. W. Mackenzie Memorial Scholarship

This \$150 scholarship is awarded to a student entering the second year of the degree program. Selection criteria include academic performance, financial need, and participation in 4-H Club activities. Applications must be submitted to the NSAC Awards Office not later than September 17.

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 Co., NS. No application required.

Joseph E. Mapplebeck Memorial Bursaries

In honor of Joseph E. Mapplebeck, who farmed for 50 years in Kings County, NS, 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. One of the two awards will be made available annually to a student in the Plant Science Technician program. Eligible candidates will have successfully completed the first year of a technical program and have demonstrated financial need. A letter of recommendation from a Faculty member must accompany this application. Applications must be submitted to the NSAC Awards Office not later than September 17.

Scholarships, Bursaries, and Prizes

Maritime Provinces Swine Producers' Bursaries

The New Brunswick Hog Marketing Board and Pork Nova Scotia sponsor two \$350 prizes to students with an interest and/or background in swine production (one to a degree student and one to a technical student). 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 17.

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.

McRorie Scholarships

In memory of Douglas McRorie, P.Ag., FAIC, a past President of AIC and Vice-President (Agricultural Services) of the Royal Bank of Canada, two \$500 scholarships are awarded to students who are entering the third or fourth year of the B.Sc. (Agr.) program. Students in any area of specialization are eligible, but applicants must demonstrate a knowledge of and interest in financial management through their studies, employment, career plans and/or extracurricular activities. Applications must be submitted to the NSAC Awards Office not later than September 17.

John Miller Memorial Bursary

The \$500 John Miller Memorial Bursary is awarded to a NS student in any year of any program 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 1983–1997. Applications must be submitted to the NSAC Awards Office not later than September 17.

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 17.

Nova Scotia Animal Breeders Co-operative Limited Scholarship

The Nova Scotia Animal Breeders Co-op awards two \$1,250 scholarships (one to a degree student and one to a technical student) 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. To be eligible, students will not have received other major scholarships. Applications must be submitted to the NSAC Awards Office not later than September 17.

Nova Scotia Department of Agriculture and Fisheries Entrance Scholarships

Renewal Criteria

1. Scholarships are renewed automatically at their initial value provided the student has maintained an average of 80% or greater for every year of study (for which the scholarship was renewable). The NSDAF scholarships are renewed annually on a continuous basis, based on the work of the previous year (once forfeited cannot be reinstated).
2. Scholarships are renewed based on an 80% average for the full year of study (80% not required in each semester). A year of study is normally defined as September 1–August 31 (students who do not follow the normal year of study will be considered by the Scholarship Committee on an individual basis).

Scholarships, Bursaries, and Prizes

3. 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 to be eligible for scholarship renewal.
4. 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).
5. The average is determined by all marks earned by the student in the previous year; non-credit courses (MP075, MP085 and MP090) are included in the calculation of the year's average for degree students.
6. A student may not have any failed courses (including Drop Failures) to be eligible for scholarship renewal.
7. The NSDAF Scholarships are credited directly to student accounts in two instalments. 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 is meeting the requirements of criterion #3.
8. NSDAF scholarships are tenable for the normal duration of the program of study.
9. A student who does not satisfy all the above criteria, based on medical or other extenuating circumstances, may appeal in writing to the Awards Office.

*The above criteria apply to all renewable scholarships (e.g., NS Department of Agriculture and Fisheries, NSAC Entrance Scholarship, NS Power, Isgonish IODE.)

Nova Scotia Department of Agriculture and Fisheries Scholarship Program for In-Program Students

At the discretion of the Scholarship Committee, scholarships of variable amounts will be awarded to NS students who perform well in their studies at NSAC. Students considered for these awards will be those who had not been eligible to receive the NSDAF Entrance Scholarship on admission or those who had forfeited their NSDAF Entrance Scholarship any year. Minimum

requirement will be 80% average in work of previous year (eight courses or more required in the year and with no DFs), with preference to students who have, in addition, maintained a cumulative average of 80%. Students must be enrolled for the full year and be registered for at least four courses per semester to be eligible.

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). 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 a 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 17.

Nova Scotia Institute of Agrologists

The \$1,000 NSIA Scholarship is awarded to a 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 17.

Scholarships, Bursaries, and Prizes

Nova Scotia Milk Producers Bursary

The Nova Scotia Milk Producers Association awards a \$1,000 bursary to a 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 NS dairy industry, and academic performance. Applications must be submitted to the NSAC Awards Office not later than September 17.

Nova Scotia/Newfoundland Holstein Branch Bursary

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 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 17.

Nova Scotia Veterinary Medical Association Bursaries

The Nova Scotia Veterinary Medical Association awards two \$500 bursaries to third-year students in the Animal Health Technology program. Selection criteria include financial need and academic performance. No application is required.

G. E. O'Brien Memorial Bursary

In memory of George Earle O'Brien, a 1911 NSAC graduate, a \$750 bursary is awarded to a degree student who has demonstrated a particular interest in and aptitude for sheep and wool production and marketing. No application is required.

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.

Cliff Retson Memorial Bursary

In memory of Cliff Retson, Class of 1934, a \$750 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 multi-cultural activities on campus. Applications must be submitted to the NSAC Awards Office not later than September 17.

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 17.

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 \$1,000 scholarship will be awarded to an outstanding student from Atlantic Canada studying in any year of any program not receiving scholarships of greater value. No application is required.

Scholarships, Bursaries, and Prizes

Robin Hood Multifoods Inc. Bursary

Robin Hood Multifoods Inc. awards a \$1,200 bursary to an Atlantic 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 17.

Ted Rose Memorial Bursary

The 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 17.

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 17.

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 and community affairs. Applications must be submitted to the NSAC Awards Office not later than September 17.

G. G. Smeltzer 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 technician program. Preference will be given to students whose course and project work reflect an interest in Agronomy. No application is required.

Taste of Nova Scotia Quality Food Program Scholarship

The Taste of Nova Scotia Quality Food Program offers a \$1,000 scholarship to a 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, as reflected through course and project work, and financial need. Applications must be submitted to the Awards Office not later than September 17.

Bruce Trenholm/Atlantic '86 Scholarship

A \$500 prize is awarded to an Atlantic student entering the final year of any program with a Holstein farm or 4-H (Holstein calf project) background. Selection criteria include academic performance and career goals. Applications must be submitted to the NSAC Awards office not later than September 17.

Vice-Principal'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 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

Scholarships, Bursaries, and Prizes

their employability, but whose financial constraints are limiting their ability to continue their studies. In the event two or more candidates otherwise qualify for one of the awards, preference will be given to students from Boutilier's Point, Halifax County, or Advocate, Cumberland County. Letters of application must be submitted to the NSAC Awards Office not later than September 17.

Raymond Webber Memorial Scholarship

Landscape Nova Scotia and the New Brunswick Horticultural Association jointly award a \$300 scholarship to the most promising Environmental Horticulture Technology second-year 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.

Women's Institutes of Nova Scotia Scholarship

The Women's Institutes of Nova Scotia (WINS) award a \$500 scholarship to a NS student entering the third year of a degree program at NSAC. Selection criteria include academic performance, leadership and participation in student and community affairs, career plans, and financial need. An essay on the history of WINS and its association to FWIC in addition to a letter outlining plans following graduation are required with the application form. Applications are available from and must be received by May 11 at the following address:

WINS
Nova Scotia Agricultural College
PO Box 550
Truro, NS B2N 5E3

GRADUATE SCHOLARSHIPS/BURSARIES

Stuart F. Allaby Graduate Studies Fund

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 \$2,000 scholarship to a graduate student at NSAC conducting research work on environmental issues. Selection criteria will 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 20.

The Gordon B. Kinsman Memorial Graduate Scholarship

The \$500 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 20.

Scholarships, Bursaries, and Prizes

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.

John Miller Memorial Bursary

The \$500 John Miller Memorial Bursary is awarded to a NS student in any year of any program 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 1983–1997. Applications must be submitted to the NSAC Awards Office not later than September 17.

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, students must be Canadian citizens or permanent residents of Canada who hold, or expect 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 have an 80% average in each of the last two completed years of study. The value of the awards is \$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.

NSAC Graduate Scholarships

NSAC offers scholarships of \$5,000 to students approved (or conditionally approved) for admission to the NSAC/Dalhousie M.Sc. program. 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. No application required.

Nova Scotia Milk Producers Bursary

The Nova Scotia Milk Producers Association awards a \$1,000 bursary to a 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 NS dairy industry, and academic performance. Applications must be submitted to the NSAC Awards Office not later than September 17.

The 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 degree at NSAC who 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 20.

Scholarships, Bursaries, and Prizes

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 20.

MEDALS AND PRIZES

Bimeda-MTCP Animal Health Inc. Prize

Bimeda-MTC Pharmaceuticals awards a prize to a graduate of the Animal Health Technology program at NSAC. The selection of the award is based on excellence in all aspects of the Animal Health Technology program, including clinical, laboratory, and laboratory animal skills. No application is required.

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 15. The award is presented at the graduation class banquet prior to Convocation.

H.J. Fraser Memorial Prize for English

In memory of the late Professor H.J. Fraser, a prize is awarded to a second-year student who has achieved excellence in a first-year English course at NSAC. No application is required.

Dr. Gerry W. Friars Undergraduate Research Prize

The Dr. Gerry W. Friars Undergraduate Research Prize is awarded 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.

Scholarships, Bursaries, and Prizes

Governor-General's Medals

The Governor-General's gold 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 graduate (B.Sc. (Agr.) and 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 AS011 and AS025 as well as other 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.

Nova Scotia Veterinary Medical Association Prize

The Nova Scotia Veterinary Medical Association awards a prize of \$300 to a technical student who has excelled in the animal physiology and animal health courses and who subsequently enrolls in the technology year. No application is required.

R. H. Stevenson Memorial Prize for Mathematics and Physics

In memory of the late Professor R. H. Stevenson, a \$500 prize is awarded at Autumn Assembly to a student who achieves excellence in all 100-level Mathematics and Physics courses required by their program of study. No application is required.

SCHOLARSHIPS AND BURSARIES FOR CONTINUING STUDIES BEYOND NSAC APENS Award and Scholarship

The Association of Professional Engineers of Nova Scotia (APENS) provides an award (value \$500) or scholarship (value \$2,000) to a student from each of the Associated Universities. The award is presented each year 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.

Scholarships, Bursaries, and Prizes

Cobequid Dog Club Scholarship

The Cobequid Dog Club awards a \$400 scholarship to a 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, through her estate, made generous provision 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 takes 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 a NS student who has attended the NSAC and has been admitted to a Canadian veterinary college. No application is required.

Nova Scotia Fur Institute Scholarship

The Nova Scotia Fur Institute awards a \$2,500 scholarship to a graduate in Animal Science from the NSAC who is pursuing graduate studies in fur production at an approved university. Selection will be based primarily on academic performance. Applications must be submitted not later than 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, Sexton Campus (formerly DalTech), 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 the Nova Scotia Agricultural College. 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 NS 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 Agricultural Engineering Department at NSAC. Continuance of the scholarships will be conditional on maintaining a satisfactory academic record. Application deadline is April 30.

Scholarships, Bursaries, and Prizes

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, who demonstrate capacity for leadership, and are committed to the pursuit of academic excellence and innovation. Applications are available at either the NSAC Awards Office or from the Millennium Scholarship website: www.millenniumscholarships.ca. The deadline for receipt of applications is January 19.

The Co-Operators 4-H Scholarship

The Co-Operators award 10 \$1,000 entrance scholarships (one per province) to students entering any year of post-secondary study. To be eligible, applicants must have been 4-H members within the last five years and active members for at least two years. Selection criteria include personal background, goals and ambitions, community involvement and interest, and knowledge of farm safety, based on a presentation to the selection committee. 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, is required. Application deadline is April 15. Application details are available from the Provincial 4-H Office.

Co-op Atlantic McEwen Scholarship

Two university entrance awards of \$1,000 are open to employees and dependents of members of Co-op Atlantic. This is a four-year renewable scholarship. Selection criteria include academic performance, demonstrated leadership ability and interest in co-operation and co-operatives. The application deadline is May 31.

Farm Credit Corporation 4-H Scholarship

Farm Credit Corporation awards 16 \$1,000 scholarships to students across Canada who had been registered 4-H members in the last five years who are in any year of any program of post-secondary study. Applicants must submit a completed application, which includes: general information, career plans, association involvement, and extra-curricular involvement. Applicants must submit an essay of approximately 1000 words. This scholarship will be awarded based on essay style, length, subject knowledge, originality, interpretation of research, spelling, and grammar. Application forms are available from and are due by March 31 at the following address:

Canadian 4-H Council, Central Experimental Farm
930 Carling Avenue, Building No. 26
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 annual, for a maximum of four years or until the first degree is obtained. The deadline for application submission is February 1. Website address: www.terryfox.org

Scholarships, Bursaries, and Prizes

New Brunswick Fruit Grower's Association Scholarship

The \$300 New Brunswick Fruit Grower's Association Scholarship is awarded to a 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 NB 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 \$1000 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. The application deadline is April 15.

NS Department of Agriculture and Fisheries 4-H Scholarships

The NS Department of Agriculture and Fisheries awards four \$1,000 scholarships to students with NS 4-H backgrounds entering a Bachelor's program at a recognized university. 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 a student with a NS 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 application by April 15.

Prince Edward Island 4-H Council Scholarship

The PEI 4-H Council awards a \$1,000 scholarship to a student with a PEI 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 application deadline is April 15.

P.E.I. Mutual Education Trust Fund Centennial Scholarship

Twenty \$450 entrance scholarships available to PEI students who are attending any post-secondary institution. Selection criteria are based on academic performance and financial need. Deadline: May 31.

Robert Walker Memorial Scholarship

Established in 1975 as a memorial to Robert Walker, who lost his life in a farm accident, these 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 NB, with a farm background. Application details are available from the NB Department of Agriculture, Fisheries and Aquaculture, Sussex, NB.

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.

Scholarships, Bursaries, and Prizes

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 November 30.

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, bursaries for two students to participate in an exchange between member institutions. Duration of the exchanges will be either one of two semesters or practical experience work sessions of at least 12 weeks. Applications must be submitted not later than December 15 to:

Vice Principal, Academic
Nova Scotia Agricultural College
PO Box 550, Truro, NS B2N 5E3

Canadian Golf Superintendents Association Scholarships

The Canadian Golf Superintendents Association supports CGSA member students attending educational programs as a means of enhancing their knowledge and skills for the 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 that demonstrates the applicant's interest in the field of turf grass as a career. Applications are due by November 30 at the following address:

Canadian Golf Superintendents Association
5580 Explorer Dr., Suite 509
Mississauga, ON L4W 4Y1

Scholarships, Bursaries, and Prizes

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.

The Co-Operators 4-H Scholarship

The Co-Operators award 10 \$1,000 entrance scholarships (one per province) to students entering any year of post-secondary study. To be eligible, applicants must have been 4-H members within the last five years and active members for at least two years. Selection criteria include personal background, goals and ambitions, community involvement and interest, and knowledge of farm safety, based on a presentation to the selection committee. 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, is required. Application deadline is April 15. Application details are available from the Provincial 4-H Office.

Dairytown Products Ltd. University Scholarship

Dairytown Products Ltd. awards a \$1,000 scholarship and a summer employment opportunity for a third- or fourth-year university student to encourage the study of Dairy Science and/or Food Technology. Applicants must be NB residents enrolled in a science or engineering degree program at a recognized college or university. Preference will be given to a student enrolled in Dairy or Food Science studies. Selection will be based on academic performance, financial need, involvement in agriculture, and interest in the dairy or food industry. Applications must include a 500-word essay, two letters of recommendation, and a transcript, and be submitted not later than July 31 to:

Scholarship Committee
Dairytown Products Ltd.
PO Box 378, Sussex, NB E0E 1P0

Farm Credit Corporation 4-H Scholarship

Farm Credit Corporation awards 16 \$1,000 scholarships to students across Canada who had been registered 4-H members in the last five years and who are in any year of any program of post-secondary study. The application must include general information, career plans, association involvement, and extra-curricular involvement. Applicants must submit an essay of approximately 1000 words. This scholarship will be awarded based on essay style, length, subject knowledge, originality, interpretation of research, spelling, and grammar. Application forms are available from and are due by March 31 at the following address:

Canadian 4-H Council
930 Carling Avenue – Building No. 26
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 annually, for a maximum of four years or until the first degree is obtained. The deadline for application submission is February 1. Website address: 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 a recognized university. The successful applicant will already have completed a minimum of one year in his/her major field of studies. Three \$750 scholarships are offered to individuals enrolled in recognized diploma programs in agriculture and/or journalism or communications. The successful applicant will have already completed a minimum of one year in a diploma program. Applications are available at the NSAC Awards Office and should be submitted not later than July 1 to:

The Keith Gilmore Foundation
5160 Skyline Way N.E.
Calgary, Alberta T2E 6V1.

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, extra-curricular activities, part-time employment, and career plans. Copy of transcript and application form must be received by August 26 at:

Windsor Agricultural Society
PO Box 368
Windsor, NS B0N 2T0

Harvest Trust 4-H Scholarships

Harvest Trust awards \$500 scholarships to students who had been 4-H members within the last five years and active in the 4-H program for at least two years, who are in any year of a degree 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 Canadian products can compete in the competitive export markets?
2. How can producers become more pro-active in the marketing of agricultural products?
3. What action must producers and producer organizations take to ensure sustainable agriculture?
4. What effects do sustainable agriculture, animal welfare, and environmental protection have on consumer attitudes and consumer consumption patterns?

Application deadline is April 15. For application details contact the Provincial 4-H Office.

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 the NB Department of Agriculture, Fisheries and Aquaculture, Sussex, NB.

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 sons/daughters of members. Selection criteria include academic performance, future goals, 4-H experience, and farm background. Applications must be submitted not later than June 25 to:

Jane N. Whaley
Scholarship Committee
Holstein Association of Canada
PO Box 610
171 Colborne Street, Brantford, ON N3T 5R4

Ivomec 4-H Scholarships

Fifty \$1,000 Ivomec 4-H scholarships are awarded to students in any year of post-secondary study who had been 4-H members for at least two years (registered within the last five 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:

A New Millennium of Animal Health – Looking Back, Looking Forward

What do you consider to be the most important animal health innovation of the 20th century? Discuss and explore its impact on the average farmer and the agriculture industry as a whole. What do you foresee could be the most significant breakthrough of the 21st century, and how will it contribute to the growth and development of the industry?

Applications 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 attending any Canadian University or Veterinary College. Applicants should submit their education profile and research proposal by January 15 to:

Karlene Hart, Executive Secretary
Canada Mink Breeders Assoc.
65 Skyway Ave., 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 and extracurricular involvement. Application deadline is February 1.

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 for the Leonard Foundation scholarships are available from:

The Provincial Nominator,
The Leonard Foundation
1774 Pryor Street, Halifax, NS B3H 4G8

Scholarships, Bursaries, and Prizes

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. Application deadline is July 31. An interview is part of the application process. 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. For application information contact the NB Department of Agriculture, Fisheries and Aquaculture, Sussex NB.

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 and interest in the dairy industry. Applicants must provide a completed application form, a one-page letter stating their commitment 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 the following: 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

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 landmines issue is required. Successful applicants will receive a \$1,000 award and an opportunity for publication of the best papers. Further details and application 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.

Scholarships, Bursaries, and Prizes

The Netherwood Foundation

The Netherwood Foundation offers four \$4,000 scholarships to NB women entering second-year post-secondary education. Applications must be submitted not later than July 15 to:

The Netherwood Foundation
c/o W. B. Budge, C.A.
Rothesay, NB E2E 5A5

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

New Brunswick Milk Marketing Board Scholarship

The NB Milk Marketing Board awards a \$750 scholarship to a NB resident, enrolled in a technician or technology diploma or certification 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 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 result 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

Prince Edward Island Potato Industry Graduate Scholarship

The Prince Edward Island Potato Board will award a \$500 scholarship to an individual 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.). Selection criteria include 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 17.

Scholarships, Bursaries, and Prizes

Prince Edward Island Potato Industry Undergraduate Scholarship

The PEI Potato Board will offer a \$500 scholarship to a PEI resident entering the second or third year of an Agriculture degree program at any recognized Canadian agricultural education institution. The applicant must demonstrate through either course work, summer employment, and/or home farm background an interest in working in the potato industry. Selection criteria include academic performance, extracurricular activities, and employment history. Applications must be submitted to the NSAC Awards Office not later than September 17.

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 to both encourage students to pursue golf course management as a career option and to support students in enhancing their knowledge and skills for the turf industry. Applicants must have a minimum of two summers/seasons of work experience as golf course maintenance employees, 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 15.

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 20.

George W. Slipp Memorial Scholarship

The Chicken Farmers of New Brunswick Marketing Board award a \$1000 scholarship in memory of Mr. George W. Slipp. The scholarship 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 November 30.

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.

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, agricultural economics, etc. Selection will be based on financial need, academic performance, involvement in community, and future plans. Applications including a 300–500 word essay, two letters of recommendation, and a transcript of marks must be submitted not later than June 24 to:

Scholarship Committee
New Brunswick Milk Marketing Board
PO Box 490
Sussex, NB E0E 1P0

General Information

THE CENTRE FOR CONTINUING AND DISTANCE EDUCATION

The 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, or
- 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.

As an arm of NSAC, the Centre focuses attention on programs and courses which involve traditional agriculture and aquaculture, related and value-added enterprises, and other land-based activities such as ornamental horticulture, agri-tourism, golf course management, and so on. The Centre seeks to tailor its offerings to meet the needs and wishes of its clients who are typically employed professionals seeking to upgrade their skills and training. 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 who are seeking to extend and diversify their learning base. The Centre has, as part of its mandate, a directive to provide specialized and customized training to specific clients. We seek to meet the training needs of those organizations which are focused on land-based enterprises, or which are involved in traditional agriculture or aquaculture. Please contact us at (902) 893-6666 for more information.

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 Animal Science Building.

Summer School: As part of our service to the campus community, the Centre traditionally offers a Summer School where a number of credit courses are held during the Spring-Summer semester. Courses offered are based on student need. For a listing of courses to be offered, contact our office.

Distance Education: The Centre is actively developing a distance education capacity. Currently, the Centre coordinates the delivery of three first-year degree credit courses:

IN100: Agricultural Ecosystems

IN101: Food Security

EB110: Agricultural Economics

For descriptions of these courses, please see the Description of Courses section of this calendar.

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 Principal. 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.

General Information

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 (Landscape Horticulture), three technician programs, four 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, Sexton Campus (formerly DalTech) or may apply to any other institution.

Two-year programs leading to Technician Diplomas are offered in Agricultural Business, Animal Science, and Plant Science. Graduates may continue their studies in a program of directed studies for a third year and earn a Diploma of Technology in Agriculture.

Two- and three-year Diploma of Technology programs are available in the areas of Agriculture, Animal Health, Environmental Horticulture, and Farming.

The Nova Scotia Agricultural College via a unique cooperation with Dalhousie University offers a Master of Science in Agriculture program. The Master of Science degree is granted by Dalhousie University in association

with the Nova Scotia Agricultural College, the only educational institution in the Atlantic Region with the faculty and facilities capable of providing such a program of study. Through a similar affiliation, students may obtain a Ph.D. in Biology from Dalhousie University. NSAC may also host graduate students registered at other acceptable universities.

The various programs for the 2001–2002 College year are listed and described in this Calendar. The Faculty reserves the right to make any necessary revisions and additions.

The Faculty reserves the right to withhold any courses for which fewer than five students apply.

The Faculty will give sympathetic consideration to any student who wishes to take a special selection of courses in order to fulfil a specific need. The choice of courses will be limited to those that do not conflict when scheduled. Students may write examinations in either of the two official languages of Canada.

FACILITIES

The Nova Scotia Agricultural College is located on a 165-hectare property at Bible Hill, a kilometre northeast of Truro, Nova Scotia. The record of the College's graduates in the past 90 years is conclusive evidence that students obtain a sound agricultural education in the programs offered.

The College buildings – Cumming Hall, Harlow Institute, Banting Building, MacRae Library, Langille Athletic Centre, Collins Horticultural Building, Cox Institute of Agricultural Technology, Boulden Building, Hancock Veterinary Building, Animal Science Building, 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 living and dining accommodations for male and female students.

General Information

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

College Colours

Royal blue and regular gold

STUDENT SERVICES

The Dean of Student Services is responsible for all non-classroom aspects of student life from initial acceptance to graduation. This includes areas such as residence and food services, medical/counselling services, career services, and athletics.

Athletics

Recreational activities. The Langille Athletic Centre provides an opportunity for students to choose a number of activities to enjoy during their leisure time. Racquetball, squash, and badminton are very popular racquet games. The spacious facility includes a power lifting room with free weights and a number of specific benches for the serious lifter. A new fitness and muscle toning room contains individual weight machines, stair climbers, bikes, rowing machines, and other equipment for the individual who wants to maintain a level of fitness. Swimming, tennis, golf, and curling facilities are also available, off campus, to students during the academic year.

Intramural athletics. The intramural program continues throughout the year with units of competition including soccer, softball, volleyball, hockey, basketball, badminton, table tennis, racquetball, and squash. Competition may be on a co-ed class, residence floor, or league draft system.

Varsity athletics. NSAC is a member of the Nova Scotia Colleges Athletic Association, which includes nine colleges/universities. Conference sports for both men and women include soccer, volleyball, basketball, and badminton. Winners from the conference advance to the national championships administered by the Canadian Colleges Athletic Association.

Also recognized as varsity teams are men's hockey and men's and women's woodsmen teams. The hockey team competes in a local competitive district league. The woodsmen teams compete in tournaments throughout the year against teams from New Brunswick, Quebec, Ontario, Maine, Vermont, and New York.

Career Services

The Nova Scotia Agricultural College provides facilities and personnel to assist graduates and undergraduates to obtain part-time, summer, and permanent employment.

Career Services contacts representatives of the agricultural industry to arrange for on- and off-campus recruitment of students. Individual counselling related to career planning and employment information associated with agriculture is available. Students are informed of employment opportunities, which are posted on bulletin boards at various locations on campus. General information on career planning, potential employers, and exchange programs is also available at Career Services.

General Information

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 such basic furnishings as: bed, mattress, desk, chair, closet and drapes. Students are encouraged to develop their social and personal potential through participation in House Council, Student Union, and Student Services activities.

An alternative student accommodation is being offered at Fundy Residence, AgriTECH Park. Fundy features apartment-like living with your peer group (of 10) in large, bright, newly renovated rooms. Each section (apartment) includes a fully equipped kitchen/sitting room with cable TV, 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.

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 the Windows 3.1x/95/98 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.

General Information

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. For further information about any other computing question please contact:

E-mail: J.Stackhouse@nsac.ns.ca

S.Gallant@nsac.ns.ca

Phone: (902) 893-7933

Fax: (902) 893-5449

Helpdesk:

E-mail: helpdesk@nsac.ns.ca

Phone: (902) 893-6308

The Policy Governing Access to and Use of NSAC Academic Computing and the Academic Computing Services User Policy govern the use of computing resources.

Administration and Faculty

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