



Embrace Your World

**107<sup>th</sup> Calendar  
2012/2013**

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The Nova Scotia Agricultural College reserves the right to make changes to this Calendar without notice. The publication of information in this Calendar does not bind the University to the provision of courses, programs, schedules of studies, or facilities as listed herein.

Not all courses listed in the Calendar are offered every year. Students are encouraged to check Nova Scotia Agricultural College's online course registration system: [www.nsac.ca/reg/register.asp](http://www.nsac.ca/reg/register.asp).

The Nova Scotia Agricultural College does not accept any responsibility for loss or damage suffered or incurred by any student as a result of suspension or termination of classes, courses, or services caused by fire, weather, natural disaster, budget limitations, strikes, lockouts, riots, war, quarantine, the operation of law, damage to university property, or for any other cause beyond the reasonable control of the Nova Scotia Agricultural College. NSAC is not responsible for the personal belongings of students and staff while on campus. Belongings should never be left in an unsecured area, especially valuable items such as laptops or other electronic equipment."

To improve communication at the Nova Scotia Agricultural College, e-mail is approved as one of the official means of communication for academic and administrative purposes. As with all official University communications, faculty, staff and students have a responsibility to ensure that e-mail is accessed, read, and acted upon in a timely fashion. Use of NSAC e-mail is bound by the guidelines set out in the official NSAC *Code of Conduct*, the NSAC *Information Technology Services Policy*, the NS Provincial Government e-mail policy, and any relevant federal or provincial legislation.

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# Message from the Registrar

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*Dear Student,*

*On behalf of the Nova Scotia Agricultural College (NSAC) community, I am delighted to welcome you to our campus and the 2012/2013 academic year. We value the intellectual contributions, diversity, leadership and creative energy that students bring to the classroom and student-life events and activities. We strongly believe that one person can make a difference to our campus, to our community and beyond; and...that person can be you.*

It is a time of change at NSAC yet our core values and traditions of the past 107 years remain the same. At NSAC, we pride ourselves on offering a high-quality education in a small, friendly environment. Professors and staff will know you by name. An academic advisor will help guide you in developing meaningful educational plans and establishing career goals. Small class sizes provide students with lots of opportunity for hands-on learning. Administrative staff offer services to support your academic success, such as those provided by our special cohort coordinator for mature students and students with disabilities. Others focus on the provision of programs that will enrich your student-life experience, including a wide variety of athletics and recreational sports. But there is so much more! Look for opportunities to become involved in student leadership and campus employment positions and clubs and societies.

NSAC is exceptional and that is because of our faculty, staff and students. We come from around the globe, bringing unique perspectives that enhance our work together in finding solutions to real-life problems and taking advantage of opportunities. We value the opportunity to contribute to the advancement of knowledge, and are committed to human and environmental sustainability.

NSAC faculty are experts in areas such as agriculture, agri-food and bioresources. They utilize a broad array of teaching methodologies and their concern for student success is evident in their instructional approaches. NSAC faculty are also leading researchers. The innovations that result from their research not only have an economic impact but also help address key challenges in areas such as food production, the environment and energy needs. NSAC researchers are highly competitive in attracting funding for their research programs, and this allows them to build and maintain world-class research laboratories and facilities and to engage students like you in their research.

You will be represented well by the NSAC Student's Union, an ever-active voice of the student body, and leader of many social and cultural experiences on campus. Be sure not to miss Orientation activities, Woodsmen Weekend, College Royal, Shinerama and the Miss Tease Competition! There are many ways to be involved and develop long-lasting friendships, so don't hesitate to participate.

Students come to NSAC from as close as Truro and as far away as Africa, China, Finland, India, and the Netherlands. We encourage you to interact with students from different cultures and learn about their language, customs and cuisine. We're sure that such experiences will only serve to contribute to and enhance your time at NSAC. Learning occurs in all spheres, not only in the classroom.

You have chosen to learn at an institution whose core values of integrity, accountability, sustainability, innovation and academic freedom are reflected in our daily work. We look forward to creating an amazing future with you based on these commonly held values that will continue to live on in the changing world ahead. We're sure you made the right choice and we look forward to supporting your endeavours.

I wish you a rewarding and successful academic year.



Jill Rogers  
Acting Registrar

July 19, 2012	Open House
September 2–4, 2012	New Student Orientation
September 4, 2012	Returning students can move into residence
September 5, 2012	Classes begin
September 18, 2012	Last day to add/change a course (Fall semester)
September 18, 2012	Last day to receive 100% tuition refund
September 25, 2012	Last day to receive 80% tuition refund
October 2, 2012	Last day to receive 50% tuition refund
October 8, 2012	Thanksgiving – No classes
October 10, 2012	Last day to receive 25% tuition refund.
October 19, 2012	Last day to drop a course without academic penalty
October 19, 2012	College Royal – No classes in afternoon
November 1, 2012	Scholarship Banquet
November 11, 2012	Applications to Atlantic Veterinary College due Remembrance Day
November 12, 2012	No classes, in lieu of Remembrance Day
November 15, 2012	Last day to apply to graduate from undergraduate or technical program in May
November 16, 2012	Last day to apply for Drop Fail status
December 3, 2012	Last day to apply to graduate from Master's program in May
December 4, 2012	Last day of classes (Fall semester)
December 6–14, 2012	Exams
January 2, 2013	Orientation for students starting in January Returning students move into Residence
January 3, 2013	Classes begin
January 16, 2013	Last day to add/change a course (Winter semester)
January 16, 2013	Last day to receive 100% tuition refund
January 23, 2013	Last day to receive 80% tuition refund
January 30, 2013	Last day to receive 50% tuition refund
February 6, 2013	President's List Reception
February 6, 2013	Last day to receive 25% tuition refund
February 14, 2013	Founding Day
February 15, 2013	Last day to drop a course without academic penalty
February 25–March 1, 2013	Mid-term study break
February 28, 2013	Last day to apply to the Veterinary Technology program
March 22, 2013	Last day to apply for Drop Fail status
March 29, 2013	Good Friday
April 1, 2013	Easter Monday
April 5, 2013	Last day of classes (Winter semester)
April 8–16, 2013	Exams
May 3, 2013	Convocation
June 30, 2013	Last day to cancel registration and residence application and receive refund
June 30, 2013	Last day to apply for the International Food Business Program
July 2, 2013	Last day to apply to graduate from Master's program in October

# General Information

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## HISTORY

The Nova Scotia Agricultural College (NSAC) 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. NSAC operates under the authority of an Act of the Legislature of Nova Scotia.

NSAC's colours are blue and gold.

## PROGRAMS OFFERED

A wide range of programs is offered at NSAC, including:

- a four-year Bachelor of Science (Agriculture) program offered in association with Dalhousie University
- a two-year Master of Science program offered in association with Dalhousie University
- a two-year Engineering program
- two years of Pre-Veterinary Medicine studies
- a two-year Bachelor of Technology program in Environmental Landscape Horticulture, in association with Dalhousie University (requires prior completion of a two-year landscape-related diploma program)
- a four-year Bachelor of Technology program in Applied Science offered in association with Dalhousie University
- a two-year Veterinary Technology Diploma program
- a two-year Managed Landscapes Technology Diploma program
- a two-year Plant Science Technology Diploma program
- a two-year Business Management Technology Diploma program, with specializations in Dairy, Equine Specialty, Farming, Greenhouse and Nursery, and Pet Specialty
- a Technology Education Certificate program (ten courses)
- an Academic Certificate program in Organic Agriculture (four courses)

Detailed information on these programs can be found in individual program sections in this calendar. Please consult the Table of Contents.

NSAC partners with two universities, Brock University and Dronen University of Applied Sciences, on the delivery of their degree programs.

- *Bachelor of Science in Oenology and Viticulture program from the University of Brock*  
Students study for one or two years at NSAC and then complete the Bachelor of Science in Oenology and Viticulture program at the University of Brock.
- *Bachelor of Administration (Honours) in International Food Business from Dronen University of Applied Sciences*  
NSAC students begin the program in Iceland meeting their European counterparts, then return to NSAC for the remainder of the first year. In year two both groups study together in The Netherlands, followed by a European work placement. In year three all students study at NSAC, followed by a North American work placement. The fourth year allows students to study two minors and prepare a final-year project at their home university.

Detailed information on these programs is available from the NSAC Registry Office.

NSAC reserves the right to make program revisions or additions.

## FACILITIES

NSAC is located on a 165-hectare property at Bible Hill, a kilometre northeast of Truro, Nova Scotia. The NSAC buildings – Cumming Hall, Harlow Institute, Banting Building, MacRae Library, Langille Athletic Centre, Collins Horticultural Building, Cox Institute of Agricultural Technology, Boulden Building, Hancock Veterinary Building, Haley Institute, the Dairy Building, MacMillan Show Centre, and a modern farm building complex – provide excellent teaching and research facilities, as well as offices and laboratories for faculty and staff and for some staff of the Nova Scotia Department of Agriculture. Fraser House, Trueman House, Chapman House, and Jenkins Hall provide excellent accommodation and dining facilities for students. There are also daycare facilities on campus, for staff and students with young children.

# General Information

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## STUDENT ENGAGEMENT PROGRAMS

The Associate Vice President Academic for Students is responsible for all non-classroom aspects of student life from recruitment to graduation. This includes areas such as residence and food services, medical/counselling services, career services, retention programs, 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 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 includes competition in soccer, softball, volleyball, hockey, basketball, badminton, table tennis, racquetball, squash, flag football, and ultimate Frisbee.

*Varsity athletics.* NSAC is one of ten members in the Atlantic Colleges Athletic Association. Conference sports for both men and women include soccer, volleyball, and basketball. Winners from the ACAA advance to the national championships administered by the Canadian Colleges Athletic Association.

Men's and women's woodsmen and rugby teams are also recognized as varsity teams. Rugby teams compete with other post-secondary teams in the Maritimes. The woodsmen teams compete in Canadian Intercollegiate Lumberjacking Association (CILA) tournaments throughout the year against teams from New Brunswick, Quebec, Ontario, Maine, Vermont, and New York.

### Career Services

NSAC provides facilities and personnel to assist graduates and undergraduates in obtaining part-time, summer, and permanent employment.

Career Services contacts representatives of the agricultural industry to arrange for on- and off-campus recruitment of student employees. Individual counselling related to career planning and employment information associated with agriculture are also available. Employment opportunities are posted on bulletin boards at various

locations on campus. General information on career planning, potential employers, and exchange programs is also available at Career Services.

### Health Services

The Health Services office is located in the Dairy Building, with weekday hours from 8 am to 4 pm throughout the year. Primary health care is provided to all NSAC students. Students are triaged according to their physical, psychological, and social needs. The Health Services office is staffed daily by two registered nurses and physician-attended clinics are held weekly. Health Services also co-ordinates the Peer Education Program on Campus known as RESPECT, which is a group of dynamic students who influence their peers to adopt health-enhancing behaviors and attitudes. The RESPECT team conveys knowledge to motivate and equip students to make healthy choices.

### Residence and Food Services

Accommodation and dining facilities are available for up to 350 students in co-educational and single-sex arrangements. Three residences – Chapman, Fraser and Trueman – are equipped with private and shared accommodation, modern laundry facilities, mail delivery, and student lounge/games room. Each room is equipped with basic furnishings such as bed, mattress, desk, chair, closet, and drapes. Students are encouraged to develop their social and personal potential through participation in House Council, Student Union, and Student Services activities.

Trueman House also features apartment-like living for mature students in large, bright rooms. Each 11-bedroom section (apartment) includes a fully equipped kitchen, sitting room with cable TV, high-speed Internet, microwave, laundry room, storage area, and shared washrooms and showers.

Food Services provide a balanced, healthy menu from which on-campus students may choose a variety of main-course and dessert items. Special meals are held to celebrate occasions such as Thanksgiving, Christmas, etc.

### Enrollment Management

The Enrollment Management team is responsible for recruitment and student retention programs. They manage several events that bring prospective students to campus, as well as visiting high schools. They take the lead on planning new student orientation, which is essential to helping our students get off to a good start. Other activities they offer that are designed to enhance student engagement and retention



# General Information

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include student success workshops, student leadership programs, a student ambassador program, and the scholarship and awards office.

## Disability Support Services

The Nova Scotia Department of Education provides support for post-secondary students with a permanent learning disability and/or physical/mental disability. NSAC students may seek assistance and accommodations from a Special Cohort Coordinator located on campus. Documentation (a Psych Ed assessment for a learning disability; a letter from a doctor for a physical disability) must be provided with regards to the disability and its impact on learning. The Special Cohort Coordinator can assist Canadian students with applications for funding resources (e.g., Canada Study Grant). Students from other countries must apply to their respective home countries for similar funding.

If the student is accepted by the Department of Education (Rehabilitation Programs and Services) as a client, such assistance as tutoring, note-taking, interpreters (for hearing impaired) and FM systems may be funded.

## Academic Support Services

A peer tutoring program provided by Student Services is available for all NSAC students. To access the service, students meet with the program co-ordinator, sign a contract, and are matched with an appropriate tutor. Students may seek help for more than one subject area at a time. Each student normally receives two hours of tutorial per week for each course.

NSAC also offers a Writing Centre and a Math Help Centre that are free to all students. Assistance with writing and math is available at regular drop-in times, and writing help is also available by appointment.

## 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 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.

## INTERNATIONAL PROGRAMS

NSAC believes that it is important for students to have an academic experience that incorporates a global perspective. Our campus has a student population that includes students from over 30 countries, which offers all students a dynamic and diverse academic environment.

NSAC is recognized for excellence in learning that builds leaders for innovations that sustain communities, and for the creation of opportunities that shape global agriculture. As part of this mandate we offer a wide variety of opportunities for students to be involved in this through study, work or volunteering abroad. Through formalized student exchanges, international course credits, internships, teaching ESL, and other opportunities, NSAC students have access to a unique learning experience.

## NSAC Student Exchanges

These formalized exchanges are between partner universities. Undergraduate students can spend one or two semesters abroad; some partner universities are able to provide study abroad opportunities for students in technical programs. NSAC students participating in these student exchanges pay tuition to NSAC. Representatives from both NSAC and the partner university work to ensure that the courses the student takes are recognized transfer credits. Canadian students in a formalized student exchange are eligible for Canada Student Loans.

Country	University	Language requirements	Other
Czech Republic	Czech University of Life Sciences (CULS)	Some courses taught in English	Up to 3 students per institution per academic year
Finland	Häme Polytechnique (University of Applied Sciences; HAMK)	Some courses taught in English	Up to 3 students per institution per academic year
United Kingdom	Writtle College	All courses in English	Up to 3 students per academic year

# General Information

## Other Opportunities for NSAC Students to Study Abroad

The following are universities that collaborate with NSAC, facilitating student study abroad. NSAC students would study on a Letter of Permission from the NSAC Registry and the acceptable credits would be planned in advance. (Please note that advanced planning is necessary.) NSAC students would be registered at the partner institution and would pay tuition at the partner university. Language requirements are set by the receiving university. NSAC students would normally be considered International students at the hosting university and would be required to pay international student fees.

Country	University	Other
Chile	Centro de Formacion Tecnica UDA	
China	Tianjin Agricultural College	
Japan	Faculty of Horticulture CHIBA University	
Mexico	Universidad Autonoma de Baja California (UABC)	
Norway	Norwegian University of Life Sciences	Some courses taught in English NSAC students may be eligible for a modest bursary
Pakistan	PMAS-Arid Agriculture University Rawakpindi	
Pakistan	University of Veterinary and Animal Sciences	
Scotland	Scottish Agricultural College (SAC)	NSAC students may be eligible for SAC Centenary Bursary
Ukraine	Chernihiv State Institute of Economics and Management	
Uruguay	Universidad de la Republica	

## INTERNATIONAL COURSE CREDITS

Students travel abroad with NSAC faculty for the delivery of one- to three-week course offerings. Tuition is paid at NSAC; Canadian students are eligible for Canada Student Loans.

See the Description of Courses section for more information.

Additional fees for travel, meals, and accommodations apply for all of these courses.

Credit and non-credit options are available. Students can request consideration for credit through Special Topics courses and/or Research Methods courses when participating in international study programs. Contact NSAC International or the Registry Office for more details.

From year to year there may be other courses available. Please contact NSAC International for more information.

## HORT2003: The British Garden

A 4-week summer course in England, studying the history of British landscape development, period garden features and design philosophy, and comparing North American and British landscape maintenance standards and techniques.

## INTD2001: Agricultural Systems of Central Europe

An intensive two-week spring course that examines agricultural systems in central Europe, offered at the Slovak University of Agriculture in Nitra, the University of Agriculture in Prague, and at the Svent Istvan University in Budapest.

## INTD2003: Food Security & Rural Development in Cuba (A, H)

A winter-semester study of food production and food security in Cuba, with one week spent in Cuba taking part in volunteer projects and tours (augmented with lectures) of urban gardens, an experimental dairy cooperative, an alternative agro-ecological farm, an herbal medicine farm, and coastal and mountain ecosystems.

## ECONXXXX

Selected NSAC Economics courses are offered at Czech University of Life Sciences.

## INTERNATIONAL ASSOCIATIONS

For more information on international study, work, or internship opportunities for students, please contact NSAC International at [www.nsac.ca/international](http://www.nsac.ca/international).

## ARTICULATION AGREEMENTS

NSAC works collaboratively with other universities to extend the educational experience of students by formalizing the study of a program at more than one educational institution. More information on these programs is available at the NSAC Registry Office and on the website ([www.nsac.ca/internationalbusiness](http://www.nsac.ca/internationalbusiness)).

## 2 + 2 FAFU/NSAC Program

Chinese students take the first two years of their B.Sc.(Agr.) from Fujian Agricultural and Forestry University (FAFU) and the final two years at NSAC.

# General Information

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## **NSAC/Tamil Nadu Agricultural University (TNAU) Program**

This agreement provides for undergraduate degree students from TNAU to take the first 3 years of the program in India and to complete the final three semesters at NSAC, qualifying them to receive the Bachelor of Technology Environmental Landscape Horticulture degree from NSAC.

## **NSAC/Annamalai University Program**

This agreement provides for undergraduate degree students from Annamalai University to take their first 3 years of the program in India and to complete the final three semesters at NSAC, qualifying them to receive the Bachelor of Technology Environmental Landscape Horticulture degree from NSAC.

## **NSAC/Brock Viticulture Program**

Students study for one or two years at NSAC and then complete the Bachelor of Science in Oenology and Viticulture program at the University of Brock.

## **NSAC/Dronten International Food Business Program**

NSAC is partnering with Dronten University of Applied Sciences in the Netherlands to offer Dronten's Bachelor of Administration (Honours) degree in International Food Business. This four-year program is designed to provide students with an international business education in managing food value-chains. Students will study and experience job placements in both North America and Europe. See the website ([www.nsac.ca/internationalbusiness](http://www.nsac.ca/internationalbusiness)) for more details.

In any given year there are special student mobility initiatives. Please consult the staff at NSAC International for information when considering study abroad.

## **CANADIAN ASSOCIATION OF DIPLOMA IN AGRICULTURE PROGRAMS**

The Canadian Association of Diploma in Agriculture Programs (CADAP) is an association of post-secondary educational institutions offering diploma programs in agriculture. The purpose of the association is to promote excellence in agricultural education. The association provides opportunities for technical students in several of the programs to enroll in another college for one semester of their second academic year. By encouraging participation in the programs of another CADAP institution, another region of Canada, or another country, CADAP provides opportunities for students:

- to broaden their studies

- to become more familiar with another region of Canada, or another country
- to live a different cultural experience, and
- to gain practical experience in another region of Canada or in another country.

CADAP offers annual bursaries for two students to participate in an exchange between member institutions. Duration of the exchanges will be either one or two semesters or practical experience work sessions of at least 12 weeks. For more information please see their website ([www.cadap-apdac.ca](http://www.cadap-apdac.ca)).

Any student wishing to do a technical exchange program at another institution must have that program approved by the Registrar. The request should be submitted to the Registrar by the student's program advisor or the Department Head. Upon approval of the program, the student will be issued a Letter of Permission detailing which courses will be replaced in the student's program and which courses must be completed at the host institution. The program must be laid out before the student leaves for the exchange institution.

## **CONTINUING AND DISTANCE EDUCATION**

NSAC students often benefit from learning opportunities offered through Continuing & Distance Education (CDE). We offer a variety of courses and programs, including credit and non-credit certificates, online programs, professional development, and skills training. Our education is outcome-based, and with formats and scheduling that work for the students. CDE offers on-site training, including the block release sections of the Farm Technician Apprenticeship Program held on Prince Edward Island. Credit courses are held in the Spring/Summer semester based upon student demand.

For information on CDE courses and programs, visit our website at [www.nsac.ca/cde](http://www.nsac.ca/cde) or call (902) 893-6666. On campus, CDE's main office is Room 276 of the Haley Institute.

# General Information

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## 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 in 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, as well as opportunities to attend scientific conferences and educational tours and to receive newsletters and technical publications. Membership in an Institute is required by provincial statute to practice agrology in most provinces.

The practice of engineering in Canada is governed by independent and autonomous provincial and territorial associations of Professional Engineers, which serve as licensing bodies for the profession. Each association has been established under a Professional Engineering Act adopted by its provincial or territorial legislature. The Canadian Council of Professional Engineers (CCPE) is the national federation of those associations of Professional Engineers and assists them in coordinating and standardizing their work. One such standardization is the accreditation of all Canadian engineering programs to ensure that the academic content and teaching facilities are acceptable to allow graduates admission into all provincial and territorial associations.

## E-MAIL USAGE AT NSAC

To improve communication at NSAC, e-mail is considered one of the primary official means of communication for academic and administrative purposes. As with all official University communications, faculty, staff and students have a responsibility to ensure that e-mail is accessed, read, and acted upon in a timely fashion. Use of NSAC e-mail is bound by the guidelines set out in the official NSAC *Code of Conduct*, the NSAC *Information Technology Services Policy*, the NS Provincial Government e-mail policy, and any relevant federal or provincial legislation.

## COMPUTING SERVICES

Information Technology Services (ITS) is responsible for managing the computing resources found on the NSAC Academic Network. The mandate of ITS 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 university community
- ensure that graduating students are equipped to meet the challenges of new communications technology, and
- provide efficient and effective management of NSAC computing resources

ITS manages over 135 workstations running Windows environments. The workstations are distributed among five general-access labs and connected through a campus-wide network. Microsoft and Corel Suite applications, mathematical, statistical, and CAD software, and discipline-specific software are available from any workstation. Students have full access to both Internet and e-mail services from any lab.

The ITS Media Centre provides students with access to multimedia projectors, scanners, imaging software, and wireless connectivity in our main teaching buildings and in residence. Library catalogues from the MacRae Library and from other educational institutions are available through the campus network.

Internet and e-mail services are available to students living in residence. For information about residence connections please contact Student Services at (902) 893-6672.

For further information about any other computing question please contact the Helpdesk:

- e-mail [helpdesk@nsac.ca](mailto:helpdesk@nsac.ca)
- phone (902) 893-6154
- fax (902) 893-5529

The *Acceptable Use Policy of NSAC Computing Resources* and the *NSAC Computing Services User Policy* govern the use of computing resources.

# General Information

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## **MACRAE LIBRARY**

Start your research at the MacRae Library. Registered students, faculty, and staff have access to services and collections representing the world literature of the life sciences, agriculture and food sciences, environmental sciences, engineering and core collections in the social sciences and humanities. The MacRae Library web page ([www.nsac.ca/library](http://www.nsac.ca/library)) provides detailed information on our resources, research tools and services.

## **Library Resources: Nova Scotia and Beyond**

As a member of Novanet, NSAC shares a single online catalogue of library holdings with nine other post-secondary institutions in Nova Scotia. The online catalogue allows users to search and borrow from a collection of over 2 million volumes, free of charge.

The MacRae Library is also a member of the Atlantic Scholarly Information Network (ASIN). This allows registered NSAC users to access collections of university libraries in Atlantic Canada both in person and through an Interlibrary Loan service.

## **Electronic Resources**

MacRae Library electronic resources can be accessed from any computer workstation on the campus network and from remote locations. As a member of the Canadian Research Knowledge Network (CRKN), the MacRae Library participates in national site-initiatives for electronic resources. NSAC students, faculty, and staff have access to several thousand electronic books and approximately 15,000 full-text peer-reviewed electronic journals in databases such as Elsevier/ScienceDirect, ASABE Technical Library, Wiley, Springer, Taylor & Francis, American Chemical Society, and Institute of Physics.

The Library also subscribes to many databases for the agricultural and related sciences, including CAB Abstracts and CAB Archive 1910-1972, AGRICOLA, AGRIS, Food Science and Technology Abstracts, Biological & Agricultural Index as well as Academic Search Premier and Scopus.

## **Research Tools and Services**

The MacRae Library has the research tools you need to succeed during your time at NSAC. Online library subject guides are available to help get you started. RefWorks is an online reference management software program that can help you organize your references and create bibliographies in dozens of styles. In addition, our Interlibrary Loan service allows you to request – for free – items that you may need from libraries throughout the world.

## **DAY CARE**

The NSAC Day Care, a non-profit organization governed by a Board of Advisors appointed by the President, promotes quality child care. The day care is open five days a week from 7:30 am to 5:30 pm. It is licensed under the Department of Community Services for 33 children per day. A reduced rate is available for the children of students. Remember to reserve early to ensure a space in September. Further information can be found on the NSAC website under Campus Community or by emailing [daycare@nsac.ca](mailto:daycare@nsac.ca).

# Admissions Information

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## ADMISSIONS STATUS

### Full-time

Students are admitted to a program of study as full-time (three or more courses per semester) 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 to a program of study as part-time (fewer than three courses per semester) 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 are at least 23 years of age and who do not meet admission requirements may be admitted as either full-time or part-time students on the basis of being mature applicants. 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 from another post-secondary institution are admitted as visiting students on the basis of a Letter of Permission. Enrollment 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.

### 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 status.

### International

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

## 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 Registry Office:

- a completed application form (forms not properly completed will delay processing)
- the application fee (\$25 in 2011-2012, subject to increase for 2012-13)
- an official transcript 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 section on English Language Requirements)
- supplementary information as required for specific programs

### Response to Applications

NSAC will respond to applications as promptly as possible and will advise applicants of any documentation still required. When the 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 may be a delay during peak periods. As soon as decisions are made, whether admission, deferral, or rejection, applicants will be advised.

Please note, 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.

# Admissions Information

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## READMISSION

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

Students who have been Academically Dismissed (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.

## UNIVERSITY ACCESS PROGRAM (UAP)

### Description

The University Access Program is designed to provide university access to students who do not meet the minimum admission requirements for entry into degree-level programs. The goal of the UAP is to provide the support and training that students require to maximize their chances of university success. Students in the UAP are eligible to enroll in a maximum of 4 courses\* per term. They will also be required to successfully complete a non-credit university success course which covers topics such as time management and study skills (12–15 contact hours). Students will receive both academic advising and student success counselling, and are eligible for other student services such as peer tutoring and career counselling.

Students in the UAP are eligible to proceed without conditions in their second semester if they complete all requirements of the UAP and are in “good academic standing” at the end of their first term. Students in the UAP who do not fulfill these requirements will continue in the UAP.

*\* Students without the requisite academic background may be required to complete university preparatory courses prior to enrolling in the degree-level counterparts. These university preparatory courses would be counted towards the four-course maximum number of courses UAP students can enroll in per term.*

## Admission

The UAP is open to mature students, students direct from high school with an admission average of 60–70%, and students with other post-secondary experience. Admission will be assessed on a case-by-case basis. The following programs are eligible for the UAP: Bachelor of Science (Agriculture), Pre-Veterinary Medicine, Bachelor of Technology in Applied Science, and Engineering Diploma.

## Benefits

The University Access Program:

- provides access to university-level studies
- includes skills development and counselling services necessary to maximize student success
- provides a supportive network of students working towards similar goals

For more information on this opportunity, please contact one of the following:

- NSAC Registry Office  
e-mail [reg@nsac.ca](mailto:reg@nsac.ca)  
phone 1-888-700-6722
- Ms. Lianne MacMinn – Special Cohort Coordinator  
e-mail [lmacminn@nsac.ca](mailto:lmacminn@nsac.ca)  
phone (902) 896-2463

## ACADEMIC PROBATION

Students may be admitted to NSAC on Academic Probation:

- (i) if the student is a mature student who does not meet admission requirements for the program, or
- (ii) if the student's last full-time enrollment at any institution has resulted in dismissal or suspension for academic reasons, or
- (iii) 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.

# Admissions Information

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## ENGLISH LANGUAGE REQUIREMENTS

Applicants whose native language is not English must provide official results from one of the following standardized tests:

- IELTS – a minimum score of 6.0
- TOEFL – a minimum score of 550
- TOEFL iBT – a minimum score of 80
- MELAB – a minimum score of 80
- CAEL – a minimum score of 60

**Note:** *Students who meet all admission requirements except for the English Testing levels may be accepted to NSAC subject to completion of an approved English program offered by the International Language Institute, Canadian Language Learning College, or East Coast School of Languages in cooperation with NSAC. Please contact NSAC for more information.*

International students studying in English and using a Canadian high school curriculum are granted admission exemptions from writing the TOEFL/IELTS or comparable English test if they successfully complete Nova Scotia Grade 12 with a minimum average of 60% (C), including successful completion of Academic English 12 with a minimum grade of 60% (C).

These students must still meet program-specific admission requirements.

## APPLICATION DEADLINES

### **for Domestic Students**

Fall semester	<b>August 1</b> (except Veterinary Technology: February 28 International Food Business: June 30)
Winter semester	<b>December 1</b>

### **for International Students**

Fall semester	<b>March 1</b>
Winter semester	<b>July 1</b>

NSAC reserves the right to rescind any acceptance of an applicant or offer of admission into the program. Such rescission will be in writing and the reason for rescission will be clearly stated. Reasons for rescission include, but are not limited to, submission of fraudulent documents by the applicant, failure to disclose all documents required for the admission's assessment; inability of the student to register on the date for which they were originally accepted into the program, administrative error.



# Admission Requirements

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## NSAC ADMISSION REQUIREMENTS BY PROGRAM 2012/2013

**Possession of the minimum entrance requirements does not guarantee admission.**

### **B.Sc. (Agriculture) and Pre-Veterinary Medicine**

Admission into the B.Sc.(Agr.) program or Pre-Veterinary Medicine studies requires high school graduation with an average of at least 70% in five Grade 12 university preparatory subjects:

- English
- Pre-Calculus Mathematics (or 70% in Academic Mathematics)\*
- any two of the following science requirements: Chemistry\*, Biology, Physics\*, Geology, Oceanography, or Agriculture
- one elective

Applicants who do not meet these admission requirements may be eligible for the University Access Program (see p.15 for more information).

**Note:** *Nova Scotia students who have successfully completed five Grade 12 university preparatory credits, including English and Mathematics, are able to use NS Oceans 11 and/or NS Agriculture 11 to meet the above-noted science requirements.*

\* Applicants who are otherwise qualified but do not have the appropriate physics, chemistry and/or math courses may be admitted with the requirement that they take the relevant non-credit introductory studies course(s) in their first year prior to registering in the degree-level counterpart(s). The non-credit introductory studies courses are CHEM0050 Preparatory Chemistry, PHYS0050 Introductory Physics, and MATH0050 Functions.

### **Engineering**

Admission into the Engineering program requires high school graduation with an average of at least 70% in five Grade 12 university preparatory subjects:

- English
- Pre-Calculus Mathematics (or 70% in Academic Mathematics)\*
- Chemistry\*
- Physics\*
- one elective

\* Applicants who are otherwise qualified but do not have the appropriate physics, chemistry and/or math courses may be admitted with the requirement that they take the relevant non-credit introductory studies course(s) in their first year prior to registering in the degree-level counterpart(s). The non-credit introductory studies courses are CHEM0050 Preparatory Chemistry, PHYS0050 Introductory Physics, and MATH0050 Functions.

A maximum of 12 credit hours of work completed at secondary school, CEGEP, or Community College is allowed. This includes a maximum of 6 credit hours of Math and 6 credit hours of Science.

### **Bachelor of Technology Environmental Landscape Horticulture**

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

### **Bachelor of Technology in Applied Science**

Admission into the Bachelor of Technology in Applied Science program requires high school graduation with an average of at least 70% in five Grade 12 university preparatory subjects:

- English
- Pre-Calculus Mathematics (or 70% in Academic Mathematics)\*
- Physics\*
- two electives

**Note:** *Courses in Technology Education, Chemistry, and Biology would be an asset.*

\* Applicants who are otherwise qualified but do not have the appropriate physics, and/or math courses may be admitted with the requirement that they take the relevant non-credit introductory studies course(s) in their first year prior to registering in the degree-level counterpart(s). The non-credit introductory studies courses are CHEM0050 Preparatory Chemistry, PHYS0050 Introductory Physics, and MATH0050 Functions.

# Admissions Requirements

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## **Technology Diploma (Business Management)**

Admission into the Diploma in Business Management Technology program requires high school graduation with successful completion of the following university preparatory courses:

- Grade 12 Academic English
- Grade 11 Academic Mathematics
- Biology 11 or Chemistry 11 or Agriculture
- Integrated Science 10 or equivalent

**Note:** Supplemental documentation is required for the Dairy Farming and Equine specializations. Forms are available at [www.n sac.ca/apply](http://www.n sac.ca/apply) or upon request from the Registry Office.

## **Technology Diploma (Veterinary)**

Admission into the Veterinary Technology program requires high school graduation with an average of at least 60% in five Grade 12 university preparatory subjects:

- English
- Pre-Calculus Mathematics (or 70% in Academic Mathematics)
- Chemistry
- Biology
- one elective

## **Technology Diploma (Managed Landscapes)**

Admission into the Managed Landscapes Technology program requires high school graduation with an average of at least 60% in five university preparatory subjects:

- Grade 12 English
- Grade 12 Mathematics
- Grade 12 Biology
- Grade 11 Chemistry
- one Grade 12 elective

## **Technology Diploma (Plant Science)**

Admission into the Plant Science Technology program requires high school graduation with successful completion of the following university preparatory courses:

- Grade 12 English
- Grade 11 Mathematics
- Grade 11 Chemistry
- Science 10 or Biology

## **ADDITIONAL ADMISSION REQUIREMENT for Students**

### **Graduating from High Schools in the United States of America**

Students who have graduated from a high school in the United States of America must submit their SAT scores. Students must have achieved average SAT I scores of at least 500.

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

## Financial Information

**Note:** At the time of printing the 2012/2013 NSAC Calendar, fees for 2012/2013 were unavailable. The rates shown below are the rates for the 2011/2012 academic year. The rates for 2012/2013 will be posted on the website ([www.nsac.ca/reg/moneymatters](http://www.nsac.ca/reg/moneymatters)) when available.

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

All fees are due and payable as of the first day of classes (September 5, 2012, for the Fall semester and January 3, 2013, for the Winter semester). 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)

Program	Price per Course (2011/2012 rates)
Degree level	\$566
Technical level	\$350
Veterinary Technology	\$469
Audit (Degree level)	\$566
Audit (Technical level)	\$350
Non-credit Preparatory	\$221
Workplace Readiness	\$103
Distance Education Course Fee	\$25*

\* Off-site non-program Distance Education students are charged a \$40 DE Course Fee, but no student fees.

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

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

### TUITION FEES (International students)

Program	Price per Course (2011/2012 rates)
Degree level	\$1132
Technical level	\$700
<b>Books</b>	<b>(2011/2012 rates)</b>
Full-time students (approx./year)	\$1200

### STUDENT FEES

A Student Fee, covering Caution/Development Fund and non-academic student activities and support programs, and a Technology Renewal fee are charged to all full- and part-time students. These fees are compulsory and non-refundable. Students who are registered in one or two courses in a semester pay Part-time Student fees, and they receive a student card.

All full-time domestic students at NSAC are automatically enrolled in the Student Health and Dental plans when they register for classes.

Full-time Students	(2011/2012 rates)
Student Fees* (per semester)	\$188
Technology Renewal (per semester)	\$75
Health/Dental Fees** (per year)	\$290

Part-time Students	(2011/2012 rates)
Part-time Student Fee* (per course)	\$54
Technology Renewal Fee (per course)	\$22

### \*Caution/Development Fund

Included in the Student Fees payable, students pay a fee to help cover the cost of damages to NSAC property, breakage in labs, etc.

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

## Financial Information

All students are subject to a general levy through the office of the Associate Vice President Academic for Students for deliberate breakage and damage to buildings and equipment that cannot be traced. The balance of monies collected and not required to cover damages/breakages will be placed into funds to support student residence development, study abroad, and broad-based student development activities and services.

### \*\*Extended Health and Dental Plans

The premiums for the extended health and dental plans are paid annually; therefore the process for opting out must be done prior to the specified deadline, which coincides with NSAC's last date to register for a Fall semester course. Students will be considered to have opted out for the duration of their studies at NSAC. More information regarding the Student Health and Dental plans can be found at [www.gallivan.ca](http://www.gallivan.ca) or by visiting the on-site Student Benefits Plan Office.

### PROGRAM-RELATED FEES

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

Full-time students in the Veterinary Technology program are charged an additional program fee, which is payable at registration. In 2011/2012 this fee was \$97 per semester. For a complete list of supplies and services that are provided to Veterinary Technology students in return for this fee, contact the Department of Plant and Animal Sciences. In addition to this fee, students may be expected to purchase required materials and equipment.

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

Students in the Diploma in Business Management program are required to pay an additional \$85 Materials and Services Fee per semester to cover the cost of workplace readiness training, such as First Aid and Occupational Health & Safety, and other services provided.

### RESIDENCE AND MEAL PLAN FEES (2011/2012 rates)

At the time of printing this Calendar, fees for 2012/2013 were unavailable. The rates shown below are the rates for the 2011/2012 academic year. The residence and meal plan rates for 2012/2013 will be posted on the website ([www.nsac.ca/residence/res\\_fee.asp](http://www.nsac.ca/residence/res_fee.asp)) when available.

### Residence and Meal Plan Fees (2011/2012 rates)

Plan	Price per Term	
	Fall	Winter
Shared room and 7-day meal plan	\$3744	\$3744
Private room and 7-day meal plan	\$4047	\$4047
Large private room and 7-day meal plan	\$4309	\$4309

Students living in residence are provided with a meal plan. Chartwells Food Service operates the Market Place which is housed in Jenkins Hall and offers a continuous dining service for residence students. The Market Place is open from early in the morning until late in the evening seven days a week, allowing students to have meals, snacks and coffee breaks as often as they like through the day/evening.

Students living in residence are required to pay for that room for the entire eight months of the academic year, with half of the fee charged in Fall and half charged in Winter. Students who are enrolled in NSAC for only one term may stay in residence for that term and would pay one-half of the full-year rate.

### Other Residence Fees (per year)

House Fee	\$40
Laundry Fee	\$60

Please note that residence students will be charged \$50 for a lost room key and \$100 for a lost front-door key.

## Financial Information

### Graduate/Mature Student Housing

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

This program features apartment-style living with peers. It includes a fully equipped kitchen with lots of cupboard space and a furnished sitting area with cable TV and a computer with high-speed Internet. Students share these common areas from eleven private furnished rooms which have local phone service, cable, and high-speed Internet service. The washrooms and shower rooms are shared. In addition, students will have access to recreational facilities in Trueman House and will be able to participate in all House events.

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

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

Students accepted into the mature housing unit will commit to one semester. Students wishing to vacate their room for the second semester must notify the residence office by November 1. All other fees and the cancellation policy are the same as the regular housing program. The 2012/2013 fees for the graduate/mature student housing program will be posted on the residence office website when available ([www.nsac.ca/residence/res\\_fee.asp](http://www.nsac.ca/residence/res_fee.asp)).

Students wishing to apply should forward an application and deposit of \$300 to reserve space in this program. This deposit will be applied to the first month's rent. The deposit will be refunded up to, but no later than, one month prior to your arrival date. Students are required to notify the residence office in writing of their intent to terminate their residence agreement.

### REFUNDS

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

### Tuition Fees

Refunds for withdrawal from courses 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

### Student Fees

Student fees will be refunded to students who withdraw during the first two weeks 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.

### Residence Fees

Students who accept a place in residence and fail to cancel their residence application (in writing) prior to May 31 (returning students) and June 30 (first-time students) for the Fall semester and November 30 for the Winter semester will forfeit their residence deposit or be levied a \$300 cancellation fee. Room fees are charged from the first day that residences officially open.

**Students withdrawing from residence at any time after they move in who are not also withdrawing from NSAC will be required to pay for that room for the entire eight months of the academic year, unless there are no vacancies in residence and an off-campus replacement can be found to take their vacated space.**

Students who withdraw from NSAC and residence will be charged room fees for the term of withdrawal as follows:

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

From the end of the third week, 100% of the room fee for the semester will be charged.

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

### NON-PAYMENT OF FEES

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

Transcripts will not be issued to students with outstanding accounts.

# Financial Information

## APPLICATION TO GRADUATE

Graduation takes place in May each year. Students intending to graduate must submit an Application to Graduate form to the Registry Office by the previous November 15. Students who apply by November 15 to graduate will receive confirmation from the Registry Office prior to the start of the Winter term. There is no fee charged for an application to graduate submitted by the deadline; however, applications that are submitted after November 15 must be accompanied by a \$50 non-refundable late fee.

## TRANSCRIPTS

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

To request a transcript, a student must mail or fax the appropriate form (obtainable at the Registry Office or at [www.nsac.ca/reg/forms](http://www.nsac.ca/reg/forms)) or a signed letter of request to the Registry Office. It is not possible to accept a transcript request over the telephone. Transcript requests are processed strictly in the order in which they are received. Although the normal processing time is approximately five working days, additional time will be required at peak periods.

Official transcripts are forwarded directly from the Registry Office to an official third party.

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

## REGISTRATION DEPOSIT

### New Students

The final admission step for new students is to submit the \$200 Registration Deposit to the Registry Office. 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. The registration deposit will be refunded for students who submit written notice of cancellation on or before June 30. No deposits received after June 30 will be refunded.

## RETURNING STUDENTS

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

## RESIDENCE DEPOSIT / CANCELLATION FEE

New students wishing to apply for accommodation in residence must submit the \$190 Residence Deposit by June 1. This may be submitted at the same time as the Registration Deposit. Deposits are applied to total residence fees. The residence deposit will be refunded, up to but not after June 30, for students who submit written notice of cancellation by that time. No deposits received after June 30 will be refunded.

### Returning Students Registered for Residence Room Draw

Returning students wishing to take part in the March Room Draw should contact the Residence Office for details. A cancellation fee of \$300 will be levied against any students failing to cancel their application in writing by May 31.

**Note:** *Students with outstanding balances on their accounts will not be permitted to enter the room draw.*

## EARLY ARRIVALS TO RESIDENCE

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

## SCHOLARSHIPS AND BURSARIES

NSAC has a well-deserved reputation for providing excellent scholarship and bursary opportunities for students. Each year, NSAC provides upwards of \$1,000,000 in awards, and over two-thirds of NSAC's student population benefits from these awards. Refer to the *Scholarships, Bursaries and Awards* section of this calendar, visit NSAC's Awards Office in Room 106 of the Cox Institute, or go to the website at [www.nsac.ca/awardsoffice](http://www.nsac.ca/awardsoffice) to find detailed information on scholarships and bursaries, including the criteria, funding amount, and deadline for each scholarship. Students are encouraged to apply for as many as possible, as some scholarships may have few applicants.

# Financial Information

## 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. Information on student loans can be found at [www.nsac.ca/reg/moneymatters](http://www.nsac.ca/reg/moneymatters). Application forms are available as follows:

### Nova Scotia

Department of Education  
PO Box 2290  
Halifax Central  
Halifax, NS B3J 3C8  
[www.studentloans.ednet.ns.ca](http://www.studentloans.ednet.ns.ca)

### New Brunswick

Department of Post-secondary Education, Training and Labour  
Chestnut Place  
PO Box 6000  
Fredericton, NB E3B 5H1  
[www.studentaid.gnb.ca](http://www.studentaid.gnb.ca)

### Prince Edward Island

Student Financial Services  
Department of Innovation and Advanced Learning  
PO Box 2000  
Charlottetown, PE C1A 7N8  
[www.studentloan.pe.ca](http://www.studentloan.pe.ca)

### Newfoundland & Labrador

Department of Education  
Student Aid Division  
St. John's, NL A1C 5R9  
[www.ed.gov.nl.ca/studentaid](http://www.ed.gov.nl.ca/studentaid)

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.

## INTERNATIONAL STUDENT INFORMATION

### Application Deadlines

September admission	March 1
January admission	July 1

### Typical Costs per Year (in Canadian dollars):

**Note:** At the time of printing the 2012/2013 NSAC Calendar, tuition fees for 2012/2013 were unavailable. The rates shown below are the rates for the 2011/2012 academic year.

Degree tuition (10 courses)	\$11,320
Books and instruments	\$1,200
Health insurance (mandatory single coverage)	approximately \$660
Student fees	\$526
Residence plus meal plans (shared room/7-day meal plan)	\$7,488
House/laundry fees	\$100
Personal expenses (clothing and amusement)	approximately \$1,600
Typical total (approximate)	\$22,894

Information regarding off-campus housing and leases can be found on the Student Services website ([www.nsac.ca/stuserv](http://www.nsac.ca/stuserv)).

### Student Visa and Health Insurance

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

# Regulations and Procedures

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

Every student is expected to show, both within and outside the University, 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 University discipline. Students should make themselves familiar with details of the regulations and procedures, which are published in the NSAC *Student Handbook* under Community Standards and in the *Residence Handbook*, available at [www.nsac.ca/stuserv](http://www.nsac.ca/stuserv).

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

## **FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY**

The Freedom of Information and Protection of Privacy (FOIPOP) Act provides for the protection of an individual's right to privacy but also requires that certain records be disclosed upon request unless they are exempted from the disclosure. The Act requires that NSAC not disclose personal information if that information would constitute an unreasonable invasion of personal privacy. Applicants to NSAC are advised that information they provide along with other information placed in a student file will be used in conjunction with University practices for internal use and will not be disclosed to third parties except in compliance with the FOIPOP Act or as otherwise required by law. The Federal Statistics Act allows Statistics Canada to collect student information for statistical analysis, but this information will not be released in a manner that identifies individual students. Further details on the use of this information can be obtained from Statistics Canada ([www.statcan.ca/english/concepts/PSIS/index.htm](http://www.statcan.ca/english/concepts/PSIS/index.htm)).

Please note that the Maritime Provinces Higher Education Commission collects this information for Statistics Canada and does similar analysis.

Students who do not wish to have their information used can ask Statistics Canada to remove their identifying information from the national database. On request by a student, Statistics Canada will delete an individual's contact information (name, address, or other personal identifiers) from the PSIS database. To make such a request, please contact Statistics Canada:

### **via telephone**

Monday to Friday

8:30 am to 4:30 pm EST/EDST

1-800-307-3382 or 1-613-951-7608

### **via mail**

Institutional Surveys Section

Centre for Education Statistics

Statistics Canada, Main Building, SC 2100-K

Tunney's Pasture, Ottawa, ON K1A 0T6

### **via e-mail**

[PSIS-SIEP\\_contact@statcan.gc.ca](mailto:PSIS-SIEP_contact@statcan.gc.ca)

## **ADVISING**

NSAC is committed to providing students with assistance in the transition to university life and guidance throughout the academic process. Academic advisors are assigned to all students, assisting them with a wide variety of issues from time management to program selection. It is important to note that the final responsibility for program success rests with the student.



# Regulations and Procedures

## ACADEMIC STANDING

Academic records are reviewed after every term and at the end of each academic year. Students are assessed with an academic standing as follows:

- None – students who only take a single course do not receive an academic standing
- Good – students with two or more courses who are not on Probation, Academic Dismissal, or the President's List
- President's List – students who are in the top 10 percent of their category (Technology, Engineering, Degree); they must have a term average of at least 80%, be enrolled in four or more courses, and not have any failures
- Probation – students who have a sessional average less than 50%, or who have failed 50 percent or more of their courses (including Drop Fails), or whose cumulative average is less than 60% (less than 55% for Tech students)
- Academic Dismissal – students who have two consecutive terms (normally Fall/Winter) of two or more courses where they have a sessional average below 50% or they have failed 50 percent or more of their courses (including Drop Fails)

Students with poor academic records may be placed on Academic Probation or Academically Dismissed (Required to Withdraw) for a full semester (normally the Fall semester, applying to return in the Winter semester).

Students will only receive an academic standing upon completion of all courses in a term.

## Academic Probation

Academic Probation is assessed each term. Students are placed on Academic Probation if they are taking two or more courses and:

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

Students on Academic Probation need to work with their advisors to ensure that they have a plan in place to assist them in improving their academic performance. Students on Academic Probation can continue to register on their own while on probation, but they are limited to a maximum workload of 5 credit courses for degree students and 6 credit courses for technical students.

## Removal From Academic Probation

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

## Academic Dismissal (Required To Withdraw)

Academic Dismissal is assessed only after the Winter semester. Students will be dismissed for a full semester if they have two consecutive terms (normally Fall/Winter) of two or more courses where:

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

**Note:** *Students returning from a period of Academic Dismissal are automatically placed on Academic Probation.*

## Academic Dismissal Appeal Policy

The following are the only grounds that a student may use for appealing Academic Dismissal:

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

## Appeal Process Procedures and Deadlines

1. Students must submit a letter to the Registrar requesting that their status be appealed. The letter should clearly demonstrate that the appeal is in accordance with the Grounds for Appeal described above. Documentation supporting any claims made must also be included. All information contained in the letter will be kept confidential.
2. Appeals must be received by 4:30 pm on June 15. The Registrar will meet with members of the Standards and Admissions Committee to review the appeal.
3. Students will be informed of the decision by letter only. All decisions are final.

# Regulations and Procedures

## ACADEMIC RESPONSIBILITY

### Academic Integrity

NSAC students are expected to display self-discipline and maturity throughout their period of study. At times there may be considerable pressure to achieve high grades, and 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 University and the degrees and diplomas that the University awards. NSAC does not condone these or other forms of academic misconduct under any circumstances and will take appropriate disciplinary action.

Regulations concerning academic misconduct can be found in the NSAC Academic Integrity Policy:

[www.nsap.ca/academicintegrity/Academic\\_Integrity\\_Policy.pdf](http://www.nsap.ca/academicintegrity/Academic_Integrity_Policy.pdf)

### Missing Classes and Course Work

NSAC students are responsible for their own academic success. They are expected to attend all lectures and laboratory periods in the courses for which they are registered and to complete all of their coursework on time. Some courses have mandatory attendance requirements, which will be stated in the course outline.

A student who misses any coursework (e.g., classes, tests, assignments, etc.) due to medical or personal circumstances beyond their control must immediately contact the instructor to discuss the situation and how it might impact their academic performance. Together the instructor and the student should determine how best to complete the missed coursework, or to work out an appropriate and reasonable accommodation.

The Registry Office may, in some circumstances, issue a notice on behalf of a student who has left suddenly due to a medical or family emergency. As soon as possible the student is required to contact the individual instructors and discuss the completion of the missed coursework or an appropriate accommodation. Supporting documentation, such as a letter from a doctor, will normally be required for any significant accommodations.

A student who misses significant periods of time may not be able to make up missed coursework and may be required to forfeit the course. This decision will be made by the Vice-President Academic in conjunction with the instructor and the Registrar.

Misrepresentation of medical or personal circumstances will constitute academic dishonesty and will be referred to the Academic Integrity Committee.

## ADVANCED STANDING

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

- Each course must be at the same academic level as the one it is replacing.
- Each course must satisfy a requirement of the student's academic program.
- Elective credits may be awarded for courses that have no direct match in the NSAC curriculum.
- Marks obtained at an external institution are not recorded on NSAC transcripts and do not factor into the student's cumulative average.
- Students enrolled in a four-year degree program must complete a minimum of 15 courses at NSAC to graduate.
- Students enrolled in an Engineering program must complete a minimum of 11 courses at NSAC to graduate.
- Students enrolled in a technical diploma program must complete a minimum of one-half of the required courses at NSAC to graduate.

Students may be eligible for advanced credit standing based on International Baccalaureate (IB) or Advanced Placement (AP) results. Credits, up to a maximum of 10, may be awarded for students with Higher Level IB class scores of 5, 6, or 7 or an AP national exam score of 4 or 5. Students who have successfully completed their International Baccalaureate Diploma with a total score of 30 or higher are guaranteed 10 credits in the B.Sc.(Agr.) program. Those wishing to apply for credit at NSAC based on IB or AP must supply an official transcript of test results to the Registry Office. The student will be notified once the assessment is complete.

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.

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. Please consult the Registry Office for information concerning your application and transfer credits.

# Regulations and Procedures

## ATHLETICS: VARSITY AND CLUB TEAMS

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

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

## 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 fulfill 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.

Students wishing to Audit a course must adhere to the same registration deadlines as students taking the course for credit.

## CHALLENGE FOR CREDIT

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

### Procedures

- Application for Challenge for Credit is made to the Registrar. A Challenge for Credit is charged at 50% of the course fee.
- The department that is responsible for the course in question must be satisfied that there is a reasonable basis for requesting a Challenge for Credit, such as previous work experience or educational experience for which a credit cannot be obtained directly. The department may designate courses that cannot be challenged. The academic basis of the department's decision is final and cannot be appealed.
- The Challenge for Credit will normally be in the form of a comprehensive examination, but for a course with an accompanying laboratory or project(s) the department may require the demonstration of appropriate skills as a prerequisite to, or as a part of, the Challenge for Credit examination. A Challenge for Credit examination is given at the discretion of, and is administered by, the department.

- The department and instructor concerned will determine the content and format of the Challenge for Credit examination.
- A Challenge for Credit examination will be given at a time arranged by the department, but must be completed and the grade submitted prior to the last date for adding a course for the term in which the particular course is offered.
- Challenge for Credit examinations will be graded as either Pass or Fail. This grade is final and cannot be appealed. If the Challenge for Credit examination is passed, the course will appear on the student's transcript indicating a 'P' for pass. Challenge for Credit examination failures will not be recorded on the student's transcript.
- No student may Challenge for Credit a course that appears on the student's transcript. This includes courses assigned a Drop Fail (DF) or Audit status and courses offered at NSAC or courses attempted elsewhere for which a credit would normally have been granted by NSAC. The latter information can be obtained from the Registry Office.
- A student currently on Academic Probation or with a Required to Withdraw status may not Challenge for Credit.
- A student may not Challenge for Credit more than once in any course.
- A maximum of six credits may be accumulated by Challenge for Credit.

## COURSE LOAD

### Normal Course Load

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

### Course Overload

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

# Regulations and Procedures

## DROPPING COURSES

### Deadline to Drop a Course Without Penalty

The deadline for dropping a course without academic penalty is 4:30 pm on the Friday of the seventh week of classes (October 19, 2012, for the Fall semester and February 15, 2013, for the Winter semester).

### Drop Failure

A Drop Fail in a course is a grade assigned when a student drops the course at the Registry Office after “the last day for dropping a course without academic penalty” and no 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 marked as DF will not be included in determining full-time status. Students must notify the instructor of their intention to Drop Fail.

### Deadline for Drop Fail Status

The deadline for declaring a Drop Fail status for a course is 4:30 pm on the Friday of the 11th week of classes (November 16, 2012, for the Fall semester and March 22, 2013, 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. A student must not communicate with any other student during the examination period.
4. Foreign language paper dictionaries, reported to and approved by the proctor, may be used by students whose native language is not English. Electronic translators are not permitted to be used during exams.
5. All texts, handbooks, notes, calculators, and other electronic devices (e.g., cell phones, PDAs, translators) must be deposited with the proctor before the student takes a seat, unless special provision has been made by the examiner, in writing, for any of these items to be used during the exam period.

6. Students who contravene an exam regulation will normally be allowed to complete their examination unless they are deemed by the proctor to be causing a disturbance. Following the examination period both student and proctor should complete an NSAC Judicial Committee Incident Report so that the matter can be referred to the NSAC Judicial Committee.
7. All forms of academic dishonesty are considered serious offences at NSAC, and any student who commits such an offence runs the risk of a range of sanctions, including a failure in the course or a requirement to withdraw from the University.
8. Sign-in and sign-out sheets are to be used during all exams.
9. If an entire day of exams is cancelled (e.g., NSAC storm closure) the exams on that day will normally be rescheduled to the day after the posted exam schedule. Should a campus closure be necessary, students will be informed by local media and NSAC e-mail.

### Supplemental Examinations

Supplemental examinations are not offered.

### Deferred Examinations

A deferred examination may only be permitted for:

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

Unless the student presents 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 instructor in consultation with the Registrar.

## GRADES

### Basis of Marking

NSAC courses are marked according to a numeric grading scale of 0-100; a passing grade is 50%. The evaluation of a course may be based on tests, laboratory exercises, other assignments, examinations, and attendance. In determining a final mark, instructors will take into consideration the total work of the course. The evaluation method used by one instructor will not necessarily be the one used by another.

# Regulations and Procedures

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 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.

## Incomplete Grade Policy

Students are expected to complete class work by the prescribed deadlines. A student who fails to complete the required work for a particular course during the established time period of the semester can expect to receive a failing grade. However, where exceptional circumstances (such as acute illness, family emergency, or death of a close relative) interfere in the completion of all the requirements necessary to pass the course, the student may apply to receive a grade of "Incomplete" ('IN') in the course. The intention of an 'IN' is to allow the student extra time beyond the end of the semester to complete the work. An 'IN' will not be allowed for students who have simply fallen behind in submitting required work.

The student must inform the instructor of the exceptional circumstances that warrant seeking an 'IN' by completing an Application for Incomplete Grade form. It is expected that this form, accompanied by appropriate supporting documentation (e.g. medical note from doctor, death certificate, etc.), will be submitted to the instructor within a week of the event occurring and prior to the last day of classes. If the instructor supports the request for a grade of 'IN', he/she will complete the appropriate sections of the form and forward the form with all supporting documentation to the Registrar for the Registrar's signature. In all circumstances, an 'IN' grade must be approved by both the instructor and the Registrar.

Subsequent completion of the work following the end of the class may result in a passing grade by the class instructor and the 'IN' will be removed from the student's academic record, as long as the work is completed before the following deadlines:

Fall semester classes	February 1
Winter and regular session (Sept.-Apr.) classes	June 1

The student will receive a mark that reflects the work completed in the course.

After the above deadlines, an 'IN' can only be extended with the permission of the Department Head and Registry.

## Re-assessment of Grades

Any student who has questions about grades must discuss them with the class instructor. Should a resolution not be reached, the student is to consult the head of the department. If the concerns still cannot be resolved the student may, after receiving the final grade for the course, apply for re-assessment of a grade by making a written request to the Registrar, accompanied by a fee of \$50 per course. The request must identify the specific component which the student wishes re-assessed (e.g., a mid-term or final examination, a major test, a written assignment such as a term paper) and the grounds for the request. Dissatisfaction with grades is not sufficient grounds for an appeal. Such requests must be made by:

Fall semester classes	March 1
Winter and regular session (Sept.-Apr.) classes	July 1

When an appeal of a grade is received, the Registrar will, after consultation with the original instructor, arrange for a re-read of the examination or paper. Re-reads of examinations will be conducted by the head of the department involved and a second qualified faculty member or subject matter specialist. In the event that the head of the department is the instructor, the Vice-President Academic will designate a replacement to conduct the re-read.

If an appeal does not fall within the scope of the above, the Registrar will set up an appeal committee comprised of the head of the department involved plus two faculty members (one chosen by the student and one chosen by the course instructor). If the head of the department is the instructor, the Vice-President Academic will designate a replacement. Both the student and the course instructor may present their respective cases in writing to the appeal committee. The committee reserves the right to meet with either or both of them.

The student will be notified by the Registrar's Office of the outcome of the re-assessment. If the re-assessment results in the assignment of a grade that is higher than the original one, the \$50 will be refunded. Students are advised that the re-assessment process could result in a grade that is lower than the original one. In either case, the new grade will replace the original one.

All decisions regarding grades in the appeal process are final. If a grade is changed, the instructor will be provided with a written explanation for the change.

# Regulations and Procedures

## 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 University.

## GRADUATION

### Application for Graduation

Students intending to graduate in May must submit an "Application to Graduate" to the Registrar by the previous November 15. There is no charge for applications received by the Registry Office on or before November 15; however, applications received after November 15 must be accompanied by a non-refundable \$50 late fee. Applications are available at the Registry Office or on the website at [www.nsac.ca/reg/forms](http://www.nsac.ca/reg/forms).

### Graduation Requirements

Graduands may opt to fulfill the program requirements in place at the time they entered the program or those in place at the time of graduation. The graduand must completely satisfy the syllabus he/she chooses. In the event that required courses are no longer offered, the University will prescribe appropriate substitutes.

### Diplomas Granted in Absentia

Students not planning to attend the Convocation Ceremony must submit the Intention to Graduate In Absentia form to the Registry Office not later than 24 hours prior to the ceremony. Forms are available in the Registry Office and on the website at [www.nsac.ca/reg/forms](http://www.nsac.ca/reg/forms).

### Participation in Convocation Policy

Students graduating with a degree or diploma granted by NSAC and approved by NSAC Faculty Council will be eligible to participate in NSAC convocation, subject to Maritime Provinces Higher Education Commission approval of the program when such is required. Students graduating from an academic certificate program of a minimum of one academic year in duration and approved by NSAC Faculty Council or the Vice-President Academic, will be eligible to participate in NSAC convocation.

### Academic Residency Requirements

#### *B.Sc.(Agr.)*

Students intending to graduate with a B.Sc.(Agr.) must successfully complete a minimum of 15 courses in their program at NSAC, including 6 courses at the 3000 or 4000 level.

#### *B.Tech*

Students intending to graduate with a B.Tech must successfully complete a minimum of 15 courses in their program at NSAC, including 6 courses at the 3000 or 4000 level.

#### *Engineering*

Students intending to graduate with an Engineering diploma must successfully complete a minimum of 11 courses in their program at NSAC.

#### *Technical Diploma*

Students intending to graduate with a Technical Diploma must successfully complete a minimum of one-half of the total required courses in their program at NSAC.

### Time to Completion of Academic Programs

Students are expected to complete their academic programs within a specified timeframe. This ensures that their skills and knowledge are current at the time of graduation.

- Students must complete the B.Sc.(Agr.) program within 10 years of enrollment in their first B.Sc.(Agr.) course.
- Students must complete the B.Tech – Applied Science program within 10 years of enrollment in their first B.Tech – Applied Science course.
- Students must complete the B.Tech Environmental Landscape Horticulture program within 6 years of enrollment in their first B.Tech Environmental Landscape Horticulture course.
- Students must complete the Managed Landscapes Technology Diploma program within 6 years of enrollment in their first Managed Landscapes Technology Diploma course.
- Students must complete the Diploma in Business Management program within 6 years of enrollment in their first Diploma in Business Management course.
- Students must complete the Veterinary Technology Diploma program within 6 years of enrollment in their first Veterinary Technology Diploma course.
- Students must complete the Plant Science Technology Diploma program within 6 years of enrollment in their first Plant Science Technology Diploma course.
- Students must complete the Engineering program within 4 years of enrollment in their first Engineering course.

# Regulations and Procedures

Notwithstanding these regulations, students may make a request to the Registrar for an extension to their academic program time to completion.

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

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

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

These transfer credits will be subject to NSAC's Academic Program Time to Completion Policy.

## **Minimum Cumulative Average Requirements for the B.Sc.(Agr.), B.Tech, B.Eng. and Diploma in Business Management**

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 90% or higher

*With Honours:* Cumulative average of 80–89%

For the purpose of determining honours and high honours standing, cumulative averages will be rounded to the nearest whole number, with those ending in 0.5 and greater being rounded up.

## **Second Diploma**

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

## **HEALTH INSURANCE REQUIREMENTS**

International students not covered by a Canadian provincial health insurance plan are required to purchase a health insurance policy through the University. Once admitted, students will be registered for coverage effective as of their date of arrival in Canada. The charge will be included on each student's account. Other insurance policies from home countries will not be accepted. International students who bring

their immediate families to Canada must ensure they have appropriate health coverage.

Full-time Canadian students are automatically enrolled in the Gallivan Health/Dental Insurance Plan (see [www.gallivan.ca](http://www.gallivan.ca)). It is possible for students who already have coverage to opt out. The premium for each plan is an annual one; therefore the process for opting out must be done prior to the specified deadline, which coincides with NSAC's last date to register for a course. See [www.gallivan.ca](http://www.gallivan.ca) for the opt-out form.

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

It is the students' responsibility to ensure that they have adequate health and accident insurance. NSAC does not accept any responsibility for costs related to accident or sickness for students participating in programs of study, athletics, or NSAC-related events.

## **PERMISSION TO TAKE COURSES ELSEWHERE**

NSAC students wishing to enroll in courses at other institutions for credit in an NSAC program must obtain, in advance, a Letter of Permission from the Registrar. Marks obtained at an external institution are not recorded on NSAC transcripts and do not factor into the student's cumulative average.

## **PLAGIARISM**

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

The most obvious form of plagiarism is simply to copy word for word from a book, article or Internet site, 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 plagiarism for copying unpublished term papers, essays, assignments, reports (including laboratory reports), and collections.

# Regulations and Procedures

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## **PRESIDENT'S LIST**

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

## **READMISSION**

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

Students who have been Academically Dismissed (required to withdraw) from NSAC must apply to the Registrar for readmission. Applications for readmission will be considered on an individual basis. Applications must be accompanied by a letter outlining the factors that accounted for poor academic performance and explaining why the applicant feels ready to commence studies again.

## **REGISTRATION**

### **Computerized Registration**

NSAC uses Datatel's Colleague Student Information System (WebAdvisor) to enable students to register for courses via the web from anywhere in the world. Once students have paid the registration deposit, they will be issued a Permit to Register, which includes login information (Username and Password) and instructions on how to register using the WebAdvisor system. No-program students will be registered by the Registry Office. WebAdvisor provides students with confidential access to their own personal information including class schedule, address information, grades, and financial information. WebAdvisor can be accessed at [www.nzac.ca/reg/register.asp](http://www.nzac.ca/reg/register.asp).

### **Course Registrations**

It is the responsibility of each student to ensure that he/she is properly registered in courses. Students will receive credit only for courses in which they are registered by the deadline to add courses. Conversely, a student who does not properly withdraw from a course will receive a mark of '0' for that course and will be responsible for all tuition fees. Deadlines for adding and dropping courses are strictly enforced.

### **Prerequisites**

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

## **RESIDENCE**

Residence regulations are to be found in the NSAC *Student Handbook* under Community Standards, and in the *Residence Handbook*, available at [www.nzac.ca/stuserv](http://www.nzac.ca/stuserv).

## **STUDENT SAFETY**

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

## **STUDENT STATUS**

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

### **Full-time**

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

### **Part-time**

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

### **Visiting**

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

### **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.



# Regulations and Procedures

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## **TRANSCRIPTS**

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

To request a transcript, a student must mail or fax the appropriate form, obtainable from the Registry Office or at [www.nsac.ca/reg/forms](http://www.nsac.ca/reg/forms), or a signed letter of request to the Registry Office. It is not possible to accept a transcript request over the telephone. Transcript requests are processed strictly in the order in which they are received. Although the normal processing time is approximately five working days, additional time will be required at peak periods.

Official transcripts are forwarded directly from the Registry Office to an official third party.

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

## **WITHDRAWAL**

Students who wish to withdraw from NSAC must notify the Registry Office. Forms are available at the Registry Office or online at [www.nsac.ca/reg/forms](http://www.nsac.ca/reg/forms). After the first two weeks of classes, students will not be able to withdraw from all their courses using the Student Information System; it must then be done in person at the Registry Office. At the time of withdrawal, the student must return the Student ID Card.

# Explanation of Terms and Codes

## PROGRAM CODES

BSCAG	Bachelor of Science in Agriculture – B.Sc.(Agr.)
BTECH	Bachelor of Technology – B.Tech
ENG	Engineering
MSC	Master's – M.Sc.
TY	Technology

## Bachelor of Science (Agriculture)

Major		Minor	
AB	Agricultural Business	AB	Agricultural Business
AEC	Agricultural Economics	AC	Agricultural Chemistry
AQ	Aquaculture	AEC	Agricultural Economics
AS	Animal Science	AQ	Aquaculture
EV	Environmental Sciences	AS	Animal Science
IEM	Integrated Environmental Management	AW	Animal Welfare
		EV	Environmental Sciences
PS	Plant Science	FS	Food Science and Technology
PV	Pre-Veterinary		
NP	No Program	GE	Genetics & Molecular Biology
		MH	Mathematics
		PM	Pest Management
		PS	Plant Science

## Bachelor of Technology

APS	Applied Science
ELH	Environmental Landscape Horticulture

## Engineering

ENG	Engineering
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## Technology

Major	Specialization
BMAG	Business Management – Agriculture
B MDF	Business Management – Dairy Farming
BMEQ	Business Management – Equine Specialty
BMGN	Business Management – Greenhouse & Nursery
BMPET	Business Management – Pet Specialty
ML	Managed Landscapes
PS	Plant Science
VT	Veterinary Technology

## COURSE CODES

Each course is described by an alphanumeric code. The alpha prefix identifies the main subject area (as noted in the Legend below), and the numeric suffix identifies the specific course and the course level. For example, CHEM1000 is a course offered in Chemistry at the 1000 level. Courses numbered 1000 to 4999 indicate Bachelor's degree credit courses. Courses numbered 0100 to 0999 are offered in Technology programs. Numbers up to 0099 are offered as non-credit requirements. Courses numbered 5000+ are offered in the Graduate Program.

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

Some first-year core courses are offered by distance delivery in addition to or instead of traditional delivery. These courses are denoted by **DE**.

## Alpha Prefixes

ACAD	Academic	HIST	History
AGRI	Agricultural	HORT	Horticulture
AGRN	Agronomy	INTD	International Development
ANSC	Animal Science	INTE	Internship
AQUA	Aquaculture	MATH	Mathematics
ARTS	Art	MGMT	Management
BIOL	Biology	MICR	Microbiology
CHEM	Chemistry	NUTR	Nutrition
CMMT	Communications	PHYS	Physics
CSCI	Computer Science	PSYC	Psychology
ECON	Economics	PLSC	Plant Science
ENGL	English	POLS	Political Science
ENGN	Engineering	RESM	Research Methods/ Project Seminars
ENVS	Environmental Sciences	RURS	Rural Studies
EXTE	Extension Education	SOCI	Sociology
FOOD	Food Science	SOIL	Soils
FREN	French	SPAN	Spanish
GENE	Genetics	SPEC	Special Topics
GEOG	Geography	STAT	Statistics
		VTEC	Veterinary Technology

# Explanation of Terms and Codes

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## **Numeric Prefixes**

### **Degree Courses**

#### **1000 Basic/Foundation**

- These courses are normally taken in the first year of a degree program.
- They facilitate the transition to post-secondary learning and expectations.
- These courses provide the foundation knowledge and skills required to successfully complete more advanced courses within the discipline or to apply these skills/knowledge to other disciplines, for example the use of chemical principles in the understanding of nutrition or animal systems.

#### **2000 Initial Exploration of a Discipline**

- These courses begin the process of studying specific elements of a discipline. In essence they become the foundation in the building-block structure of a discipline. Students begin to understand the framework upon which a discipline is based.
- These courses are typically taken by students who have completed a first year of post-secondary education and, as a result, usually have 1000-level prerequisites or at the very least require background knowledge at the post-secondary level.
- This is the highest level of degree course available to technology students.

#### **3000 More Detailed Exploration of a Discipline**

- Courses at this level generally require students to have the breadth of knowledge and skills obtained after two years of post-secondary education. Therefore, 3000-level courses tend to have 2000-level prerequisites or require at least two years of post-secondary study.

#### **4000 Advanced Study of a Discipline or Integrated Courses**

- Courses at the 4000 level foster the integration of material covered in the previous three years and therefore generally require 3000-level prerequisites or third-year standing.

### **Technology Courses**

#### **0100 Initial Exploration of a Discipline**

- These courses are taken in the first year of a technology program.
- They facilitate the transition to post-secondary learning and expectations.
- These courses provide the basic knowledge and skills required to successfully obtain an understanding of a discipline, for example exposure to soil science to understand crop production.

#### **0200 Detailed Exploration of a Discipline**

- These courses study in detail the various aspects of a discipline with a focus on real-life application.
- 0200-level courses usually have 0100-level prerequisites or at the very least require background knowledge at the post-secondary level.

# Undergraduate Degree Programs BACHELOR OF SCIENCE IN AGRICULTURE [B.SC.(AGR.)]

## BACHELOR OF SCIENCE IN AGRICULTURE [B.SC.(AGR.)]

NSAC, in association with Dalhousie University, offers a four-year (40-course) program leading to a degree in Agricultural Science. NSAC students in the Agricultural Sciences who successfully complete the prescribed courses with a Program Cumulative 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.). Graduates of this program meet the formal educational requirements for Professional Agrologists in the provincial Institutes of Agrologists of the Atlantic Provinces.

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

### Majors Offered at NSAC

Agricultural Business  
 Agricultural Economics  
 Animal Science  
 Aquaculture  
 Environmental Sciences  
 Integrated Environmental Management  
 Plant Science

### Minors Offered at NSAC

Agricultural Business  
 Agricultural Chemistry  
 Agricultural Economics  
 Animal Science  
 Animal Welfare  
 Aquaculture  
 Environmental Sciences  
 Food Science and Technology  
 Genetics and Molecular Biology  
 Mathematics  
 Pest Management  
 Plant Science

### Admission Requirements

Admission into the B.Sc.(Agr.) program requires high school graduation with an average of at least 70% in five Grade 12 university preparatory subjects, including:

- English
- Pre-Calculus Mathematics (or 70% in Academic Mathematics)\*
- any two of the following sciences: Chemistry\*, Biology, Physics\*, Geology, Oceanography, or Agriculture
- one elective

**Note:** Nova Scotia students who have successfully completed five Grade 12 university preparatory credits, including English and Mathematics, are able to use NS Oceans 11 and/or NS Agriculture 11 to meet the above-noted science requirements.

\* Applicants who are otherwise qualified but do not have the appropriate physics, chemistry and/or math courses may be admitted with the requirement that they take the relevant non-credit introductory studies course(s) in their first year prior to registering in the degree-level counterpart(s). The non-credit introductory studies courses are CHEM0050 Preparatory Chemistry, PHYS0050 Introductory Physics, and MATH0050 Functions.

### Continuing Academic Education After Technical Diploma

Students who have graduated from the NSAC technical diploma program and have been admitted to the B.Sc.(Agr.) program at NSAC shall be awarded a minimum of 10 credits toward the B.Sc.(Agr.) degree.

### Syllabus

#### All Majors – B.Sc.(Agr.) Core

#### Year 1

##### Semester I

AGRI1000	Agricultural Ecosystems (A)
BIOL1002	Biology I
CHEM1000	General Chemistry I
ECON1000	Principles of Microeconomics* (A)
MATH1000	Introductory Calculus I

##### Semester II

BIOL1003	Biology II
CHEM1001	General Chemistry II
ECON1000	Principles of Microeconomics* (A)
MATH1001	Introductory Calculus II
	<i>Elective**</i>

and **one** of:

ENGL1000	Composition
ENGL1001	The Novel
ENGL1002	Nature in English and American Literature

\* ECON1000 Principles of Microeconomics can be taken in either semester and should be alternated with the choice of ENGL1000, ENGL1001, or ENGL1002.

\*\* Students planning to major in Agricultural Business or Agricultural Economics may wish to select ECON1001 Principles of Macroeconomics.

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

#### **STAT2000 Introduction to Statistics is required of all students.**

RESM4XXX: Project-Seminar I and RESM4XXX: Project-Seminar II represent the Project-Seminar courses and one Research Methods course. 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. The purpose of the project-seminar course sequence in the B.Sc.(Agr.) 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.

Two Humanities/Social Sciences electives, one of which must be at the 3000 level or higher, are also required. NSAC subjects classified as Humanities/Social Science electives are those with prefixes ARTS, CMMT, ECON (except ECON1000), ENGL, EXTE, FREN, GEOG, HIST, PHIL, POLS, PSYC, SOCI, and SPAN, plus AGRI3001, HORT3008, INTD2002, RURS3000, and SPEC4009. Students majoring or minoring in Agricultural Economics and Agricultural Business cannot take courses from the ECON designation to meet the Humanities/Social Science elective requirement. Students must complete 12 'A' (Agricultural) courses to be awarded the B.Sc.(Agr.); four 'A' courses are in the B.Sc.(Agr.) core (including first year). Courses with an 'A' designation focus on one or more aspects of the agri-food system – the 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. Students must successfully complete a minimum of 15 courses in their program at NSAC, including six courses at the 3000-4000 level.

RESM4XXX: Project-Seminar I and RESM4XXX: Project-Seminar II represent the Project-Seminar courses and one Research Methods course. 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.

The purpose of the project-seminar course sequence in the B.Sc.(Agr.) 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.

Two Humanities/Social Sciences electives, one of which must be at the 3000 level or higher, are also required. NSAC subjects classified as Humanities/Social Science electives are those with

prefixes ARTS, CMMT, ECON (except ECON1000), ENGL, EXTE, FREN, GEOG, HIST, PHIL, POLS, PSYC, SOCI, and SPAN, plus AGRI3001, HORT3008, INTD2002, RURS3000, and SPEC4009. Students majoring or minoring in Agricultural Economics and Agricultural Business cannot take courses from the ECON designation to meet the Humanities/Social Science elective requirement.

Students must complete 12 'A' (Agricultural) courses to be awarded the B.Sc.(Agr.); four 'A' courses are in the B.Sc.(Agr.) core (including first year). Courses with an 'A' designation focus on one or more aspects of the agri-food system – the 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. Students must successfully complete a minimum of 15 courses in their program at NSAC, including six courses at the 3000-4000 level.

### Declaring a Major

Students may enter NSAC with a declared major or with a status of "Undeclared" (i.e., B.Sc.(Agr.), Open). However, to graduate from the B.Sc.(Agr.) program, students must declare and complete a major. The major in which a student is registered is shown in WebAdvisor. Students are to ensure that the Registry Office has the correct major attached to their academic record by the start of their third year of study (i.e., beginning of their fifth semester). The same procedure is followed for declaring or changing a major; students must submit a completed Notification of Program Change form available from the Registry Office or online at [www.nsac.ca/reg/forms](http://www.nsac.ca/reg/forms).

### Double Major Option

A student may graduate with two majors in the B.Sc.(Agr.) Program as long as they:

- complete all requirements of the B.Sc.(Agr.)
- complete all program requirements for both majors with the exception of the research methods courses (i.e., RESM4000/4001)
- complete one set of research methods courses (i.e., RESM4000/4001); ideally the research project should cover both majors
- complete a minimum of 8 courses in the second major that are not included in the first major

Students considering a double major should inform their academic advisor and the Registry Office in their second year of study. A degree with a double major may take longer to complete than a degree with a single major, due to scheduling challenges.

## ***Agricultural Business***

Agricultural Business at NSAC will prepare students for this exciting and growing industry both here and around the world. In this program, science and management practices converge to solve problems and capture opportunities in our natural world. In four years students will attain an applied education with a science foundation and leading business management skills. The food industry will change, but food will always be a priority.

In addition to the completion of the B.Sc.(Agr.) core – Year 1 (see page 36), students must take the following courses to meet the requirements of this program:

### **Required Courses**

ECON1001	Principles of Macroeconomics
ECON2000	Intermediate Microeconomics
ECON3000	Mathematical Economics
ECON3002	Agricultural and Food Policy (A)
ECON3003	Mathematical Programming (A)
ECON3006	Statistics for Economics and Business
MGMT2002	Marketing
MGMT2003	Financial Management (A)
MGMT2004	Financial Accounting
MGMT3000	Management Accounting
MGMT3001	International Marketing <b>or</b>
MGMT3002	Consumer Behaviour
MGMT4000	Strategic Management
MGMT4001	Advanced Entrepreneurship (A)
RESM4004	Research Methods for Economics & Business (A)
RESM4005	Project-Seminar for Economics & Business (A)
STAT2000	Introduction to Statistics

Electives must include **two** Humanities/Social Science courses, one of which must be at the 3000 or 4000 level, and **four** 'A' courses. (See Appendix I for a list of courses and their designations.) Students majoring or minoring in Agricultural Business cannot take courses from the ECON designation to meet the Humanities/Social Science elective requirement.

## **Recommended Syllabus for a Major in Agricultural Business**

### **Year 2**

#### *Semester III*

ECON2000	Intermediate Microeconomics
ECON3000	Mathematical Economics
MGMT2002	Marketing
MGMT2004	Financial Accounting
	<i>Elective</i>

#### *Semester IV*

ECON1001	Principles of Macroeconomics
MGMT3001	International Marketing <b>or</b>
MGMT3002	Consumer Behaviour
STAT2000	Introduction to Statistics
	<i>Elective</i>
	<i>Elective</i>

### **Year 3**

#### *Semester V*

ECON3006	Statistics for Economics & Business
MGMT2003	Financial Management (A)
MGMT3000	Management Accounting
	<i>Elective</i>
	<i>Elective</i>

#### *Semester VI*

ECON3002	Agricultural & Food Policy (A)
ECON3003	Mathematical Programming (A)
MGMT4001	Advanced Entrepreneurship (A)
	<i>Elective</i>
	<i>Elective</i>

### **Year 4**

#### *Semester VII*

MGMT4000	Strategic Management
RESM4004	Research Methods for Economics & Business (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

#### *Semester VIII*

RESM4005	Project-Seminar for Economics & Business (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

## ***Agricultural Economics***

Agricultural Economics at NSAC will help students develop professional decision-making skills. These skills apply to current issues facing people in Canada and internationally. In a practical, “real-world” approach, students not only develop an understanding of the issues but also learn to choose among the possible solutions. Meeting NSAC’s high academic standards positions graduates for success in the job market and in graduate studies.

In addition to the completion of the B.Sc.(Agr.) core – Year 1 (see page 36), students must take the following courses to meet the requirements of this program:

### **Required Courses**

ECON1001	Principles of Macroeconomics
ECON2000	Intermediate Microeconomics
ECON2001	Intermediate Macroeconomics
ECON2003	Agricultural Futures and Options (A)
ECON2004	Issues in Environmental Economics (A)
ECON3000	Mathematical Economics
ECON3002	Agricultural and Food Policy (A)
ECON3003	Mathematical Programming (A)
ECON3004	Agricultural Markets and Prices (A)
ECON3006	Statistics for Economics and Business
ECON4004	Trade (A)
MGMT2002	Marketing
MGMT2003	Financial Management (A)
MGMT2004	Financial Accounting
RESM4004	Research Methods for Economics & Business (A)
RESM4005	Project-Seminar for Economics & Business (A)
STAT2000	Introduction to Statistics

Electives must include **two** Humanities/Social Science courses, one of which must be at the 3000 or 4000 level, and **one** ‘A’ course. (See Appendix I for a list of courses and their designations.) Students majoring or minoring in Agricultural Economics cannot take courses from the ECON designation to meet the Humanities/Social Science elective requirement.

## **Recommended Syllabus for a Major in Agricultural Economics**

### **Year 2**

#### *Semester III*

ECON2000	Intermediate Microeconomics
ECON2003	Agricultural Futures and Options (A)
ECON3000	Mathematical Economics
MGMT2002	Marketing
MGMT2004	Financial Accounting

#### *Semester IV*

ECON1001	Principles of Macroeconomics
ECON2004	Issues in Environmental Economics (A)
STAT2000	Introduction to Statistics
	<i>Elective</i>
	<i>Elective</i>

### **Year 3**

#### *Semester V*

ECON2001	Intermediate Macroeconomics
ECON3006	Statistics for Economics and Business
ECON4004	Trade (A)
MGMT2003	Financial Management (A)
	<i>Elective</i>

#### *Semester VI*

ECON3002	Agricultural and Food Policy (A)
ECON3003	Mathematical Programming (A)
ECON3004	Agricultural Markets and Prices (A)
	<i>Elective</i>
	<i>Elective</i>

### **Year 4**

#### *Semester VII*

RESM4004	Research Methods for Economics & Business (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

#### *Semester VIII*

RESM4005	Project-Seminar for Economics & Business (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

# Undergraduate Degree Programs ANIMAL SCIENCE MAJOR

## **Animal Science**

Whether a student wants to work in agriculture, go on to training in veterinary medicine or continue on to advanced research in animal nutrition, physiology, genetics or behaviour studies, this major features both in-depth study of animal biology and enough freedom to focus on anything from Business to Genetics and Molecular Biology at NSAC.

In addition to the completion of the B.Sc.(Agr.) core – Year 1 (see page 36), students must take the following courses to meet the requirements of this program:

### **Required Courses**

ANSC2005	Animal Agriculture (A)
ANSC3000	Animal Breeding (A)
BIOL2006	Mammalian Physiology
BIOL3008	Growth, Reproduction, and Lactation (A)
CHEM2000	Organic Chemistry I
CHEM3001	Biochemistry
GENE2000	Genetics
NUTR3000	Animal Nutrition (A)
NUTR3001	Applied Animal Nutrition (A)
PHYS1000	Physics for Life Sciences I <b>or</b>
PHYS1002	Physics I
RESM4002	Animal Science Project-Seminar I (A)
RESM4003	Animal Science Project-Seminar II (A)
STAT2000	Introduction to Statistics

Electives must include **two** Humanities/Social Science courses, one of which must be at the 3000 or 4000 level, **four** 3000- or 4000- level Animal Science elective courses, and **three** 'A' courses.

NSAC courses designated as Animal Science electives for the major, or courses for the minor, are listed in Appendix III.

### **Recommended Syllabus for a Major in Animal Science**

#### **Year 2**

##### *Semester III*

ANSC2005	Animal Agriculture (A)
CHEM2000	Organic Chemistry I
GENE2000	Genetics
PHYS*	Physics <b>or</b>
STAT2000	Introduction to Statistics
	<i>Elective</i>

##### *Semester IV*

BIOL2006	Mammalian Physiology
CHEM3001	Biochemistry
PHYS*	Physics <b>or</b>
STAT2000	Introduction to Statistics
	<i>Elective</i>
	<i>Elective</i>

#### **Year 3**

##### *Semester V*

BIOL3008	Growth, Reproduction & Lactation (A)
NUTR3000	Animal Nutrition (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

##### *Semester VI*

ANSC3000	Animal Breeding (A)
NUTR3001	Applied Animal Nutrition (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

#### **Year 4**

##### *Semester VII*

RESM4002	Animal Science Project-Seminar I (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

##### *Semester VIII*

RESM4003	Animal Science Project-Seminar II (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

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

\* Students must take either PHYS1000 or PHYS1002, but not both, for credit.



# Undergraduate Degree Programs AQUACULTURE MAJOR

## ***Aquaculture***

Aquaculture is the growing of fish, shellfish and aquatic plants to enhance both our society and aquatic ecosystems. Globally, aquaculture is expanding fast; by 2030 over half of our seafood will be farmed. A major in Aquaculture is the gateway to a diversity of rewarding careers such as food production, seafood marketing, water resource management, conservation, and management of wild fish stocks.

In addition to the completion of the B.Sc.(Agr.) core – Year 1 (see page 36), students must take the following courses to meet the requirements of this program:

### **Required Courses**

ANSC3000	Animal Breeding (A)
AQUA2000	Introduction to Aquaculture (A)
AQUA3000	Fish Health (A)
AQUA4000	Finfish Production <b>or</b>
AQUA4001	Shellfish Production
BIOL3005	Physiology of Aquatic Animals (A)
BIOL3006	Aquatic Ecology
CHEM2000	Organic Chemistry I
CHEM3001	Biochemistry
ENGN2004	Aquacultural Environment (A)
ENGN3013	Aquacultural Engineering (A)
GENE2000	Genetics
MGMT2003	Financial Management (A)
MICR2000	Microbiology
NUTR3000	Animal Nutrition (A) <b>or</b>
NUTR3002	Fish Nutrition (A)
PHYS1000	Physics for Life Sciences I <b>or</b>
PHYS1002	Physics I
RESM4002	Animal Science Project-Seminar I (A)
RESM4003	Animal Science Project-Seminar II (A)
STAT2000	Introduction to Statistics
<i>and one of:</i>	
MGMT1000	Small Business Entrepreneurship
MGMT2002	Marketing
MGMT2004	Financial Accounting

Electives must include **two** Humanities/Social Science courses, one of which must be at the 3000 or 4000 level (see Appendix I for a list of courses and their designations).

## **Recommended Syllabus for a Major in Aquaculture**

### **Year 2**

#### *Semester III*

AQUA2000	Introduction to Aquaculture (A)
CHEM2000	Organic Chemistry I
GENE2000	Genetics
PHYS*	Physics <b>or</b>
STAT2000	Introduction to Statistics
	<i>Elective</i>

#### *Semester IV*

CHEM3001	Biochemistry
ENGN2004	Aquacultural Environment (A)
MICR2000	Microbiology
PHYS*	Physics <b>or</b>
STAT2000	Introduction to Statistics
	<i>Elective</i>

### **Year 3**

#### *Semester V*

BIOL3005	Physiology of Aquatic Animals (A)
BIOL3006	Aquatic Ecology
MGMT2003	Financial Management (A)
NUTR3000	Animal Nutrition (A)** <b>or Elective</b>
	<i>Elective</i>

#### *Semester VI*

ANSC3000	Animal Breeding (A)
AQUA3000	Fish Health (A)
ENGN3013	Aquacultural Engineering (A)
NUTR3002	Fish Nutrition** (A) <b>or Elective</b>
	<i>Elective</i>

### **Year 4**

#### *Semester VII*

AQUA4000	Finfish Production*** <b>or Elective</b>
RESM4010	Aquaculture Project-Seminar I (A)
	<i>Elective</i>
	<i>Elective</i>

#### *Semester VIII*

AQUA4001	Shellfish Production*** <b>or Elective</b>
RESM4011	Aquaculture Project-Seminar II (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

## Undergraduate Degree Programs AGRICULTURE MAJOR

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

\* Students must take either PHYS1000 or PHYS1002, but not both, for credit.

\*\* Students must complete either NUTR3000 or NUTR3002.

\*\*\* Students must complete either AQUA4000 or AQUA4001.

## Environmental Sciences

Environmental issues are on the front pages every day. NSAC's four-year degree program leads to a fascinating career working on behalf of the environment. This program is unique because it covers so many disciplines – environmental biology, environmental chemistry, soil and water quality, waste management, and environmental economics – and that means a well-rounded education.

The coordinators build a multi-subject curriculum, with lots of hands-on work, in an integrated program. Students learn by identifying environmental issues and then dissecting them into biological, chemical, and socioeconomic aspects. By the time they graduate, students have a complete understanding of the implications of environmental problems, the causes, and potential solutions.

In addition to the completion of the B.Sc.(Agr.) core – Year 1 (see page 36), students must take the following courses to meet the requirements of this program:

### Required Courses

BIOL3001	Ecology
CHEM2000	Organic Chemistry I
CHEM3001	Biochemistry <b>or</b>
CHEM3009	Environmental Chemistry
CHEM3010	Bio-Analytical Chemistry <b>or</b>
ENVS4005	Geographic Information Systems (GIS) (A)
ENVS2000	Environmental Studies I (A)
ENVS2001	Environmental Studies II (A)
ENVS3000	Environmental Impact Assessment
ENVS3001	Environmental Sampling and Analysis
ENVS3002	Waste Management and Site Remediation (A)
ENVS3004	Principles of Pest Management (A)
ENVS4006	Air, Climate and Climate Change (A)
HORT3000	Environmental Processes and Natural Landscape Functions
MICR2000	Microbiology
PHYS1000	Physics for the Life Sciences I <b>or</b>
PHYS1002	Physics I
RESM4006	Environmental Sciences Project-Seminar I (A)
RESM4007	Environmental Sciences Project-Seminar II (A)
SOIL2000	Introduction to Soil Science (A)
STAT2000	Introduction to Statistics
STAT3000	Introduction to Planned Studies: Surveys and Experiments

Students who complete CHEM3010 must include **two** "A" courses while students who complete ENVS4005 must include **one** "A" course in their choice of electives. All students must include **one** Humanities/Social Science course at the 3000 or 4000 level, and **one** additional Humanities/Social Science course at any level (see Appendix I for a list of courses and their designations).

Within the Environmental Sciences major, students may select any one of the following areas of specialization:

- Environmental Biology
- Environmental Chemistry
- Environmental Soil Science
- Pest Management
- Waste Management

Interested students are to consult with the Academic Advisor.

### Recommended Syllabus for a Major in Environmental Sciences

#### Year 2

##### Semester III

CHEM2000	Organic Chemistry I
ENVS2000	Environmental Studies I (A)
SOIL2000	Introduction to Soil Science (A)
STAT2000	Introduction to Statistics
	<i>Elective</i>

##### Semester IV

CHEM3001	Biochemistry <b>or</b>
CHEM3009	Environmental Chemistry
ENVS2001	Environmental Studies II (A)
MICR2000	Microbiology
STAT3000	Intro to Planned Studies: Surveys and Experiments
	<i>Elective</i>

#### Year 3

##### Semester V

BIOL3001	Ecology
CHEM3010	Bio-Analytical Chemistry <b>or</b>
ENVS4005	Geographic Information Systems (GIS) (A)
ENVS3001	Environmental Sampling and Analysis
PHYS1000*	Physics for the Life Sciences I <b>or</b>
PHYS1002*	Physics I <b>or</b> <i>Elective</i>
	<i>Elective</i>

# Undergraduate Degree Programs ENVIRONMENTAL SCIENCES MAJOR

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## Semester VI

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ENVS3002	Waste Management and Site Remediation (A)
PHYS1000*	Physics for the Life Sciences I <b>or</b>
PHYS1002*	Physics I <b>or</b> <i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

## Year 4

### Semester VII

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ENVS3004	Principles of Pest Management (A)
ENVS4006	Air, Climate and Climate Change (A)
HORT3000	Environmental Processes and Natural Landscape Functions
RESM4006	Environmental Sciences Project-Seminar I (A)
	<i>Elective</i>

### Semester VIII

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ENVS3000	Environmental Impact Assessment
RESM4007	Environmental Sciences Project-Seminar II (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

\* Students must take either PHYS1000 or PHYS1002, but not both, for credit.

## Integrated Environmental Management

We are faced with the challenge of making technologically advanced sustainable food and fibre production under rising global restrictions.

The Integrated Environmental Management major provides graduates with advanced knowledge of environmental and biological systems applied to land, water, buildings, and machinery. Experts in these fields at the NSAC combine their efforts in this program to produce a well-rounded, highly marketable graduate for the workplace of tomorrow.

In addition to the completion of the B.Sc.(Agr.) core – Year 1 (see page 36), students must take the following courses to meet the requirements of this program:

### Required Courses

ENGN1003	Practices and Mechanics of Materials
ENGN2002	Bioresource Systems Analysis
ENGN2011	Technology for Precision Agriculture
ENGN2012	Intro to Bioresource Science (A)
ENGN2013	Machinery and Building Technology (A)
ENGN2014	Bioresource Processing
ENGN3001	Electrotechnology (A)
ENGN3016	Engineering Economy
ENGN3020	Energy Production and Utilization
ENGN3021	Ecohydrology (A)
ENGN4004	Energy Conversion and Assessment
ENGN4005	Waterscape Ecology and Management (A)
ENGN4006	Wastewater Management (A)
ENVS3002	Waste Management and Site Remediation (A)
MGMT1000	Small Business Entrepreneurship
PHYS1000	Physics for Life Sciences I
RESM4000	Bio-Environmental Systems Management Project-Seminar I (A)
RESM4001	Bio-Environmental Systems Management Project-Seminar II (A)
STAT2000	Introduction to Statistics

Electives must include **two** Humanities/Social Science courses, one of which must be at the 3000 or 4000 level, and **one** 'A' course. (See the list of recommended electives following the syllabus, or Appendix I for a complete list of courses and their designations.)

## Recommended Syllabus for a Major in Integrated Environmental Management

### **Year 2**

#### *Semester III*

ENGN2002	Bioresource Systems Analysis
ENGN2011	Technology for Precision Agriculture
ENGN2012	Intro to Bioresource Science (A)
PHYS1000	Physics for Life Sciences I <b>or</b>
STAT2000	Introduction to Statistics <i>Elective</i>

#### *Semester IV*

ENGN1003	Practices and Mechanics of Materials
ENGN2014	Bioresource Processing
ENGN3001	Electrotechnology (A)
PHYS1000	Physics for Life Sciences I <b>or</b>
STAT2000	Introduction to Statistics <i>Elective</i>

### **Year 3**

#### *Semester V*

ENGN2013	Machinery and Building Technology (A)
ENGN3020	Energy Production and Utilization
ENGN3021	Ecohydrology (A)
MGMT1000	Small Business Entrepreneurship <i>Elective</i>

#### *Semester VI*

ENGN3016	Engineering Economy
ENVS3002	Waste Management and Site Remediation (A)
RESM4000	Bio-Environmental Systems Management Project-Seminar I (A) <i>Elective</i> <i>Elective</i>

### **Year 4**

#### *Semester VII*

ENGN4006	Wastewater Management (A)
RESM4001	Bio-Environmental Systems Management Project-Seminar II (A) <i>Elective</i> <i>Elective</i> <i>Elective</i>

#### *Semester VIII*

ENGN4004	Energy Conversion and Assessment
ENGN4005	Waterscape Ecology and Management (A) <i>Elective</i> <i>Elective</i> <i>Elective</i>

# Undergraduate Degree Programs INTEGRATED ENVIRONMENTAL MANAGEMENT MAJOR

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\* PHYS – Students must complete the combination of PHYS1000 and STAT2000 in Semesters III & IV. If PHYS1000 is done in Semester III, then STAT2000 will be done in Semester IV. If STAT2000 is done in Semester III PHYS1000 will be done in Semester IV.

# Undergraduate Degree Programs PLANT SCIENCE MAJOR

## **Plant Science**

This classic program in plant agriculture has been offered for over a hundred years at NSAC, yet it is as up-to-date as the newest scientifically tested plant cultivars and the latest developments in biotechnology and advancements in agroecology. Students will be provided with a range of basic and applied courses related to production of crops for use by humans and livestock. The program focuses on crop production that is sustainable in terms of production, profits and the environment. The major in Plant Science provides a wide range of options following graduation, and it is suited to students who want to go on to careers in agriculture or other plant-related business, or to graduate studies and research. There is a rich world of opportunity in this field.

In addition to the completion of the B.Sc.(Agr.) core – Year 1 (see page 36), students must take the following courses to meet the requirements of this program:

### **Required Courses**

BIOL2000	Cell Biology <b>or</b>
BIOL2001	Cell Biology Laboratory
BIOL2002	Plant Physiology
BIOL2004	Structural Botany
BIOL2005	Principles of Plant Pathology (A)
BIOL2008	Plant Diversity
BIOL3000	General Entomology (A)
BIOL3002	Weed Science (A)
CHEM2000	Organic Chemistry I
CHEM3001	Biochemistry
GENE2000	Genetics
MICR2000	Microbiology
PLSC4002	Plant Ecophysiology (A)
RESM4008	Plant Science Project-Seminar I (A)
RESM4009	Plant Science Project-Seminar II (A)
SOIL2000	Introduction to Soil Science (A)
SOIL3000	Soil Fertility and Nutrient Management (A)
STAT2000	Introduction to Statistics

Electives must include two Plant Science Production (PDN) 'A' courses (see Appendix III) and **two** Humanities/Social Science courses, one of which must be at the 3000 or 4000 level.

## **Recommended Syllabus for a Major in Plant Science**

### **Year 2**

#### *Semester III*

BIOL2000	Cell Biology <b>or</b>
BIOL2001	Cell Biology Laboratory
BIOL2008	Plant Diversity
CHEM2000	Organic Chemistry I
GENE2000	Genetics
SOIL2000	Introduction to Soil Science (A)

#### *Semester IV*

BIOL2002	Plant Physiology
BIOL2004	Structural Botany
CHEM3001	Biochemistry
MICR2000	Microbiology
	<i>Elective</i>

### **Year 3**

#### *Semester V*

BIOL3000	General Entomology (A)
BIOL3002	Weed Science (A)
STAT2000	Introduction to Statistics <b>or</b> <i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

#### *Semester VI*

BIOL2005	Principles of Plant Pathology (A)
RESM4008	Plant Science Project-Seminar I (A)
SOIL3000	Soil Fertility and Nutrient Management (A) <b>or</b> <i>Elective</i>
	<i>Elective</i>
STAT2000	Introduction to Statistics <b>or</b> <i>Elective</i>
	<i>Elective</i>

### **Year 4**

#### *Semester VII*

PLSC4002	Plant Ecophysiology (A)
RESM4009	Plant Science Project-Seminar II (A)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

#### *Semester VIII*

SOIL3000	Soil Fertility and Nutrient Management (A) <b>or</b>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

## **B.SC.(AGR.) PROGRAM MINORS**

The purpose of a minor is to attain a significant body of knowledge within a specific discipline that is outside of the student's major or substantially exceeds what a candidate would obtain through studies for their major. Students may take a minor in one of the areas listed below as part of the B.Sc.(Agr.) degree program. Students who wish to take a minor must meet the requirements for a major in their chosen discipline. Students are to ensure the Registry Office has their correct minor attached to their academic record by the end of their third year of study. For a minor to be recognized on a student's academic record, the student must declare the minor by submitting a completed 'Notification of Program Change' form available from the Registry Office or online at [www.nsac.ca/reg/forms](http://www.nsac.ca/reg/forms).

### **Minor in Agricultural Business**

A minimum of **six** courses including:

MGMT2002      Marketing  
MGMT2003      Financial Management (A)

and any **four** additional courses approved by the Business and Social Sciences Department Head. Students may count a maximum of three MGMT or ECON courses from their major towards their minor (ECON1000 is excluded).

Students should see the academic advisor in the Business and Social Sciences Department for selection of appropriate courses. Final approval of the head of the department is required.

### **Minor in Agricultural Chemistry**

A minimum of **five** chemistry courses including CHEM2000 and CHEM3003.

Students should see the academic advisor in the Department of Environmental Sciences for selection of appropriate courses. Course selection must be approved by the department head. Students may not select courses which are required for their major.

### **Minor in Agricultural Economics**

A minimum of **six** courses including ECON1001 and any **five** additional courses approved by the Business and Social Sciences Department. Students may count a maximum of three MGMT or ECON courses from their major towards their minor (ECON1000 is excluded).

Students should see the academic advisor in the Business and Social Sciences Department for selection of appropriate courses. Final approval of the department head is required.

### **Minor in Animal Science**

Any **six** courses approved by the Plant and Animal Science Department. The content of the minor will be decided on a student-by-student basis. Students cannot select courses which are required for their major.

Students should see the academic advisor in the Plant and Animal Science Department for selection of appropriate courses. Final approval of the head of the department is required.

### **Minor in Animal Welfare**

A minimum of **six** courses, consisting of:

ANSC3002      Domestic Animal Behaviour (A)  
ANSC3005      Animal Welfare (A)

and **four** of the following courses taken in consultation with the Animal Science academic advisor:

ANSC3001      Animal Health (A)  
ANSC4009      Directed Study in the Animal Sciences (can count toward the Minor if the topic is within the area of animal welfare science)  
BIOL3004      Environmental Physiology (A)  
BIOL4004      Animal Adaptation and Stress  
PHIL3000      Environmental and Agricultural Ethics  
RESM4XXX      Project-Seminar I & II (can together count as one course toward the minor if the research project is conducted in the field of animal welfare science)

Students are permitted to select up to three courses that count toward this Minor as well as toward their Major.

### **Minor in Aquaculture**

**Six** courses to be chosen from the following, in consultation with the Aquaculture Advisor:

AQUA2000      Intro to Aquaculture (A)  
AQUA3000      Fish Health (A)  
AQUA4000      Finfish Production  
AQUA4001      Shellfish Production  
BIOL3005      Physiology of Aquatic Animals (A)  
BIOL3006      Aquatic Ecology  
ENGN2004      Aquacultural Environment (A)  
ENGN3013      Aquacultural Engineering (A)  
NUTR3002      Fish Nutrition (A)

Students may count a maximum of three courses from their major towards this minor.



# Undergraduate Degree Programs MINORS

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## **Minor in Environmental Sciences**

A minimum of **five** courses, including:

ENVS2000 Environmental Studies I (A)

ENVS2001 Environmental Studies II (A)

and **three** other courses approved by the Department of Environmental Sciences. Students may not select courses which are required for their major.

Students should see the academic advisor in the Department of Environmental Sciences for selection of appropriate courses. Final approval of the head of the department is required.

## **Minor in Food Science and Technology**

A minimum of **five** courses, consisting of:

CHEM2003 Food Chemistry I (A)

MICR2000 Microbiology\*

MICR3000 Food Microbiology (A)

and **two** of the following courses:

ANSC3003 Eggs and Dairy Products (A)

ANSC3004 Meat Science (A)

CHEM3007 Food Chemistry II (A)\*\* **or**

CHEM3008 Intermediate Food Chemistry (A)\*\*

ENGN2014 Bioresources Processing

FOOD3000 Food Quality Assurance (A)

FOOD3001 Functional Foods and Nutraceuticals (A)

FOOD4000 Directed Studies in Food & Bioproduct Science (A)

\* Students may not select courses which are required for their major. However, if MICR2000 Microbiology is required in a student's major, an additional elective must be selected from the above list.

\*\* Either CHEM3007 or CHEM3008, but not both, can be taken for credit.

## **Minor in Genetics and Molecular Biology**

This minor, offered by the Department of Plant and Animal Sciences, is targeted at those students who wish to be well-prepared for a master's or doctoral graduate program in this field.

A minimum of **six** courses, consisting of:

BIOL2000 Cell Biology **or**

BIOL2001 Cell Biology Laboratory

GENE2000 Genetics

GENE3000 Intro to Molecular Genetics

and **three** of the following courses taken in consultation with the academic advisor:

ANSC3000 Animal Breeding (A)

GENE3001 Population and Quantitative Genetics

GENE4000 Molecular Applications to Animal Production (A)

GENE4003 Biotechnology

GENE4004 Laboratory Techniques in Genomics

PLSC4000 Plant Breeding (A)

The Project-Seminar I & II courses (RESM4XXX) can together count as one course toward the minor if the research project is conducted within the field of genetics and molecular biology.

Students are encouraged to select courses that can count toward this minor as well as toward their major.

## **Minor in Mathematics**

A minimum of **five** courses, consisting of:

MATH4000 Agricultural Modeling

plus **four** additional courses as approved by the Head of the

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

*Discipline-specific courses:*

MATH2000 Multivariable Calculus

MATH2001 Differential Equations

MATH3000 Applied Linear Algebra

STAT3000 Intro to Planned Studies: Surveys & Experiments

STAT4000 Intermediate Statistical Methods

*Other courses deemed to be appropriate for this minor:*

CSCI2000 Computer Science

CSCI3000 Data Structures and Numerical Methods

ECON3000 Mathematical Economics

ECON3003 Mathematical Programming (A)

ECON3006 Statistics for Economics and Business

PHYS1001 Physics for the Life Sciences II

PHYS1003 Physics II

Other courses offered at NSAC may be deemed acceptable provided they have a strong mathematical content.

**Note:** Students wanting to have mathematics as a "teachable subject" should consult in advance with the B.Ed. program they plan to apply to, and confirm the provincial requirements for the province where they hope to practice.

# Undergraduate Degree Programs MINORS

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## **Minor in Pest Management**

A minimum of **five** courses, consisting of:

ENVS3004 Principles of Pest Management (A)

MICR2000 Microbiology\*

and any **three** of the following courses:

BIOL2005 Principles of Plant Pathology (A)

BIOL3000 General Entomology (A)

BIOL3002 Weed Science (A)

BIOL4003 Plant-Microbe Interactions

ENVS4002 Economic Entomology (A)

ENVS4003 Advanced Weed Science (A)

If any course listed above is a requirement for the student's major, then another course from the list must be substituted.

Since students in the Plant Science degree program are required to take 4 of these 8 courses in their major, they will only be required to take the additional 4 courses to be granted the Minor in Pest Management.

Students should see the academic advisor in the Environmental Science Department for selection of appropriate courses. Final approval of the head of the department is required.

\* If MICR2000 Microbiology\* is required in a student's major, an additional elective must be selected from the above list.

## **Minor in Plant Science**

Any **five** Plant Science\* degree courses.

Students cannot select courses which are required for their major.

Students should see the academic advisor in the Plant and Animal Science Department for selection of appropriate courses. Final approval of the head of the department is required.

\* See Appendix III for list of Plant Science Courses.

# Undergraduate Degree Programs

BACHELOR OF TECHNOLOGY (B.TECH)

## BACHELOR OF TECHNOLOGY (B.TECH)

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

NSAC offers two B.Tech majors, the Bachelor of Technology Environmental Landscape Horticulture and the Bachelor of Technology in Applied Science. (See program syllabi below.)

The majors are designed to provide advanced studies for NSAC diploma graduates, and they require many of the elements of these programs as a foundation. Each major has specific entrance requirements, and possession of minimum requirements does not guarantee admission.

## BACHELOR OF TECHNOLOGY IN APPLIED SCIENCE

NSAC, in association with Dalhousie University, offers a four-year Bachelor of Technology in Applied Science degree. This degree leads to careers requiring a Bachelor's degree, with the additional advantage of experience in a variety of technical areas. Graduates of the Bachelor of Technology in Applied Science program are qualified to apply directly for admission into the Bachelor of Education program in Technology Education at Acadia University.

This program prides itself on hands-on training coupled with classroom expertise in the Applied Sciences. Graduates are in demand for jobs in the field of technology related to education, government and industry. The program allows students a high degree of flexibility, with 18 electives that can be taken at NSAC or with other institutions.

### Admission Requirements

Admission into the Bachelor of Technology in Applied Science program requires high school graduation with an average of at least 70% in five Grade 12 university preparatory subjects:

- English
- Pre-Calculus Mathematics (or 70% in Academic Mathematics)\*
- Physics\*
- two electives

**Note:** Courses in Technology Education, Chemistry and Biology would be an asset.

\* Applicants who are otherwise qualified but do not have the appropriate physics and/or math courses may be admitted with the requirement that they take the relevant non-credit introductory studies course(s) in their first year prior to registering in the degree-level counterpart(s). The non-credit introductory studies courses are PHYS0050 Introductory Physics and MATH0050 Functions.

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

CSCI2000	Computer Science
ECON1000	Principles of Microeconomics
ENGL1000	Composition
ENGN1001	Engineering Design I
ENGN1003	Practices and Mechanics of Materials
ENGN1004	Wood Construction Technology I
ENGN1005	Metal Construction Technology I
ENGN2002	Bioresource Systems Analysis
ENGN2008	Digital Electronics and Computer Interfacing
ENGN2012	Intro to Bioresource Science
ENGN2013	Machinery and Building Technology
ENGN3001	Electrotechnology
ENGN3020	Energy Production and Utilization
ENGN3018	Technology Modules
ENGN3019	Communications Technology
ENVS2001	Environmental Studies II
ENVS4005	Geographic Information Systems (GIS)
MATH1000	Introductory Calculus I
MATH1001	Introductory Calculus II
PHYS1000	Physics for the Life Sciences I
RESM4000	Project Seminar I
RESM4001	Project Seminar II

**18 Electives** (including 1 English, 1 Social Studies, and 5 Technology; see lists following syllabus)

# Undergraduate Degree Programs BACHELOR OF TECHNOLOGY (B.TECH)

## Recommended Syllabus

### Year 1

#### Semester I

ECON1000	Principles of Microeconomics
ENGL1000	Composition
ENGN1001	Engineering Design I
ENGN1005	Metal Construction Technology I
MATH1000	Introductory Calculus I

#### Semester II

ENGN1003	Practices & Mechanics of Materials
ENGN1004	Wood Construction Technology I
MATH1001	Introductory Calculus II
	<i>Elective</i>
	<i>Elective</i>

### Year 2

#### Semester III

ENGN2002	Bioresource Systems Analysis
ENGN2012	Introduction to Bioresource Science
ENGN2013	Machinery and Building Technology
ENGN3020	Energy Production and Utilization
	<i>Elective</i>

#### Semester IV

CSCI2000	Computer Science
ENGN2008	Digital Electronics & Computer Interfacing
ENGN3001	Electrotechnology
PHYS1000	Physics for the Life Sciences I
	<i>Elective</i>

### Year 3

#### Semester V

ENGN3019	Communications Technology
ENVS4005	Geographic Information Systems (GIS)
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

#### Semester VI

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

### Year 4

#### Semester VII

RESM4001	Bio-Environmental Systems Management Project-Seminar II
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>
	<i>Elective</i>

#### Semester VIII

*Elective*

*Elective*

*Elective*

*Elective*

*Elective*

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

### Technology Electives

ENGN2004	Aquacultural Environment
ENGN2009	Metal Construction Technology II
ENGN2010	Wood Construction Technology II
ENGN2011	Technology for Precision Agriculture
ENGN3013	Aquacultural Engineering
ENGN3016	Engineering Economy
ENGN4004	Energy Conversion and Assessment
ENGN4005	Waterscape Ecology and Management
ENGN4006	Wastewater Management

Other preapproved science and engineering courses with significant technology components

# Undergraduate Degree Programs BACHELOR OF TECHNOLOGY (B.TECH)

## Social Studies Electives

CMMT3000	Communication Theory and Skills
ECON1001	Principles of Macroeconomics
EXTE3001	Leadership Dev. and the Social Action Process
GEOG1000	Introductory Human Geography
GEOG3000	Rural Geography
HIST1000	Introduction to Canadian History I: 1000–1867
HIST1001	Introduction to Canadian History II: 1867–present
HIST3000	Rural History
PHIL3000	Environmental and Agricultural Ethics
POLS1000	Introduction to Political Science
POLS1001	Structure and Function of Government
SOCI1000	Introductory Sociology
SOCI1001	Introductory Sociology II
SOCI3000	Rural Sociology

## English Electives

ENGL1001	The Novel
ENGL1002	Nature in English and American Literature
ENGL3000	Literature of Atlantic Canada

Students intending to get a B.Ed. (Technology Education) degree at Acadia University must take 6 academic electives as a second teachable for admittance to the B.Ed. degree program and to meet provincial teacher license requirements.

**Note:** Over the four years of the program, a total of at least five courses must be chosen from the technology electives.

## BACHELOR OF TECHNOLOGY ENVIRONMENTAL LANDSCAPE HORTICULTURE

This NSAC 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.

## Admission Requirements

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

## Recommended Syllabus

### Year 3

#### Semester V

BIOL2008	Plant Diversity
CHEM1000	General Chemistry I
ENGN3019	Communications Technology
ENVS2000	Environmental Studies I
HORT3000	Env. Processes & Natural Landscape Functions

#### Semester VI

ENVS2001	Environmental Studies II
MGMT1000	Small Business Entrepreneurship
HORT2009	Landscape Plant Nursery Management
PLSC3000	Theory and Practice of Plant Propagation <i>Elective or SOIL2000*</i>

### Year 4

#### Semester VII

ENVS3004	Principles of Pest Management
ENVS4005	Geographic Information Systems
HORT3001	Landscape Project Management
HORT4000	Urban Tree Management
RESM4006	Environmental Sciences Project-Seminar I

#### Semester VIII

ENGN3015	Irrigation and Drainage <b>or</b> <i>Elective</i>
HORT2005	Design & Construction of Turf Facilities
HORT3008	Horticultural Therapy
RESM4007	Environmental Sciences Project-Seminar II <i>Elective</i>

\* Students who have not met the Soil Science requirements of the Managed Landscapes Technology diploma (formerly Environmental Horticulture Technology program) will be required to take SOIL2000.

## ENGINEERING DIPLOMA

NSAC offers the first two years leading to an engineering degree. Students completing their two years at NSAC will usually continue their engineering program at Dalhousie but may choose to attend another school, such as UNB. Engineering has strong, rewarding career opportunities, as engineers help to create solutions to serve humanity. The Department of Engineering has a strong faculty of accomplished Professional Engineers and scientists to provide courses and exposure to world-class research activities.

Students have a wide selection of engineering areas of concentration:

- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Environmental Engineering
- Industrial Engineering
- Materials Engineering
- Mechanical Engineering
- Mineral Resource Engineering

Or, they may select other streams of specialization at the appropriate universities.

Students planning to complete their Bachelor of Engineering program at Dalhousie University are advised that 50 percent of the course work required for the Bachelor of Engineering program **MUST** be completed at Dalhousie.

## Admission Requirements

Admission into the Engineering program requires high school graduation with an average of at least 70% in five Grade 12 university preparatory subjects.

- English
- Pre-Calculus Mathematics (or 70% in Academic Mathematics)\*
- Chemistry\*
- Physics\*
- one elective

\* Applicants who are otherwise qualified but do not have the appropriate physics, chemistry, and/or math courses may be admitted with the requirement that they take the relevant non-credit introductory studies course(s) in their first year prior to registering in the degree level counterpart(s). The non-credit introductory studies courses are CHEM0050 Preparatory Chemistry, PHYS0050 Introductory Physics, and MATH0050 Functions.

A maximum of 12 credit hours of work completed at secondary school, CEGEP, or Community College level is allowed. This includes a maximum of 6 credit hours of Math and 6 credit hours of Science.

All transfer credits for engineering science/design and other compulsory engineering-content course must be done at institutions accredited by Canadian Engineering Accreditation Board (CEAB) or Washington Accord (WA).

## Graduation Requirements

The academic requirements for the Engineering Diploma are successful completion of:

- all courses specified in the syllabus of courses
- at least 23 one-semester courses
- at least 11 courses at NSAC, including 6 of the last 10 required courses

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

# Undergraduate Degree Programs ENGINEERING DIPLOMA

## Syllabus

### Year 1

#### Semester I

CHEM1000	General Chemistry I
ENGN1001	Engineering Design I
ENGN1002	Engineering I
MATH1000	Introductory Calculus I
PHYS1002	Physics I

#### Semester II

CHEM1001	General Chemistry II
CSCI2000	Computer Science
ENGN3006	Engineering II
MATH1001	Introductory Calculus II
MATH3000	Applied Linear Algebra
PHYS1003	Physics II

### Year 2

#### Semester III

ENGN3000	Electric Circuits
ENGN3002	Thermo-fluids I
ENVS2000	Environmental Studies I
MATH2000	Multivariable Calculus
	Discipline-specific
	Discipline-specific

#### Semester IV

ENGN3017	Engineering Design II
MATH2001	Differential Equations
STAT2001	Probability and Statistics for Engineering
	Discipline-specific
	Discipline-specific
	Discipline-specific

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

### Engineering Diploma Program – Required Discipline-specific Courses

#### Semester III

<b>Chemical</b>	CHEM2000	Organic Chemistry 1	ENGN3021	Ecohydrology
<b>Civil</b>	ENGN2005	Dynamics		Writing Elective
<b>Electrical</b>	ENGN3004	Digital Circuits		Writing Elective
<b>Environmental</b>	CHEM2000	Organic Chemistry 1	ENGN3021	Ecohydrology
<b>Industrial</b>	ENGN3021	Ecohydrology		Writing Elective
<b>Mechanical</b>	ENGN2005	Dynamics		Writing Elective
<b>Materials</b>	CHEM2000	Organic Chemistry 1	ENGN3021	Ecohydrology
<b>Mineral Resource</b>	ENGN3021	Ecohydrology		Writing Elective

#### Semester IV

<b>Chemical</b>	ENGN2014	Bioresource Processing	Writing Elective	Writing Elective
<b>Civil</b>	GEOL2000	Intro to Geology	ENGN3011	Thermo-fluids II
<b>Electrical</b>	ENGN3008	Electrical Circuits II	ENGN3016	Engineering Economy
<b>Environmental</b>	ENGN2014	Bioresource Processing	Writing Elective	Writing Elective
<b>Industrial</b>	ENGN2014	Bioresource Processing	ENGN3016	Engineering Economy
<b>Mechanical</b>	ENGN3011	Thermo-fluids II	ENGN3016	Engineering Economy
<b>Materials</b>	ENGN2014	Bioresource Processing	Writing Elective	Writing Elective
<b>Mineral Resource</b>	ENGN3016	Engineering Economy	GEOL2000	Introduction to Geology
				Writing Elective

Writing course credits: Any of the following NSAC courses qualify – ENGL1000, ENGL1001, ENGL1002, SOCI1000, and GEOG1000.

### PRE-VETERINARY MEDICINE STUDIES

These studies qualify students to apply for admission to the Doctor of Veterinary Medicine program at the Atlantic Veterinary College (University of Prince Edward Island) in Charlottetown, PEI. NSAC's pre-vet studies expose students to animals such as sheep, cattle, and poultry. Students can take part in the active Pre-Vet Club and volunteer to help with lambing, daily milking, or egg collection on the NSAC farm.

Students who have completed Pre-Veterinary Medicine studies are considered to have completed the first two years of the B.Sc.(Agr.) and are eligible to switch into one of the other majors at NSAC.

### NSAC Admission Requirements

Admission into Pre-Veterinary Medicine studies requires high school graduation with an average of at least 70% in five Grade 12 university preparatory subjects:

- English
- Pre-Calculus Mathematics (or 70% in Academic Mathematics)\*
- any two of the following sciences: Chemistry\*, Biology, Physics\*, Geology, Oceanography, or Agriculture
- one elective

**Note:** NS students who have successfully completed five Grade 12 university preparatory credits, including English and Mathematics, are able to use NS Oceans 11 and/or NS Agriculture 11 to meet the above-noted science requirements.

\* Applicants who are otherwise qualified but do not have the appropriate physics, chemistry and/or math courses may be admitted with the requirement that they take the relevant non-credit introductory studies course(s) in their first year prior to registering in the degree-level counterpart(s). The non-credit introductory studies courses include CHEM0050 Preparatory Chemistry, PHYS0050 Introductory Physics, and MATH0050 Functions.

### Atlantic Veterinary College Admission Requirements

The following is the current minimum academic requirement for application for admission to the Atlantic Veterinary College (AVC) at the University of Prince Edward Island. Students should consult the latest UPEI calendar to make sure that there have been no changes. It is the student's responsibility to ensure that the requirements are met. Students are recommended to be registered in at least three credit courses per semester.

Twenty (20) one-semester courses or equivalent are required (see Appendix II for a list of NSAC courses that meet AVC admission requirements):

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

Science courses will normally have a laboratory component.

Canadian applicants to AVC must have established residency in one of the four Atlantic Provinces. For more information, please consult the AVC website at [www.upei.ca/avc](http://www.upei.ca/avc).



# Undergraduate Degree Programs PRE-VETERINARY MEDICINE STUDIES

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## Recommended Syllabus

### Year 1

#### *Semester I*

AGRI1000	Agricultural Ecosystems* (A)
BIOL1002	Biology I
CHEM1000	General Chemistry I
ENGL1000	Composition
MATH1000	Introductory Calculus I

#### *Semester II*

BIOL1003	Biology II
CHEM1001	General Chemistry II
ECON1000	Principles of Microeconomics* (A)
ENGL1001	The Novel
MATH1001	Introductory Calculus II*

### Year 2

#### *Semester III*

ANSC2005	Animal Agriculture* (A)
CHEM2000	Organic Chemistry I
GENE2000	Genetics
PHYS**	Physics <b>or</b>
STAT2000	Introduction to Statistics <i>Elective*** (Humanities/SS)</i>

#### *Semester IV*

BIOL2006	Mammalian Physiology*
CHEM3001	Biochemistry*
MICR2000	Microbiology
PHYS**	Physics <b>or</b>
STAT2000	Introduction to Statistics <i>Elective*** (Humanities/SS)</i>

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

\*\* PHYS1000 Physics for Life Sciences I or PHYS1002 Physics

\*\*\* Any Humanities or Economics (ECON) course will fit the requirement of Humanities or Social Science Elective (*see Appendix I for a list of courses and their designations*).

# Technology Programs

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NSAC offers specialized two-year programs to prepare students for careers associated with the practice of Managed Landscapes, Plant Science and Business Management, and laboratory techniques in Veterinary Technology. These studies lead to a Diploma of Technology in each of these areas.

## GENERAL INFORMATION

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

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

## 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.

## Second Diploma

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

## Continuing Academic Education After Technical Diploma

Graduates of NSAC's technical diploma programs are eligible to apply to other universities in Canada to complete a degree in agriculture. For example, the University of Manitoba allows students with an agricultural business diploma to enter the third year of their B.Sc.(Agr.) program (some conditions apply). Olds College in Alberta has a Bachelor of Applied Science program where graduates of a technical diploma in agriculture complete two more years to obtain a degree. Outside the country, NSAC's partner Dronnten University of Applied Sciences in the Netherlands accepts diploma graduates into their 1½-year Bachelor's degree in Equine Management and other agricultural specialties.

Academic advisors can provide information on the options available.

## DIPLOMA IN BUSINESS MANAGEMENT (DBM)

The Diploma in Business Management is a program designed to provide the fundamentals of business management and at the same time allow students to specialize in one of the following areas: Agriculture, Dairy Farming, Equine Specialty, Greenhouse and Nursery, or Pet Specialty. This two-year technology program provides students with the management, communication, and leadership skills necessary to manage a business such as a farm, a stable, or a pet-related or greenhouse and nursery retail operation. Careers in marketing, sales, or service are other options.

This diploma program is a unique mix of technical-credit courses and courses designated as workplace readiness courses (non-credit). The workplace readiness courses develop the practical skills and knowledge required to work in business and in the area of specialty. The workplace readiness courses common to all the options include: career preparation, public speaking, first aid, Occupational Health and Safety (OHS), Workplace Hazardous Materials Information System (WHMIS), business ethics, and professionalism. Specialty workplace readiness courses are specific to the area chosen, e.g., Hazard Analysis and Critical Control Point (HACCP) and dairy medicines for the dairy farming option. Some of these courses will be scheduled throughout the semester, and others will be offered at the beginning of the semester. Students may be required to bring protective clothing and footwear, depending on the option chosen.

## DBM Pathway to B.Sc.(Agr.) Major In Agricultural Business Degree

Students who graduate from the Diploma in Business Management (DBM) program have the option of continuing their studies in the Bachelor of Science in Agriculture [B.Sc.(Agr.)] program. Students who graduate from the DBM program are awarded a minimum of 10 credits toward the B.Sc.(Agr.) degree, provided all other program requirements are met. In addition, in consultation with the Academic Advisor, DBM students may identify additional elective courses that are available to transfer for credit towards the B.Sc.(Agr.) program. DBM students interested in exploring or developing a pathway from DBM to B.Sc.(Agr.) are strongly encouraged to meet with their academic advisor early in their program.

# Technology Programs

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## Graduation Requirements

Students are required to successfully complete all of the required courses in their selected program with a cumulative average of 60%. Students must also satisfactorily complete an internship as required by specific options.

## Diploma in Business Management Specializations

Students choose one of the following options:

**Agriculture** – Students planning to operate/manage a farm or who wish to work in the agricultural industry in sales or service should choose this specialization. Along with the primary emphasis on business, students pick and choose among a number of livestock, field crop, or horticulture electives to develop a program best suited to their long-term career interests.

**Dairy Farming** – This specialization is designed for students interested in a career in the dairy industry, whether it is operating their own dairy farm, working as a herdsman, or employed in sales or service for the dairy industry.

**Equine Specialty** – This specialization is designed specifically for those students interested in someday owning or managing an equine-related business. It provides students who have a passionate interest in horses the opportunity to study something they love and at the same time receive a solid business education that is directly transferable to any type of business operation.

**Greenhouse and Nursery** – This program is designed for people who are passionate about plants and would like a business career in a “green” and “growing” industry. Along with a solid business education, this program provides a detailed understanding of the production and marketing of ornamental plants including greenhouse- and field-grown nursery stock, and of greenhouse vegetable crops such as tomatoes and cucumbers. Career possibilities include: owner of a greenhouse operation focused on bedding plants, manager of a garden centre, and production manager of field nursery stock.

**Pet Specialty** – This specialization is best suited for students interested in working in the pet industry as either owners or managers of pet-related businesses. Sales and service are other areas of employment, e.g., managing the pet section of a department store or selling pet-care products to other businesses. Along with the business courses, students will study the care and management of small animals, reptiles, and fish.

Some of the options – Pet Specialty, Agriculture, and Greenhouse and Nursery – have an internship requirement for the spring and summer semesters. Students will be expected to obtain employment in their area of specialty and complete a designated list of competencies. The employer will be expected to complete an assessment of the student’s performance. See the course descriptions for more details.

Students who successfully complete all the requirements of the DBM will be granted a Technology Diploma and thus become Associates of NSAC. It is the student’s responsibility to see that the requirements for the diploma are fulfilled. Students who wish to continue on to complete a degree will be given advanced standing in NSAC’s degree programs.

## Admission Requirements

Admission into this program requires high school graduation with:

- Grade 12 Academic English
- Grade 11 Academic Mathematics
- Biology 11 **or** Chemistry 11 **or** Agriculture
- Integrated Science 10 **or** equivalent

In addition, the following are required for entry into specific programs:

**Dairy Farming** – The student is expected to be experienced in the care and handling of dairy animals. A Dairy Competency Form outlining practical experience and knowledge in the dairy industry is required. This form can be found online at [www.nsac.ca/dbm/dairy/entrance.asp](http://www.nsac.ca/dbm/dairy/entrance.asp).

**Equine Specialty** – The student is expected to be experienced in the care and handling of horses. An Equine Competency Form, which can be found online at [www.nsac.ca/dbm/equine/entrance.asp](http://www.nsac.ca/dbm/equine/entrance.asp), must be completed.

# Technology Programs

## Syllabus for Diploma in Business Management – Agriculture

### Year 1

#### Semester I

ACAD0020	Skills for Academic Success*
ANSC0112	Animal Biology and Management <b>or</b>
PLSC0100	Utilization of Plant Resources
ECON0100	Introductory Microeconomics
ENGL0101	Writing For Business
MATH0100	Business Math
MGMT0100	Accounting
SOIL0100	Principles of Soil Science

#### Semester II

CMMT0020	Career and Employment Skills*
MGMT0101	Applied Accounting & Taxation
MGMT0104	Small Business Entrepreneurship
SOIL0200	Soil Management
	<i>Elective**</i>
	<i>Elective**</i>
	<i>Elective**</i>

#### Semester III (Spring/Summer)

INTE0100	Internship
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### Year 2

#### Semester IV

ENGN0200	Environmental Management
MGMT0020	Business Leadership, Ethics, and Professionalism*
MGMT0204	Financial Management (A)
MGMT0206	Marketing
	<i>Elective**</i>
	<i>Elective**</i>
	<i>Elective**</i>

#### Semester V

CMMT0021	Introduction to Public Speaking*
ECON0202	Production Economics
FOOD0020	Topics in Agriculture and Food Enterprise Management*
MGMT0103	Business Law
MGMT0201	Business Project
MGMT0205	Human Resource Management
	<i>Elective**</i>
	<i>Elective**</i>

Required Workplace Readiness certificates:

WHMIS, First Aid, OHS, Farm Safety, On-farm HACCP or QA, Livestock Medicines course (for students interested in livestock production)

\* Workplace Readiness course

\*\* Students can select elective courses from a number of areas (both degree and diploma, provided prerequisites are met) including agronomy, horticulture, and animal science. Distance Education courses on specific topic areas such as beef and sheep are also available. ENGN2011 Technology in Precision Agriculture is highly recommended for students interested in crop production. Students will need to consult with the Agriculture Program Advisor to assist in the selection of courses best suited to their future career plans.

## Syllabus for Diploma in Business Management – Dairy Farming

### Year 1

#### Semester I

ACAD0020	Skills for Academic Success*
ANSC0020	Dairy Industry I*
ANSC0112	Animal Biology and Management
ECON0100	Introductory Microeconomics
ENGL0101	Writing For Business
MATH0100	Business Math
MGMT0100	Accounting
SOIL0100	Principles of Soil Science

#### Semester II

AGRN0202	Forage-Based Cropping Systems
ANSC0021	Dairy Industry II*
ANSC0113	Principles of Animal Welfare & Husbandry
ANSC0114	Animal Feed and Nutrition Management
ANSC0205	Optimizing Bovine Reproductive and Genetic Performance
CMMT0020	Career and Employment Skills*
MGMT0101	Applied Accounting & Taxation
SOIL0200	Soil Management

### Year 2

#### Semester III

AGRN0201	Cereal-Based Cropping Systems
ANSC0206	Managing Dairy Milking Systems and Housing Facilities
ENGN0200	Environmental Management
ENGN0201	Machinery and Building Technology
MGMT0020	Business Leadership, Ethics, and Professionalism*
MGMT0204	Financial Management (A)
MGMT0206	Marketing

# Technology Programs

## Semester IV

ANSC0204	Dairy Herd Health and Nutrition Management
ANSC0207	Records Management and Decision-making for Dairy Herds
CMMT0021	Introduction to Public Speaking*
ECON0202	Production Economics
MGMT0103	Business Law
MGMT0201	Business Project
MGMT0205	Human Resource Management

Required Workplace Readiness certificates and experience: WHMIS, First Aid, OHS, Farm Safety, On-farm HACCP, Dairy Medicines course, Dairy Skills experience\*\*

\* Workplace Readiness course

\*\* Students will be expected to complete two weeks of work experience at the NSAC Dairy Farm as part of the requirements for the program. This work experience normally is completed in the first year.

## Syllabus for Diploma in Business Management – Equine

### Specialty

#### Year 1

##### Semester I

ACAD0020	Skills for Academic Success*
ANSC0022	Equine Industry*
ANSC0112	Animal Biology and Management
ECON0100	Introductory Microeconomics
ENGL0101	Writing For Business
MATH0100	Business Math
MGMT0100	Accounting
SOIL0100	Principles of Soil Science

##### Semester II

AGRN0202	Forage-Based Cropping Systems
ANSC0113	Principles of Animal Welfare and Husbandry
ANSC0114	Animal Feed and Nutrition Management
CMMT0020	Career and Employment Skills*
MGMT0101	Applied Accounting & Taxation
MGMT0104	Small Business Entrepreneurship
SOIL0200	Soil Management

## Year 2

### Semester III

ANSC0213	Equine Growth & Nutrition
ANSC0214	Equine Health, Genetics and Reproduction
ENGN0200	Environmental Management
MGMT0020	Business Leadership, Ethics, and Professionalism*
MGMT0203	Customer Relations Management
MGMT0204	Financial Management
MGMT0206	Marketing

### Semester IV

ANSC0215	Equine Facilities Management
ANSC0216	Equine Health & Fitness
ANSC0219	Equine Behaviour & Learning
CMMT0021	Introduction to Public Speaking*
MGMT0103	Business Law
MGMT0201	Business Project
MGMT0205	Human Resource Management

Required Workplace Readiness certificates:

WHMIS, First Aid, OHS, Work Safety, Equine Medicines course

\* Workplace Readiness course

## Syllabus for Diploma in Business Management – Greenhouse and Nursery

#### Year 1

##### Semester I

ACAD0020	Skills for Academic Success*
ECON0100	Introductory Microeconomics
ENGL0101	Writing For Business
MATH0100	Business Math
MGMT0100	Accounting
PLSC0100	Utilization of Plant Resources
SOIL0100	Principles of Soil Science

##### Semester II

CMMT0020	Career and Employment Skills*
MGMT0101	Applied Accounting & Taxation
MGMT0103	Business Law
MGMT0104	Small Business Entrepreneurship
SOIL0200	Soil Management

*Elective\*\**

*Elective II*

##### Semester III (Spring/Summer)

INTE0100	Internship
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# Technology Programs

## Year 2

### Semester IV

HORT0201	Greenhouse & Floriculture Crop Management
MGMT0020	Business Leadership, Ethics & Professionalism*
MGMT0202	Managing Retail Operations & Physical Resources
MGMT0203	Customer Relations Management
MGMT0204	Financial Management
MGMT0206	Marketing
PLSC0200	Plant Propagation

### Semester V

BIOL0102	Plant Physiology and Stress Management
CMMT0021	Introduction to Public Speaking*
HORT0200	Landscape Plant Nursery Management
MGMT0201	Business Project
MGMT0205	Human Resource Management
MGMT0208	Retail Sales Management
PLSC2000	Specialty Crops

Required Workplace Readiness certificates:

WHMIS, First Aid, OHS, Workplace Safety, HACCP or QA

\* Workplace Readiness course

\*\* Students can select elective courses from a number of areas including agronomy, horticulture, and animal sciences. Students will need to consult with the Greenhouse and Nursery Program Advisor to assist in the selection of courses best suited to their future career paths.

## Syllabus for Diploma in Business Management – Pet Specialty

### Year 1

#### Semester I

ACAD0020	Skills for Academic Success*
ANSC0116	Companion Animal Enterprise
ECON0100	Introductory Microeconomics
ENGL0101	Writing for Business
MATH0100	Business Math
MGMT0100	Accounting
MGMT0206	Marketing

### Semester II

ANSC0117	Companion Animal Growth, Development, and Nutrition
ANSC0208	Biology and Care of Aquarium Fish and Reptiles** or
ANSC0209	Biology and Care of Pet Birds and Small Mammals**
ANSC0217	Companion Animal Behaviour
CMMT0020	Career and Employment Skills*
MGMT0101	Applied Accounting & Taxation
MGMT0104	Small Business Entrepreneurship
MGMT0207	Advertising and Promotion

### Semester III (Spring/Summer)

INTE0100	Internship
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### Year 2

#### Semester IV

ANSC0210	Introduction to Companion Animal Health
ANSC0212	Companion Animal Genetics and Reproduction
MGMT0020	Business Leadership, Ethics, and Professionalism*
MGMT0202	Managing Retail Operations and Physical Resources
MGMT0203	Customer Relations Management
MGMT0204	Financial Management

#### Semester V

ANSC0208	Biology and Care of Aquarium Fish and Reptiles** or
ANSC0209	Biology and Care of Pet Birds and Small Mammals**
ANSC0211	Companion Animal Facilities Management
CMMT0021	Introduction to Public Speaking*
MGMT0103	Business Law
MGMT0201	Business Project
MGMT0205	Human Resource Management
MGMT0208	Retail Sales Management

Required Workplace Readiness certificates and experience:

WHMIS, First Aid, OHS, Workplace Safety, Small Animal Work Experience\*\*\*

\* Workplace Readiness course

\*\* Courses are offered in alternate years.

\*\*\* Students will be expected to complete 40 hours of small-animal work experience as part of the requirements for the program. This may be completed at the Boulden Animal Centre, an animal shelter, or any acceptable animal facility.

# Technology Programs

## DIPLOMA IN MANAGED LANDSCAPES

NSAC 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.

Managed Landscapes at NSAC is a fully approved Certified Horticultural Technician integrated educational program, recognized by the International Certification Council (ICC) and the Certification Committee of the Canadian Nursery Landscape Association (CNLA). Interested students can apply for a Passport to Certification that enables modular training and testing toward international recognition as a Certified Horticultural Technician. The NSAC curriculum fully encompasses the requirements for certification in various industry sectors.

Students who graduate from the Managed Landscapes Technology program with a cumulative average of at least 60% are eligible for admission to the two-year Bachelor of Technology Environmental Landscape Horticulture (B.Tech ELH) program, as years one and two of the B.Tech ELH program are satisfied by the successful completion of the Managed Landscapes program.

### Admission Requirements

Admission into the Managed Landscapes Technology program requires high school graduation with an average of at least 60% in five university preparatory subjects:

- Grade 12 English
- Grade 12 Mathematics
- Grade 12 Biology
- one Grade 12 elective
- Grade 11 Chemistry

### Recommended Syllabus

#### Year 1

##### Semester I

ENGL0101	Writing for Business
HORT0100	Landscape Plants I
HORT0102	Turfgrass Production and Management
HORT0103	Landscape Horticulture I
SOIL0100	Principles of Soil Science

##### Semester II

BIOL0102	Plant Physiology and Stress Management
ENGN0101	Horticultural Engineering
HORT0101	Landscape Plants II
HORT0208	Landscape Maintenance
HORT0210	Landscape Installation

#### Year 2

##### Semester III

BIOL0200	Entomology
ENGN0100	Surveying
HORT0204	Landscape Plants III
HORT0207	Arboriculture
HORT0209	Landscape Horticulture II

##### Semester IV

BIOL0101	Plant Pathology
BIOL0103	Weed Science
HORT0205	Residential Landscape Design and Construction
SOIL0200	Soil Management
	<i>Elective</i>

Required Workplace Readiness certificates:

WHMIS, First Aid, OHS

Recommended Workplace Readiness courses:

<i>CMMT0020</i>	<i>Career and Employment Skills</i>
<i>CMMT0021</i>	<i>Introduction to Public Speaking</i>

## DIPLOMA IN PLANT SCIENCE TECHNOLOGY

The two-year Plant Science Technology program prepares graduates for exciting careers in the dynamic plant-based industries of the future. Emerging information and technology related to bio-energy, nutrition, health, environmental protection, and plant genetics will make a plant science education a valuable asset. This program provides an innovative approach to the production and use of plant resources, with emphasis on responsible environmental and social stewardship, commercialization of ideas and strong practical skills in horticultural or agronomic plant production techniques, entrepreneurship, problem-solving, communication, and decision-making, all built on a solid foundation in the bio-sciences.

Studies begin with a first year of required courses that allow students to build their knowledge in the bio-sciences, plant production, and business, and to develop their interests. The program then provides the opportunity in the second year to select from a wide variety of courses to give each student the flexibility to match courses to their interests and career goals. With the help of a knowledgeable program advisor, students can choose from courses in edible horticulture, ornamental horticulture, agronomy, plant science, business, or engineering.

# Technology Programs

## Plant Science Technology Diploma Pathway to B.Sc.(Agr.)

### Degree

Students who graduate from the Plant Science technology diploma program have the ability to make significant progress towards the completion of the B.Sc.(Agr.) Plant Science degree program during their two-year technology residency. Students who graduate from the technology program are awarded a minimum of 10 credits toward the B.Sc.(Agr.) degree, provided all other program requirements are met. In addition, in consultation with the Plant Science Technology Academic Advisor, students can identify additional elective courses that will transfer for credit toward the B.Sc.(Agr.) Plant Science degree program. Plant Science students interested in exploring a pathway from the technology program to the B.Sc.(Agr.) degree program are strongly encouraged to meet with their academic advisor early in their program.

### Admission Requirements

Admission into the Plant Science Technology program requires high school graduation with successful completion of the following university preparatory courses:

- Grade 12 English
- Grade 11 Mathematics
- Grade 11 Chemistry
- Grade 10 Biology or Integrated Science

### Syllabus

#### Year 1

##### *Semester I*

BIOL0200	Entomology
ENGL0101	Writing for Business
MGMT0100	Accounting
PLSC0100	Utilization of Plant Resources
PLSC0200	Plant Propagation
SOIL0100	Principles of Soil Science

##### *Semester II*

BIOL0102	Plant Physiology and Stress Management
BIOL0103	Weed Science
BIOL0101	Plant Pathology
CSCI0200	Computer Methods
MGMT0104	Small Business Entrepreneurship
MGMT0205	Human Resource Management

##### *Semester III and Semester IV*

Twelve courses, six in each semester, chosen in consultation with a program advisor. One course (PLSC0202), if chosen, is taken during the Spring/Summer between Semesters II and III.

## Recommended Electives

The following courses are suggested as electives in the study areas related to the Plant Science Technology program. Courses not on the list may also be eligible as electives; students may choose either technical-level courses or degree courses at the 1000 and 2000 level. Consultation with the program advisor is recommended. Many of these courses have prerequisites; it is the student's responsibility to ensure that these requirements are met.

### FALL

AGRN0201	Cereal-Based Cropping Systems
ANSC0112	Animal Biology and Management
ENGN0200	Environmental Management
ENGN2011	Technology for Precision Agriculture
HORT0100	Landscape Plants I
HORT0201	Greenhouse and Floriculture Crop Management
HORT0211	Vegetable Production
HORT0202	Small Fruit Crops
HORT0204	Landscape Plants III
HORT0102	Turfgrass Production and Management
HORT0103	Landscape Horticulture I
HORT0207	Arboriculture
HORT2001	Principles of Organic Horticulture <b>DE</b>
MGMT0204	Financial Management
PLSC1000	Farm Woodlot Management

### WINTER

AGRN0200	Potato Production
AGRN0202	Forage-Based Cropping Systems
ANCS0113	Principles of Animal Welfare and Husbandry
ANSC0114	Animal Feed and Nutrition Management
ENGN0101	Horticultural Engineering
HORT0101	Landscape Plants II
HORT0200	Landscape Plant Nursery Management
HORT0203	Tree Fruit Crops
HORT0204	Landscape Plants III
MGMT0103	Business Law
MGMT0207	Advertising and Promotion
MGMT0208	Retail Sales Management
PLSC2000	Specialty Crops
SOIL0200	Soil Management

### SPRING/SUMMER (between Years 1 and 2)

PLSC0202	Plant Science Techniques
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# Technology Programs

## VETERINARY TECHNOLOGY

The Veterinary Technology (VT) Program prepares graduates with the skills and knowledge required to enter veterinary practice as technical assistants to veterinarians. Veterinary technicians have also made successful careers in a variety of other fields, including the management of animal shelters; research with animals in universities and for private companies; sales for veterinary supply companies; and employment with zoos and in wildlife rehabilitation.

The Veterinary Technology Program at NSAC is a two-year program with four standard semesters and an intersession after the first year. In addition to on-campus learning there are off-campus externships at the Atlantic Veterinary College and in general veterinary practices. To reflect the major employment opportunities in Atlantic Canada, the program is oriented mainly towards companion animals. The modest large-animal content is appropriate for graduates entering mixed practice and for those who wish to further develop their livestock or equine competence. Under the supervision of veterinarians and veterinary technicians in the VT program's Boulden Animal Clinic, students learn the skills and tasks required of them in companion animal practice.

Students in the NSAC Veterinary Technology Program must successfully complete 8 required courses each academic year (Fall/Winter) to be eligible to continue in the program the following year. Students who do not meet this requirement, or who withdraw for any reason, will need to reapply if they want to return to the program. They will be considered along with the new pool of applicants and will not have preferential admittance. They must fulfill all orientation and application procedures, and adhere to the February 28 application deadline. Students who wish to return in the winter semester may only do so if there is space in the program, and they are required to reapply by December 1.

The Veterinary Technology Program at NSAC is accredited by the Canadian Veterinary Medical Association. The animal facilities are approved for teaching by the Canadian Council on Animal Care. The Animal Clinic is accredited by the Nova Scotia Veterinary Medical Association.

## Admission Requirements

Admission into the Veterinary Technology program requires high school graduation with an average of at least 60% in five Grade 12 university preparatory subjects:

- English
- Pre-Calculus Mathematics (or 70% in Academic Mathematics)
- Chemistry
- Biology
- one elective

## Syllabus

### Year 1

#### Semester I

ENGL0101	Writing for Business
VTEC0111	Animal Medicine and Nursing I
VTEC0112	Clinical Exercises I
VTEC0113	Veterinary Clinical Pathology I
VTEC0114	Fundamentals in Veterinary Technology I
VTEC0115	Anatomy–Physiology–Pathophysiology I

#### Semester II

ANSC0217	Companion Animal Behaviour
VTEC0121	Animal Medicine and Nursing II
VTEC0122	Clinical Exercises II
VTEC0123	Veterinary Clinical Pathology II
VTEC0124	Fundamentals in Veterinary Technology II
VTEC0125	Anatomy–Physiology–Pathophysiology II

#### Semester III

VTEC0131	Internship in Veterinary Technology
VTEC0132	Externship at the Atlantic Veterinary College
VTEC0133	Externship in General Veterinary Practice

### Year 2

#### Semester IV

VTEC0211	Animal Medicine and Nursing III
VTEC0212	Clinical Exercises III
VTEC0213	Veterinary Clinical Pathology III
VTEC0214	Fundamentals in Veterinary Technology III
VTEC0215	Livestock and Equine Principles
	<i>Elective*</i>

#### Semester V

VTEC0221	Animal Medicine and Nursing IV
VTEC0222	Clinical Exercises IV
VTEC0223	Veterinary Clinical Pathology IV
VTEC0224	Fundamentals in Veterinary Technology IV
VTEC0225	Lab Animal & Alternative Pet Medicine
	<i>Elective*</i>

\* Electives must be approved by the Program Coordinator.

# University Preparatory Courses

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University Preparatory courses are offered for students who are entering any of our B.Sc.(Agr.) programs and who do not meet entrance requirements or who require upgrading to enter certain courses. These one-semester non-credit courses in Chemistry, Physics, and Mathematics are offered in Fall and Winter semesters. These courses may also be taken by non-degree students, but they may not timetable well.

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

For detailed descriptions of the following University Preparatory courses, please see Description of Courses.

CHEM0050	Preparatory Chemistry
MATH0050	Functions
PHYS0050	Introductory Physics

For more information, please contact the Registry Office  
([reg@nsac.ca](mailto:reg@nsac.ca)).

## Certificate Programs

### CERTIFICATE OF SPECIALIZATION IN ORGANIC AGRICULTURE

NSAC offers a Certificate program in Organic Agriculture. This initiative provides students with an opportunity to specialize in the expanding area of organic agriculture. The Certificate of Specialization in Organic Agriculture enables students to approach agriculture from their area of interest, to know they can be recognized for this accomplishment, and to continue to take other courses in agriculture toward a degree. Any student who has successfully completed four of the eligible organic agriculture credit courses and has an overall average of at least 60% in these courses can apply to receive a Certificate of Specialization in Organic Agriculture. Two of the courses may be substituted with approved organic agriculture courses offered by external institutions (see below). A Letter of Permission is required for these alternative courses.

#### Eligible Courses:

AGRI2000	Transition to Organic Agriculture
AGRN2000	Organic Field Crop Management
ANSC2004	Organic Livestock Production
ENVS2002	Composting and Compost Use
HORT2001	Principles of Organic Horticulture

**Note:** Students will not be required to take the courses in any particular order. AGRI2000, ENVS2002, and HORT2001 are currently offered in the Fall semester. AGRN2000 and ANSC2004 are currently offered in the Winter semester.

All NSAC courses in the Certificate of Specialization in Organic Agriculture program are offered only through web-based distance education. Other institutions offering web-based courses that are approved for the certificate program:

- McGill University (Organic Soil Fertilization)
- Université Laval [French translation of NSAC courses AGRI2000, AGRN2004, ANSC2004, and ENVS2002]\*
- University of British Columbia (Key Indicators of Agroecosystem Sustainability)
- University of Guelph (Organic Marketing)
- University of Manitoba (Organic Crop Production on the Prairies)
- University of Saskatchewan (Weed Control in Organic Agriculture)

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

### CERTIFICATE IN TECHNOLOGY EDUCATION

The Certificate in Technology Education Program is intended to upgrade and diversify the technology background of Technology Education teachers presently working in Nova Scotia schools. It is approved in Nova Scotia by the Minister of Education for teaching license upgrading. This program is an innovative collaboration between NSAC and Nova Scotia's Technology Education Teachers Association, the Nova Scotia Department of Education, and Acadia University. The program provides a variety of hands-on experiences and teaching methodologies that strengthen traditional skills and introduce new technologies to better meet the demand for qualified technology educators for the public school system.

Instruction is conducted outside regular school hours, in evening or summer sessions.

Students must complete 10 approved courses with a cumulative average of 65%. Eight of the ten courses must be from the NSAC course list; the other two courses are teaching methodology courses offered by Acadia University. The program must be completed in a maximum of 6 years. Courses can be taken in any sequence. The offering of this program is subject to the approval of MPHEC and sufficient enrollment.

#### NSAC Courses (8 required)

ENGN1001	Engineering Design I
ENGN1003	Practices and Mechanics of Materials
ENGN1004	Wood Construction Technology
ENGN1005	Metal Construction Technology
ENGN2000	Environmental Impacts and Resource Management
ENGN2007	Fluid Power Technology
ENGN2008	Digital Electronics and Computer Interfacing
ENGN3001	Engineering Measurements and Controls
ENGN3018	Technology Modules
ENGN3019	Communications Technology

#### Acadia Courses

EDUC5053	Problems in Education: Technological Education and Sustainability
EDUC5873	Technology & Curriculum: Technology Studies

**Note:** It is the responsibility of individual teachers to ensure that they comply with the requirements of the NS Department of Education for continuing education and upgrades. For more information, see [certification.ednet.ns.ca/approval\\_upgrading.shtml](http://certification.ednet.ns.ca/approval_upgrading.shtml).

# Description of Courses – Undergraduate Degree Level

These courses are at the undergraduate degree level. The course descriptions are grouped according to discipline and are in alphanumeric order. Course descriptions include the course designations (A) for Agriculture courses and (H) for Humanities/Social Sciences courses. The course designations will assist students in determining program requirements as described in the program syllabi. Appendix I provides a list of courses with course designations.

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

Course information indicates the weekly instructional requirement in hours per week. The faculty reserves the right to make any necessary revisions or additions.

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

*Prerequisite:* A course that must be completed successfully prior to the course that lists it as a prerequisite.

*Preparatory:* A course that is recommended to be taken prior to the course that lists it as a preparatory. This is particularly important for students who do not have sufficient background knowledge in that area.

*Directed Studies Courses:* Courses that permit senior students (third- and fourth-year), under the direction of faculty, to pursue their interest in areas not covered in depth by other courses. Directed studies courses may include directed reading, seminars, written assignments, individual study, discussion and laboratory projects. Students should approach potential instructors directly with their request.

*Special Topics Courses (SPECXXXX):* These courses address topics for which no current course exists. They are normally taught in a traditional format to groups of students, and are often used to pilot potential new courses.

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

## Course Codes by Discipline

Agricultural	AGRI
Agronomy	AGRN
Animal Science	ANSC
Aquaculture	AQUA
Art	ARTS
Biology	BIOL
Chemistry	CHEM
Communications	CMMT
Computer Science	CSCI
Economics	ECON
Engineering	ENGN
English	ENGL
Environmental Sciences	ENVS
Extension Education	EXTE
Food Science	FOOD
French	FREN
Genetics	GENE
Geography	GEOG
Geology	GEOL
History	HIST
Horticulture	HORT
International Development	INTD
Management	MGMT
Mathematics	MATH
Microbiology	MICR
Nutrition	NUTR
Philosophy	PHIL
Physics	PHYS
Plant Science	PLSC
Political Science	POLS
Psychology	PSYC
Research Methods/Project Seminars	RESM
Rural Studies	RURS
Sociology	SOCI
Soils	SOIL
Spanish	SPAN
Special Topics	SPEC
Statistics	STAT

# Description of Courses – Undergraduate Degree Level

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## AGRICULTURAL

### **AGRI1000: Agricultural Ecosystems (A)**

Instructor: **Prof. Caldwell**

This course is an introduction to agriculture and food systems. The principles of agricultural production as studied in the disciplines of animal science, plant science, agricultural engineering, and soil science will be integrated to give a comprehensive view of agricultural ecosystems. Course work will include lectures, laboratories, problem-solving exercises, and small-group work. There will be a farm tour for all AGRI1000 students on September 19, 2012, from 1 pm until 7 pm. The course will expose students to issues and raise questions to be considered during the remainder of their undergraduate careers.

The goals of this course are to provide students with knowledge of the application of science to agriculture, and to 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 – Lecture 3 hours, lab and/or tutorial 2 hours per week.

### **AGR12000: Transition to Organic Agriculture (A) DE**

Instructor: **D. Jans**

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

Fall semester.

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

### **AGRI3001: Issues in Agricultural Health and Safety (A, H) DE**

Instructor: **Prof. Sanderson**

*Prerequisite:* third-year standing

This course is a series of ten online modules on Agricultural Health & Safety designed for agricultural students, farm managers and owner-operators, and anyone else who wishes to obtain a better understanding of the health and safety issues present on Canadian farms. The course describes the health and safety situation and the major health and safety risks in the agriculture industry, and highlights the importance of improving the current situation.

Fall or Winter semester.

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

### **AGRI4000: Contemporary Issues in Agriculture (A)**

Instructor: **Prof. Tennessen**

*Prerequisite:* third- or fourth-year standing

This course has limited enrollment.

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-hour seminar weekly.

# Description of Courses – Undergraduate Degree Level

## AGRONOMY

### **AGRN2000 (AGRN1000): Organic Field Crop Management (A) DE**

Instructor: **D. Jans**

This course will introduce students to organic principles and practices applied to the production and management of field crops. The criteria for optimum yield and quality of field crops are presented within the context of organic farming principles, sustainable soil and nutrient management, and the requirements for organic certification. Five stand-alone modules provide a framework for study:

*Soil and Field Management Practices:* methods used in organic farming to build and maintain soil fertility, preserve soil structure, conserve and recycle nutrients, reduce weed pressure, and reduce outbreaks of pest and disease;

*Nutrient Management Planning:* how to optimize the efficiency of nutrient cycling, improve resource utilization, and minimize nutrient loss on the farm;

*Forages:* organic methods of production for pasture, hay, silage, cover crops, or green manure;

*Row Crops:* organic methods of production of cereal row crops (corn, sorghum), root crops (carrots, potatoes), seed legumes (soybean, peas, beans), and others (e.g., hemp); and

*Small Grains and Oilseeds:* organic methods of production of winter-seeded grains (winter wheat, winter rye), spring-seeded grains (spring wheat, oats, and barley), oilseeds (canola, flax), and others.

Winter semester.

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

### **AGRN2001: Cereal-Based Cropping Systems (A)**

*Cross-referenced as AGRN0201*

Instructor: **TBA**

This course takes a systems approach to the study of crop and soil management in rotations involving the growing of the principal cereals, oilseeds, pulses, and other grains, and their relationship to other crops in a rotation. Through a whole-farm approach over time, it studies environmentally and economically sustainable methods for grain cash crops and grain-based animal feed production. It stresses soil and water conservation and an understanding of the principles and processes of the nutrient cycles, which are critical to improving the food production environment. Students will gain knowledge of grains as they relate to people and the environment, from soil to shelf, both in a Maritime temperate climate and in an international context.

Fall semester – Lecture 3 hours, lab 2 hours per week.

### **AGRN2002: Forage-Based Cropping Systems (A)**

*Cross-referenced as AGRN0202*

Instructor: **Prof. McLean**

Forage crop production, management, and use will be discussed in the context of agricultural ecosystems. Emphasis will be placed on beneficial management practices to reduce negative impacts on the environment, while maintaining profitability and sustainability of rural communities. Topics covered will include pasture, hay, and silage, as well as the role of perennial and annual forages in crop rotations.

Winter semester – Lecture 3 hours, lab 2 hours per week.

### **AGRN2008 (AGRN3002): Potato Production (A)**

*Cross-referenced as AGRN0200*

Instructor: **Prof. Asiedu**

*Preparatory:* AGR11000

History, biosystematics, and eco-physiology of the crop are emphasized. Production practices for seed, table, and processing stock and marketing in the Atlantic Provinces are examined. Soil fertility, crop health management strategies, and nutritional qualities and storage are covered in detail. Some commercial operations are visited.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## ANIMAL SCIENCE

### **ANSC2002: The Horse: Its Biology and Use (A)**

Instructor: **L. Jack**

*Prerequisite:* second-year standing or equivalent, in any program

This course is an introduction to the behaviour, anatomy, nutrition, and history of horses. What behavioural 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 – Lecture/lab 3 hours per week with online component.

# Description of Courses – Undergraduate Degree Level

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## **ANSC2003: Companion Animal Behaviour**

*Cross-referenced as ANSC0217*

Instructor: **Prof. Tennesen**

In this course, students will study the fundamentals of animal learning and how those principles affect success in training and behaviour modification. Attention will be given to understanding and solving behaviour problems (e.g., separation anxiety, dominance aggression, fighting, inappropriate urination, and behavioural stereotypies). The focus is on companion animals – dogs and cats, and to some extent horses. The normal development of behaviour in those species will be covered.

Winter semester – Lecture 3 hours per week.

## **ANSC2004 (ANSC1000): Organic Livestock Production (A) DE**

Instructor: **S. Fernandez**

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

Winter semester.

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

## **ANSC2005: Animal Agriculture (A)**

Instructor: **Prof. Tennesen**

*Prerequisite:* AGRI1000

Through a mixture of classroom lectures and exercises at NSAC, this course will enable students to recognize common breeds of farm animals, to describe livestock production cycles and methods, and to understand the place of farm animals in the world food system. The course will provide introduction to subject matter covered in more senior animal science courses, such as nutrition, reproduction, behavior and welfare, animal anatomy, and environmental physiology. The interaction of livestock production with our environment will be examined.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC2006: Equine Health, Genetics and Reproduction**

*Cross-referenced as ANSC0214*

Instructors: **T.-L. Masters** and **D. Pelkey-Field**

*Prerequisite:* ANSC2002

Students examine in detail the processes of reproduction and lactation in horses, as well as the requirements for care and management of the mare during breeding, parturition, and lactation. Students also study the growth and development of the foal and the requirements for the care of the foal. The common breeds of horses and the genetics of coat colour, conformation, and performance potential will be discussed. The course will enable students to evaluate the genetic merit of sires and dams, and to plan matings and genetics strategies to meet the genetic goals of their particular operation. Students will obtain a basic knowledge of health care and disease prevention, and be able to address issues relating to biosecurity.

Fall semester – Lecture 3 hours, lab 2 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **ANSC2007: Beef Production and Management (A)**

*Cross-referenced as ANSC0218*

Instructor: **F. Nicholson**

*Prerequisite:* ANSC2000 or ANSC2005

This course will focus on the management of commercial beef farms, ranging from cow/calf to stocker/feeder operations. Components of breeding, nutrition, and behaviour will be discussed. A systems approach to the management of the farm will be undertaken. The role of the manager in optimizing production is an important component. A historical perspective on the Atlantic beef industry along with coverage of emerging trends will be part of the course. Key beef industry issues such as the impact of BSE, animal welfare, and beef marketing will be discussed.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC3000: Animal Breeding (A)**

Instructor: **Prof. Glover**

*Prerequisites:* GENE2000, STAT2000

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

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC3001: Animal Health (A)**

Instructor: **T. Semple**

*Prerequisite:* MICR2000

This course 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 – Lecture 3 hours, lab 2 hours per week.

## **ANSC3002: Domestic Animal Behaviour (A)**

Instructor: **Prof. Jendral**

*Prerequisite:* BIOL2006 or BIOL3005

This course studies the behaviour of farm animals and presents information that is relevant to the care and management of animals. Topics covered include domestication, animal communication, social behaviour, reproductive and maternal behaviour, development of behaviour, genetics of behaviour, and the influence of management systems and practices on behavioural characteristics. Considerable attention is also given to welfare issues in animal agriculture.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC3003: Eggs and Dairy Products (A)**

Instructor: **Prof. Firth**

This course deals with the nature and composition of eggs and milk and their products such as cheese and yogurt; hygiene; processing; and storage.

Fall semester – Lecture 2 hours, lab 2 hours per week.

## **ANSC3004: Meat Science (A)**

Instructor: **Prof. Firth**

This course covers 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 – Lecture 2 hours, lab 2 hours per week.

## **ANSC3005: Animal Welfare (A)**

Instructor: **J. Morrigan**

*Prerequisite:* at least third-year standing

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

Winter semester – Lecture 3 hours, lab 2 hours per week.



# Description of Courses – Undergraduate Degree Level

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## **ANSC3006: Companion Animal Biology**

Instructors: **Profs. Rouvinen-Watt and Patterson**

*Prerequisites:* BIOL3008, GENE2000

This course focuses on digestive and reproductive physiology, nutritional, genetic, and breeding programs, and the importance of these for management of companion animals. The emphasis is on domestic dogs and cats, with other companion animals included as the topic permits. Laboratory sessions include evaluation of diets and dietary supplements, reproductive and digestive anatomy, simulation of breeding programs, and guest lecturers or field trips to companion animal facilities.

Winter semester – Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2012/2013.

## **ANSC4003: Avian Production Systems (A)**

Instructors: **Profs. Rathgeber and Jendral**

*Prerequisites:* ANSC2005, NUTR3000

This course will focus on management of commercial poultry, from hatching to the production of value-added products. The course material will require the application of the sciences of nutrition, genetics, physiology, and behavior to understand the key aspects of growth, reproduction, and health of commercial poultry species.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **ANSC4004: Ecology of Milk Production in Ruminants (A)**

Instructor: **Prof. Fredeen**

*Prerequisite:* ANSC2005

Milk is a highly prized food, the efficient forage-based production of which has been a major economic phenomenon in agriculture for millennia. Four main species – cattle, buffalo, goats and sheep – have been selected to produce milk for humans. All are from the *Bovidae* Family (Suborder *Ruminantia*) of cudchewers. Chosen initially because they didn't compete for the scarce food supplies of our ancestors, ruminants, especially cows, have been selected intensively for milk-yielding characteristics and conformation. The objectives of this course are to examine the production of milk, from provision of feed for the animals to processing the milk into products, and the important contribution made by the dairy industry in providing sustainable food security for society. This course will challenge perceptions of students who will become future dairy farmers or consumers and thus will influence future policy.

Fall semester – Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2012/2013.

## **ANSC4005: Swine Science and Pork Production (A)**

Instructor: **Prof. Anderson**

*Prerequisites:* ANSC2005, ANSC3000, BIOL2006, NUTR3001

Globally, pork production is a significant source of animal protein. Swine science provides the tools to accomplish pork production. This course will cover aspects of pork production including nutrition, management, breeding, housing, health and post-farmgate opportunities. The science of swine will be discussed, including biology and the role of swine as models for human studies. Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ANSC4006: The Science of Modern Sheep Farming (A)**

Instructor: **Prof. Barrett**

*Prerequisites:* BIOL3008, NUTR3000

Sheep were among the first animals to be domesticated and since then, sheep have been bred for different roles: wool, meat, milk. In the Maritimes, the importance of sheep in the rural economy is on the increase. This course will guide students through the science of sheep production. Nutrition, pasture management, breeding, lambing and flock health will be covered. The traditional roles of sheep for meat and wool production will be emphasized, but also newer uses in Canada such as dairy sheep production will be explored.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC4007: Pastures in Sustainable Livestock Systems (A)**

Instructors: **Profs. Papadopoulos, Fredeen and J. Duynisveld**

*Prerequisites:* AGR11000, AGRN2002

An advanced course that provides students with an overview of current sustainable pasture management practices in northern latitudes, with a focus on grassland ecology, the environmental impacts of livestock production, and applied pasture management. In addition to attending lectures and presenting material in class, students will participate in lab sessions on practical grazing management techniques as well as participate in investigative tours of local pasture producers.

Fall semester – Lecture 3 hours, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

## **ANSC4008: Carnivore Biology**

Instructor: **Prof. Rouvinen-Watt**

*Preparatory:* BIOL3006

This is an advanced-level course in mammalian biology focusing on species in the Order *Carnivora*. The specialized features of the biology of mammalian carnivores will be reviewed, emphasizing seasonal breeding and reproduction, nutrition and physiology, and health and disease. Species discussed will include livestock, companion and zoo animals, and wildlife. The practical aspects of the course will use the mink as a model animal.

Winter semester – Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/14.

## **ANSC4009: Directed Studies in the Animal Sciences**

*Prerequisite:* permission of the Department/Program Advisor; students must obtain consent of an instructor who is willing to be a supervisor. This course permits senior students, under the direction of faculty members, to pursue their interest in areas not covered, or not covered in depth, by other courses.

**Note:** ANSC4009 cannot duplicate subject matter covered through regular course offerings.

Fall, Winter or Summer semester – directed independent study

## **AQUACULTURE**

### **AQUA2000: Introduction to Aquaculture (A)**

Instructor: **TBA**

The history and the current status of world aquaculture production are discussed, with emphasis on species with potential in Atlantic Canada. Advances in freshwater or marine finfish and shellfish culture are included. Aquatic plant production is discussed. Business aspects of aquaculture are introduced. The course includes field trips to aquaculture and related facilities.

Fall semester – Lecture 3 hours, lab 3 hours per week.

### **AQUA3000: Fish Health (A)**

Instructor: **Prof. Duston**

*Preparatory:* BIOL3005

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

Winter semester – Lecture 3 hours, lab 3 hours per week.

### **AQUA4000: Finfish Production**

Instructor: **Prof. Duston**

*Prerequisites:* NUTR3000 or NUTR3002, AQUA3000, BIOL3005

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 – Lecture 3 hours, lab 3 hours per week.

### **AQUA4001: Shellfish Production**

Instructor: **TBA**

*Prerequisites:* NUTR3000 or NUTR3001, AQUA3000, BIOL3005

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

Winter semester – Lecture 3 hours, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## ART

### **ARTS2000: Nature's Image: A Survey of Landscape Art (H)**

Instructor: **C. Brown**

This course will provide an introduction to the history of art forms depicting landscape, with the major focus being on landscape painting. The course will consist of art history lectures and a studio component in which drawing techniques, collage, and colour theory will be explored. Students will develop skills in composition and will gain an increased appreciation for landscape art traditions.

Fall semester – Lecture/studio 3 hours per week.

## BIOLOGY

### **BIOL1002: Biology I**

Instructor: **Prof. Olson**

This is the first of a two-semester course sequence exploring various general principles common to the biological sciences. The biological significance of cell structure and function, metabolism, the cell cycle, sexual reproduction, Mendelian genetics and basic gene structure are among the topics to be considered in the lecture sessions. The labs reinforce and enhance the learning of selected topics discussed in the lectures.

Fall semester – Lecture 3 hours, lab 3 hours per week.

### **BIOL1003: Biology II**

Instructor: **Prof. Olson**

*Prerequisite:* BIOL1002

This is the second of a two-semester course sequence exploring various general principles common to the biological sciences. In addition to evolutionary processes and patterns, the fundamental systematics and diversity of prokaryotes, protists, plants, fungi and animals are emphasized in the lecture sessions. The laboratory continues to reinforce and enhance the learning of selected topics discussed in the lectures.

Winter semester – Lecture 3 hours, lab 3 hours per week.

### **BIOL2000: Cell Biology**

Instructor: **Prof. Wang-Pruski**

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 prokaryotic cell. Specialized cell functions will also be discussed.

Fall semester – Lecture 3 hours per week.

### **BIOL2001: Cell Biology Laboratory**

Instructor: **Prof. Wang-Pruski**

This course combines the lectures of BIOL2000 with a laboratory section. Students will participate fully in BIOL2000 and, as well, complete laboratory sessions to complement lecture material.

Students may receive credit for either BIOL2000 or BIOL2001, but not both.

Fall semester – Lecture 3 hours, lab 3 hours per week.

### **BIOL2002: 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 – Lecture 3 hours, lab 3 hours per week.

### **BIOL2004: 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 – Lecture 3 hours, lab 3 hours per week.

### **BIOL2005: Principles of Plant Pathology (A)**

Instructor: **Prof. Prithiviraj**

*Prerequisites:* BIOL1003, MICR2000

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.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## Description of Courses – Undergraduate Degree Level

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### **BIOL2006: Mammalian Physiology**

Instructor: **T. Semple**

*Corequisite:* CHEM3001

An introduction to the body systems and how they function. The student should develop a basic understanding of physiological processes and how they are regulated and integrated by the nervous and endocrine systems. Topics covered include: homeostasis; the nervous, muscular, endocrine, cardiovascular, respiratory, renal, and digestive systems; and an introduction to environmental physiology. Winter semester – Lecture 3 hours, lab 3 hours per week.

### **BIOL2007: Mycology**

Instructor: **TBA**

An introduction to the fungi, including members of the Kingdoms *Eumycota* and *Chromista*, and the protozoan *pseudofungi*. The labs in this course will focus on classification of the fungi, but lecture topics will also include fungal physiology, genetics, ecology, industrial mycology, food spoilage, and medical mycology. Students will be required to submit a microfungus collection and a mushroom collection.

Fall semester – Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2013/2014.

### **BIOL2008: Plant Diversity**

Instructor: **Prof. Olson**

*Preparatory:* BIOL1003

This course emphasizes the biology, evolution, and diversification of the major phyla of the Kingdom *Plantae*. The lectures illustrate the fundamental reproductive unity underlying the diversity of all land plants, using examples from both fossil and living species. In addition to exploring the major plant groups and their subdivisions in the laboratory, students learn to use the appropriate resources to identify specific plants.

Fall semester – Lecture 3 hours, lab 2 hours per week.

### **BIOL3000: General Entomology (A)**

Instructor: **Prof. Cutler**

*Preparatory:* BIOL1003

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. Students will be required to prepare and submit an insect collection.

Fall semester – Lecture 3 hours, lab 3 hours per week.

### **BIOL3001: Ecology**

Instructor: **Prof. Nams**

*Prerequisites:* BIOL1002, BIOL1003

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 – Lecture 3 hours, lab 3 hours per week.

### **BIOL3002: Weed Science (A)**

Instructor: **Prof. Boyd**

*Prerequisite:* BIOL1002

*Preparatory:* BIOL2002

This course 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 and 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 – Lecture 3 hours, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **BIOL3003: Comparative Vertebrate Anatomy**

Instructor: **TBA**

*Prerequisite:* BIOL1003

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 – Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2012/2013.

## **BIOL3004: Environmental Physiology (A)**

Instructor: **Prof. Rouvinen-Watt**

*Prerequisite:* BIOL2006 or BIOL3005

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

Fall semester – Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2012/2013.

## **BIOL3005: Physiology of Aquatic Animals (A)**

Instructor: **Prof. Duston**

*Prerequisite:* BIOL1003

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 – Lecture 3 hours, lab 3 hours per week.

## **BIOL3006: Aquatic Ecology**

Instructor: **TBA**

*Prerequisite:* BIOL1003

The biology of aquatic species in marine and freshwater environments is discussed, with emphasis on biological systems involving farmed species, and 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 – Lecture 3 hours, lab 3 hours per week.

## **BIOL3008: Growth, Reproduction and Lactation (A)**

Instructor: **Prof. Barrett**

*Prerequisite:* BIOL2006

A continuation of BIOL2006, emphasizing physiological systems relevant to animal production. Major topics include growth and development as it applies to meat and brood animal production, and the physiology and management of reproduction and lactation in domestic species.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **BIOL4000: Avian Biology (A)**

Instructors: **Profs. Jendral and Rathgeber**

*Prerequisites:* ANSC2005, CHEM3001 (or CHEM2005), GENE2000

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 – Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

## **BIOL4002: Conservation Biology**

Instructor: **Prof. Nams**

*Prerequisite:* 20 degree credits

This course has limited enrollment.

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, optimal design of nature reserves, and habitat heterogeneity. This is a discussion-style course concentrating on current published scientific papers chosen by the students. Students will also learn to read and critically evaluate scientific papers, and to apply this ability to writing literature reviews.

Winter semester – Lecture 3 hours per week.

# Description of Courses – Undergraduate Degree Level

## **BIOL4003: Plant-Microbe Interactions**

Instructor: **Prof. Prithviraj**

*Prerequisites:* BIOL 2005, 15 degree credits.

This course is an advanced study of the interactions between plants and microorganisms, with emphasis on plant pathogenic microorganisms but including symbiotic and other microorganisms that can provide a benefit to the plant. Students will study the histology of the infection process in relation to plant disease and symbiosis, and the impact that infection has on the physiology of the host. Responses of the plant to infection will be studied, with emphasis on Systemic Acquired Resistance and Induced Systemic Resistance.

Fall semester – Lecture 3 hours, tutorial 2 hours per week.

## **BIOL4004: Animal Adaptation and Stress**

Instructor: **Prof Rouvinen-Watt**

*Prerequisite:* At least third-year standing

*Preparatory:* BIOL3004

This is an advanced-level course in the comparative physiology of animal adaptation and stress. The concepts of allostasis, homeostasis and the physiological stress response will be reviewed, and the role of endocrine regulation in animal adaptation under changing external (environmental) and internal (life-history) demands will be discussed. Special emphasis will be placed on mammalian and avian adaptation in response to changes in the internal, physical, and social environments. Species discussed may include livestock, companion and zoo animals, and wildlife.

Fall semester – Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

## **CHEMISTRY**

### **CHEM0050: Preparatory Chemistry**

Instructor: **P. Nelson**

*Prerequisite:* approval of the Registrar

This non-credit course is designed for students who satisfy all other requirements for admission but lack the Grade 12 Chemistry course. The course will cover the basic material necessary for entrance into CHEM1000, including review of the periodic table, nomenclature, chemical reactions, aqueous solutions, chemical bonding, and other topics as determined by a review of the class. CHEM0050 is not intended to duplicate or replace Grade 12 Chemistry.

Fall and Winter semesters – Lecture 3 hours, tutorial 1 hour per week.

### **CHEM1000: General Chemistry I**

Instructor: **Prof. Pitts**

*Prerequisite:* successful completion of academic Grade 12 Chemistry or equivalent.

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

Fall semester – Lecture 3 hours, lab 3 hours per week.

### **CHEM1001: General Chemistry II**

Instructor: **Prof. Pitts**

*Prerequisite:* CHEM1000

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

Winter semester – Lecture 3 hours, lab 3 hours per week.

### **CHEM2000: Organic Chemistry I**

Instructor: **Prof. Hoyle**

*Prerequisite:* CHEM1001

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

Fall semester – Lecture 2 hours, tutorial 1 hour, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **CHEM2001: Organic Chemistry II**

Instructor: **Prof. Hoyle**

*Prerequisite:* CHEM2000

This course builds on work begun in CHEM2000. Functional groups included here will be carbonyls (aldehydes, ketones, acids, and their derivatives), more complex aromatics, simple organometallics, and bifunctional organic compounds. The emphasis on mechanistic chemistry will continue, as will the study of appropriate spectroscopy (MNR and UV-Vis). In addition, an introduction to organic syntheses and biomolecules will be undertaken.

Winter semester – Lecture 3 hours per week. Offered in alternate years; next offered in 2013/2014.

## **CHEM2003: Food Chemistry I (A)**

Instructor: **Prof. Hoyle**

*Prerequisite:* CHEM2000

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 this will be augmented by hands-on laboratory experiences with these analytic procedures.

This course may not be taken for credit by students who have credit for CHEM2004.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **CHEM2004: Introductory Food Chemistry (A)**

Instructor: **Prof. Hoyle**

An introductory study of the chemistry of food and food components. The emphasis will be on water, fats, proteins, and carbohydrates (and related compounds) with an overview of vitamins, minerals, and additives. Methods used for analysis of food components will be discussed in detail.

This course may not be taken for credit by students who have credit for CHEM2003.

Fall semester – Lecture 3 hours per week.

## **CHEM3001: Biochemistry**

Instructor: **Prof. Rupasinghe**

*Prerequisite:* CHEM2000

The major focus of this course will be on the biochemical pathways and activities that account for the assimilation, transformation, degradation, and synthesis of the major macromolecules in living cells. These molecules include proteins, lipids, carbohydrates, RNA and DNA. Catalytic and regulatory strategies used by living cells will also be discussed. The final topic will be to examine and understand how metabolism consists of highly interconnected biochemical pathways. Winter semester – Lecture 3 hours, lab 3 hours per week.

## **CHEM3003: Advanced Integrated Chemistry Laboratory**

Instructor: **Prof. Hoyle**

*Prerequisite:* CHEM2001

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 – Lab 4 hours per week. Offered in alternate years; next offered in 2013/2014.

## **CHEM3006: Mammalian Biochemistry**

Instructor: **Prof. Hoyle**

*Prerequisite:* CHEM2000

A study of the application of basic biochemical principles to the molecular functions of the diverse mammalian organ systems. The subject matter is divided into three parts: *Body Fluids and Their Constituents*, which includes such subjects as blood coagulation, the complement system, the immune system, and their control; *Specialized Tissues*, such as connective tissue, nervous tissue, and muscle tissue; and *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 – Lecture 3 hours per week.

# Description of Courses – Undergraduate Degree Level

## **CHEM3007: Food Chemistry II (A)**

Instructor: **Prof. Pitts**

*Prerequisite:* CHEM2003 or CHEM2004

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

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

Winter semester – Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2013/2014.

## **CHEM3008: Intermediate Food Chemistry (A)**

Instructor: **Prof. Pitts**

*Prerequisite:* CHEM2003 or CHEM2004

This course, which builds on CHEM2003 (or CHEM2004), will provide an in-depth study of selected food components including vitamins, colorants (natural and artificial), 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.

This course may not be taken for credit by students who have credit for CHEM3007.

Winter semester – Lecture 3 hours per week. Offered in alternate years; next offered in 2013/2014.

## **CHEM3009: Environmental Chemistry**

Instructor: **Prof. Hoyle**

*Prerequisite:* CHEM2000

In this course students will undertake an in-depth study of the chemical processes involved in the pollution of the environment. Chemical pollution of the atmosphere, hydrosphere, and lithosphere will each be studied in depth. In each case, chemical solutions to these problems will be considered. Chemical processes such as dissolution, coordination, ion exchange, hydrolysis, ionization, and freezing point depression will be covered.

Winter semester – Lecture 3 hours per week. Offered in alternate years; next offered in 2013/2014.

## **CHEM3010: Bio-Analytical Chemistry**

Instructor: **TBA**

*Prerequisite:* CHEM2000

This course will equip the non-chemistry major with an understanding of HPLC (liquid chromatography), GC (gas chromatography), AAS (atomic absorption spectrophotometry), and UV-visible spectrophotometry. The course will use environmental, agricultural, and food samples in classroom examples and in student laboratories. Students will be exposed to proper sample preparation and analysis, data interpretation and proper laboratory techniques with each of these analytical instruments.

This course may not be taken for credit by students who have credit for CHEM2002.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **CHEM4001: Directed Studies in Chemistry**

*Coordinator:* **J. Hoyle**

*Prerequisites:* CHEM2000 and 20 degree credits

Directed studies involve a suitable combination of directed reading, written assignments, individual study or laboratory research projects in the area of chemistry. Classes are organized and scheduled by appropriate faculty via a course coordinator. Students should approach potential instructors directly with their requests.

Fall or Winter semester – as arranged.

## **COMMUNICATIONS**

### **CMMT0030: English for Academic Purposes**

Instructor: **TBA**

*Prerequisites:* NSAC/FAFU 2+2 program student who meets all of the NSAC B.Sc.(Agr.) admission requirements, has achieved a minimum score of 5.5 on the IELTS (530 TOEFL), and has been recommended by the FAFU Overseas Education College as a strong candidate

This course will focus on enhancing English language skills (reading, speaking, writing, listening), critical thinking, and presentation skills required to be successful in an English university setting. Students who successfully complete CMMT0030 will be considered to have met their English language requirement and are eligible to continue full-time studies at NSAC.

Fall semester – 15 hours per week for 180 hours.



# Description of Courses – Undergraduate Degree Level

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## **CMMT3000: Communication Theory and Skills (H)**

Instructor: **Prof. Sanderson**

*Prerequisite:* at least second-year standing

This course is designed to provide students with the opportunity to enhance their communication skills and knowledge. Since a key requirement of today's job market is the ability to communicate effectively, students will be exposed to the theory and the practice of communication. An important component of the course will be the emphasis on the practical application of communication knowledge. Winter semester – Lecture 3 hours, lab 2 hours per week.

## **CMMT3001: Teaching English as a Second Language**

Instructors: **Cambridge Certified Instructors, at International Language Institute**

Students must obtain a Letter of Permission from the Registrar of NSAC to take this class as an NSAC credit. Students must then apply, register, and pay fees for this class at the International Language Institute (ILI). In cooperation with the University of Cambridge Local Examinations Syndicate (UCLES) and ILI, NSAC offers an intensive class leading to a Certificate in Teaching English to Speakers of Other Languages (CELTA). The syllabus covers six major areas: language awareness; the learner, the teacher, and the teaching/learning context; planning; classroom management and teaching skills; resources and materials; and professional development. Critical feedback is provided on teaching practice, written assignments, and evidence of professional development through the class. Fall, Winter or Spring semester.

## **COMPUTER SCIENCE**

### **CSCI1000: Computer Methods**

*Cross-referenced as CSCI0200*

Instructor: **TBA**

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 – Lecture 3 hours, lab 2 hours per week.

### **CSCI2000: Computer Science**

Instructor: **TBA**

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

Fall and Winter semesters – Lecture 3 hours, lab 2 hours per week.

### **CSCI3000: Data Structures and Numerical Methods**

Instructor: **TBA**

*Prerequisite:* CSCI2000

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

Winter semester – Lecture 3 hours, lab 2 hours per week.

# Description of Courses – Undergraduate Degree Level

## ECONOMICS

### **ECON1000: Principles of Microeconomics (A)**

Instructor: **Prof. Dunlop**

A course in comprehensive principles of microeconomic theory, covering the market system, producer and consumer theory, environmental and resource economics, and international trade policy. Emphasis in this course is on the application of economics to issues and problems facing many countries and their citizens today. The approach is practical and “real-world,” using microeconomic theory to develop an understanding of the issues and problems being discussed and the policy choices facing governments in dealing with these matters.

Fall and Winter semesters – Lecture 3 hours per week.

### **ECON1001: Principles of Macroeconomics**

Instructor: **Prof. Grant**

*Prerequisite:* ECON1000

This course introduces the student to basic macroeconomic concepts and to both short-term and long-term macroeconomic analysis. The basic macroeconomic concepts include economy-wide output, price level and inflation, asset prices and interest rates, international exchange rates among currencies, and the international balance of payments. The introduction to short-term macroeconomic analysis, or business-cycle analysis, is based on John Maynard Keynes’ work on the 1929–33 Great Depression. The introduction to long-term macroeconomic analysis is based on Robert Solow’s work on economic growth. Throughout the course macroeconomics is related to the historical experience of farmers and to contemporary macroeconomic forces affecting the agri-food sector.

Winter semester – Lecture 3 hours, tutorial 1 hour per week.

### **ECON2000: Intermediate Microeconomics**

Instructor: **Prof. Yiridoe**

*Prerequisite:* ECON1000

A course in microeconomics at the intermediate level. Topics include the theory of the firm, consumer theory, markets and market structure, and externalities and public goods. All major concepts are presented graphically and some are studied using basic mathematics as well.

Fall semester – Lecture 3 hours, lab 2 hours per week.

### **ECON2001: Intermediate Macroeconomics**

Instructor: **Prof. Grant**

*Prerequisite:* ECON1001

This course extends the Principles of Macroeconomics course to the intermediate level. Short-term, or business-cycle, macroeconomics is progressed from the introductory Keynesian income determination model to the IS-LM model, and then to the Aggregate Demand/Aggregate Supply model. The long-term macroeconomic content advances the introductory economic growth model in considering the relative importance of the factors determining the overall rate of economic growth. Throughout the course macroeconomic theory is related to macroeconomic policy goals, stabilizing the economy in the short term and promoting improvement in economic well-being in the long term.

Fall semester – Lecture 3 hours per week.

### **ECON2002: Production Economics (A)**

Instructor: **Prof. Yiridoe**

*Prerequisite:* ECON1000

An introduction to the study of economic principles used to analyze production and resource use in agriculture. Areas of emphasis include economic examination of the factor/factor, factor/product, and product/product relationships of the farm production system. Practical examples and lab exercises are used to illustrate and reinforce the concepts presented in the classroom.

Winter semester – Lecture 2 hours, lab 3 hours per week. Last offered in 2012/2013.

### **ECON2003: Agricultural Futures and Options (A)**

Instructor: **Prof. Grant**

*Prerequisite:* ECON1000

The course begins with an introduction to agricultural futures markets. This leads into a study of fundamental and technical analyses of futures markets. This part of the course concludes with a consideration of price risk management using futures markets. Following is an introduction to options markets and price risk management using options. The course concludes with a topic of importance when exporting or importing agricultural commodities internationally: managing exchange-rate risk using futures and options.

Fall semester – Lecture 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **ECON2004: Issues in Environmental Economics (A)**

Instructor: **TBA**

*Prerequisite:* ECON1000

This course is designed as an introduction to environmental and resource economics issues and policy. Students will learn how economic analysis is applied to questions concerning use, management and conservation of natural resources, as well as market failures. Frameworks for measuring environmental costs and benefits and for exploring the efficiency of pollution control policies will also be developed. The impact of environmental and resource issues on the agri-food industry at all levels in the marketing chain will be examined. Applications include air and water pollution and global environmental problems, including climate change.

Winter semester – Lecture 3 hours, seminar 1 hour per week.

## **ECON3000: Mathematical Economics**

Instructor: **Prof. Stackhouse**

*Prerequisites:* MATH1000, ECON2000

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

Fall semester – Lecture 3 hours, lab 2 hours, tutorial 1 hour per week.

## **ECON3002: Agricultural and Food Policy (A)**

Instructor: **Prof. Dunlop**

*Prerequisites:* ECON1000 and at least second-year standing

This course introduces students to the structure of the agri-food industry and the process of policy and implementation. A critical assessment of the institutions (organizations, programs, and policies) in agriculture is the main focus of the course. Through guest speakers, students' presentations, interactive class discussions, and lectures, students will learn how policies are developed and who is involved in the policy development process. An historical appreciation for agricultural policy in Canada will be pursued with a critical assessment of these policies. In reviewing policy problems affecting the agri-food industry, students will examine possible solutions to these issues. Topics covered include: reasons for government intervention; historical development of agri-food policy in Canada; the policy process; players in agriculture and food policy; structure of provincial, federal, and cost-shared programs; consumers and food policy; resource and environmental policy; international agricultural and food policies; trade agreements; and agribusiness involvement in agriculture and food policy.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **ECON3003: Mathematical Programming (A)**

Instructor: **Prof. Stackhouse**

*Prerequisite:* ECON3000

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

Winter semester – Lecture 4 hours, lab 1 hour per week.

# Description of Courses – Undergraduate Degree Level

## **ECON3004: Agricultural Markets and Prices (A)**

Instructor: **Prof. Grant**

*Prerequisite:* ECON2000

An introduction to agricultural market and price analysis as a field of study within agricultural economics. An applied microeconomics approach is taken to studying agricultural supply and demand, price discovery, and market structure for crop and livestock products. In addition to cash (spot) markets, agricultural futures and options markets are studied, including managing agricultural commodity price risk by hedging.

Winter semester – Lecture 3 hours per week.

## **ECON3006: Statistics for Economics and Business**

Instructor: **Prof. Clark**

*Prerequisite:* STAT2000

This course is designed to train students in the application of statistical methods to business and economics problems. Emphasis will be given to the application of quantitative and qualitative methods to real-world problems in order to provide students with context in applications. Particular attention will be paid to both the art as well as the science of data analysis. Students will conduct analysis of data, using methods discussed in class, as a term project.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **ECON3007: Environmental and Resource Economics**

Instructor: **Prof. Clark**

*Prerequisite:* ECON2000

This course is designed to give students a basic introduction to the area of Resource Economics and an understanding of how economists view environmental problems. Topics of study will include public versus private goods, externalities, market failure, and the role of property rights in the economic system. The Coase theorem will also be presented. Policy analysis contrasting market-based solutions for environmental problems with conventional solutions will be discussed. Specific topics will then be covered, including environmental policy surrounding water pollution, air pollution, and climate change. Issues related to nonrenewable and renewable economies and sustainable development will be discussed.

This course may not be taken for credit by students who have credit for ECON3001 or ECON4003.

Fall semester – Lecture 3 hours per week.

## **ECON4000: Advanced Microeconomics**

Instructor: **Prof. Clark**

*Prerequisites:* ECON2000, ECON3000

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

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **ECON4004: Trade (A)**

Instructor: **Prof. Dunlop**

*Prerequisites:* ECON2000 and third-year standing

This course will provide students with an understanding of the factors that influence the exchange of products, with particular emphasis on trade interventions and institutions. Students will be introduced to trade theory, which they will use to evaluate trade policy issues. Students will learn how various government policy instruments and institutions affect international and interregional trade. Also, the complex set of rules and regulations governing international trade, such as the WTO, will be analyzed. The consequences of, and linkages among, international trade, the environment, and economic development will also be pursued.

Fall semester – Lecture 3 hours per week.

## **ECON4005: Advanced Macroeconomics**

Instructor: **Prof. Grant**

*Prerequisites:* ECON1001, ECON3000

This course provides a concise, mathematical coverage of classic issues in macroeconomic theory. The course starts with the classical model of a closed economy. A reconsideration of the labour market leads to the Keynesian model. An alternative treatment of the capital market underlies Tobin's dynamic aggregative model. The role of inflation expectations is explored under the contrasting cases of economic agents having adaptive expectations and perfect foresight. By integrating macroeconomic thinking and mathematical reasoning in the context of non-stochastic models, the course is also preparatory to graduate studies in economics.

Winter semester – Lecture 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## ENGLISH

### ENGL1000: Composition (H)

Instructors: **Prof. Stiles** and **L. Little**

This course has two primary objectives: to improve students' basic writing abilities and to offer training in scientific writing – in particular the literature review. Tutorials focus on building skills in composing, revising, editing, grammar, sentence structure, and mechanics; the lectures cover topics such as bias, essay forms, and the issues surrounding paraphrasing and citing. Students are required to write extensively throughout the term. Part of the evaluation is based upon written work done under examination conditions during class.

Fall semester – Lecture 1 ½ hours, tutorial 1 ½ hours per week.

### ENGL1001: The Novel (H)

Instructor: **Prof. Stiles**

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

Winter semester – Lecture 3 hours per week.

### ENGL1002: Nature in English and American Literature (H)

Instructor: **Prof. Stiles**

This course explores the ways in which nature has been represented in literature. Selected works by a number of authors of fiction, non-fiction 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 – Lecture 3 hours per week.

### ENGL1005: Academic Writing – International Students (H)

Instructor: **TBA**

The objective of this course is to develop the skills necessary to write papers and reports at a university level. The course is designed specifically for students whose first language is not English, and it will focus on the process of writing from the development of a thesis or objective to the editing of the final document. Some of the topics include: selecting different types and styles of papers and reports, researching and presenting appropriate academic documentation, organizing material, preparing the initial draft, and proofreading and editing. The course will also focus on enhancing the student's capacity to write in English.

Students whose first language is English are not eligible to take this course.

Fall semester – Lecture 3 hours, tutorial 2 hours per week.

### ENGL3000: Literature of Atlantic Canada (H)

Instructor: **L. Little**

*Prerequisite:* ENGL1000 or ENGL1001 or ENGL1002 or any other first-year English course

This course focuses on the prose and poetry of the Atlantic region of Canada, looking at the works in historical, geographical, and social context, and discussing the concept of regionalism in literature. Classes will include lectures, films, videos, presentations, and discussions.

Fall semester – Lecture 3 hours per week.

## ENGINEERING

### ENGN1000: Computer Aided Graphics and Projection

Instructor: **TBA**

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 – Lecture 2 hours, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

## **ENGN1001: Engineering Design I**

Instructor: **TBA**

Students are introduced to the concept of Engineering Design and the design process. Procedures and conventions for the preparation of engineering drawings and technical reports are presented. Students develop skills in manual drawing and computer aided drafting.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN1002: Engineering I**

Instructor: **TBA**

Students are introduced to the history of engineering up to the modern-day professional societies. The fundamental theory for engineers begins with statics, which teaches the concepts of particle and rigid body equilibrium. Students will apply vector algebra to work with position and force vectors, moments of forces, couple moments, and equilibrium of 2- and 3- dimensional bodies. Structural applications, such as 2-dimensional trusses, frames and simple machines, shear forces and bending moments in beams are presented. Coulomb friction, centroids and centres of mass, as well as area moments and products of inertia, are also included.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN1003: Practices and Mechanics of Materials**

Instructor: **TBA**

This course deals with the practices of selecting and working with materials, including considerations for green practices. Selection of materials is based on many properties depending on the application; usually strength, workability, durability, and costs are key concerns. Green practices during the construction of machines, structures and buildings will include traditional properties and their environmental and resource efficiency including their deconstruction. Using green materials and products promotes conservation of dwindling non-renewable resources and helps to reduce the environmental impacts associated with the extraction, transport, processing, fabrication, installation, reuse, recycling, and disposal of these source materials.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN1004: Wood Construction Technology I**

Instructor: **TBA**

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

Winter semester – Lecture 2 hours, lab 3 hours per week.

## **ENGN1005: Metal Construction Technology I**

Instructor: **TBA**

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

Fall semester – Lecture 2 hours, lab 3 hours per week.

## **ENGN2000: Environmental Impacts and Resource Management (A)**

Instructor: **TBA**

*Prerequisites:* BIOL1002, CHEM1001

This course is an introduction to environmental engineering and technology, emphasizing a quantitative engineering approach. The course addresses the issues associated with the safe and ecologically appropriate handling, processing, storage, and utilization of organic wastes arising from human activities, including agricultural and bio-resource production systems. Topics covered will include: growth models for populations of living organisms, as well as models for depletion and replenishment of natural resources; the concept of mass and energy balances applied to quantify changes in environmental systems; physical, chemical, and biological unit operations for treatment and reduction of solid, liquid, and gaseous wastes; and reduction of pollution impacts on air and water resources.

Labs will include visits to environmental treatment facilities.

Fall semester – Lecture 3 hours, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **ENGN2002: Bioresource Systems Analysis**

Instructors: **Prof. Price and other NSAC Engineering Faculty**

The objective of this course is to introduce the concept of systems theory and analysis. The emphasis will be on the use of bioresource science principles applied to environmental and technological systems. Students will be exposed to case studies and special lectures focusing on bioresource science and systems analysis as an integrated problem-solving tool. Real-world systems will be examined through field tours and guest speakers. New faculty will give case studies in their areas of specialization.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN2004: Aquacultural Environment (A)**

Instructor: **Prof. Yildiz**

Principles necessary for understanding and providing optimal aquatic environments for aquaculture production are reviewed. Topics in water habitat management will be emphasized, including: water properties of both fresh- and salt-water systems; water quality and reconditioning techniques; maintenance of dissolved oxygen and removal of metabolic wastes in aquaculture rearing systems; and evaluation of water resource requirements for aquaculture.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN2005: Dynamics**

Instructor: **TBA**

*Prerequisites:* MATH1001, PHYS1000 or PHYS1002

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

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN2007: Fluid Power Technology**

Instructor: **TBA**

This course covers the subjects essential to understanding the design, analysis, operation, and maintenance of fluid power systems: hydraulic, pneumatic, and water. Emphasis is placed on the practical applications of fluid power and the functioning of system components such as reservoirs, pumps, compressors, motors, valves, filters, lines and hoses, and mechanical and electrical controls in typical fluid power circuits. The principles of fluid flow, pressure and force, energy conservation, and power in the context of using fluid energy to do useful mechanical work are covered. Theory is presented to emphasize how and why fluid power systems operate. General maintenance, safety, and environmental issues associated with fluid power systems are also discussed.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN2008: Digital Electronics and Computer Interfacing**

Instructor: **TBA**

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

# Description of Courses – Undergraduate Degree Level

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## **ENGN2009: Metal Construction Technology II**

Instructor: **TBA**

*Prerequisite:* ENGN1005

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

Winter semester – Lecture 2 hours, lab 3 hours per week.

## **ENGN2010: Wood Construction Technology II**

Instructor: **TBA**

*Prerequisite:* ENGN1004

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

Fall semester – Lecture 2 hours, lab 3 hours per week.

## **ENGN2011: Technology for Precision Agriculture**

Instructor: **TBA**

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

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN2012: Introduction to Bioresource Science (A)**

Instructor: **Prof. France**

*Prerequisites:* BIOL1002, CHEM1001

This course is an introduction to environmental science and engineering technology with a specific focus on agriculture, and consists of the ENVS2000 lectures plus additional weekly tutorials and labs by the Engineering department. This combination provides an efficient means to provide the environmental science and the applied management of resources. The course is designed to provide an introduction to horizon topics in this rapidly developing field that are the subjects of specialized, upper-level courses available in the program, and it provides a solid foundation for some environmental science courses. Topics to be covered include: overviews of green-collar jobs and the new bioresource economy, and of sustainable agroecosystem management; introductions to the management of sustainable water and energy resources, including alternative waste water, biosolids, and biofuels; introductions to materials life-sourcing; geographic information systems and precision agriculture. Students can receive credit for either ENGN2012 or ENVS2000, but not both.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN2013: Machinery and Building Technology (A)**

Cross-referenced as ENGN0201

Instructor: **Prof. Zaman**

Two keys to the success of utilizing biomaterials are selection of appropriate machines and designing effective facilities to manage the production/processing system. In the first half of the course, students are introduced to the types of equipment, their productivity, and methods of selection for efficient operation. This will include machinery for soil preparation, planting, crop care, and harvesting. The machines and their unit operation are analyzed with respect to functions, work rates, material flow and power usage. The importance of monitoring machine performance relating to work quality and environmental effects of machine operation will be studied. The labs will emphasize safety, basic maintenance, adjustment, calibration and performance testing. The second half of the course provides an introduction to the planning process of structures and various topics related to the use of building materials, particularly "green" materials. Functional layouts and ventilation principles of storage and production buildings are considered. Field trips supplement the lecture material. A term paper is required.

Fall semester – Lecture 3 hours, lab 3 hours per week.



# Description of Courses – Undergraduate Degree Level

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## **ENGN2014: Bioresource Processing**

Instructor: **TBA**

This course deals with the technologies of converting biomass into upgraded fuels as well as direct combustion. Students are introduced to biomass conversion; physical conversion of biomass (drying, dewatering, densification); thermo-chemical conversion of biomass (torrefaction, pyrolysis, gasification, combustion); heat and power applications; biogas production (digester design and kinetic considerations); ethanol and bio-diesel conversion technologies; and environmental impacts.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN3000: Electric Circuits**

Instructor: **Prof. Havard**

*Prerequisite:* PHYS1003

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

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **ENGN3001: Electrotechnology (A)**

Instructor: **Prof. Havard**

*Prerequisite:* PHYS1000 or PHYS1002

Electricity is integral to our society, and this course reviews application of AC and DC electricity. Safety and measurements are practised during hands-on lab sessions. Common sensors, measurements and control systems are discussed and applied to improve energy management.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN3002: Thermo-fluids I**

Instructor: **Prof. Havard**

*Prerequisite:* PHYS1000 or PHYS1002

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 – Lecture 3 hours, lab 3 hours per week.

## **ENGN3004: Digital Circuits**

Instructor: **TBA**

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

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN3006: Engineering II**

Instructor: **TBA**

*Prerequisites:* ENGN1002, MATH1001, and PHYS1000 or PHYS1002

This class teaches the concept of stress, strain and deformation of a solid body subjected to static forces. Topics considered include: stresses and strains under axial, bending, torsional and combined loadings; transformation relations for stresses and strains; Mohr's circle for stress and strain; strain gauges; mechanical properties of materials; and failure theories.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN3008: Electrical Circuits II**

Instructor: **Prof. Havard**

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

Winter semester – Lecture 3 hours, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **ENGN3011: Thermo-fluids II**

Instructor: **TBA**

*Prerequisite:* ENGN2005 or permission of the instructor

This course builds on the introduction to fluid mechanics in ENGN3002 to present engineering concepts of fluid mechanics and energy. The course completes fluid statics from ENGN3002; covers dimensional analysis; emphasizes the notion of control volume needed to properly solve thermal fluid problems using the conservation laws presented as integral relations; treats flow in ducts, putting emphasis on head losses (friction and minor); and presents a practical theory of turbomachinery. The different concepts studied during the course are brought together at the end in a series of design examples and design problems.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN3013: Aquacultural Engineering (A)**

Instructor: **TBA**

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

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN3015: Irrigation and Drainage**

Coordinator: **Prof. Havard**

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 landscapes.

Students who have credit for ENGN3010 may not take ENGN3015 for credit.

Winter semester – Lecture 2 hours, lab 3 hours per week. Offered in alternate years; next offered in 2013/2014.

## **ENGN3016: Engineering Economy**

Instructor: **TBA**

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 – Lecture 2 hours, lab 3 hours per week.

## **ENGN3017: Engineering Design II**

Instructor: **Prof. Corscadden**

*Prerequisites:* ENGN1001, ENGN3006

This class provides a project-based exercise in the engineering design process. Students work on defined projects which apply knowledge and skills from their first three semesters. The projects encompass design method, conceptual design, design selection, detailed analysis, CAD and simulation tools, engineering drawings, safety, and preparation of professional technical reports. Discipline-specific projects are assigned. All projects involve evaluation/testing of student designs, depending on the discipline section, either through construction and testing of a physical prototype or development and testing of an engineering simulation model.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN3018: Technology Modules**

Instructor: **TBA**

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

Winter semester – Lecture 5 hours per week.

## **ENGN3019: Communications Technology**

Instructor: **TBA**

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

Fall semester – Lecture 3 hours, lab 2 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **ENGN3020: Energy Production and Utilization**

Instructor: **Prof. Corscadden**

*Prerequisite:* MATH1001

*Preparatory:* PHYS1000 or PHYS1002

This lecture-based course provides an overview of the whole energy system, focusing on selected attributes of energy. The assessment, management and remediation of energy production is a global issue, which will ultimately impact all walks of life, business, industry and future infrastructure. It includes an introduction to the energy supply chain, transmission and distribution systems, energy use, energy policy and the environment and methods of generation. It also includes an overview of renewable energy assessment techniques and feasibility tools.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN3021: Ecohydrology (A)**

Instructor: **Prof. France**

This course deals with the emerging green science and technology management tool of ecohydrology and the design of best management practices (BMPs) for water resource protection and use. Topics to be covered include: non-point source pollution, drainage and irrigation; soil erosion and deforestation; and the BMPs of buffer strips, nutrient entrapment, and runoff and wastewater management. Many topics for discussion deal with agricultural development in Canada and developing nations.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN4001: Water Quality Issues (A)**

Coordinator: **TBA**

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 – Lecture 3 hours per week. Offered in alternate years; next offered in 2013/2014.

## **ENGN4003: Senior Design Project for Engineers I**

Instructor: **Engineering Faculty**

Coordinator: **TBA**

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 – Lecture 1 hour, lab 5 hours per week.

## **ENGN4004: Energy Conversion and Assessment**

Instructor: **Prof. Corscadden**

This lecture-based course focuses on selected attributes of existing and renewable energy options, including the reserves and consumption of oil, coal and gas; fossil energy technologies for power generation; fundamental principles, applications and status of solar energy, biomass energy, wind energy and hydro-power; and outlook and evaluation of renewable energy.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **ENGN4005: Waterscape Ecology and Management (A)**

Instructor: **Prof. France**

This lecture-based, non-quantitative course focuses on selected basic attributes of land-water interactions and aquatic degradation as they relate to issues of waterside and watershed development in rural and (sub)urban environments. The course provides an introduction to a variety of aquatic principles and how they in turn are influenced by human activity, followed by an introduction to and review of the many management options available to land-use planners to mitigate development pressures. Broad latitude will be permitted in the subject areas of the assignments in order to appeal to individuals' interests and career aspirations in environmental engineering, environmental science, horticulture, international development, and environmental governance and sociology.

Winter semester – Lecture 3 hours, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

## **ENGN4006: Wastewater Management (A)**

Instructor: **TBA**

*Prerequisite:* at least third-year standing

This course gives an overview of sources of water pollution, particularly in the rural situation, and standard methods of treatment. Alternative approaches such as wetlands and filters will be discussed. Laboratory sessions will include field trips, methods of sampling, and some testing of water.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ENVIRONMENTAL SCIENCES**

### **ENVS2000: Environmental Studies I (A)**

Coordinator: **Prof. Brewster**

*Prerequisites:* 8 technical or degree course credits

This is the first of a two-semester course sequence that deals with environmental issues from both an agricultural and a socio-economic basis. The scientific principles of each issue will first be outlined and explained, and then the agricultural and socio-economic aspects of the issue will be examined. The topics to be emphasized in this course will include issues associated with population growth, the atmosphere, and the hydrosphere. Students will be expected to show their understanding of the interplay between agriculture and environmental issues by writing a major term paper.

Students can receive credit for either ENGN2012 or ENVS2000, but not both.

Fall semester – Lecture 3 hours per week.

### **ENVS2001: Environmental Studies II (A)**

Coordinator: **Prof. Brewster**

*Prerequisite:* ENVS2000

This is the second of a two-semester course sequence that deals with environmental issues from both an agricultural and a socio-economic basis. All aspects of the issues will be integrated 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 – Lecture 3 hours per week.

### **ENVS2002: Composting and Compost Use (A) DE**

Instructor: **Prof. Price**

Composting and the utilization of organic matter produced on the farm provide the basis for soil fertility in organic systems; however, potential benefits derived from compost use are often limited by the supply and quality of composts produced on-farm. The objective of this web-based course is to teach composting primarily by providing students with the opportunity to make their own compost over a period of 13 to 15 weeks. Students learn through five stand-alone modules\*: *Composting of Organic Materials* (how the underlying principles of composting are applied when combining various feedstock materials for composting); *Composting Process* (how to evaluate and manage an actively working pile and troubleshoot to maintain optimum conditions for composting); *On-Farm Composting* (efficient and low-cost composting methods for agricultural composting at various scales); *Compost Quality* (how to evaluate the quality of the finished compost, as well as the quality requirements of various standards, markets, and end uses for compost); and *Compost Utilization and Marketing* (considerations and requirements for the optimal use of compost in organic greenhouse crop production and organic farming systems, as well as factors which are important in the marketing of compost).

\* Note that making compost and completing all five modules will be a requirement for students who are taking the course for credit. Students who are not taking the course for credit may also decide to make compost and complete all five modules; however, this is not a requirement for non-credit students. To provide maximum flexibility for non-credit students, the modules are offered as independent (stand-alone) units.

Fall semester.

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

### **ENVS3000: Environmental Impact Assessment**

Instructor: **TBA**

*Prerequisites:* ENVS2000, ENVS2001

An introduction to the study and assessment 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 and assessment techniques.

Winter semester – Lecture 3 hours, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **ENVS3001: Environmental Sampling and Analysis**

Instructor: **Prof. Nams**

*Prerequisite:* STAT3000

This course will introduce students to the proper methods of sampling and experimental design for biological and chemical analyses, as well as for environmentally oriented surveys. Emphasis will be given to the actual collection of samples and their subsequent analysis.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ENVS3002: Waste Management and Site Remediation (A)**

Instructor: **Prof. Price**

*Prerequisite:* ENVS2001 or ENGN2012

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 – Lecture 3 hours, lab 3 hours per week.

## **ENVS3003: Environmental Studies Field Course**

Coordinator: **Prof. Hoyle**

*Prerequisites:* 30 degree credits, including ENVS2000 and ENVS2001

This 12-day course is designed to provide students with an opportunity to pursue a holistic approach to solve real environmental problems. It 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 in 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 enrollment.

Summer session – 12-day course.

## **ENVS3004: Principles of Pest Management (A)**

Instructor: **TBA**

*Prerequisite:* BIOL1003

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 – Lecture 3 hours, seminar 3 hours per week.

## **ENVS4000: Pesticides in Agriculture (A)**

Coordinator: **Prof. Boyd**

*Preparatories:* BIOL2005, BIOL3000, BIOL3002

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

Winter semester – Lecture 3 hours, discussion period 3 hours per week.

## **ENVS4002: Economic Entomology (A)**

Instructor: **Prof. Cutler**

*Prerequisite:* BIOL3000

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

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **ENVS4003: Advanced Weed Science (A)**

Instructor: **Prof. Boyd**

*Prerequisite:* BIOL3002

Deals with principles of weed science from an ecological perspective. Included are discussions on ecology and management of weeds in traditional agro-ecosystems as well as in low-input sustainable agricultural systems. The roles of biological, cultural, and chemical controls in these systems will be stressed.

Winter semester – Lecture 3 hours, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

## **ENVS4005: Geographic Information Systems (GIS) (A)**

Instructor: **Prof. Brewster**

*Prerequisite:* at least third-year standing

This course has limited enrollment.

The objective of this course is to provide both a theoretical and a practical understanding of GIS concepts and GIS application skills as it relates to ESRI ArcGIS® software. Practical training and application skills will be acquired doing laboratory sessions, whereas GIS foundations and concepts will be provided during lectures. The application of GIS technologies will focus on data sets derived from environmental science, soil science, or agriculture generally. A component of this class will be the application of GIS technologies to a student-defined problem or issue.

Fall semester – Lecture 2 hours, lab 2 hours per week.

## **ENVS4006: Air, Climate and Climate Change (A)**

Instructor: **Prof. Burton**

*Prerequisite:* ENVS2000

This course examines the composition of our atmosphere, how it functions to create weather and climate, and its role in agricultural production. A fundamental understanding of chemistry and physics of atmospheric processes will provide the basis for an examination of micro-, regional- and global-scale meteorological processes. The expression of these meteorological processes will be examined over time and space as a means of examining climate and climate change. The role of weather and climate in agricultural production will be discussed. The global debate surrounding anthropogenic greenhouse gas emissions and climate change will be considered from scientific, social and political perspectives. Agricultural adaptation to climate change, both regionally and globally, will be considered. The laboratory portion of the class will examine the tools for measuring the composition of the atmosphere, the physical state of the atmosphere, the transfer of heat and mass to and within the atmosphere, and the use of weather and climate data in agricultural decision-making.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **ENVS4007: Directed Studies in Environmental Science**

Coordinator: **TBA**

*Prerequisites:* ENVS2000, ENVS2001, and 20 degree credits

Directed studies involve a suitable combination of directed reading, written assignments, individual study or laboratory research projects in the area of environmental sciences. Classes are organized and scheduled by appropriate faculty via a course coordinator. Students should approach potential instructors directly with their requests. Fall or Winter semester – as arranged.

## **ENVS4008: Directed Studies in Pest Management (A)**

Coordinator: **Prof. Cutler**

*Prerequisites:* one of BIOL2005, BIOL3000, BIOL3002 (as per topic chosen) and 20 degree credits

Directed studies involve a suitable combination of directed reading, written assignments, individual study or laboratory research projects in the area of pest management. Classes are organized and scheduled by appropriate faculty via a course coordinator. Students should approach potential instructors directly with their requests. Fall or Winter semester – as arranged.

## **EXTENSION EDUCATION**

### **EXTE3001: Leadership Development and the Social Action Process (H)**

Instructor: **Prof. Sanderson**

*Prerequisite:* at least third-year standing

Students will be looking at leadership development from a number of angles: current theories, leader identification, and leadership skills. The impact of leadership on the social action process will be analyzed in the context of rural communities. Analysis of the social action process will focus on participatory approaches to rural community development and extension. Students will have the opportunity to enhance personal leadership skills through discussion and practice. Fall semester – Lecture 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## FOOD SCIENCE

### **FOOD3000: Food Quality Assurance (A)**

Instructor: **Prof. Pitts**

*Prerequisite:* MATH1000

The various quality philosophies (QC, QA, TQM) will be studied with respect to their industrial application. The course will centre on the use of control charts to monitor processes and to evaluate the quality of both incoming raw materials and the finished product. Students will gain first-hand experience in the design and implementation of ISO 9000 and HACCP systems in the commercial food industry. The application of these principles to other manufacturing processes and/or data acquisition will be discussed. Consideration will also be given to recognizing the quality criteria required by some international customers.

Winter semester – Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2012/2013.

### **FOOD3001: Functional Foods and Nutraceuticals (A)**

Instructor: **Prof. Rupasinghe**

*Prerequisite:* CHEM2000

Interest in functional foods and nutraceuticals is growing rapidly and it has emerged as a new frontier of the agri-food and nutrition industry worldwide. This course provides a basic scientific knowledge of bioactive plant compounds (phytochemicals) present in functional foods and nutraceuticals. Emphasis will be given to phytochemical biosynthesis, classification, distribution among food and medicinal crops, analysis, and current scientific knowledge on the potential health benefits of the bioactive phytochemicals. The course also introduces global marketing trends, government regulations, principles of designer food, and value-added food processing concepts in functional foods and nutraceuticals.

Fall semester – Lecture 3 hours, lab 3 hours per week.

### **FOOD4000: Directed Studies in Food and Bioproduct Science (A)**

Coordinator: **Prof. Rupasinghe**

*Prerequisites:* CHEM2000 and 20 degree credits; students taking FOOD4000 are strongly encouraged to take CHEM2003 or CHEM2004

Directed studies involve a suitable combination of directed reading, written assignments, individual study or laboratory research projects in the area of food and bioproduct science. Classes are organized and scheduled by appropriate faculty via a course coordinator. Students should approach potential instructors directly with their requests. Fall or Winter semester – as arranged.

## FRENCH

### **FREN1000: French Language I (H)**

Instructor: **TBA**

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

Fall semester – Lecture 3 hours per week.

### **FREN1001: French Language II (H)**

Instructor: **TBA**

*Prerequisite:* FREN1000

This course is designed to fill the needs of students who have already studied French, and is intended to review grammar and provide an opportunity to refine language skills. Classes will emphasize basic grammatical structures, pronunciation, listening comprehension, and speaking skills. FREN1001 is designed to provide the student with opportunities to actively use the language. This course is intended not as an introduction to French language but as a review and continuation of the major aspects of FREN1000. It is expected that students have a basis grasp of French grammar and some vocabulary. Students whose first language is French or who are fluent in the French language are not eligible to take this course.

Winter semester – Lecture 3 hours, tutorial 2 hours per week.

# Description of Courses – Undergraduate Degree Level

## GENETICS

### **GENE2000: Genetics**

Instructor: **Prof. McLean**

This course studies heredity and variation in plants and animals, including man, and the relationships of genetics to evolution and breeding practices.

Fall semester – Lecture 3 hours, lab 2 hours per week.

### **GENE3000: An Introduction to Molecular Genetics**

Instructor: **Prof. Wang-Pruski**

*Prerequisite:* GENE2000

*Preparatory:* one course in biochemistry

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

Winter semester – Lecture 3 hours, lab 3 hours per week.

### **GENE3001: Population and Quantitative Genetics**

Instructor: **TBA**

*Prerequisites:* GENE2000, STAT2000

An introduction to population and quantitative genetics, with particular emphasis on the forces causing genetic change in populations. Applications from natural populations, conservation biology, and plant and animal breeding will be used to illustrate theories of evolution and modern breeding methods. Contemporary ideas about evolution at both the molecular and organismal levels will be explored. Laboratory sessions include discussion of concepts and use of computer simulations to model populations under natural and artificial selection. Winter semester – Lecture 3 hours, lab/discussion period 2 hours per week. Offered in alternate years; next offered in 2012/2013.

### **GENE4000: Molecular Applications to Animal Production (A)**

Instructor: **Prof. Farid**

*Prerequisites:* CHEM3001 (or CHEM2005), GENE3000

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 – Lecture 3 hours per week.

### **GENE4003: Biotechnology**

*Cross-referenced as* AGRI5750

Instructor: **Prof. Wang-Pruski**

*Prerequisite:* GENE2000

Biotechnology includes the generation of new medicine, generation of biofuel, new chemicals and materials, removal of pollutants, and production of better and safer foods. The objective of this course is to provide students with general information on the theory and technologies that are currently used in biotechnology. Course topics will include gene identification, transformation and expression regulations, tissue culture and cell culture techniques, and other genomics-related agricultural applications. Nutraceutical and pharmaceutical applications will be addressed.

Fall semester – Lecture 3 hours per week. Offered in alternate years; next offered in 2013/2014.

### **GENE4004: Laboratory Techniques in Genomics**

Instructor: **Prof. Benkel**

*Prerequisite:* GENE3000 or GENE4000

An intensive course that provides hands-on training in manipulations used routinely in molecular labs. An exercise for both hands and minds; students will work in pairs and should be prepared to spend four hours per laboratory session as well as two hours of instruction and preparation on the day immediately preceding lab class. Laboratory reports will account for the bulk of the mark, with a participation score and a final exam rounding out the grade.

Winter semester – Lab 6 hours per week.



# Description of Courses – Undergraduate Degree Level

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## GEOGRAPHY

### **GEOG1000: Introductory Human Geography (H)**

Instructor: **O. Ferguson**

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 – Lecture 3 hours per week.

### **GEOG3000: Rural Geography (H)**

Instructor: **O. Ferguson**

*Prerequisite:* GEOG1000

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

Winter semester – Seminar 3 hours per week.

## GEOLOGY

### **GEOL2000: Introduction to Geology**

Instructor: **Prof. Brewster**

This course introduces the student to the basic concepts of Earth Science and Physical Geology. Geology, as a subject matter area in the Earth Sciences, is closely related to soil science. This course will examine the nature of Earth materials as well as Earth processes, both internal and surface. Minerals, rocks, earthquakes, streams, and groundwater are just some of the areas investigated in this course. Many geological processes are of importance to the Environmental Sciences because an understanding of Earth processes is fundamental for the understanding of human impacts on our landscape.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## HISTORY

### **HIST1000: Introduction to Canadian History I: 1000–1867 (H)**

Instructor: **M. MacLeod**

This course introduces students to the theory and practice of history through a general historical survey of Canadian history for the period from approximately 1000 CE [Common Era] to about the mid-19th century. Historical theories and methodologies will be introduced in this course. A social and/or cultural approach is emphasized, with focus on Aboriginal peoples and Contact; Acadia and New France; and British North America to Confederation.

Fall semester – Lecture 3 hours per week.

### **HIST1001: Introduction to Canadian History II: 1867–Present (H)**

Instructor: **M. MacLeod**

This course will examine the problems of modernity, through an exploration of Canadian history from the mid-19th century through to the present. Political, social, and cultural developments and transformations will be emphasized. In addition to the exploration of Canadian history from Confederation to the present, students will be introduced (or, in the case of those who have previously taken HIST1000, reintroduced) to concepts, theories, and methodologies employed in historical study.

Winter semester – Lecture 3 hours per week.

### **HIST3000: Rural History (H)**

Instructor: **Prof. Stiles**

*Prerequisite:* HIST1000 or HIST1001

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 – Lecture 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## HORTICULTURE

### **HORT2000: Vegetable Production (A)**

*Cross-referenced as HORT0211*

Instructor: **TBA**

*Preparatory:* AGRI1000

Production technology for the major vegetables grown in the Atlantic region is 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 – Lecture 3 hours, lab 2 hours per week.

### **HORT2001: Principles of Organic Horticulture (A) DE**

Instructor: **Prof. Goodyear**

*Preparatory:* AGRI1000

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.

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

### **HORT2003: 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 enrollment. Expenses associated with the course are the responsibility of the student.

Summer semester – 4 weeks intensive.

### **HORT2004: Introduction to Viticulture (A)**

Instructor: **Prof. Percival**

*Prerequisite:* BIOL1002

**Note:** *Students taking this course must be 19 years of age or older.*

This course on viticulture in the Atlantic region will initially examine the taxonomy, morphology, physiology, and biochemistry of grapevine growth and fruit maturation. Emphasis will be placed on the environmental regulation of grapevine growth, development, yield and composition, and management strategies to optimize grape production in cool-climate viticulture production areas. Included will be an examination of the importance of site selection, soil management, grapevine cultivars, rootstocks, clones, production systems, and vineyard establishment. Cultural management practices including pruning, training, canopy management, crop control, and mechanization will be discussed, and an overview of pest pressures and other environmental concerns including winter hardiness will be covered. Lastly, the harvesting and vinification of wine grapes will be examined with the inclusion of “hands-on” laboratory sessions at a commercial vineyard and winery. Successful completion of the course should prepare students for upper-division courses in viticulture and oenology.

Fall semester – Lecture 3 hours, lab 3 hours per week.

### **HORT2005: Design & Construction of Turf Facilities**

Instructor: **TBA**

Includes the interpretation and implementation of design and construction plans for various facilities such as golf courses and recreational fields. Topics include understanding the basic concepts involved in golf course construction, individual components of a golf course, design and construction of sport turf facilities, and development and maintenance of high-end facilities, including those using synthetic turfgrass. Emphasis will be placed on the special considerations needed to “grow in” a new turf in each of these situations.

Winter semester – Lecture 2 hours, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **HORT2006 (HORT3002): Tree Fruit Crops (A)**

*Cross-referenced as HORT0203*

Instructor: **Prof. Pruski**

Tree fruit production with emphasis on resource conservation is investigated in relation to the region. Origins, history, biosystematics, adaptation, and culture of tree fruits, including organic systems, are studied. Propagation, pruning, training, harvesting, and marketing of these crops are covered in this course.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **HORT2007 (HORT3003): Small Fruit Crops (A)**

*Cross-referenced as HORT0202*

Instructor: **Prof. Pruski**

The course consists of the study of strawberry, blueberry, raspberry, cranberry, currant, gooseberry, kiwi, elderberry, Saskatoon berry, and grape production. Aspects of propagation through to harvesting and marketing of each crop is discussed. Some aspects of organic production of small fruits are included. Origins, adaptation, and distribution of each crop are examined. New small fruit crop development for nutraceuticals is covered.

**Note:** *Field trips to small fruit farms, small fruit crop nurseries, and research institutes are included during the term.*

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **HORT2009 (HORT3005): Landscape Plant Nursery Management (A)**

*Cross-referenced as HORT0200*

Instructor: **Prof. Mapplebeck**

*Prerequisite:* AGRI1000

*Preparatory:* BIOL2002

Nursery crops are those plant materials generally used for outdoor landscape plantings, including trees, shrubs, vines and other plants having persistent woody stems, and all herbaceous perennials. This course will examine the selection, propagation, growing, handling and marketing of these materials. The course uses an entrepreneurial approach with emphasis on the importance of new plant introductions, and plant and landscaping trends analysis. The course also examines the nursery industry from the standpoint of where it fits into the bigger picture, i.e., the overall “green” industry.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **HORT2010 (HORT3004): Greenhouse and Floriculture Crop Management (A)**

*Cross-referenced as HORT0201*

Instructor: **Prof. Mapplebeck**

*Prerequisite:* AGRI1000

*Preparatory:* BIOL2002

Greenhouse and floriculture crop production is one of the most exacting specialties in the many areas of agriculture. It is the only type of crop production where almost complete control of plant growth is achieved with the modification of environmental conditions. This is obtained through atmosphere modification (increasing CO<sub>2</sub> levels); temperature control; control of light, nutrition, and water; the application of growth-modifying chemical regulators; and pest control. Greenhouse management can therefore be one of the most interesting and intriguing of the agricultural sciences. This course will examine the greenhouse, its environment, and the production of crops in this environment, plus outdoor cut-flower production.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **HORT3000: Environmental Processes and Natural Landscape Functions**

Coordinator: **Prof. MacKenzie**

The structure, functions, and dynamics of landscapes that are altered by human design are discussed. Key ecological processes and their disruption, landscape modification, and landscape planning and management will be examined. Students are expected to participate in field work, and to engage in self-directed study.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **HORT3001: Landscape Project Management**

Instructor: **Prof. MacKenzie**

*Prerequisite:* a previous course in landscape design and construction

This is an advanced course in landscape design, estimating, and construction. Principles and processes for cost estimating will be studied, using actual landscape projects and considering local building codes and regulations. Computers will be utilized in the process.

Fall semester – Lecture 3 hours, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **HORT3008: Horticultural Therapy (H)**

Instructor: **Prof. Goodyear**

*Prerequisite:* second-year standing

An in-depth study of the application of horticultural activities as a treatment modality, e.g., working with youth and older adults, the rehabilitation of handicapped individuals, treatment of emotional problems and substance abuse, and others. Attention is given to understanding problems associated with client groups and specific horticultural activities used in therapeutic programs.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **HORT4000: Urban Tree Management**

Instructor: **Prof. Goodwin**

*Prerequisite:* HORT0207 or a previous course in arboriculture, or permission of the instructor

This course focuses on the management of the urban forest. Tree inventory systems, planning the urban forest, rhizosphere management, site reclamation, the valuation of urban trees, and trees and the law will be included. Lab exercises will include tree assessment techniques, tree inventory exercises, use of tree inventory software, new techniques for hazard tree assessment, new techniques for managing pests and diseases in urban trees, and site assessment and remediation. Tree pruning exercises will emphasize preservation of tree structure, quality of cuts, and work efficiency and safety.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **INTERNATIONAL DEVELOPMENT**

### **INTD2000: Food Systems in the Tropics (A)**

Coordinators: **Prof. Asiedu** and **Russell**

This course examines tropical food systems in tropical environments. 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 a tropical country. The country is determined on a year-by-year basis. Additional fees for travel, meals, and accommodations apply.

Spring semester (subject to enrollment).

### **INTD2001: Agricultural Systems of Central Europe**

Coordinator: **TBA**

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

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

Spring semester, following exams in April.

### **INTD2002: International Rural Development (H)**

Instructor: **Prof. Cameron**

This course explores the history, defining characteristics, and diversity of developing societies, with a focus on the people and issues of rural communities. Students will explore the main issues facing rural communities in developing regions, as well as the many cultural, social, political and economic factors that can impact the success of development projects and initiatives at the community level. Students will be expected to develop an understanding of a variety of perspectives on international community development and also to develop an appreciation for the opportunities and challenges of sustainable development in different societies and cultures.

Fall semester – Lecture 3 hours per week.

## Description of Courses – Undergraduate Degree Level

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### **INTD2003: Food Security & Rural Development in Cuba (A, H)**

Instructors: **Prof. Cameron** and **G. Martin**

The focus of the course is food production and food security in Cuba, with emphasis on animal production, urban gardens, herbal medicine, environmental protection, ecotourism, and rural development.

Students will also learn about Cuba's history, politics, economy, and culture and how these socioeconomic factors influence food production and food security. Readings, discussions and self-directed study are required during the semester.

One week of the course is spent in Cuba in conjunction with the University of Cienfuegos. The week consists of volunteer work projects and tours (augmented with lectures) of urban gardens, an experimental dairy cooperative, an alternative agro-ecological farm, an herbal medicine farm, and coastal and mountain ecosystems.

Additional fees for travel, meals, and accommodation apply.

Winter semester – Lecture 3 hours per week, plus one week in Cuba.

### **INTD3000: 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 – Lecture 3 hours per week.

### **INTD3001: Directed Studies in International Development (A)**

Coordinator: **Dean of Internationalization**

*Prerequisites:* 30 degree credits or final-year standing

Independent study of topics in international development at an advanced level, with a focus on agriculture and rural development.

Topics are developed through literature review, assigned readings, and discussion, and may include independent research. Students are expected to present the final project at a public seminar. Students are encouraged to use international travel or study opportunities as a focus, but this is not required. Topics must be supervised by a faculty member in the proposed area of interest, and approved by the Dean of Internationalization. Students must apply to the Dean of Internationalization at least six weeks before the semester start date. This course would normally be taken by undergraduate students in their final year.

Fall, Winter or Summer – as arranged.

### **INTD4000: Global Seminar on Rural Sustainability (A)**

Instructor: **Prof. Goodyear**

An international course which brings together students from around the world to investigate and discuss local and global issues. The course will consist of a number of case studies, and the students must choose four in which to participate. Students will work in groups to research the topic using e-mail and discussion forums, and present their findings to the class using electronic classroom technology.

Together the students will participate in a truly global seminar course.

Fall semester – Lecture 3 hours per week (either through virtual classroom or on campus).

# Description of Courses – Undergraduate Degree Level

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## MANAGEMENT

### **MGMT1000: Small Business Entrepreneurship**

*Cross-referenced as MGMT0104*

Instructor: **TBA**

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.

Fall and Winter semesters – Lecture 3 hours per week.

### **MGMT2000: Human Resource Management**

*Cross-referenced as MGMT0205*

Instructor: **Prof. Lewis**

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 – Lecture 3 hours per week.

### **MGMT2001: Introduction to Business Law**

*Cross-referenced as MGMT0103*

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.

Winter semester – Lecture 3 hours per week.

### **MGMT2002: Marketing**

*Cross-referenced as MGMT0206*

Instructor: **Prof. Lewis**

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 – Lecture 3 hours.

### **MGMT2003: Financial Management (A)**

*Cross-referenced as MGMT0204*

Instructor: **Prof. Russell**

*Preparatory: MGMT2004*

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

Fall semester – Lecture 2 hours, lab 3 hours per week.

### **MGMT2004: Financial Accounting**

Instructor: **E. Arnfast**

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 – Lecture 3 hours, lab 2 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **MGMT2006: Advertising and Promotion**

*Cross-referenced as MGMT0207*

Instructor: **Prof. Lewis**

*Prerequisite:* MGMT2002

Students examine the process of planning, implementing, and evaluating advertising and promotional strategies for small businesses. Topics include an evaluation of conventional advertising media and web-based advertising, the preparation of customer profiles and target marketing, the creation of advertising copy, and the evaluation and monitoring of the advertising program. Case studies and class projects are essential elements of the course.

Winter semester – Lecture 3 hours per week.

## **MGMT2007: Retail Sales Management**

*Cross-referenced as MGMT0208*

Instructor: **M. Brodie**

*Prerequisite:* MGMT2002

Students examine effective sales techniques for a retail business and learn to use records systems for tracking sales performance. They also explore strategies for integrating front-line sales techniques with the overall marketing and promotional strategy for the business. The course will enable the student to track and interpret sales performance for the business, and to work with sales managers or consultants in identifying ways to improve sales performance.

Winter semester – Lecture 3 hours per week.

## **MGMT2008: Managing Retail Operations and Physical Resources**

*Cross-referenced as MGMT0202*

Instructor: **M. Brodie**

*Prerequisite:* MGMT2004

This course is designed to train students in the daily office, sales, and inventory operations important in managing a small business. The course also covers the requirements for the siting and layout of a retail facility, and the factors important in designing a retail space. The maintenance, safety, and security requirements for the retail operation are also considered.

Fall semester – Lecture 3 hours per week.

## **MGMT2009: Customer Relations Management**

*Cross-referenced as MGMT0203*

Instructor: **Prof. Lewis**

The objective of this course is to provide students with a practical approach to the provision of exceptional customer service for a small business. Students are expected to identify the various factors that affect the provision of quality service and to identify ways to ensure client satisfaction. The course also provides training in point-of-sale techniques and complaint management.

Fall semester – Lecture 3 hours per week.

## **MGMT3000: Management Accounting**

Instructor: **TBA**

*Prerequisite:* MGMT2004

This course introduces students to the use of accounting information in making effective management decisions. Topics include cost control and analysis, cost/volume/profit analysis, break-even analysis, differential analysis, and capital investment analysis.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **MGMT3001: International Marketing**

Instructor: **TBA**

*Prerequisite:* MGMT2002

This course provides an introduction to international marketing and the international trading system. Students will be exposed to the unique aspects of international market research, selection, entry, pricing, and communications that differentiate them from their domestic equivalents. In addition, the international trading system will be examined with an emphasis on institutions such as the WTO and the IMF and on 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 – Lecture 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **MGMT3002: Consumer Behaviour**

Instructor: **TBA**

*Prerequisite:* MGMT2002

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

Winter semester – Lecture 3 hours per week.

## **MGMT4000: Strategic Management**

Instructor: **TBA**

*Prerequisites:* Students will normally be Agricultural Business majors who have successfully completed the first three years of the program. This is a capstone course that will integrate all the business disciplines (marketing, finance, accounting, etc.) and prepare the student to formulate and implement strategy in an agribusiness setting. Students will be expected to gain a full understanding of the complexity and interrelationships of modern managerial decision-making and apply this knowledge to real managerial problems. Lectures, case studies, projects, and guest speakers will be utilized.

Fall semester – Lecture 3 hours per week.

## **MGMT4001: Advanced Entrepreneurship (A)**

Instructor: **Prof. Russell**

*Prerequisites:* MGMT2002, MGMT2003, and at least third-year degree standing

This course will apply the concepts of entrepreneurship to creating and managing a small business. Students will investigate opportunities for new agribusinesses and develop business plans that consider management structure, financing, production, marketing, and taxation. Lectures, case studies, guest speakers, and project assignments will be utilized.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **MATHEMATICS**

### **MATH0050: Functions**

Instructor: **P. Nelson**

*Prerequisite:* if required as a result of performance on a mathematics diagnostic test, or approval of the Registrar

This is a one-semester non-credit course designed for those who do not have the requisite skills for the first-year mathematics courses but have shown sufficient basic mathematical ability to warrant a one-semester course to make up for the deficiencies. This course will emphasize the study of the basic functions used in the sciences.

Topics to be covered include linear, exponential, logarithmic, and trigonometric functions. Emphasis is placed on use of a graphing calculator. MATH0050 is not intended to duplicate or replace Grade 12 Pre-Calculus Mathematics.

Fall and Winter semesters – Lecture 3 hours, tutorial 1 hour per week.

### **MATH1000: Introductory Calculus I**

Instructor: **TBA**

*Prerequisite:* Grade 12 Mathematics or MATH0050

Topics will include functions and their inverses, limits, differentiation of polynomial, trigonometric, exponential and logarithmic functions, product and quotient rules, and implicit differentiation, with applications to curve sketching, maxima and minima problems, and velocity and acceleration problems. This course also includes an introduction to anti-derivatives and applications of the definite integral to a variety of problems. Students are required to confirm their eligibility for admission to this course by means of a mathematics diagnostic test, to be taken the day following registration. Students not admitted must take MATH0050.

Fall and Winter semesters – Lecture 3 hours, tutorial 1 hour per week.



# Description of Courses – Undergraduate Degree Level

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## **MATH1001: Introductory Calculus II**

Instructor: **TBA**

*Prerequisite:* MATH1000

A continuation of the study of calculus with topics including both the definite and indefinite integral: techniques of integration, with applications to areas, volumes, arc length, surface areas, elementary differential equations and their applications. The course may also include parametric equations and polar coordinates, and sequences and series and their applications.

Fall and Winter semesters – Lecture 3 hours, tutorial 1 hour per week.

## **MATH2000: Multivariable Calculus**

Instructor: **TBA**

*Prerequisite:* MATH1001

This course covers functions of several variables: vectors, dot product, cross product, differentiation and integration of vector-valued functions, 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 – Lecture 4 hours, lab 2 hours per week.

## **MATH2001: Differential Equations**

Instructor: **TBA**

*Prerequisite:* MATH1001

This course introduces the basic theory of differential equations, considers various techniques for their solution, and looks at various applications. Topics include First Order Linear and Non-Linear differential equations; differential equations of higher order; Laplace Transforms; Series solutions; systems of equations; and Fourier Series. Topics from Linear Algebra are included as required to solve systems of differential equations, Linear Algebraic equations, matrices and vectors, eigenvalues and eigenvectors, and solutions to both homogeneous and nonhomogeneous systems.

Winter semester – Lecture 4 hours, tutorial 2 hours per week.

## **MATH3000: Applied Linear Algebra**

Instructor: **TBA**

This course covers geometric vectors in three dimensions, dot product, lines and planes, complex numbers, systems of linear equations, matrix algebra, matrix inverse, determinants, Cramer's rule, introduction to vector spaces, linear independence and bases, rank, linear transformations, orthogonality and applications, Gram-Schmidt algorithm, eigenvalues and eigenvectors.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **MATH4000: Agricultural Modelling**

Instructor: **Prof. Georgallas**

*Prerequisites:* MATH1001 and at least third-year standing

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 – Lecture 3 hours, tutorial 1 hour per week.

# Description of Courses – Undergraduate Degree Level

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## MICROBIOLOGY

### MICR2000: Microbiology

Instructor: **TBA**

*Preparatories:* BIOL1002, BIOL1003

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

Winter semester – Lecture 3 hours, lab 3 hours per week.

### MICR3000: Food Microbiology (A)

Instructor: **TBA**

*Prerequisite:* MICR2000

A study of microorganisms involved in the production and processing of food products. Topics will include the use of microorganisms for food production and processing, food spoilage and potential for food poisoning, and 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 – Lecture 3 hours, lab 3 hours per week.

### MICR4000: Soil Microbiology (A)

*Cross-referenced as* AGRI5250

Instructor: **Prof. Burton**

*Prerequisites:* MICR2000, SOIL2000

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

Fall semester – Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2012/2013.

## NUTRITION

### NUTR3000: Animal Nutrition (A)

Instructor: **Prof. Firth**

*Prerequisite:* CHEM2000

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 – Lecture 3 hours, lab 2 hours per week.

### NUTR3001: Applied Animal Nutrition (A)

Instructors: **Profs. Firth and Anderson**

*Prerequisite:* NUTR3000

Classification and characteristics of feedstuff 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 – Lecture 3 hours, lab 2 hours per week.

### NUTR3002: Fish Nutrition (A)

Instructor: **Prof. Anderson**

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

Winter semester – Lecture 3 hours, lab 2 hours per week.

### NUTR4000: Ruminant Digestive Physiology and Metabolism

*Cross-referenced as* AGRI5620

Instructor: **Prof. Fredeen**

*Prerequisites:* BIOL2006, CHEM3006, NUTR3000

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 – Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

# Description of Courses – Undergraduate Degree Level

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## PHILOSOPHY

### PHIL3000: Environmental and Agricultural Ethics (H)

Instructor: **A. Kernohan**

*Prerequisite:* at least third-year standing

This course offers a general introduction to environmental ethics with emphasis on agricultural issues. Students will be introduced to modern ethical theory and to techniques of philosophical reasoning, and will be provided with a general context for overall discussion by examining the origins of the modern world view (the rise of modern science, market economics, and liberalism). Students will be evaluated on class participation and a series of short weekly essays based upon directed readings and field experience. Essay-style midterm and final exams are required.

Winter semester – one 2-hour seminar per week.

## PHYSICS

### PHYS0050: Introductory Physics

Instructor: **P. Nelson**

*Prerequisite:* approval of the Registrar

An introductory non-credit course for entering students who do not have the equivalent of NS Grade 12 Physics. Course topics include one-dimensional kinematics, vector theory, Newton's Laws, equilibrium, kinetic energy and work, and other topics as determined by a review of the class. PHYS0050 is not intended to duplicate or replace Grade 12 Physics.

Fall and Winter semesters – Lecture 3 hours, tutorial 1 hour per week.

### PHYS1000: Physics for the Life Sciences I

Instructor: **Prof. Georgallas**

*Prerequisite:* Grade 12 Physics or PHYS0050

*Prerequisite/Corequisite:* MATH1000

In this course an understanding of physics is acquired by exploring the physical principles that 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.

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

Fall and Winter semesters – Lecture 3 hours per week, lab/tutorial 1½ hours per week (alternating weekly).

### PHYS1001: Physics for the Life Sciences II

Instructor: **Prof. Georgallas**

*Prerequisite:* PHYS1000 or PHYS1002

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

Winter semester – Lecture 3 hours, lab/tutorial 1½ hours per week (alternating weekly).

### PHYS1002: Physics I

Instructor: **Prof. Georgallas**

*Prerequisite:* Grade 12 Physics or PHYS0050

*Prerequisite/Corequisite:* MATH1000

Fundamental physical principles that are necessary for the understanding of the agricultural sciences form the core material of this course. Classical physics topics include vector analysis, dynamics, statics, fluid mechanics, acoustics, and heat. Concepts derived from modern physics are added in order to complete the classical theories. Weekly student laboratory sessions allow for direct investigation of the theories studied in the course.

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

Fall and Winter semesters – Lecture 3 hours, lab 1½ hours, tutorial 1 hour per week.

# Description of Courses – Undergraduate Degree Level

## **PHYS1003: Physics II**

Instructor: **Prof. Georgallas**

*Prerequisite:* PHYS1002

A continuation of PHYS1002. The course mainly deals with electromagnetic theory, including such topics as electric charges, fields, potential, magnetic theory, induction, and Maxwell's Equations. Fundamental wave theory and optics are also studied, together with an introduction to nuclear physics. The laboratory provides an opportunity to investigate the theories in a hands-on environment. Winter semester – Lecture 3 hours, lab 3 hours per week.

## **PLANT SCIENCE**

### **PLSC1000: Farm Woodlot Management (A)**

Instructor: **TBA**

This course has limited enrollment.

This course will focus on the importance of privately owned woodlands to the landowner, the forest industry, and the agricultural sector. It will examine forest ecology, tree identification, forest measurement, aerial photo interpretation, and forest management practices including silviculture. The course will review Christmas tree and maple syrup production. The role of appropriate equipment and machinery in the woods will also be discussed. A field lab will be held weekly. Steel-toed boots and hard hats are required.

Fall semester – Lecture 3 hours, lab 3 hours per week.

### **PLSC2000: Specialty Crops (A)**

Coordinator: **Prof. Mapplebeck**

This course will examine opportunities for specialty crop production, using an entrepreneurial approach. A core group of specialty crops will be examined. Production requirements, production and marketing potential, end use, and value adding will be studied. Students will have optional crop choices to reflect individual interest. A major project is required.

Winter semester – Lecture 3 hours, lab 2 hours per week.

### **PLSC3000: Theory and Practice of Plant Propagation (A)**

Instructor: **Prof. Pruski**

*Prerequisite:* BIOL2002

This course is intended to give students an advanced knowledge in the area of biology, physiology and practical aspects of plant propagation. It is strongly recommended for students wishing to undertake graduate work in plant sciences, biotechnology, environmental sciences, and ecology. It is also recommended for managers of greenhouses and nurseries. Topics will include biology of plant propagation, propagation environment, breeding systems, seed and vegetative propagation, cell and tissue micropropagation, and propagation of selected plant species for commercial production. Winter semester – Lecture 3 hours, lab 3 hours per week.

### **PLSC4000: Plant Breeding (A)**

Instructor: **Prof. McLean**

*Prerequisites:* GENE2000, STAT2000, one crop production subject  
An introduction to the principles and practices of plant breeding, including the genetics of agriculturally important traits, germplasm conservation, breeding bio-technology, and the structure of the Canadian seed industry.

Winter semester – Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

### **PLSC4002: Plant Ecophysiology (A)**

Instructor: **Prof. Lada**

*Prerequisites:* BIOL 2002, one crop production course

This course is designed to stimulate interest, critical thinking, and investigative processes for the understanding of growth, development, distribution, acclimation, and adaptation of crop plants that are influenced by their physiological ecology; the interaction with the climatological, physical, chemical, and biological environments; and the ecophysiological responses that are modulated by input and crop management factors. This course will also enhance knowledge of crop stress diagnostics, physiological mechanisms of acclimation, and adaptation to various challenging abiotic and biotic stress factors. Agricultural practices and agroecosystem management will be related to the economic and environmental responsibilities. This course will use several "Participatory Learning" techniques.

Fall semester – Lecture 3 hours, lab 3 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **PLSC4003: Problem Solving in Plant Science (A)**

Instructor: **Prof. Caldwell**

*Prerequisite:* fourth-year standing in Plant Science major or minor

The objective of this course is to review and integrate material from prerequisite courses in crop production, environment, business, soils, climate, and basic sciences into a comprehensive understanding of crop management systems. Students will work with each other and the instructor to develop group and individual study plans and learning contracts to address individual needs to fill gaps in knowledge and skills in Plant Science. Activities and assignments will be tailored to the needs of the group and the individuals.

Winter semester – Lecture 3 hours per week.

## **PLSC4004: Root Physiology: Underground Secrets (A)**

Instructor: **Prof. Lada**

*Prerequisite:* BIOL2002

The objective of this course is to give students a fundamental understanding of the mysteries of the hidden half of plants – roots. The architectural, physiological, metabolic and ecological significance of roots is often less understood, frequently forgotten or ignored. Students will study the intricacies of root architecture, growth, development, physiology and the role of roots in plant defence. Attention is given to the soil ecosystem and how roots respond to their environment. Students will also learn about root-derived secondary metabolites and their roles in plant and human health, and appreciate the emerging opportunities in “milking roots”.

Winter semester – Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

## **POLITICAL SCIENCE**

### **POLS1000: Introduction to Political Science (H)**

Instructor: **Prof. Cameron**

An introductory study of the ideologies of modern movements. Liberal democracy, conservatism, democratic socialism, fascism, and Marxist perspectives will be covered. Analysis of such central concepts as liberty, equality, power, authority, justice, law, constitutionalism, democracy, and authoritarianism will be presented and discussed. This course provides an overview of the various institutions and policies involved in governing. There will be a focus on rural social movements.

Fall semester – Lecture 3 hours per week.

### **POLS1001: Structure and Function of Government (H)**

Instructor: **Prof. Cameron**

Students will study the legislative, executive, and judicial aspects of the Canadian state, and their interactions. They will look at political processes and policy development. This course will provide students with the basic knowledge of how governments operate at all levels. It will offer insight into how and why political decisions are made about the issues that affect all Canadians: taxation, education, employment, health care, and the debt. There will be a focus on issues of interest to rural Canada.

Winter semester – Lecture 3 hours per week.

## **PSYCHOLOGY**

### **PSYC1000: Introductory Psychology I (H)**

Instructor: **Prof. Dukeshire**

This course will introduce students to the mental processes that underlie human behaviour. Topics covered include brain function, the nervous system, sensation, perception, states of consciousness, learning, memory and cognition. The course will be taught primarily through lecture and in-class demonstrations and activities.

Fall semester – Lecture 3 hours per week.

### **PSYC1001: Introductory Psychology II (H)**

Instructor: **Prof. Dukeshire**

This course will introduce students to important elements that describe, explain, predict, and influence human behaviour. Topics covered include human development, emotion, social influences, personality, health, psychological disorders, and therapy. The course will be taught primarily through lecture and in-class demonstrations and activities.

Winter semester – Lecture 3 hours per week.

# Description of Courses – Undergraduate Degree Level

## RESEARCH METHODS / PROJECT-SEMINARS

### **RESM4000: Bio-Environmental Systems Management Project-Seminar I (A)**

Coordinator: **TBA**

*Prerequisite:* Integrated Environmental Management student in third year, or consent of the coordinator

Students will study an operation (information gathering) and review management of technological, human, financial, and environmental resources. A group report and individual oral and poster presentations are required.

Winter semester – Seminar 3 hours per week.

### **RESM4001: Bio-Environmental Systems Management Project-Seminar II (A)**

Coordinator: **Prof. Price**

*Prerequisites:* RESM4000; Integrated Environmental Management student in final year or consent of the coordinator

This is a continuation of RESM4000, with a study and examination of identified problems within the operation. Working with industry representatives, the course will identify alternatives to solve current problems. Written and oral reports are presented to class and industry.

Fall semester – Lab 4 hours per week.

### **RESM4002: Animal Science Project-Seminar I (A)**

Instructor: **TBA**

Coordinators: **Prof. Barrett** and **Fredeen**

*Prerequisite:* Animal Science major in third or fourth year of the program, or consent of the coordinator

In consultation with a faculty advisor, Animal Science majors select a research topic. This topic is investigated and presented orally and in a written report. Other topics of current interest are also presented and discussed in the weekly seminar period.

Fall semester – Seminar 2 hours per week.

### **RESM4003: Animal Science Project-Seminar II (A)**

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

Coordinators: **Prof. Fredeen** and **Barrett**

*Prerequisite:* RESM4002

The continuation and conclusion of the project selected in RESM4002. Winter semester – Seminar 2 hours per week.

### **RESM4004: Research Methods for Economics and Business (A)**

Instructor: **Prof. Grant**

*Prerequisite:* at least third-year standing, including ECON1000

The lectures cover general methodological issues within business and social sciences research, as well as considering specific research techniques. Students undertaking fourth-year projects within the Department of Business and Social Sciences begin their projects, under faculty supervision, through this course's project development process. Other students may instead write one or more papers on research methodology.

Fall semester – Lecture 2 hours, lab 2 hours per week.

### **RESM4005: Project-Seminar for Economics and Business (A)**

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

Coordinator: **Prof. Dunlop**

*Prerequisite:* RESM4004

Under the supervision of faculty, students complete the research projects begun in RESM4004. Each 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 – Seminar 2 hours per week.

### **RESM4006: Environmental Sciences Project-Seminar I (A)**

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

Coordinators: **Prof. Burton** and **France**

*Prerequisite:* students registered for their final year in the Department of Environmental Sciences, or consent of the coordinator

A required course for all B.Sc.(Agr.) students registered in the Department of Environmental Sciences. Each student will choose a research project and faculty advisor in consultation with the course coordinator. Each student will present periodic oral and written reports on their subject of investigation. Other written and seminar topics may be assigned. Topics on communication skills and the presentation of scientific information in various formats will be discussed in the weekly seminar periods.

Fall semester – Seminar 2 hours per week.

# Description of Courses – Undergraduate Degree Level

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## **RESM4007: Environmental Sciences Project-Seminar II (A)**

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

Coordinators: **Profs. Nams and France**

*Prerequisite:* RESM4006

A continuation of RESM4006. Students will continue with their research projects. The course will culminate in the presentation of project results, in several formats. Other written and seminar topics may be assigned.

Winter semester – Seminar 2 hour per week.

## **RESM4008: Plant Science Project-Seminar I (A)**

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

Coordinators: **Profs. Asiedu and McLean**

Involves the selection of an appropriate project and the preparation of a research plan to investigate the chosen subject. Fundamentals of experimental design and data analysis are covered in lectures. Under the supervision of a faculty advisor, each student will select a topic, conduct a detailed literature review, and prepare an experimental plan for implementation in RESM4009. The research project and faculty advisor are to be chosen in consultation with the course coordinator during Semester VI, and work initiated soon thereafter. This is a required course for all students in Year 3 of the Plant Science option.

Winter semester – Lecture 2 hours per week.

## **RESM4009: Plant Science Project-Seminar II (A)**

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

Coordinators: **Profs. Asiedu and McLean**

*Prerequisite:* RESM4008

The continuation and conclusion of the subject selected in RESM4008. This consists of both a written and an oral presentation of the project.

Fall semester – Lecture 2 hours per week.

## **RESM4010: Aquaculture Project-Seminar I (A)**

Instructor: **TBA**

Coordinators: **Profs. Barrett and Fredeen**

*Prerequisite:* Aquaculture major in third or fourth year of the program, or consent of the coordinator

In consultation with a faculty advisor, each student will select a research topic. This topic is investigated and presented both orally and in a written report. Other topics of current interest are also presented and discussed in the weekly seminar period.

Fall semester – Seminar 2 hours per week.

## **RESM4011: Aquaculture Project-Seminar II (A)**

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

Coordinators: **Profs. Fredeen and Barrett**

*Prerequisite:* RESM4010

The continuation and conclusion of the project selected in RESM4010. Winter semester – Seminar 2 hours per week.

## **RURAL STUDIES**

### **RURS3000: Rural Community Economic Development (H)**

Instructor: **Prof. Cameron**

*Prerequisite:* at least third-year standing

This course examines the evolution of key paradigms, theories and principles in the field of rural community development studies, and explores the economic and social contexts in which rural community development has emerged. It also examines the community development process and the organizations, processes and strategies associated with rural community organization and development. A key aspect of the course will be an exploration of the defining characteristics of rural communities (e.g. co-operatives), as well as their diversity in current and historical social and economic contexts.

Winter semester – Lecture 3 hours per week.

## **SOCIOLOGY**

### **SOCI1000: Introductory Sociology (H)**

Instructor: **Prof. Dukeshire**

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 – Lecture 3 hours per week.

# Description of Courses – Undergraduate Degree Level

## **SOCI1001: Introductory Sociology II (H)**

Instructor: **Prof. Dukeshire**

The study of social issues uses sociological theory and research to examine social dynamics and social consequences associated with various current concerns. The topics covered will vary from year to year, but may well include problems such as gender and race relations, child and spousal abuse, substance abuse, poverty, work and alienation, and environmental issues. There will be a focus on issues of interest to rural Canada.

Winter semester – Lecture 3 hours per week.

## **SOCI3000: Rural Sociology (H)**

Instructor: **I. Landry**

*Prerequisite:* SOCI1000

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

Fall semester – Seminar 3 hours per week.

## **SOILS**

### **SOIL2000: Introduction to Soil Science (A)**

Instructor: **Prof. Brewster**

*Prerequisite/ Corequisite:* CHEM1001

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

Fall semester – Lecture 3 hours, lab 3 hours per week.

### **SOIL3000: Soil Fertility and Nutrient Management (A)**

Instructor: **Prof. Sharifi**

*Prerequisite:* SOIL2000

*Preparatory:* BIOL2002

The study of the soil chemical environment as it affects crop production. The course investigates the biogeochemical cycling of nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, and micronutrients in crop production. It considers the use and management of supplemental nutrients in both conventional and certified organic production. Soil pH and other factors that influence soil fertility, directly or indirectly, are also discussed. Labs take the form of problem-solving tutorials on nutrient management.

Winter semester – Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2013/2014.

### **SOIL3001: Soil Conservation in Agriculture (A)**

Instructor: **TBA**

*Prerequisite:* AGRI1000

A study of the processes of soil degradation and its prevention or amelioration. A major part of the course concerns the erosion of agricultural soils and its control. Other topics include soil compaction and soil acidification, soil reclamation, use of soil in waste recycling, and the role of soil in water conservation. Lab periods may be used for field trips, tutorials, or seminars.

Fall semester – Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2012/2013.

### **SOIL4000: Environmental Soil Chemistry**

*Cross-referenced as* AGRI5450

Instructor: **Prof. Hoyle**

*Prerequisite:* SOIL2000

A study of 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 – Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2013/2014.



# Description of Courses – Undergraduate Degree Level

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## **SOIL4001: Directed Studies in Soil Science (A)**

Coordinator: **Prof. Burton**

*Prerequisites:* SOIL2000 and 20 degree credits

Directed studies involve a suitable combination of directed reading, written assignments, individual study or laboratory research projects in the area of soil science. Classes are organized and scheduled by appropriate faculty via a course coordinator. Students should approach potential instructors directly with their requests.

Fall or Winter semester – as arranged.

## **SPANISH**

### **SPAN1000: Basic Spanish I (H)**

Instructor: **M. Medina**

This course will be offered subject to minimum enrollment.

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 – Lecture 3 hours per week.

### **SPAN1001: Basic Spanish II (H)**

Instructor: **M. Medina**

*Prerequisite:* SPAN1000

This course will be offered subject to minimum enrollment.

This course is designed for anglophone, francophone and International students. It is a continuation of SPAN1000, with emphasis on comprehension, conversation, reading, and writing.

Winter semester – Lecture 3 hours per week.

## **SPECIAL TOPICS**

### **SPEC2000: Topics in Economics and Business Management (A)**

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

*Prerequisites:* 10 degree or diploma courses

An opportunity for students throughout the University to study introductory topics defined by an individual student, a group of students, or faculty. The course is conducted by classes, tutorials, assigned readings, assignments and/or other appropriate activities. Topics must be supervised by a faculty member and approved by the department head.

Fall, Winter or Summer semester – as arranged.

### **SPEC2001: Topics in International Development (A)**

Coordinator: **Dean of Internationalization**

*Prerequisite:* second-year standing

An opportunity for students to study introductory topics in international development, with a focus on agriculture and rural development.

Topics may be defined by the individual student, a group of students, or faculty. The course is conducted by classes, tutorials, assignments, readings, and/or other appropriate activities. Students are encouraged to use international travel or study opportunities as a focus for the course, but this is not required. Topics must be supervised by a faculty member in the proposed area of interest, and approved by the Dean of Internationalization. Students must apply to the Dean of Internationalization at least six weeks before the semester start date.

Fall, Winter or Summer semester – as arranged.

### **SPEC4000: Special Topics in Animal Science or Aquaculture**

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

Coordinator: **TBA**

*Prerequisites:* two years of full-time study at a post-secondary institution (normally 20 degree courses), and permission of the instructor

This is an opportunity to study a special topic in the area of animal science or aquaculture as defined by an individual student, group of students or faculty. The course is conducted by tutorials, assigned readings, assignments, field trips and/or other appropriate activities. The special topics would normally be supervised by a faculty or staff member associated with the Animal Science program or the Aquaculture program and approved by the department head.

Fall or Winter semester – as arranged.

# Description of Courses – Undergraduate Degree Level

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## **SPEC4005: 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 in the area of agricultural economics and business as 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.

## **SPEC4006: 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 SPEC4005, 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.

## **SPEC4007: Special Topics in Environmental Studies (A)**

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

Coordinator: **TBA**

*Prerequisites:* 20 degree, technology or technical courses, including ENVS2000 and ENVS2001, and permission of the coordinator

This is an opportunity to study a special topic in the area of agricultural, environmental or environmental horticultural studies as 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 would normally be supervised by a faculty member associated with either the Environmental Sciences or Environmental Landscape Horticulture program, and must be approved by the coordinator.

Fall or Winter semester – as arranged.

## **SPEC4009: Special Topics in Rural Studies (H)**

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

*Prerequisite:* at least third-year standing

This is an opportunity to study a special topic in the area of rural studies as 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 – Lecture 3 hours per week.

## **SPEC4010: Special Topics in Plant Science I (A)**

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

*Prerequisites:* 20 degree courses or enrollment in the B.Tech (Env. Hort.) program

An opportunity to study a special topic in the area of plant science as defined by an individual student, a group of students, or faculty. The course is conducted by tutorials, assigned readings, assignments, and/or other appropriate activities. Special topics must be supervised by a faculty member and approved by the department head.

Fall, Winter or Summer semester – as arranged.

## **SPEC4011: Special Topics in Plant Science II (A)**

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

*Prerequisites:* 20 degree courses or enrollment in the B.Tech (Env. Hort.) program

A second special topics course provides additional opportunity for students to individualize the program with in-depth study of an approved topic. Although the second topic selected may be in a similar area of interest to that studied in SPEC4010, it must be sufficiently distinct to warrant additional study. Special topics must be supervised by a faculty member and approved by the department head.

Fall, Winter or Summer semester – as arranged.

## **SPEC4012: Directed Studies in Agricultural Engineering I (A)**

Instructors: **Engineering Department Faculty**

Independent studies are developed through literature review or laboratory or field research on topics pertinent to agricultural engineering. Topics must be supervised by a faculty member and approved by the department head.

Fall or Winter semester – as arranged.

# Description of Courses – Undergraduate Degree Level

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## **SPEC4014: Directed Studies in Agricultural Engineering II (A)**

Instructors: **Engineering Department Faculty**

*Prerequisites:* 20 degree courses

Independent studies are developed through literature review or laboratory or field research on topics pertinent to agricultural engineering. Lectures may be required depending on the instructors' and students' needs. Topics must be supervised by a faculty member and approved by the department head.

Fall or Winter semester– as arranged.

## **STATISTICS**

### **STAT2000: Introduction to Statistics**

Instructor: **Prof. Astatkie**

Graphical presentation of data; descriptive statistics; normal, binomial, t and F distributions; sampling distributions and the central limit theorem; estimation and hypothesis testing of a single mean and the difference between two means; and introduction to correlation, regression and analysis of variance for simple experimental designs.

Fall and Winter semesters – Lecture 3 hours, tutorial 1 hour, computer lab 1 hour per week.

### **STAT2001: Probability and Statistics for Engineering**

Instructor: **TBA**

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 – Lecture 3 hours, tutorial 1 hour, lab 1 hour per week.

### **STAT3000: Introduction to Planned Studies: Surveys and Experiments**

Instructor: **Prof. Astatkie**

*Prerequisite:* STAT2000

This course is a continuation of STAT2000. Topics covered include sampling techniques, simple and multiple linear regression, analysis of variance for completely randomized and randomized block designs, nonparametric tests, and introduction to categorical data analysis. Winter semester – Lecture 3 hours, tutorial 1 hour, computer lab 1 hour per week.

### **STAT4000: Intermediate Statistical Methods**

*Cross-referenced as* AGRI5630

Instructor: **Prof. Astatkie**

*Prerequisite:* STAT3000

Analysis of single-factor experiments, randomized blocks, latin squares, and factorial and two-level fractional factorial designs.

Fall semester – Lecture 3 hours, computer lab 1 hour per week.

# Description of Courses – Technology Level

These courses are at the technology level and can only be used in technology programs. The course descriptions are grouped according to discipline and are in alphanumeric order.

Enrollment in some cases may be restricted to specific program groups or there may be a maximum enrollment.

Course information indicates the weekly instructional requirement in hours per week. The faculty reserves the right to make any necessary revisions or additions.

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

*Prerequisite:* A course that must be completed successfully prior to the course that lists it as a prerequisite.

*Preparatory:* A course that is recommended to be taken prior to the course that lists it as a preparatory. This is particularly important for students who do not have sufficient background knowledge in that area.

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

## Course Codes by Discipline

Academic	ACAD	Food Science	FOOD
Agronomy	AGRN	Horticulture	HORT
Animal Science	ANSC	Internship	INTE
Biology	BIOL	Management	MGMT
Communications	CMMT	Mathematics	MATH
Computer Science	CSCI	Plant Science	PLSC
Economics	ECON	Soils	SOIL
Engineering	ENGN	Veterinary Technology	VTEC
English	ENGL		

## ACADEMIC

### ACAD0020: Skills for Academic Success

Coordinator: **M. Sani-Berry**

The objective of this course is to facilitate the successful transition from high school or the workplace to university life. This course will expose students to the functions of various student services on campus, encourage the development of good study skills, and explore the life management skills necessary to achieve success at university. This is a Workplace Readiness course required for the Diploma in Business Management.

Fall semester – Lecture 1 hour per week.

### ACAD0021: University Study Skills

Coordinator: **H. Avery**

This course provides students with the skills they need to be successful university students, including note taking, textbook reading, exam taking, and time management skills. The course will introduce students to the resources available on campus and will help them understand their learning styles and strengths. Students in this course will learn how to balance their commitments and use their study time efficiently. It provides an essential bridge for students coming to university directly from high school, as well as an important refresher for students who have had a break in their studies.

Fall and Winter semesters – Lecture (six two-hour sessions).

## AGRONOMY

### AGRN0200: Potato Production

*Cross-referenced as AGRN2008*

Instructor: **Prof. Asiedu**

History, biosystematics, and eco-physiology of the crop are emphasized. Production practices for seed, table, and processing stock and marketing in the Atlantic Provinces are examined. Soil fertility, crop health management strategies, and nutritional qualities and storage are covered in detail. Some commercial operations are visited.

Winter semester – Lecture 3 hours, lab 2 hours per week.

# Description of Courses – Technology Level

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## **AGRN0201: Cereal-Based Cropping Systems**

*Cross-referenced as AGRN2001*

Instructor: **TBA**

This course takes a systems approach to the study of crop and soil management in rotations involving the growing of the principal cereals, oilseeds, pulses and other grains, and their relationship to other crops in a rotation. Through a whole-farm approach over time, it studies environmentally and economically sustainable methods for grain cash crops and grain-based animal feed production. It stresses soil and water conservation and an understanding of the principles and processes of the nutrient cycles, which are critical to improving the food production environment. Students will gain knowledge of grains as they relate to people and the environment, from soil to shelf, both in a Maritime temperate climate and in an international context.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **AGRN0202: Forage-Based Cropping Systems**

*Cross-referenced as AGRN2002*

Instructor: **Prof. McLean**

The second course in cropping systems focuses on the forage crops. Students will acquire the basic knowledge and skills for the management of forage crops within cropping systems in a socially and environmentally responsible manner. Soil and water conservation will be emphasized in the context of production agriculture. Production and management for sustainable yields of forage crops under conditions specific to Atlantic Canada will be emphasized. Students will develop investigative and critical thinking skills to evaluate forage publications and enable themselves to address production challenges as they arise.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **ANIMAL SCIENCE**

### **ANSC0020: Dairy Industry I**

Instructors: **Department of Plant and Animal Sciences Faculty**

Coordinator: **D. MacCallum**

Students participate in an examination of the structure of the dairy industry and of the supply management system in which dairy farms operate. They will also be required to identify current issues facing the industry and to examine their potential impact on sustainability and opportunities in the Atlantic Canadian industry.

This is a Workplace Readiness course required for the Dairy Farming option in the Diploma in Business Management.

Fall semester – Lecture 1 hour per week.

### **ANSC0021: Dairy Industry II**

Instructors: **Department of Plant and Animal Sciences Faculty**

Coordinator: **D. MacCallum**

A continuation of the topics in ANSC0020. Students extend their examination of the issues facing the dairy industry in a series of lectures presented by speakers from a variety of fields.

This is a Workplace Readiness course required for the Dairy Farming option in the Diploma in Business Management.

Winter semester – Lecture 1 hour per week.

### **ANSC0022: Equine Industry**

Instructor: **D. Pelkey-Field**

This course enables students to examine the structure of the equine industry and to discuss the issues, challenges, and opportunities facing the industry. Speakers from the equine industry are invited to discuss relevant topics, and students participate in the discussion and write summaries of the discussion.

This is a Workplace Readiness course required for the Equine Specialty option in the Diploma in Business Management.

Fall semester – Lecture 1 hour per week.

# Description of Courses – Technology Level

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## **ANSC0112: Animal Biology and Management**

Instructor: **G. Fraser**

Students examine production cycles, reproduction, and genetics in farm animals, with a focus on care and management during breeding, parturition, growth, and lactation. Lectures cover the principles that are common to all species, and the labs and tutorial sessions focus on more specialized topics that are relevant to the management of bovine, equine, and other ruminant species.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC0113: Principles of Animal Welfare & Husbandry**

Instructor: **G. Fraser**

Students examine the biological basis for animal behaviour, animal welfare, environmental physiology, and animal health. They also examine the role and importance of legislation and voluntary codes of practice in animal welfare and animal health. The course will enable the student to analyze and select handling practices, housing options, biosecurity, and disease prevention options that meet the needs of the animal and the enterprise. Lectures cover the principles that are common to all species, and the labs and tutorial sessions focus on more specialized topics that are relevant to the management of bovine, equine, and other ruminant species.

Winter semester – Lecture 2 hours, lab 2 hours per week.

## **ANSC0114: Animal Feed and Nutrition Management**

Instructor: **G. Fraser**

Students examine in detail the biology of digestion and nutrient metabolism and the assessment of feedstuff quality in forage-based feeding systems. The course will enable the students to analyze strategies for meeting nutrient requirements and avoiding nutritional problems, and to assess feed efficiency and feed costs for the enterprise. Lectures cover the principles that are common to all species, and the labs and tutorial sessions focus on more specialized topics that are relevant to the management of bovine, equine, and other ruminant species.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC0116: Companion Animal Enterprise**

Instructor: **C. Spears**

This course will enable the student to oversee the routine care of animals in a companion animal facility and to develop some of the basic workplace communication skills necessary in such an enterprise. Students examine the structure of the companion animal industry and discuss the issues, challenges, and opportunities facing the industry. The basic care component covers mainly dogs and cats, with some coverage of other species, and a portion of this will be conducted outside class time. The industry overview component covers all species represented by the industry, as well as the different segments of the industry.

Fall semester – Lab 3 hours per week.

## **ANSC0117: Companion Animal Growth, Development, and Nutrition**

Instructor: **T.L. Masters**

*Prerequisite:* ANSC0116

Students examine the biology of growth and development in companion animals and analyze the requirements for care and management throughout the life cycle. They also examine the biology of nutrition and the nutritional requirements throughout the life cycle, and relate this to information on specific products, supplements, and feeding regimes. The course will enable the student to work with a nutritionist or veterinarian in establishing and implementing feeding and nutritional programs, and to interpret the legal and other limitations to providing foods and nutrition products and services for companion animals. The course covers mainly dogs and cats, with some coverage of other species.

Winter semester – Lab 3 hours per week.

# Description of Courses – Technology Level

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## **ANSC0204: Dairy Herd Health and Nutrition Management**

Instructor: **F. Schenkels**

*Prerequisite:* ANSC0112, ANSC0113, ANSC0114

Students participate in an in-depth examination of the health and nutrition requirements of the individual dairy cow, and of the requirements for maintaining high standards of health and optimal nutrition in the dairy herd. The course will enable the students to use herd records and on-site evaluations to troubleshoot health and nutrition problems and to identify solutions to those problems. The course will also enable the student to use a variety of technical and human resources in meeting future challenges in health and nutrition. Winter semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC0205: Optimizing Bovine Reproductive and Genetic Performance**

Instructor: **D. MacCallum**

*Prerequisite:* ANSC0112

Half of the course is devoted to an in-depth examination of bovine reproduction and of the requirements for maintaining high success rates in heat detection and AI procedures. Students will use herd records and on-site evaluations to troubleshoot breeding problems and to identify solutions to those problems, and use a variety of technical and human resources in meeting future challenges in breeding management. In the other half of the course, students participate in an in-depth examination of dairy genetics and of the tools and systems used for evaluating performance and genetic merit in the dairy industry. Students will use herd records and on-site evaluations to identify breeding goals for the herd and to select sires and dams that will help the herd achieve these goals. The course will enable students to use a variety of technical and human resources in meeting future challenges in dairy genetics. Applications to the beef industry will be discussed as well.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC0206: Managing Dairy Milking Systems and Housing Facilities**

Instructor: **TBA**

*Prerequisite:* ANSC0113

Students examine in detail the management of the milking system and evaluate current and future options in milking systems technology. They also examine current and future options for housing and equipment, and analyze the ability of those options to meet the financial, environmental, and animal welfare goals of the operation. Tours and field trips give the students an opportunity to view a variety of housing and milking systems. Some of the tours or field trips may be conducted outside scheduled class time.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC0207: Records Management and Decision-making for Dairy Herds**

Instructor: **TBA**

*Prerequisites/Corequisites:* ANSC0204, ANSC0205

Students examine record-keeping options for dairy herds and use herd records to analyze key aspects of herd and farm performance. They also use case studies and records summaries to benchmark performance and to analyze the herd's ability to meet its targets. Establishing and maintaining the records required to meet certification (e.g., HACCP) requirements are also integral components of the course.

Winter semester – Lab 3 hours per week.

## **ANSC0208: Biology and Care of Aquarium Fish and Reptiles**

Instructor: **C. Spears**

*Prerequisite:* ANSC0116

Students examine the biology of growth and development in aquarium fish and reptilian species, and analyze the requirements for care and management throughout the life cycle, including the requirements for nutrition and health care. A considerable portion of the course is devoted to the selection and set-up of aquarium and terrarium systems and to troubleshooting problems. The course will enable the student to ensure high standards of health and nutrition for fish in aquarium systems and for reptiles.

Winter semester – Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

# Description of Courses – Technology Level

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## **ANSC0209: Biology and Care of Pet Birds and Small Mammals**

Instructor: **C. Spears**

*Prerequisite:* ANSC0116

Students examine the biology of growth and development in avian and small animal species and analyze the requirements for care and management throughout the life cycle, including the requirements for nutrition and health care. The selection and set-up of housing systems are important components of the course. The course will enable the student to ensure high standards of health, nutrition, and care for birds and small animals.

Winter semester – Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2012/2013.

## **ANSC0210: Introduction to Companion Animal Health**

Instructor: **B. Ramsay**

*Prerequisite:* ANSC0117

Students examine the causes and predisposing factors of diseases common to companion animals, and of the principles of disease management and prevention as they apply to companion animal facilities. The course will enable students to establish and implement biosecurity and health management protocols, and to interpret the legal and other limitations to providing health care products and services in consultation with the facility veterinarian. The course covers mainly dogs and cats, with some coverage of other species.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC0211: Companion Animal Facilities Management**

Instructor: **H. Logan**

Students examine the biological and behavioral considerations important in designing companion animal housing and facilities, and explore the options available for ensuring high standards of animal welfare in the facility. The course will enable the student to design and implement protocols for managing the facility and for ensuring compliance with regulatory requirements or industry standards. Students participate in tours and field trips to view a variety of housing and facilities options. Some of the tours or field trips may be conducted outside scheduled class time. The course covers mainly canine and feline facilities, with some coverage of facilities for other species.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC0212: Companion Animal Genetics and Reproduction**

Instructor: **T.-L. Masters**

*Prerequisite:* ANSC0116

Students examine the processes of reproduction and lactation in companion animals, and analyze the requirements for care and management during mating, parturition, and lactation. They also study the common breeds and the genetics of colour and conformation, and examine the requirements for choosing breeders and planning matings that meet the objectives of the breeding program. The course covers mainly dogs and cats, with some coverage of other species.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC0213: Equine Growth and Nutrition**

Instructor: **T.-L. Masters**

*Prerequisites:* ANSC0113, ANSC0114

Students will study the physiological growth and development at every life stage from conception to old age in the horse. The nutrition component focuses on the digestive system of the horse and the requirements for specific nutrients at different stages of growth and development. Analysis of different types of feeds and the formulation of diets based on life stage and level of activity will be conducted. The course will enable the student to troubleshoot nutrition problems in a variety of equine enterprise types.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC0214: Equine Health, Genetics, and Reproduction**

*Cross-referenced as* ANSC2006

Instructors: **T.-L. Masters** and **D. Pelkey-Field**

*Prerequisite:* ANSC0113

Students examine in detail the processes of reproduction and lactation in horses, as well as the requirements for care and management of the mare during breeding, parturition, and lactation. Students also study the growth and development of the foal and the requirements for the care of the foal. The common breeds of horses and the genetics of coat colour, conformation, and performance potential will be discussed. The course will enable students to evaluate the genetic merit of sires and dams, and to plan matings and genetics strategies to meet the genetic goals of their particular operation. Students will obtain a basic knowledge of health care and disease prevention, and be able to address issues related to biosecurity.

Fall semester – Lecture 3 hours, lab 2 hours per week.



# Description of Courses – Technology Level

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## **ANSC0215: Equine Facilities Management**

Instructor: **R. Moskovits**

*Prerequisites:* ANSC0213, ANSC0214

Students examine the behavioural and environmental considerations important in designing an equine facility, and explore the options available for ensuring high standards of animal welfare in the facility. The course will enable students to design and implement protocols for managing the facility and for ensuring compliance with regulatory requirements or industry standards. Students participate in tours to view a variety of facility options. Some of these tours may be conducted outside scheduled class time.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC0216: Equine Health and Fitness**

Instructor: **R. Moskovits**

*Prerequisite:* ANSC0213

Students examine the anatomy and physiology of the horse with special attention to the respiratory, skeletal, muscular, and cardiovascular systems. The course will enable students to analyze how the horse's health and soundness is affected by its environment, level of fitness, and condition.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC0217: Companion Animal Behaviour**

*Cross-referenced as* ANSC2003

Instructor: **Prof. Tennesen**

In this course, students will study the fundamentals of animal learning and how those principles affect success in training and behaviour modification. Attention will be given to understanding and solving behaviour problems (e.g., separation anxiety, dominance aggression, fighting, inappropriate urination, and behavioural stereotypies). The focus is on companion animals – dogs and cats, and to some extent horses. The normal development of behaviour in those species will be covered.

Winter semester – Lecture 3 hours per week.

## **ANSC0218: Beef Production and Management**

*Cross-referenced as* ANSC2007

Instructor: **F. Nicholson**

*Prerequisite:* ANSC0114

This course will focus on the management of commercial beef farms ranging from cow/calf to stocker/feeder operations. Components of breeding, nutrition, and behaviour will be discussed. A systems approach to the management of the farm will be undertaken. The role of the manager in optimizing production is an important component. A historical perspective on the Atlantic beef industry along with coverage of emerging trends will be part of the course. Key beef industry issues such as the impact of BSE, animal welfare, and beef marketing will be discussed.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **ANSC0219: Equine Behaviour and Learning**

Instructor: **D. Pelkey-Field**

*Prerequisite:* ANSC0113

This course explores the evolution of the horse and the history of equine domestication. Equine behaviour in both the feral and domesticated horse will be examined, and students will learn how understanding equine body language has practical applications within current training and husbandry practices. Type and causation of various abnormal equine behaviours and methods of behavioural rehabilitation will be covered. Students will examine equine perception and principles of learning, and how application of these principles can improve training and behaviour. Students will also study the human-horse relationship.

Winter semester – Lecture 3 hours per week.

# Description of Courses – Technology Level

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## BIOLOGY

### **BIOL0101: Plant Pathology**

Instructor: **Prof. Prithiviraj**

This course deals with the diagnosis of plant diseases caused by fungi, bacteria, phytoplasmas, viruses, and nematodes. Students will develop skills to differentiate plant diseases caused by microbial pathogens from those caused by abiotic factors. Principles of plant disease management will be covered. Labs deal with basic techniques used in plant pathology, such as fungal, bacterial, and nematode isolation, identification, and inoculation.

Winter semester – Lecture 3 hours, lab 3 hours per week.

### **BIOL0102: Plant Physiology and Stress Management**

Instructor: **Prof. Percival**

This course is aimed at gaining an insight into various plant physiological, growth, and developmental processes and to develop a fundamental understanding and appreciation as to how various environmental factors influence growth, differentiation, and developmental processes in plants. The course also examines the impact of various abiotic stresses on plant growth and development, yield, and productivity, including acclimation and adaptation techniques. Plant diagnosis will be emphasized.

Winter semester – Lecture 3 hours, lab 2 hours per week.

### **BIOL0103: Weed Science**

Instructor: **Prof. Boyd**

This course 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 and in lawns and non-crop areas. Selection, safe use, handling, and storage of herbicides are stressed.

Winter semester – Lecture 3 hours, lab 3 hours per week.

### **BIOL0200: Entomology**

Instructor: **TBA**

An introduction to the study of the phylum *Arthropoda*, with particular reference to the class *Hexapoda (Insecta)*, emphasizing insect pests of the northeast. Anatomy, physiology, taxonomy, behaviour, and ecology of insects are considered during lectures and laboratory work. Discussions on the relationship of insects to humans, basics of insect control methods, and pesticide safety are included. Students will be required to prepare and submit an insect collection.

Fall semester – Lecture 2 hours, lab 2 hours per week.

## COMMUNICATIONS

### **CMMT0020: Career and Employment Skills**

Instructor: **R. Chapman**

This course is designed to provide an introduction to job searching and hiring strategies. Through class discussion students will explore the world of work today, the hiring process, and the development of a personal career plan. Assignments will include resumé and cover letter writing, a networking exercise, and interview preparation. Restricted to students in the Diploma in Business Management program.

This is a Workplace Readiness course required for all options in the Diploma in Business Management program.

Winter semester – Lecture 3 hours per week for 4 weeks.

### **CMMT0021: Introduction to Public Speaking**

Instructor: **Prof. Sanderson**

The objective of this course is to enhance the student's ability to prepare and deliver different types of presentations: informative, persuasive, and impromptu. Topics covered will include assessing audience needs, developing a strong focus, outlining different styles of presentations, and writing effective introductions and conclusions. Students will learn how to evaluate a presentation and make recommendations on how to increase its effectiveness. Tips for presenting ideas visually will also be discussed.

This is a Workplace Readiness course required for all options in the Diploma of Business Management program.

Winter semester – Lab 2 hours per week for 4 weeks.

## COMPUTER SCIENCE

### **CSCI0200: Computer Methods**

*Cross-referenced as CSC1100*

Instructor: **TBA**

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 – Lecture 3 hours, lab 2 hours per week.

# Description of Courses – Technology Level

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## ECONOMICS

### **ECON0100: Introductory Microeconomics**

Instructor: **Prof. Stackhouse**

An introduction to the theory of the firm. The course examines the theory of demand and supply, distribution of income, forms of business organizations in Canada, and the levels of competition in the agricultural industry. Application of the various theories to explain the agricultural industry is stressed.

Fall semester – Lecture 3 hours per week.

### **ECON0202: Production Economics**

Instructor: **Prof. Yiridoe**

*Prerequisite:* ECON0100

An introduction to the study of economic principles used to analyze production and resource use in agriculture. Areas of emphasis include economic examination of the factor/factor, factor/product, and product/product relationships of the farm production system. Practical examples and lab exercises are used to illustrate and reinforce the concepts presented in the classroom.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## ENGLISH

### **ENGL0101: Writing for Business**

Instructor: **Prof. Sanderson**

The objective of this course is to develop the reading and writing skills necessary to write at a technical level and to develop appropriate writing strategies for business documents. The course will focus on the process of writing from the development of a thesis, researching for information, and writing the initial draft through to proofreading and editing. Typical business documents to be discussed include: proposals, letters, e-mails/memos, and reports. Some of the topics include: tailoring writing to the audience, selecting templates for documents, researching and presenting documentation, using word processing packages to create professional documents, and proofreading and editing.

Fall semester – Lecture 3 hours per week.

## ENGINEERING

### **ENGN0100: 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 practise 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 – Lecture 2 hours, lab 3 hours per week.

### **ENGN0101: Horticultural Engineering**

Instructor: **TBA**

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 chainsaw operation.

Winter semester – Lecture 2 hours, lab 3 hours per week.

### **ENGN0200: Environmental Management**

Instructor: **TBA**

*Prerequisite:* SOIL0100

Students examine the major environmental issues and risks in agricultural production. The emphasis is on how agricultural activities impact the environment and how environmental issues, regulations, and programs impact the way agricultural activities are carried out. The course will enable the student to identify the legal and other requirements for reducing the environmental risks associated with production activities, and to work with an engineer or environmental specialist in determining ways to minimize environmental risk.

Fall semester – Lecture 3 hours, lab 2 hours per week.

# Description of Courses – Technology Level

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## **ENGN0201: Machinery and Building Technology**

*Cross-referenced as ENGN2013*

Instructor: **Prof. Zaman**

Two keys to the success of utilizing biomaterials are selection of appropriate machines and designing effective facilities to manage the production/processing system. In the first half of the course, students are introduced to the types of equipment, their productivity, and methods of selection for efficient operation. This will include machinery for soil preparation, planting, crop care, and harvesting. The machines and their unit operation are analyzed with respect to functions, work rates, material flow and power usage. The importance of monitoring machine performance relating to work quality and environmental effects of machine operation will be studied. The labs will emphasize safety, basic maintenance, adjustment, calibration and performance testing. The second half of the course provides an introduction to the planning process of structures and various topics related to the use of building materials, particularly green materials. Functional layouts, ventilation principles of storage, and production buildings are considered. Field trips supplement the lecture material. A term paper is required.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **FOOD SCIENCE**

### **FOOD0020: Topics in Agriculture & Food Enterprise Management**

Coordinator: **Prof. Sanderson**

Students participate in an examination of the structure of agri-food industry and of the context in which individual enterprises operate. They are required to identify current issues facing the agri-food industry at all levels, and to examine their potential impact on sustainability and opportunities in the Atlantic Canadian industry. This is a Workplace Readiness course required in the Agriculture option of the Diploma in Business Management.

Winter semester – Lecture 1 hour per week for 12 weeks.

## **HORTICULTURE**

### **HORT0100: Landscape Plants I**

Instructor: **J. Morton**

Herbaceous and woody plants are studied with respect to their identification, landscape value, and use. Special groups of plants to be studied include plants with fall interest, shade-loving plants, groundcovers, and vines, as well as many other plants suited to Atlantic landscapes. The lab involves the study of plant families, plant morphology, use of plant keys, plant collecting, and preparation of herbarium specimens. A plant collection is required.

Fall semester – Lecture 3 hours, lab 2 hours per week.

### **HORT0101: Landscape Plants II**

Instructor: **J. Morton**

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

Winter semester – Lecture 3 hours per week.

### **HORT0102: Turfgrass Production and Management**

Instructor: **TBA**

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 – Lecture 3 hours, lab 2 hours per week.

### **HORT0103: Landscape Horticulture I**

Instructor: **Prof. Goodwin**

An introduction to landscape horticulture. Plant/environment interaction and the fundamental principles governing plant growth are discussed, as well as the functional uses of ornamental plants in the contemporary landscape. Laboratory exercises will concentrate on the basic skills associated with the use of plants in the landscape.

Fall semester – Lecture 3 hours, lab 3 hours per week.

# Description of Courses – Technology Level

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## **HORT0200: Landscape Plant Nursery Management**

*Cross-referenced as HORT2009*

Instructor: **Prof. Mapplebeck**

*Prerequisite:* PLSC0100

Nursery crops are those plant materials generally used for outdoor landscape plantings, including trees, shrubs, vines and other plants having persistent woody stems, and all herbaceous perennials. This course will examine the selection, propagation, growing, handling, and marketing of these materials. The course uses an entrepreneurial approach with emphasis on the importance of new plant introductions, and plant and landscaping trends analysis. The course also examines the nursery industry from the standpoint of where it fits into the bigger picture, i.e., the overall “green” industry.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **HORT0201: Greenhouse and Floriculture Crop Management**

*Cross-referenced as HORT2010*

Instructor: **Prof. Mapplebeck**

*Prerequisite:* PLSC0100

Greenhouse and floriculture crop production is one of the most exacting specialties in the many areas of agriculture. It is the only type of crop production where almost complete control of plant growth is achieved with the modification of environmental conditions. This is obtained through atmosphere modification (increasing CO<sub>2</sub> levels); temperature control; control of light, nutrition and water; the application of growth-modifying chemical regulators; and pest control.

Greenhouse management can therefore be one of the most interesting and intriguing of the agricultural sciences. This course will examine the greenhouse, its environment, and the production of crops in this environment, plus outdoor cut-flower production.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **HORT0202: Small Fruit Crops**

*Cross-referenced as HORT2007*

Instructor: **Prof. Pruski**

The course consists of the study of strawberry, blueberry, raspberry, cranberry, currant, gooseberry, kiwi, elderberry, Saskatoon berry, and grape production. Aspects of propagation through to harvesting and marketing of each crop is discussed. Some aspects of organic production of small fruits are included. Origins, adaptation, and distribution of each crop are examined. New small fruit crop development for nutraceuticals is covered.

**Note:** *Field trips to small fruit farms, small fruit crop nurseries, and research institutes are included during the term.*

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **HORT0203: Tree Fruit Crops**

*Cross-referenced as HORT2006*

Instructor: **Prof. Pruski**

Tree fruit production with emphasis on resource conservation is investigated in relation to the region. Origins, history, biosystematics, adaptation, and culture of tree fruits, including organic systems, are studied. Propagation, pruning, training, harvesting, and marketing of these crops are covered in this course.

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **HORT0204: Landscape Plants III**

Instructor: **Prof. Goodwin**

Herbaceous, woody, and aquatic plants are studied with respect to their identification, use, and value in landscape settings. Special plant groups included in the course include woodland plants, sensory plants, container plants, medicinal herbs, xeric plants, submerged and floating aquatic plants, and salt-tolerant plants, in addition to many other plants for Atlantic landscapes. The recognition of woody plants by their winter wood characteristics is included.

Fall and Winter semesters – Lecture 2 hours per week.

# Description of Courses – Technology Level

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## **HORT0205: Residential Landscape Design and Construction**

Instructor: **Prof. MacKenzie**

*Prerequisites:* HORT0100, HORT0103, HORT0209

This course introduces a systematic process for developing residential landscape designs. Emphasis is placed upon maximizing the usefulness of the property and developing it in an environmentally sound and sustainable manner. Lab exercises will utilize the computer as a design tool as well as conventional graphic techniques.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **HORT0207: Arboriculture**

Instructor: **Prof. MacKenzie**

*Prerequisite:* HORT0103

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

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **HORT0208: Landscape Maintenance**

Instructor: **Prof. Goodwin**

*Prerequisites:* HORT0102, HORT0103

Provides an overview of site management. Time studies, scheduling of horticultural work and management techniques are included. Plant healthcare 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 – Lecture 3 hours, lab 2 hours per week.

## **HORT0209: Landscape Horticulture II**

Instructor: **Prof. Goodwin**

*Prerequisite:* HORT0100

*Prerequisite/Corequisite:* HORT0103

A study of herbaceous plants and their uses in landscape. Special plant groups, gardening techniques, and styles will be examined. Both computer and conventional methods of drafting will be utilized in design.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **HORT0210: Landscape Installation**

Instructor: **Prof. MacKenzie**

*Prerequisite/Corequisite:* ENGN0101

This course provides theoretical and practical training in landscape construction and installation. Skills and standards identified by the Canadian Nursery and Landscape Association and tested through the Canadian Certified Horticultural Technician Program are considered minimum in levels of information presented in a modular format.

Topics include plan reading, construction drawings, and site grading.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **HORT0211: Vegetable Production**

*Cross-referenced as* HORT2000

Instructor: **TBA**

*Preparatory:* PLSC0100

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

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **INTERNSHIP**

### **INTE0100: Internship**

Coordinators: **Prof. Sanderson** and **G. Fraser**

*Prerequisites:* completion of the first year in the Diploma in Business Management, plus Workplace Readiness courses

The student will be required to work under contract with an approved employer in their chosen field for a period of at least 12 weeks (480 hours). Contract details will be relevant to the student's area of study and will be negotiated between the student, the employer, and the course coordinator. Assessment will be based on this contract and will be carried out jointly by the employer and the course coordinator.

Spring semester – 12 weeks.

# Description of Courses – Technology Level

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## MANAGEMENT

### **MGMT0020: Business Leadership, Ethics, and Professionalism**

Instructor: **Prof Sanderson**

Students explore the ethical and professional context in which individual enterprises operate, and develop effective strategies for professional participation and leadership in their industry. They also develop the team skills necessary for participation in seminars, conferences, and other special events. This module course requires the development and presentation of a proposal for a business plan, which will be completed in MGMT0201.

This is a Workplace Readiness course required for all options in the Diploma in Business Management

Fall semester – Lecture 2 hours per week.

### **MGMT0100: Accounting**

Instructor: **P. MacCormick**

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

Fall semester – Lecture 3 hours per week.

### **MGMT0101: Applied Accounting and Taxation**

Instructor: **K. McNutt**

*Prerequisite:* MGMT0100

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

Winter semester – Lecture 3 hours, lab 2 hours per week.

### **MGMT0103: Business Law**

*Cross-referenced as* MGMT2001

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 – Lecture 3 hours per week.

### **MGMT0104: Small Business Entrepreneurship**

*Cross-referenced as* MGMT1000

Instructor: **TBA**

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 – Lecture 3 hours per week.

### **MGMT0201: Business Project**

Coordinator: **Prof. Russell**

*Prerequisite:* MGMT0020, MGMT0204, and MGMT0206

An opportunity to examine, in detail, enterprise management topics. Projects are organized and carried out by the students under the supervision of various staff members. Projects started in MGMT0020 will be completed in this course.

Winter semester – Lab 5 hours per week.

### **MGMT0202: Managing Retail Operations and Physical Resources**

*Cross-referenced as* MGMT2008

Instructor: **M. Brodie**

*Prerequisite:* MGMT0100

This course is designed to train students in the daily office, sales, and inventory operations important in managing a small business. The course also covers the requirements for the siting and layout of a retail facility, and the factors important in designing a retail space. The maintenance, safety, and security requirements for the retail operation are also considered.

Fall semester – Lecture 3 hours per week.

### **MGMT0203: Customer Relations Management**

*Cross-referenced as* MGMT2009

Instructor: **Prof. Lewis**

The objective of this course is to provide students with a practical approach to the provision of exceptional customer service for a small business. Students are expected to identify the various factors that affect the provision of quality service and to identify ways to ensure client satisfaction. The course also provides training in point-of-sales techniques and complaint management.

Fall semester – Lecture 3 hours per week.

# Description of Courses – Technology Level

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## **MGMT0204: Financial Management (A)**

*Cross-referenced as* MGMT2003

Instructor: **Prof. Russell**

*Preparatory:* MGMT0100

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

Fall semester – Lecture 2 hours, lab 3 hours per week.

## **MGMT0205: Human Resource Management**

*Cross-referenced as* MGMT2000

Instructor: **Prof. Lewis**

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 – Lecture 3 hours per week.

## **MGMT0206: Marketing**

*Cross-referenced as* MGMT2002

Instructor: **Prof. Lewis**

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 – Lecture 3 hours, lab 2 hours per week.

## **MGMT0207: Advertising and Promotion**

*Cross-referenced as* MGMT2006

Instructor: **TBA**

*Prerequisite:* MGMT0102 or MGMT0206

Students examine the process of planning, implementing, and evaluating advertising and promotional strategies for small businesses. Topics include an evaluation of conventional advertising media and web-based advertising, the preparation of customer profiles and target marketing, the creation of advertising copy, and the evaluation and monitoring of the advertising program. Case studies and class projects are essential elements of the course.

Winter semester – Lecture 3 hours per week.

## **MGMT0208: Retail Sales Management**

*Cross-referenced as* MGMT2007

Instructor: **M. Brodie**

*Prerequisite:* MGMT0206

Students examine effective sales techniques for a retail business and learn to use records systems for tracking sales performance. They also explore strategies for integrating front-line sales techniques with the overall marketing and promotional strategy for the business. The course will enable the student to track and interpret sales performance for the business, and to work with sales managers or consultants in identifying ways to improve sales performance.

Winter semester – Lecture 3 hours per week.

## **MATHEMATICS**

### **MATH0100: Business Math**

Instructor: **Prof. Stackhouse**

This course introduces the basic mathematical skills needed to understand, analyze, and solve mathematical problems encountered in business, finance, and investment decision-making. Students are expected to be able to understand and perform arithmetic and algebraic operations.

Fall semester – Lecture 3 hours, tutorial 1 hour per week.

## **PLANT SCIENCE**

### **PLSC0100: Utilization of Plant Resources**

Instructor: **Prof. Mapplebeck**

Using an integrated systems approach, students are introduced to the principles and practices involved in the sustainable production of crop plants. Practical exercises will give the students an opportunity to gain knowledge and skills involved in economic and environmental growing of agronomic and horticultural crops.

Fall semester – Lecture 3 hours, lab 2 hours per week.



# Description of Courses – Technology Level

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## **PLSC0200: Plant Propagation**

Instructor: **Prof. Pruski**

This course studies physiological and anatomical bases 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 – Lecture 3 hours, lab 3 hours per week.

## **PLSC0201: 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.

Students register in the Fall semester and complete the project in the Winter semester.

Fall and Winter semesters – Lecture 2 hours per week.

## **PLSC0202: Plant Science Techniques**

Coordinator: **S. Kilyanek**

*Prerequisite:* completion of the first year of the Plant Science Technology program

This is a Spring semester course intended for students in the Plant Science Technology program following their first year of study.

Students will be required to work under contract in an area of Plant Science with an approved employer for a period of at least 12 weeks (480 hours). Contract content will be relevant to the student's area of study and will be negotiated between the employer, the course coordinator, and the student. Assessment will be based on this contract and will be carried out jointly by the employer and the course coordinator.

Spring semester – 12 weeks.

## **SOILS**

### **SOIL0100: Principles of Soil Science**

Instructor: **Prof. Hammermeister**

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, illustrate the lecture material and introduce methods of soil analysis.

Fall semester – Lecture 3 hours, lab 2 hours per week.

### **SOIL0200: Soil Management**

Instructor: **Prof. Lynch**

*Prerequisite:* SOIL0100

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

Winter semester – Lecture 3 hours, lab 2 hours per week.

## **VETERINARY TECHNOLOGY**

### **VTEC0034: Externship in Specialty Field**

Coordinator: **Prof. Parsons**

This course is designed to encourage the student to pursue the practical application of special interests in Veterinary Technology that would not be addressed in the externships in general practice or at the Atlantic Veterinary College. The externship is customized to the venue and contracted in a manner similar to the general practice externship. Typical institutions that sponsor this optional externship are farm animal or equine veterinary practices, intensive care and emergency clinics, specialty veterinary clinics, zoos, humane societies, and research facilities.

# Description of Courses – Technology Level

## **VTEC0111: Animal Medicine and Nursing I**

Instructor: **Prof. Parsons**

This is the first in a stream of medicine and nursing courses designed to enable the student to grasp cognitively the principles and practices of veterinary medical, surgical, and related topics. In conjunction with other courses in the Veterinary Technology Program and the related internship and externships, these courses equip the graduate to perform entry-level clinical tasks in the veterinary practice workplace. Topics include animal handling and restraint; drug routes; prescription, control and narcotic drugs; vaccines and vaccination; anaesthesiology; surgical preparation; radiography principles and processing; and clinical calculations.

Fall semester – Lecture 3 hours per week.

## **VTEC0112: Clinical Exercises I**

Instructor: **K. Murray**

This is the first in a stream of clinical exercises courses designed to enable the student to practise medical, surgical, and related clinical skills. In conjunction with other courses in the Veterinary Technology Program and the related internship and externships, these courses equip the graduate to perform entry-level clinical tasks in the veterinary practice workplace. Animal care and maintenance duties are in addition to the scheduled hours in this course. Task areas included in this course are animal and facilities maintenance, drug administration, common clinical equipment, anaesthesiology, surgical preparation, and radiography.

Fall semester – Lecture 1 hour, lab 4 hours per week.

## **VTEC0113: Veterinary Clinical Pathology I**

Instructor: **C. Spears**

This is the first in a stream of theory and practical clinical pathology courses designed to enable the student to perform, and cognitively grasp the principles of, essential tasks in the in-house veterinary practice laboratory. In conjunction with other courses in the Clinical Pathology stream and the related internship and externships, these courses equip the graduate to perform entry-level laboratory diagnostic tasks in the veterinary practice workplace. Task areas and topics included in this course are microscopy, practical parasitology, urinalysis, the microhaematocrit, haemoglobin and the red blood cell, and initial blood film assessment.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **VTEC0114: Fundamentals in Veterinary Technology I**

Instructor: **Prof. Parsons**

This is the first in a stream of courses designed to address discrete topics in veterinary technology. These topics may not warrant full-course status; they may require attention at specific times in the syllabus; they may need to be addressed at several levels. Topics in this first fundamentals course are: orientation to the profession and to the program; first-aid training; WHMIS; workplace safety; and an introduction to zoonotic disease, animal husbandry, cleaning and disinfection, nutrition, animal behaviour, records in veterinary medicine, and veterinary medical terminology.

Fall semester – Lecture 5 hours per week.

## **VTEC0115: Anatomy–Physiology–Pathophysiology I**

Instructors: **Prof. Parsons** and **L. MacIntosh**

This is the first of two courses designed to enable the student to apply the principles of anatomy, physiology, and pathophysiology to animal nursing and medicine. Clinical applications are stressed, and progress through this course is coordinated with other courses in the semester. This course addresses the general topics of cell, tissue, organ, and system plus terms and processes in anatomy, physiology, and disease generally. It then deals with the anatomy, physiology, and typical disease processes in the major body systems. Systems in this course include musculoskeletal, cardiovascular, respiratory, and urinary/excretory.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **VTEC0121: Animal Medicine and Nursing II**

Instructors: **Prof. Parsons, K. Murray** and **M. MacKay**

*Prerequisites:* VTEC0111, VTEC0112

This is the second in a stream of medicine and nursing courses designed to enable the student to grasp cognitively the principles and practices of veterinary medical, surgical, and related topics. In conjunction with other courses in the Veterinary Technology program and the related internship and externships, these courses equip the graduate to perform entry-level clinical tasks in the veterinary practice workplace. Topics included in this course are: anaesthesiology, surgical preparation and assisting, radiography exposure and positioning, clinical calculations, fluid therapy, blood sampling, common infectious diseases of companion animals, feeding in disease states, and introduction to dental disease and treatment.

Winter semester – Lecture 3 hours per week.

# Description of Courses – Technology Level

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## **VTEC0122: Clinical Exercises II**

Instructor: **K. Murray**

*Prerequisites:* VTEC0111, VTEC0112

This is the second in a stream of clinical exercises courses designed to enable the student to perform medical, surgical, and related clinical skills. In conjunction with other courses in the Veterinary Technology program and the related internship and externships, these courses equip the graduate to perform entry-level clinical tasks in the veterinary practice workplace. Animal care and maintenance duties are in addition to the scheduled hours in this course. Task areas included in this course are animal and facilities maintenance, drug administration, general nursing, anaesthesiology, surgical preparation, radiography, fluid therapy, sampling for the laboratory, and dental equipment and supplies.

Winter semester – Lecture 1 hour, lab 4 hours per week.

## **VTEC0123: Veterinary Clinical Pathology II**

Instructor: **C. Spears**

*Prerequisite:* VTEC0113

This is the second in a stream of theory and practical clinical pathology courses designed to enable the student to perform, and cognitively grasp the principles of, essential tasks in the in-house veterinary practice laboratory. In conjunction with other courses in the Clinical Pathology stream and the related internship and externships, these courses equip the graduate to perform entry-level laboratory diagnostic tasks in the veterinary practice workplace. Task areas and topics included in this course are all prior topics, plus white blood cell development and assessment, total white blood cell counts, the differential count, toxic white cells, QBCÆ evaluation, various blood film stains, UnopetteÆ counting systems, RBC indices, microscopic evaluation of urine, kit immunoassay tests, canine heartworm assays, *Mycoplasma hemofelis*, and clinical pathology case studies.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **VTEC0124: Fundamentals in Veterinary Technology II**

Instructors: **Prof. Parsons** and **L. MacIntosh**

*Prerequisite:* VTEC0114

This is the second in a stream of courses designed to address discrete topics in veterinary technology that do not warrant full-course status or that require attention during the semester to support other courses. Topics included in this course are: communications in the veterinary practice, veterinary medical records, credentialing and legislation in the veterinary professions, veterinary medical terminology, pharmacology, parasitology, computer applications in veterinary practice, and the economics of veterinary practice.

Winter semester – Lecture 5 hours per week.

## **VTEC0125: Anatomy–Physiology–Pathophysiology II**

Instructors: **Prof. Parsons** and **L. MacIntosh**

*Prerequisite:* VTEC0115

This is the second of two courses designed to enable the student to apply the principles of anatomy, physiology, and pathophysiology to animal nursing and medicine. Clinical applications are stressed, and progress through this course is co-ordinated with other courses in the semester. This course addresses the anatomy, physiology, and typical disease processes in the remainder of the major body systems.

Systems and topics in this course include: digestive, reproductive, nervous, and endocrine systems; organs of special sense; and skin. The principles of inheritance and genetics and embryology are dealt with using examples of common congenital diseases.

Winter semester – Lecture 3 hours, lab 3 hours per week.

# Description of Courses – Technology Level

## **VTEC0131: Internship in Veterinary Technology**

Instructors: **Vet Tech Instructor Team**

This is a capstone course. In this course the learning objectives of all courses in the first two semesters are consolidated and re-tested.

Students rotate through clinical, laboratory, and off-campus cooperating hospital experiences, with daily classroom sessions for discussion and testing. In clinical and diagnostic laboratory sessions, students hone skills learned in the first two semesters and acquire some new ones. Completion of this course is a prerequisite for registration in VTEC0133 and for registration in all second-year courses (Semesters 4 and 5). The approximate division of elements of this course is: Clinical 64 hours (2 x 8 hr per week); Clinical Pathology 36 hours (3 x 3 hr per week); Cooperating Hospital 16 hours (1 x 4 hr per week); and Cognitive Classroom Sessions 16 hours (4 x 1 hr per week). Animal care and maintenance duties are in addition to scheduled hours in this course. Task areas included in this course are animal and facilities maintenance, drug administration, anaesthesiology, surgical preparation and assisting, radiography, clinical calculations, fluid therapy, blood sampling, feeding, and introduction to dental disease and treatment.

Spring semester – 4 weeks.

## **VTEC0132: Externship at the Atlantic Veterinary College**

Instructor: **TBA**

This course is an off-campus externship delivered by the Atlantic Veterinary College (AVC). During these four weeks students are on duty with technical staff for approximately one-half of their time at the Veterinary Teaching Hospital (VTH). Evening and night shifts are a large part of the AVC Externship. Day shifts allow some opportunity for the student to choose specific areas of interest. In addition, there are structured learning exercises. There is a significant livestock and equine component to the AVC Externship. Students attend this externship in two or more sections. Attendance is required at all scheduled duty shifts and exercises. Completion of this course is a prerequisite for registration in VTEC0133 and for registration in all second-year courses (Semesters 4 and 5).

**Note:** *Cost of transportation to AVC and room and board in Charlottetown are the responsibility of the student. Staff of the Veterinary Technology Program will assist the student where possible, but the responsibility for living arrangements is the student's.*

Spring semester – 4 weeks.

## **VTEC0133: Externship in General Veterinary Practice**

Instructor: **TBA**

*Prerequisite:* VTEC0131

This course is an off-campus learning experience in a general veterinary practice. Students locate these externship practices from a list provided by the VT Program staff, but an unlisted practice contacted by a student may be approved. To be approved the practice must have a significant companion-animal (small-animal) clientele and employ at least one graduate AHT/VT. Students may apply to complete this externship in practices outside of the Atlantic Region. A contract between the student, the practice, and the University must be completed before this externship can begin. Weekly report forms and a final report are completed by practice personnel. Student assignments must be completed before a credit can be entered for this course.

Spring semester – 6 weeks.

## **VTEC0211: Animal Medicine and Nursing III**

Instructor: **T. MacLeod**

*Prerequisites:* VTEC0131, VTEC0132

This is the third in a stream of medicine and nursing courses designed to enable the student to grasp cognitively the principles and practices of veterinary medical, surgical, and related topics. In conjunction with other courses in the Veterinary Technology Program and the related internship and externships, these courses equip the graduate to perform entry-level clinical tasks in the veterinary practice workplace. Topics included in this course are anaesthesiology, pain management, surgical preparation and assisting, radiography, clinical calculations, fluid therapy, emergency procedures, blood sampling, non-infectious diseases of companion animals, feeding in disease states, and dental disease and treatment.

Fall semester – Lecture 4 hours per week.

# Description of Courses – Technology Level

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## **VTEC0212: Clinical Exercises III**

Instructor: **K. Murray**

*Prerequisites:* VTEC0131, VTEC0132

This is the third in a stream of clinical exercises courses designed to enable the student to perform medical, surgical, and related clinical skills. In conjunction with other courses in the Veterinary Technology program and the related internship and externships, these courses equip the graduate to perform entry-level clinical tasks in the veterinary practice workplace. Animal care and maintenance duties are in addition to the scheduled hours in this course. Task areas included in this course are animal and facilities maintenance, drug administration, general nursing, anaesthesiology, surgical preparation and assistance, radiography, fluid therapy, sampling for the laboratory, and dental procedures.

Fall semester – Lecture 1 hour, lab 4 hours per week.

## **VTEC0213: Veterinary Clinical Pathology III**

Instructor: **M. MacKay**

*Prerequisites:* VTEC0131, VTEC0132

This is the third in a stream of theory and practical clinical pathology courses designed to enable the student to perform, and cognitively grasp the principles of, essential tasks in the in-house veterinary practice laboratory. In conjunction with other courses in the clinical pathology stream and the related internship and externships, these courses equip the graduate to perform entry-level laboratory diagnostic tasks in the veterinary practice workplace. Task areas and topics included in this course are all prior topics, plus theory of blood chemical tests, serum chemistry, large-animal parasites, haematology of alternate species, microbiology and antibiotic susceptibility testing, yeast and other fungi, advanced parasitology techniques, quality control in the laboratory, submissions to external laboratories, and clinical pathology case studies.

Fall semester – Lecture 3 hours, lab 3 hours per week.

## **VTEC0214: Fundamentals in Veterinary Technology III**

Instructor: **L. MacIntosh**

*Prerequisites:* VTEC0131, VTEC0132

This is the third in a stream of courses designed to address discrete topics in veterinary technology that do not warrant full-course status or that require attention during the semester to support other courses. Case reports from externships are delivered and discussed. Topics included in this course are veterinary medical terminology, pharmacology and dispensing, parasitology, clinical calculations, computer applications in veterinary practice, bookkeeping in the veterinary practice, and presentations to small groups.

Fall semester – Lecture 5 hours per week.

## **VTEC0215: Livestock and Equine Principles**

Instructors: **M. MacKay, D. MacCallum and D. Pelkey-Field**

*Prerequisites:* VTEC0131, VTEC0132

Through a mixture of classroom and field trip exercises, this course enables the Veterinary Technology student to recognize common equine and livestock breeds; describe livestock production cycles and methods; and use appropriate terminology. Common diseases of large animals as they relate to the veterinary technician are dealt with. Urgent and emergency clinical signs in large-animal species are stressed. Common clinical procedures in large-animal practice are outlined.

Fall semester – Lecture 3 hours, lab 2 hours per week.

## **VTEC0221: Animal Medicine and Nursing IV**

Instructors: **M. MacKay and T. MacLeod**

*Prerequisites:* VTEC0211, VTEC0212

This is the last and capstone course in a stream of medicine and nursing courses designed to enable the student to grasp cognitively the principles and practices of veterinary medical, surgical, and related topics. Upon completion of this course and the related course VTEC0222, the graduate is able to perform entry-level clinical tasks in the veterinary practice workplace. Problem-oriented case studies are used as models. All task areas included in prior Animal Medicine and Nursing courses are revisited, and some are elaborated. Students are re-evaluated comprehensively.

Winter semester – Lecture 4 hours per week.

# Description of Courses – Technology Level

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## **VTEC0222: Clinical Exercises IV**

Instructor: **K. Murray**

*Prerequisites:* VTEC0211, VTEC0212

This is the last and capstone course in a stream of clinical exercises courses designed to enable the student to perform medical, surgical, and related clinical skills. Upon completion of this course and the related VTEC0221, the graduate is able to perform entry-level clinical tasks in the veterinary practice workplace. All task areas included in prior Clinical Exercises courses are reviewed, some are elaborated, and students are re-evaluated.

Winter semester – Lecture 1 hour, lab 4 hours per week.

## **VTEC0223: Veterinary Clinical Pathology IV**

Instructor: **M. MacKay**

*Prerequisite:* VTEC0213

This is the last and capstone course in a stream of theory and practical clinical pathology courses designed to enable the student to perform, and cognitively grasp the principles of, essential tasks in the in-house veterinary practice laboratory. Upon completion of this course the graduate is able to perform entry-level laboratory diagnostic tasks in the veterinary practice workplace. Students are re-evaluated comprehensively. Task areas and topics included in this course are all prior topics, plus cytology of the reproductive tracts, soft tissues, and body fluids; transfusion medicine; bone marrow evaluation; semen evaluation; cerebrospinal fluid; blood dyscrasias; coagulation factor evaluations; quality control programs; trouble-shooting problems in the laboratory; and clinical pathology case studies.

Winter semester – Lecture 3 hours, lab 3 hours per week.

## **VTEC0224: Fundamentals in Veterinary Technology IV**

Instructor: **Prof. Parsons**

This is the last and capstone course in a stream of courses designed to address discrete topics in veterinary technology that do not warrant full-course status or that require attention during the semester to support other courses. All topics included in prior Fundamentals courses are reviewed and some are elaborated, and students are re-evaluated comprehensively in all areas.

Winter semester – Lecture 5 hours per week.

## **VTEC0225: Laboratory Animal and Alternative Pet Medicine**

Instructor: **L. MacIntosh**

*Prerequisites:* VTEC0211, VTEC0212, VTEC0213, VTEC0214

This course enables the student to apply the principles of clinical nursing to alternate and exotic pets as well as to common laboratory animal species. It also enables the graduate to enter the research facility and, with supplemental training and experience, prepares the graduate for certification with the Canadian Association for Laboratory Animal Sciences. Topics include specialized animal sources, barriers and containment, bio-hazards, special requirements of various species, handling of and common techniques used on alternate and laboratory animal species, and the ethics of animal research and of wild animal species as pets.

Winter semester – Lecture 3 hours, lab 3 hours per week.

# Graduate Program

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The Master of Science (M.Sc.) program with a specialization in Agriculture is a joint program offered by NSAC and Dalhousie University (Dal). Dal grants the M.Sc. degree in association with NSAC. Graduate students may take graduate courses offered at NSAC and at Dal. This provides graduate students in the M.Sc. program in Agriculture with a wide variety of courses from which to select. Graduate courses offered at NSAC are listed herein. Graduate courses offered at Dal are listed in the *Dalhousie University Graduate Studies Calendar 2012/2013*, available on the Dal website at [dalgrad.dal.ca](http://dalgrad.dal.ca).

Students accepted for enrollment in the M.Sc. program are registered at both NSAC and Dal, and are given a student identification number for each institution. Official transcripts for all students are produced by Dal.

For all academic matters relating to the M.Sc. program, including admission requirements, degree requirements, examinations, evaluations, and theses, students are deemed to be students of both NSAC and Dal. Students are subject to the academic regulations and rules of the Dal Faculty of Graduate Studies (FGS) as outlined in the *Dalhousie University Graduate Studies Calendar*. For all non-academic matters, including the payment of tuition and other fees, scholarships, bursaries, research and conference funding, athletics, and non-academic discipline, students are deemed to be students of NSAC. For further information on the rules and regulations governing the University community, graduate students are referred to the *NSAC Community Standards* ([www.nzac.ca/communitystandards](http://www.nzac.ca/communitystandards)). 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 *NSAC Policy for Responsible Computing* also applies to graduate students and can be found in the document *Policy Governing Access to and Use of NSAC Academic Computing* ([www.nzac.ca/its/policy.asp](http://www.nzac.ca/its/policy.asp)).

All students must agree to obey all the regulations of NSAC and all academic regulations of Dal FGS. Additionally, students are advised that this Calendar is not an all-inclusive set of rules and regulations but represents only a portion of the rules and regulations that will govern the student's relationship with NSAC and Dal. Other rules and regulations are contained in additional publications that are available to the student from Dalhousie University Registry Office and Faculty of Graduate Studies as well as the NSAC Registry Office and Research

& Graduate Studies (RGS) Office. Students are also advised that the regulations herein are subject to change.

Students in the M.Sc. program may choose to specialize in one of the following areas:

## **Animal Science**

(livestock, fur animals, poultry, shellfish, and finfish)

- Animal Management
- Behaviour
- Breeding
- Molecular Genetics
- Nutrition
- Physiology

## **Bioresource and Environmental Sciences**

- Agricultural Systems Management
- Ecology
- Entomology
- Pest Management
- Resource Management
- Wastewater Management
- Weed Science
- Environmental and Resource Economics
- Food Product Development
- Soil Conservation and Management

## **Plant Science**

(fruits, vegetables, grains, forages, and specialty crops)

- Cropping Systems Management
- Plant Breeding
- Molecular Genetics
- Nutrition
- Pathology
- Physiology

There are also opportunities for graduate studies in Organic Agriculture, Agricultural Economics and Engineering. Contact the RGS Office for details.

# Graduate Program

## ADMISSION REQUIREMENTS

For entry into the Master's program, candidates must hold an Honours Bachelor's degree, or equivalent of Honours, with a minimum 73% average ('B' or GPA of 3.0) in the last two full years of study from a university of recognized standing. The Bachelor's degree with Honours, or an equivalent of Honours standing as granted by Dalhousie University, must be in the area in which graduate work is to be done or in an area that is relevant to the graduate work. A four-year Bachelor's degree may be considered as equivalent of Honours if there is 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. If 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 (see *Programs of Full-time and Part-time Study*). In all cases, candidates for admission must possess degrees which have been granted by institutions fully recognized by Dal and which are deemed by the Faculty of Graduate Studies to be equivalent to those granted by NSAC and Dal.

English is the standard language of study at NSAC and Dal. 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 (paper-based) TOEFL is 580 and for the Internet-based TOEFL is 92. Official TOEFL reports are to be submitted to NSAC (institution code 0844). The following other tests will also be accepted with these minimum scores: MELAB, 85; IELTS, 7; CanTest, 4.5; CAEL, 70; and Dalhousie's Continuing Education ESL Placement Test with scores equivalent to TOEFL. The TOEFL requirement is considered to be met if the applicant has completed a degree at an institution where the language of instruction is English.

Students with diagnosed learning disabilities who meet the current admission requirements may follow the current admission procedures.

Students with diagnosed learning disabilities who do not meet the current admission requirements or who otherwise wish to have their learning disability considered may apply for special consideration, as may all other students who have extenuating circumstances. The following additional documentation must be submitted by students who wish to apply for special consideration:

- letter(s) of recommendation from the individual(s) most familiar with the applicant's academic performance and/or potential for success in the program;

- a written, oral or electronic statement from the student – in this brief personal statement, students should describe their learning disability, how it has affected their grades, and the type of assistance they would require while at NSAC; and
- a current (within three years) psychological assessment, based on standard diagnostic instruments administered by a registered psychologist, documenting the presence of learning disabilities. If a current report is not possible, NSAC/Dal may accept an earlier report along with a current opinion (i.e., within the past year) expressed in a letter by a registered psychologist (or an individual supervised by a registered psychologist) that the student has a learning disability. This letter should specify the nature, extent, and rationale for program modifications or accommodations that were deemed appropriate in the student's last two years of schooling.

All applications will be reviewed at NSAC based on the academic qualifications and record of the applicant. Application forms may be requested from the Research & Graduate Studies (RGS) Office, or downloaded from the RGS website ([www.nsac.ca/research/graduatestudies/admissions.asp](http://www.nsac.ca/research/graduatestudies/admissions.asp)). Completed applications are sent to the Department to which the student is applying. The Department representative arranges for a departmental recommendation on admission for each applicant and assists with finding a supervisor and funding support for acceptable M.Sc. candidates. In the event that a supervisor can be found but funding support is not available, the Department may recommend that the student be admitted on a self-funded basis. A recommendation on admission, signed by the Department Head, will be forwarded to the RGS Office within two weeks of receiving the completed application. Recommendations regarding admission will then be forwarded from NSAC to the Dean of Graduate Studies, Dal. At this stage, NSAC will contact applicants to inform them that a positive recommendation has been made to Dal FGS. This does not constitute official acceptance into the graduate program. Final decisions on all admissions are made by Dal FGS and there are no appeals on admission decisions. Dal FGS reserves the sole right to reject applications from candidates who meet or exceed the minimum admission requirements. Official acceptance is achieved when the recommendation has been approved by FGS and a formal letter of acceptance is issued by the Dal Registry Office.

Please note that entry into the graduate program is very competitive and applicants who meet or exceed the minimum requirements are not guaranteed admission. Normally, successful



# Graduate Program

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applicants have academic records and qualifications that are well above the minimum required.

Supporting documents included in applications (e.g., transcripts, letters of reference, etc.) will be verified for authenticity. Applicants submitting fraudulent documents may have their names published on the listserv of the Association of Registrars of Universities and Colleges in Canada and may have their acceptance rescinded. Documents submitted as part of the application cannot be returned or photocopied for the student.

Dal reserves the right to rescind any acceptance of an applicant or offer of admission into the program. Such rescission will be in writing in accordance with Dal regulations (see *Dalhousie University Graduate Studies Calendar*).

If a conditional admission is approved, the condition must be met within the first term of initial registration, and Dal FGS may set a shorter time period. If the condition is not met by the appropriate deadline, the student's registration will be terminated. Conditions on admission cannot subsequently be waived.

Newly-accepted applicants who, for reasons beyond their control, are unable to take up their position on the date for which they were accepted may request a deferral of their start date to a later term. Students may request a deferral of one, two, or three terms, but no student may receive more than one deferral. Students wishing to request a deferral should contact the NSAC RGS Office as soon as possible. All deferrals are subject to the agreement of the supervisor of the student's program of study, the Head of the department to which the student has applied, and the final approval of Dal FGS. Students are advised that funding assistance provided through a research assistantship (e.g., supervisor's research grant or contract) may be rescinded if the student is unable to register on the date for which they were originally accepted into the program. If a student requests a deferral after registration, it is the student's responsibility to cancel his or her registration.

Application forms and information may be obtained from:

## Research & Graduate Studies Office

Cumming Hall, NSAC

PO Box 550, Truro, NS B2N 5E3

Phone (902) 893-6502, fax (902) 893-3430

[www.nsac.ca/research/graduatestudies/admissions.asp](http://www.nsac.ca/research/graduatestudies/admissions.asp)

## ACADEMIC DEADLINES

A complete list of academic deadlines for those students enrolled in the M.Sc. program can be found on the NSAC Graduate Studies website.

## 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

For studies commencing	Deadline
September 1	<b>June 1</b> <i>(non-Canadian students April 1)*</i>
January 1	<b>October 31</b> <i>(non-Canadian students August 31)*</i>
May 1	<b>February 28</b> <i>(non-Canadian students December 31)*</i>

\* If visa processing is lengthy, applicants should apply at least two months before the deadline, e.g., by January 31 for September admission.

# Graduate Program

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## PROGRAMS OF FULL-TIME AND PART-TIME STUDY

Students holding an Honours degree or equivalent in a discipline that prepares them well for the particular area in which they wish to do graduate work may be accepted into the One-year M.Sc. program. However, if there is a significant change of discipline between undergraduate and graduate studies, the student may be required to register in a Two-year program.

### One-year M.Sc. Program

Ten graduate credits are required. The thesis will count for a maximum of six credits. The remaining credits (pass grade of 'B-' or 70% in each course) must include AGRI5700 (Communication Skills and Graduate Seminar). The number of credits awarded for the thesis is intended to make the total number of credits equal to ten (the number required for the M.Sc. degree), and is not related to the thesis quality. The One-year program involves a program fee requirement of one year (three terms of full-time study), during which a full-time student is expected to be on campus for three consecutive terms unless otherwise given permission to take courses or undertake research somewhere else. The One-year program fee is followed by continuing fees as required. The usual time for completion of the One-year program is 24 to 28 months.

### Two-year M.Sc. Program

In addition to the requirements for a One-year M.Sc. program, students must complete at least five additional 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. If admitted to a Two-year program, full-time students are normally required to be on campus for six consecutive terms. The usual time for completion of the Two-year program is 36 months.

## GENERAL INFORMATION

### Graduate Courses

Graduate courses at NSAC are numbered in the 5000 series. No course can be assigned a graduate number without the recommendation of the Dal FGS Curriculum Committee and the approval of the Curriculum Committee and the Faculty Council at NSAC. The last dates for adding and deleting classes are published in the schedule of Academic Deadlines, as printed in the *Dalhousie University Graduate Studies Calendar*. For withdrawals within this period, the class and the withdrawal are not recorded on the academic record. After these dates, the student is responsible for the content of the class and receives a grade for it.

Combined Advanced Placement, Letter of Permission, and Transfer Credits cannot exceed 33% of the program's overall course requirements.

### Advanced Placement

Upon admission, a student may be granted advanced placement credits based on courses completed previously with a course content equivalent to a graduate course at NSAC or Dal. Graduate courses that have not been counted toward a previous degree may be awarded transfer credit (see below). For courses that have been counted toward a previous degree, advanced placement normally does not reduce the overall course requirements in the program, but may replace one or more required courses. Advanced placement must be approved by the supervisor, the NSAC Faculty Graduate Coordinator and Dal FGS, and must be clearly annotated on the student's Program Form. Students should be aware that courses approved for advanced placement will not appear on their official transcript of the NSAC/Dal M.Sc. program.

# Graduate Program

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## Transfer Credit

A transfer credit allows for courses completed outside the student's program, normally at another institution, to be used as part of the student's degree requirements. Such courses cannot have been used for credit towards another degree. Transfer credits should be applied for within the first term following admission and must be approved by the student's supervisor, the NSAC Faculty Graduate Coordinator, and Dal FGS. An original transcript and course equivalency is required. Approved transfer credits will appear on the student's official transcript of the NSAC/Dal M.Sc. program. In order to be eligible, courses must satisfy any time-period restrictions.

## Letters of Permission

Courses approved by Dal (after examination of course 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 Dal. Graduate students enrolled in the M.Sc. program in Agriculture do not need a Letter of Permission to take courses at Dal. To apply to take a course outside NSAC/Dal, see Forms and Regulations at [dalgrad.dal.ca/currentstudents/forms](http://dalgrad.dal.ca/currentstudents/forms). Approval of the Letter of Permission is granted by the Dean of Graduate Studies, Dal. 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 the NSAC/Dal M.Sc. program for graduate credit unless prior approval has been received from Dal FGS; Letters of Permission are not approved retroactively.

Students must achieve a 'B-' (70%) grade or better in order to achieve a pass standing at NSAC/Dal. Grades below 'B-' received for courses taken on a Letter of Permission at another institution will be recorded as a failing grade ('F') on the student's record. The normal regulations governing grading policy (see *Grading Policy* and *Failed Courses*) apply to classes taken at other institutions, and an 'F' in the student's program will render him/her liable to academic withdrawal. Students who fail a class may not replace that class on a Letter of Permission, except with special permission of Dal FGS.

NSAC will normally reimburse up to a maximum of \$500 toward the cost of a course taken on a Letter of Permission, if the course is a required course for the student's M.Sc. program but not available at NSAC or Dal. To be reimbursed, the student must provide proof of payment for the course and an official transcript showing that the course was passed (i.e., a grade of 'B-' or 70%).

## Ancillary Courses

A student may be directed by his/her supervisor or supervisory committee to take undergraduate courses that are additional background to the degree program, but not specifically required for that program. These are termed ancillary courses and are usually taken in a department other than the one in which the student is registered. They are taken by the student for credit in order to make up deficiencies in background or to acquire important skills of an ancillary nature. The pass grade in ancillary courses taken at NSAC is 60%. Ancillary courses must be listed on the Program Form but do not count toward the required number of credits for the M.Sc. degree. Normally students are limited to one ancillary class (six credit hours) during their program. Undergraduate courses taken at NSAC will not appear on the student's official transcript of the M.Sc. program issued by Dal. Students who take ancillary courses at another institution are responsible for the tuition fees at the other institution and the courses will not appear on their M.Sc. transcript. The NSAC Registry Office will record ancillary courses.

## Additional Undergraduate and Audit Courses

As part of their regular fees, graduate students may take up to two NSAC undergraduate courses for credit and two for audit, 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.

Students may also take one audit at Dal (equivalent to six credit hours) in each year of residency of their formal program. Audits at Dal must be listed on the Program Form and must be relevant to the student's program of study. Audits cannot be taken on a Letter of Permission and will not be approved as part of a Qualifying Program.

## Independent Study, Directed Readings, and Special Topics

Students may not register for more than two independent study, directed studies, or special topics courses in any graduate program.

## Passing Grade for Required Courses

Classes may be designated by the candidate's committee as "Required" (pass mark is 'B-') or "Ancillary" (pass mark of 60% unless otherwise specified). Some graduate courses are cross-listed with senior undergraduate courses, in which case the requirements for graduate students are more demanding than those for undergraduates. If a student takes a cross-listed course as part of the graduate course work, the minimum 'B-' grade also applies.

# Graduate Program

## Grading Policy

Graduate students must achieve a minimum passing grade of 'B-' (70%) in all classes required as part of their degree program. Any lower grade will be recorded as a failure. Note that there is no withdrawal (WD) grade for graduate students (see grading chart below), except where a student formally withdraws from the program.

Dalhousie University's FGS uses the following grading scheme:

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

## Academic Transcript

The academic transcript is a reflection of academic progress and therefore reflects both passes and failures. It cannot be altered after the fact. Accordingly, it is essential that students be fully aware of the deadlines for adding and withdrawing from graduate classes. Except for university purposes, transcripts will only be issued at the request of the student and upon payment of the required fee, where appropriate. A student can receive only an unofficial transcript. Upon a student's request, official transcripts will be sent to other universities or to business organizations. Graduate students are reminded that their official academic transcript must be requested directly from Dal. Official transcripts can be requested through Dal's online system.

## Incomplete Courses

A student who fails to complete the required work for a particular class during the normal period of the class will receive a grade of 'F' (Fail). However, where circumstances warrant it, a grade of 'IN' (Incomplete) may be assigned. Subsequent completion of the work following the end of the class may result in a change of grade by the class instructor, as long as the work is completed before the following deadlines:

Fall term classes	February 1
Winter term classes	June 1
Full academic year classes (e.g., AGR15710)	June 1
Summer term classes	October 1

After these deadlines, an 'IN' grade cannot be changed without permission of Dal FGS.

Where the formal deadline for completion of work is beyond the 'IN' deadline, the instructor can request permission from FGS to extend the 'IN' 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 and, when possible, should describe the impact it had on the student's ability to fulfill academic requirements, as well as any other information the physician considers relevant and appropriate. To obtain a medical certificate, a student who misses examinations, tests, or the completion of other assignments should contact the physician while ill and should submit a medical certificate to the instructor as soon thereafter as possible. Such certificates will not normally be accepted after a lapse of more than one week from the examination or assignment completion date.

For exceptional circumstances other than illness, appropriate documentation, depending on the situation, will be required. Requests for alternative arrangements should be made to the instructor in all cases. The deadlines for changing a grade from 'ILL' to a letter grade are the same as those listed above for changing a grade from 'IN' to a letter grade.

All outstanding 'ILL' and 'IN' grades must be addressed prior to registration for the next term. If grades are still outstanding into the next term and no arrangements have been made, the student may be required to re-register in the class.

## In Progress Courses

The grade of 'IP' (In Progress) may be used only to report the thesis course, research project classes, and those designated as "open to independent completion of study." Final submission of grades for module courses (AGR15710 and AGR15705) is April 30 for fall term courses and August 31 for winter term.

## Academic Standards

When the work of a student becomes unsatisfactory (including insufficient progress), or a student's attendance is irregular without sufficient reason, withdrawal from one or more courses or academic dismissal from the program may be required.

# Graduate Program

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## Failed Courses

A student who fails to obtain the minimum grade ('B-' or 70%) in any course in any year is immediately and automatically withdrawn (academically dismissed) from the program. However, such a student may apply, in writing, to the NSAC Faculty Graduate Coordinator for immediate reinstatement (see Readmission below). Note that any academic withdrawal and reinstatement will be recorded on the student's official transcript.

## Length of Program and Extensions

Graduate students have a maximum period of time within which to complete all of the requirements for their graduate program.

*Usual time limits for the completion of degrees are:*

One-year M.Sc., full-time:	2 years
One-year M.Sc., part-time:	4 years
Two-year M.Sc., full-time:	3 years

*Upper time limits for the completion of degrees are:*

One-year M.Sc., full-time:	4 years
One-year M.Sc., part-time:	5 years
Two-year M.Sc., full-time:	5 years
Two-year M.Sc., part-time:	7 years

Students may apply for extensions beyond the upper time limits. A first extension of one year may be granted by FGS on the recommendation of the NSAC Faculty Graduate Coordinator, along with a satisfactory Progress Report Form completed and signed by the student and the supervisor. A request for a second extension, the Final Extension, must be submitted to the NSAC Faculty Graduate Coordinator with a Report on Progress for the previous year together with a detailed plan and timetable for completion of the thesis within the following 12-month period. If supported by the supervisory committee, the Faculty Graduate Coordinator will forward the recommendation to the Dean of Graduate Studies at Dal for approval. The student is then expected to defend and submit the approved thesis within that academic year. Further extensions will only be given for one term to provide for necessary revisions to the thesis following defense. Under no circumstances can a student be registered in a program for more than ten years.

## Withdrawal from Program

A student who decides to withdraw from the graduate program must immediately notify, in writing, his/her supervisor and the NSAC Faculty Graduate Coordinator. The Faculty Graduate Coordinator will notify the NSAC Registrar, the Dalhousie Registrar, and the Dal Dean of Graduate Studies. Refund of fees, if applicable, will be calculated from the date this letter is received by the RGS Office. A withdrawal is not official until it has been approved by Dal FGS and is received in the Dalhousie Registry Office. Under no circumstances will FGS back-date a withdrawal notice.

## Academic Dismissal

A student may be required to withdraw from the program for academic reasons (e.g., course failure, failure of ATC examination, or lack of academic progress), for academic offences such as plagiarism, for irregularities in the presentation of data, for non-academic reasons (e.g., breach of an NSAC or Dal regulation or Code of Student Conduct), or for failure to maintain registration status. The student will be notified by the appropriate body of the reason for the required withdrawal. The student has the right to appeal the decision to the NSAC Faculty Graduate Coordinator. Academic work completed at another institution while on Academic Dismissal cannot be used for credit at NSAC/Dal.

## Readmission of Students

A student who is academically dismissed may appeal in writing to the NSAC Faculty Graduate Coordinator for immediate reinstatement. Upon the recommendation of the student's supervisor, the Faculty Graduate Coordinator and Dal FGS, a student may be immediately reinstated once during the course of their program.

A student who is required to withdraw, who voluntarily withdraws, or whose registration has lapsed may apply for readmission within ten years of initial registration. A student who unsuccessfully appealed may not apply for readmission for at least 12 months following the official date of the withdrawal. Readmission is not automatic, because of the competition for places with incoming students.

# Graduate Program

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## Re-admitted Students

Students who fail to register and pay tuition fees for any term before the degree requirements have been fulfilled are considered to have withdrawn, and will be required to apply for readmission. Re-admitted students (except those who have been withdrawn for academic reasons) must pay fees at the current “continuing fee” rate for the terms in which they were not registered, to a maximum of three terms.

Re-admitted students who were academically withdrawn will not be charged make-up fees for the three terms immediately following the official date of withdrawal. Make-up fees will be charged for any term thereafter, to a maximum of three terms, until the student is registered. Students who have not maintained registration are normally required to have a satisfactory thesis in hand or a timetable for completion, approved by the NSAC Faculty Graduate Coordinator and signed by the student and the thesis supervisor, before they can be re-admitted.

Students may be re-admitted only once during the course of their program. Application for readmission must meet normal application deadlines, and all outstanding fees must be paid.

## OTHER PROGRAM COMPONENTS

### Demonstrating

As part of their graduate training, all students must spend at least one academic term demonstrating in an undergraduate class. Department Heads, in consultation with the students’ supervisors, are responsible for ensuring that each graduate student is assigned at least one demonstrating position during their program. Students must discuss this requirement with their supervisory committees and the Department Heads early in their program. It is hoped that graduate students will participate in a variety of activities through the demonstrating position such as preparing teaching materials, giving pre-lab presentations/instructions, monitoring student progress, and marking assignments. The demonstrating will normally occupy six hours per week for the teaching term and will be paid for by the department at the prevailing rate unless payment is disallowed by the terms of a scholarship. The precise requirements of each graduate teaching assistantship differ according to what the individual professor determines to be appropriate to provide the experience necessary.

Although departments must ensure that a position is available for every student within their department so that this program requirement can be fulfilled, on occasion students demonstrate in an undergraduate course outside of their academic department. A student who is interested in demonstrating in an undergraduate course outside of his/her academic department must discuss this possibility with the supervisory committee and the instructor of the course, and

must have the approval of the Head of the department in which the course is offered. If a student is able to arrange to complete the demonstrating requirement in another academic department, he/she must notify the supervisory committee and the Head of his/her department. The department in which the student is registered will not pay for a graduate student to demonstrate in an undergraduate course that is offered outside that academic department.

The demonstrating requirement can be completed in the student’s first or second year of the program. Students are responsible for ensuring that the instructor of the course receives, and submits to the RGS Office, a Teaching Assistantship Letter of Reference form. This form is available at [www.nsic.ca/research/graduatestudies/forms/default.asp](http://www.nsic.ca/research/graduatestudies/forms/default.asp). The students’ performance as demonstrators should be evaluated by those in charge of the course.

### Admission to Candidacy (ATC) Examination

The purpose of the ATC examination is:

- to evaluate the student’s competency to pursue graduate studies in the student’s chosen discipline within the context of the proposed research;
- to identify and address any specific weaknesses in the student’s background relevant to the proposed research area; and
- to assess the merit, feasibility, and suitability of the proposed research as a graduate-level thesis.

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. If the ATC examination is not completed within the first six months of the student’s program, the student must submit a request for an extension with a detailed timeline for the completion of the examination before registration for his/her third term of study will be permitted. The request for the extension and timeline for completion must be approved and supported by the student’s supervisory committee. Students who do not complete the ATC examination within their first year of study will not be permitted to register for their second year of study. Students in a Two-year M.Sc. program or part-time program may elect to delay the candidacy examination for up to one year.

The examination begins with a 15-minute verbal presentation of the proposal by the student, highlighting the goals and objectives of the research, the research strategy/methodology, and the impact, significance, or benefit of the proposed research.

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The ATC Examining Committee will include a Chair, one External Examiner, and the members of the Supervisory Committee. The Chair will normally be the Head of the student's academic department of study or his/her designate. The Chair must be a member of the Faculty of Graduate Studies, Dalhousie University. In the event that the Department Head is not available to Chair the exam and a designate cannot be obtained, the Faculty Graduate Coordinator may act as Chair. The External Examiner may be an NSAC faculty member, a qualified scholar from outside NSAC, an honorary research associate or an adjunct professor of NSAC. The Chair, Supervisory Committee members, and External Examiner then question the student on the proposal and on concepts relevant to the proposal.

A Research Proposal must be prepared by all students as a requirement for Admission to Candidacy (ATC). The proposal should provide a suitably-documented account of the project that the student wishes to undertake for the M.Sc. degree. The research proposal must be no more than 25 single-sided pages (in 12-point font, double-spaced, with 2.5-cm/1" margins on all sides), including the cover page, table of contents, reference list, figures, tables, appendices and a time-line detailing the completion of all program requirements. Students are to develop the research proposal in consultation with their supervisor and supervisory committee members. Students should consult with their supervisory committee on issues such as the rationale behind the proposed research, important background literature, resources available, practical limitations, and the nature of the ATC examination.

It is recommended that students have all members of their supervisory committee review, comment on, edit and critique the proposal prior to submitting it for the ATC examination. It should be submitted, together with a research proposal information form (ATC Form Part 1) and the ATC Planning Form, to the RGS Office to schedule the ATC examination. The ATC Form Part 1 and the ATC Planning Form are available on the RGS website at [www.nsac.ca/research/graduatestudies/forms/default.asp](http://www.nsac.ca/research/graduatestudies/forms/default.asp).

Three weeks prior to the ATC examination, sufficient additional copies of the research proposal must be provided to the RGS Office for distribution to the Supervisory Committee, External Examiner, and Chair of the exam. One additional copy must be submitted to the RGS Office for the student's official file.

Admission to Candidacy is based on presentation of an acceptable research proposal and successful defence of this proposal before an examining committee. The examiners will consider the merit and feasibility of the proposal as well as the student's knowledge of methodology, literature, and general academic background in areas relevant to the research.

Decision will be by consensus and the alternatives are Pass or Fail. The Chair will vote only if the committee vote is tied. Recommendations and/or conditions may accompany a Pass outcome. If the student requires further background preparation, the student may be required to take additional courses as a condition of passing the ATC examination. Appropriate classes or remedial effort will be assigned for the following academic year. If the research proposal is not deemed to be satisfactory, the student may be required to rewrite the research document. The NSAC Faculty Graduate Coordinator will verify that these assignments are completed. A student who fails the ATC examination is required to withdraw from the program. A failed ATC examination can be appealed to the NSAC Faculty 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 members not on the original examining committee.

## Research Presentation

All graduate students are required to present at a Graduate Research Day event least once during the time of their program.

## Annual Progress Report

Annual Progress Report forms, available on the Dal website at [dalgrad.dal.ca/currentstudents/forms](http://dalgrad.dal.ca/currentstudents/forms), must be completed, submitted and approved each year in order for students to register for their next year of study. This report is due one month prior to the anniversary of the student's admission date:

- December 1 for those students who registered in January;
- April 1 for those students who registered in May; and
- August 1 for those students who registered in September.

Every graduate student must present a written progress report to the supervisory committee each year and arrange a meeting with the supervisory committee to discuss it. At this meeting, the Annual Progress Report form should be completed. The student must then ensure that the completed Progress Report form is submitted through the supervisor to the NSAC RGS Office by the set deadline.

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Students who are planning to defend their theses and complete their programs prior to their anniversary date and who do not believe they will need to register for another year of study are still required to submit an Annual Progress Report that indicates the date of their defence and program completion date. However, should such a student miss the intended defence date, a full Annual Progress Report will be required prior to registration for another term of study. Failure to submit this report may result in delays in registration and funding.

## Thesis

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

## Supervisor and Supervisory Committee

All thesis students must have a supervisor (or co-supervisors) and a supervisory committee. The appointment of a supervisor is a prerequisite for admission into the graduate program. Students are not admitted until their research areas have been identified and faculty members have agreed to supervise them. A faculty member becomes the graduate student's supervisor upon signing the Confirmation of Intention to Supervise form. The student's supervisory committee is to be in place within the first month of the student's initial registration in the program. Students are advised to meet with their supervisory committees early in their program (i.e., as soon as the committees are formed).

## Supervisor

A thesis supervisor or co-supervisor must be a member of the Dal FGS. 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 FGS. An Adjunct faculty member may be the academic supervisor of a student, provided the student also has an internal advisor to handle the administrative details. This is usually done to support the student within the program rather than for reasons of academic need. 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 Faculty Graduate Coordinator and the student's supervisory committee should play a

significant role in overseeing the development of the research and in protecting the student against the loss of academic freedom.

The supervisor must meet with the student to select courses before classes commence. If the student is not on campus by this time, the meeting must take place within one or two days of arrival. The responsibilities of the supervisor at the first meeting with a graduate student are:

- to check whether the student has registered and to advise on correct registration procedures, if necessary;
- to help the student plan course work, and advise on all requirements for the program;
- to determine which courses are required and whether any should be designated ancillary or audit;
- to ensure that the student has suitable working space and facilities for research;
- to assign any language or auxiliary skill requirement;
- to advise students as to where they can obtain information on matters such as health insurance, social insurance numbers, housing, and finances.

If a supervisor is not available to assist the student (e.g., the supervisor takes a one-year sabbatical leave), he/she must arrange an alternative (interim) supervisor for the student. The name and the expected duration of tenure of the interim supervisor must be reported to the NSAC Faculty Graduate Coordinator in writing.

In addition, each supervisor consents to:

- guide and assist their graduate students;
- serve on examining committees for ATC examinations and thesis defences;
- teach in a graduate module course or graduate course;
- contribute information to the annual reports of the Graduate Program;
- encourage dissemination of results and interaction of graduate students with other students and faculty through research seminars and other means.

The supervisor and the student are responsible for recommending to the NSAC Faculty Graduate Coordinator the names of three suitable potential external examiners for the ATC examination and the names of three potential external examiners for the thesis defence.

Supervisors are responsible for initiating the thesis defence. The RGS Office will assist with the costs associated with external examiners' travel expenses. Reimbursement of travel expenses of an external examiner will be to a maximum of \$700 and must be in accordance with current guidelines of the Province of Nova Scotia



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regarding per diem rates and travel policies. Supervisors are responsible for arranging any additional expenditures to be covered through approved sources prior to the defence.

## **Co-supervision**

Three types of co-supervision are recognized:

1. where a co-supervisor is added because the other supervisor does not have an appropriate academic qualification (e.g., does not have a Ph.D. or equivalent);
2. where a student wishes to draw equally upon the expertise of two supervisors from different disciplines;
3. where required to conform to practices of Dal FGS regarding external supervisors or supervisors not from the student's department of program. An Adjunct faculty member may be the academic supervisor of a student, provided the student also has an internal advisor to handle the administrative details.

Students are advised to meet with their co-supervisors, together, early in their program to clarify the roles, responsibilities, and expectations of each co-supervisor and to devise a communication strategy with each co-supervisor.

## **Supervisory Committee**

A supervisory committee is recommended by the supervisor in consultation with the student and should complement the expertise available to the student in completing his/her 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 NSAC Faculty Graduate Studies Coordinator within the student's first academic term of study. All supervisory committees are approved by the Dal FGS.

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 who will be responsible to NSAC for the student's progress must be appointed;
- all members of the committee must be Dal FGS members; and
- the majority of committee members must be FGS and full-time faculty of NSAC.

Additional members of the non-university/college community (such as practicing professionals), may be appointed to the supervisory committee where their particular expertise makes it appropriate. The

appointment of a non-member of the FGS, including any non-regular appointments, requires permission from the Dean of Graduate Studies at Dal for the individual to become a formal member of the supervisory committee. Non-members of FGS must be approved as External Scholars by the Dal Dean of Graduate Studies. Supervisors should contact the RGS Office for more information on the approval process.

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 to meet at least twice a year during the thesis research period, and more often in the writing stages of the student's program. Normally, the agreement of all committee members is required before a thesis is brought forward for examination.

Supervisory committees are responsible for reviewing the student's Annual Progress Report and assisting the student in completing the Annual Progress Report Form, which is received and reviewed by the Faculty Graduate Studies Coordinator prior to being submitted to Dal FGS.

Supervisors should encourage students to consult other members of their supervisory committee, either individually or as a group, whenever it is useful. Students have the right to call a committee meeting at any time. The committee should also have opportunities to critique the work in progress and make alternative suggestions before it appears in thesis form.

## **Supervisory Committee Member's Responsibilities**

Each member of a supervisory committee is responsible for:

- (i) providing guidance to allow for the student's intellectual growth to become a competent contributor to a field of knowledge. In this context, the supervisory committee must provide constructive criticism and provocative discussion of the student's ideas as the program develops. The committee should ensure that the student is exposed to a wider range of expertise and ideas than can be provided by the supervisor alone.
- (ii) being reasonably accessible to the student for consultation and discussion of the student's academic progress and research problems, and directing the student, as appropriate, to consult with experts outside the committee.
- (iii) ensuring that a "program of study" is established with the student's involvement and that it is formally approved by the committee, the student, and the RGS Office.
- (iv) as far as possible, identifying current and anticipated problems that may arise in the student's program and helping to alleviate them.

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- (v) meeting regularly to review the student's progress and constructively advance the student's research. The frequency of meetings will vary according to the stage and nature of the student's program.
- (vi) confirming and approving annual progress reports to the RGS Office and Dal FGS.
- (vii) informing the student of the approximate time it will take for submitted written material to be returned with comments, with a normal maximum duration of two weeks.
- (viii) reading and commenting on drafts of written material and indicating whether or not a major paper is complete or a thesis ready for submission to the final examination committee.
- (ix) conforming to the basic principles of academic integrity and professionalism in the development of a mature and objective relationship with the student.
- (x) respecting and conforming to the NSAC and FGS guidelines regarding scholarly integrity and conflict of interest.

## REGISTRATION

Registration is the process by which students officially establish their status (full-time or part-time), list their courses to be taken in the M.Sc. program, and pay the appropriate academic fees. Both the course registration and the fee payment must be completed before a student can be officially registered.

Graduate students must register via the website for each term (Fall, Winter, and Summer) at **both** Dal and NSAC. It is the student's responsibility to register on the day(s) specified for graduate student registration. Students are reminded that they must keep their mailing address up to date.

Graduate students may take graduate courses at NSAC and at Dal. Graduate courses offered at NSAC are listed in the *NSAC 2012/2013 Calendar*, available from the NSAC Registry Office or the RGS Office, and on the NSAC website ([www.nsac.ca/reg/calendar.asp](http://www.nsac.ca/reg/calendar.asp)). Graduate courses offered at Dal are listed in the *Dalhousie University Graduate Studies Calendar* and on the Dal website at [gr.cal.dal.ca](http://gr.cal.dal.ca).

To register, all graduate students in their first year of study must do the following during each of their first three academic terms:

- (i) Meet with the NSAC Faculty Graduate Coordinator for a student interview/registration appointment to complete the relevant forms. At the student interview, the student will be required to identify his/her supervisor and proposed supervisory committee members, and to provide a list of courses, approved by the student's supervisor or committee, as necessary for completion of the

student's M.Sc. requirements. Thus, students must meet with their supervisors prior to their registration appointment. The Faculty Graduate Coordinator will assist the student with online registration procedures at NSAC and Dal and with the formal completion of the Program Form. The completed forms will be submitted by the Faculty Graduate Coordinator to the NSAC Registrar and the Dalhousie Dean of Graduate Studies. Any change in courses after the interview must be approved by the supervisor and the NSAC Faculty Graduate Coordinator.

- (ii) Arrange for medical insurance coverage. At NSAC, all full-time students who are Canadian citizens and permanent residents are automatically enrolled in the NSAC Student Health and Dental Plans when they register for classes (International students are added to the plan once they are approved for MSI coverage). The premium for each plan is an annual one; therefore the process for opting out must be done prior to the specified deadline. The deadline each year coincides with NSAC's last date to register for a course. More information regarding Student Health and Dental plans can be obtained by visiting the on-site Student Benefits Plan Office.

NSAC International is responsible for administering International student health insurance. Please contact the International and Exchange Student Coordinator if you have any questions or if your status changes. All International students will be automatically enrolled in StudentGuard for the first year of their stay at NSAC.

Students at NSAC for longer periods will remain on StudentGuard unless MSI coverage has been arranged. International students will be billed for StudentGuard by the Finance Office through their student account. Costs and dates may change from year to year, and are based on rates set by the insurance company.

- (iii) Arrange for payment of fees through the RGS Office and/or Financial Services, 2nd Floor, Cumming Hall.
- (iv) Obtain a student ID card from NSAC Student Services, Dairy Building.
- (v) Obtain WebAdvisor and e-mail account login information.
- (vi) Contact or meet with the Head of their department to ask about desk space, a mailbox, and any departmental policies that apply to them.
- (vii) Review the Student/Supervisor Checklist with the supervisor(s). This will clarify the supervisor's expectations of the student regarding academic requirements and research requirements, mandatory or necessary additional training requirements, additional publications and presentations, financial assistance for

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costs other than the research project (e.g., costs associated with publications, presentations, photocopying, printing, etc.), vacations, and work hours. Students are also encouraged to discuss the following with their supervisor(s): authorship guidelines, intellectual property ownership, the location of laboratory space and storage space for samples (if necessary for the research project), opportunities to network and attend seminars and workshops, etc.

Graduate students in the second year of their program and beyond will receive a registration package by mail. This package will contain:

- deadline dates by which registration must be completed;
- procedures to be followed to register at NSAC via the online registration system;
- procedures to be followed to register at Dal via the online registration system;
- procedures for the payment of tuition fees; and
- specific information on procedures to follow to change academic status, program requirements, etc.

In addition to courses and thesis (AGRI9000), **students must register at Dal for REGN9999** in all three terms. REGN9999 is listed in the Academic Timetable as “Registration Course – Graduate” on Dal’s website ([dal.ca](http://dal.ca)).

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 FGS. Late registration is permitted until the last day for adding courses. Students who do not register on or before that date must apply in writing to the RGS Office for permission to register. Any student who fails to register and pay tuition fees by the approved deadlines may neither submit a thesis nor obtain any services from NSAC or Dal during that semester.

Graduate students must maintain their registration on a continuing basis or they will be considered to have withdrawn and will be required to apply for re-admission. Continuing students who fail to register by the final deadline will be automatically withdrawn from their program and will have to apply for re-admission at the next available admission date.

An individual program of study for each graduate student must be approved by the NSAC Faculty Graduate Coordinator and submitted for final approval to Dal FGS. The Faculty Graduate Coordinator will enter the proposed program (with the total number of credits required, the names and numbers of courses required, including ancillary

courses, and any other requirements and conditions) on the Program Form. The student, the supervisor, and the Faculty Graduate Coordinator must sign this form to be submitted to Dal FGS within the first term of the student’s program of study. Once approved, the Program Form constitutes an agreed contract between the student and NSAC/Dal for the requirements to complete the M.Sc. program. Any changes to the approved Program Form must be agreed to by the supervisor, the Faculty Graduate Coordinator, and Dal FGS by submission of a Program Update form.

## Concurrent Registration

A student may, with the permission of the Dean of Graduate Studies, register for two concurrent degrees, one at Dal and one elsewhere or both at Dal, for a maximum of twelve months, usually the first academic year of the graduate program. This does not apply to an NSAC/Dal student finishing his/her M.Sc. degree who has been accepted into a Ph.D. program. In that case, the student must first complete the Master’s degree and then register in the Ph.D. program.

## Leave of Absence

Students who need to take leave from their program of study because of illness (medical reasons) or a serious problem outside the student’s control may apply in writing through the RGS Office for a Leave of Absence. If NSAC recommends to Dal FGS that the Leave of Absence be granted, and if Dal FGS is also satisfied that the need is justified, such leave will be granted. An official Leave of Absence does not count toward time in the program. Students may not hold stipends or scholarships during a Leave of Absence. During a Leave of Absence, a student cannot study elsewhere for credit at NSAC or Dal. **Leaves of Absence will not be approved retroactively.**

An application for a Leave of Absence is available at [dalgrad.dal.ca/currentstudents/forms](http://dalgrad.dal.ca/currentstudents/forms) and must be completed by the student, in consultation with the student’s supervisor. Leaves of Absence can be granted for a full semester. Students may apply for successive term leaves up to a maximum of three terms (one year).

Applications for Leave of Absence must be received according to the deadlines listed in the schedule of Academic Dates and Deadlines.

A Leave of Absence not only frees the student from the necessity of paying tuition fees, it also releases NSAC and Dal from the obligation to provide the student with services. These include consultations with professors, library and computer privileges, health services, and other student services.

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## **Suspension of Studies**

Unexpected emergencies that arise during the term cannot be accommodated by a Leave of Absence. Such cases can be accommodated through a suspension of program but no fee rebate is possible. A student must apply in writing to the Faculty Graduate Coordinator stating the reasons and the length of time requested. A suspension relieves the student from responsibilities for completing classwork and other program requirements, but it does contribute to time in the program. Normally, a suspension of studies shall be for no longer than one term. Disposition of courses registered for during a term of suspension of studies must be agreed upon by NSAC, and approved by Dal FGS.

## **Parental Leave**

Parental leave will be granted, without prejudice to academic standing, at the time of pregnancy, birth, or adoption. A parent may request up to three terms of leave, which must be completed within twelve months of the date of birth or custody. Where both parents are graduate students seeking parental leave, the total number of terms may not exceed four. While on parental leave, students do not register or pay fees to NSAC. Any refund of fees will be governed by university regulations. Parental leave not only frees the student from the necessity of paying fees, it also releases Dal and NSAC from the obligation to provide the student with services. These include consultations with professors, library and computer privileges, health services, and other student services. It is recommended that students planning to take parental leave not only give adequate notice to their supervisor but also discuss issues such as future plans and progress, stipend support, and research deadlines.

## **Identification Cards**

Full-time and part-time students will receive both NSAC and Dal ID numbers. Students will receive NSAC ID cards that will entitle them to Novanet library services. The Novanet consortium comprises ten post-secondary institutions: AST, CBU, Dal, Kings, MSVU, NSAC, NSCADU, NSCC, SMU, and St. FX. Students will have borrowing privileges at all of the above-listed institutions. Contact the NSAC MacRae Library for more information. Please note that because students are registered at Dal and are also given a Dal ID number, NSAC graduate students can access the proxy server at Dal that allows access to the Dalhousie Library databases and electronic journals. Students will need their Dal ID number to access their grades and to update their personal information on Dal's online access system at [dal.ca/online](http://dal.ca/online).

## **Notification of Address**

Correspondence from Dal 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 either institution. Non-receipt of material because of failure to report a change of address will not excuse students from program responsibilities.

All students must report their local address while attending the M.Sc. program to the NSAC RGS Office, upon registration or as soon as possible thereafter. Subsequent changes must be reported promptly to the RGS Office and a Change of Address form must be completed. The RGS Office will notify the NSAC Registry Office and Financial Services of the change in address.

Students are also required to ensure that Dal has their current mailing address, by updating their address on Dal's online system. Students will need their Dal ID number and a password to enter the system.

## **E-mail**

E-mail is an authorized means of communication for academic and administrative purposes within Dal and NSAC. All students will be assigned an official e-mail address by both Dal and NSAC. Both the Dal and NSAC e-mail addresses will remain in effect while the student remains a student. NSAC allows students to maintain their [@nsac.ca](mailto:@nsac.ca) e-mail address after graduation as a service to alumni. This means that students will be able to access their NSAC e-mail accounts via webmail after graduation just as they did before. These e-mail addresses will be used for communication with students regarding all academic and administrative matters. Any redirection of e-mail will be at the student's own risk. Each student is expected to check both his or her official NSAC and Dal e-mail addresses frequently in order to stay current with program communications.

## **Change of Name**

Students who change their name while attending the M.Sc. program must provide proof of name change (e.g., marriage or divorce certificates, official name change form, etc.). Students are to contact the RGS Office for additional information.

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## FULL-TIME, PART-TIME, AND OTHER CATEGORIES

A **full-time student** is a student who has been approved by NSAC and FGS as working full-time on a graduate degree. A full-time student may hold job(s) simultaneously only if the job(s) involves no more than 16 hours work per week, including the hours worked as a teaching assistant.

A **part-time student** is a student who has been approved by NSAC and Dal FGS as working part-time on a graduate degree. A part-time graduate student cannot carry more than eight credit hours per term. International students are not admitted to the M.Sc. program on a part-time basis.

A **continuing student** is one who has completed the program fee and residency requirements but has not yet finished all the degree requirements (usually the thesis). The student is required to pay a continuing fee on a per-term basis.

A **qualifying student** is a person with a Bachelor's degree or its equivalent, and in whom NSAC has expressed an interest as a potential graduate student, but who does not meet all admission requirements for the program. Admission to a qualifying program may be recommended for students in the following circumstances:

- (i) The student has the required GPA in a recognized undergraduate degree program but may not have the required background for graduate studies in a specific discipline. The required advanced undergraduate courses that must be completed with 'B-' or higher marks to qualify for admission to the graduate program must be specified.
- (ii) The student does not meet the overall GPA requirements for admission to the graduate program. A set of advanced undergraduate courses that, upon satisfactory completion, will raise the GPA to the minimum acceptable level must be specified.

Qualifying students can be full-time or part-time. If advanced placement for the graduate classes is anticipated, this information must be specified in the comments section of the application form. As it is a prerequisite, a qualifying program cannot be used to reduce the length of a subsequent regular graduate program. Qualifying students are not eligible for scholarship or bursary support and must apply for admission to the graduate program in the usual way toward the end of the qualifying period. Qualifying students must pass all classes with no grades below a 'B-' (70%) and an average of at least 'B' (73%), and fulfill any other requirements in order to be considered for admission.

**Special students** are those students who are permitted to take a graduate class outside the Master's program. Such students, 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 Faculty Graduate Coordinator. As all graduate classes must be taught at a standard consistent with graduate-level studies, non-program students must have records which meet the minimum entrance requirements for the graduate program (hence they must be approved by Dal FGS as being admissible to the graduate program). Students are ineligible to apply for Special Student status in a class if they have been rejected from the program on account of academic standing, or have been withdrawn from the program. Students trying to qualify for entry to a graduate program must follow a different route: either a Qualifying Year program, if eligible, or a program of study as a Special Student in an undergraduate faculty. Classes completed as a Special Student may not be used for credits toward the formal graduate program. Exceptions can be granted only by Dal FGS at the time of admission.

A letter confirming a student's registration and/or scholarship or stipend status can be produced on request. Confirmation letter request forms are located on the NSAC web site at [www.nsac.ca/gradstudies/forms/default.asp](http://www.nsac.ca/gradstudies/forms/default.asp). Students should contact the NSAC RGS Office for information on this service.

## FEES

Graduate students pay "program fees" for fixed periods, either as full-time or part-time students, followed by "continuing fees" until all program requirements have been completed. The current fee schedule is available each year in July. It can be obtained from the RGS Office or the NSAC website at [www.nsac.ca/research/graduatestudies/fees.pdf](http://www.nsac.ca/research/graduatestudies/fees.pdf).

## Program Fees for Full-Time Students

The One-year M.Sc. program involves a program fee requirement of one year (three consecutive terms). The Two-year M.Sc. program involves a program fee requirement for the first two years of study (six consecutive terms). If students have to continue beyond the program fee requirement period to complete the degree, additional continuing fees are required.

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## Program Fees for Part-Time Students

Part-time graduate students pay the same program fees as full-time students, spread over three part-time years of study for every full-time year.

In other words, a part-time student entering the One-year M.Sc. program will pay nine consecutive terms of part-time fees, and a part-time student in the Two-year program will pay 18 consecutive terms of part-time fees. Students who complete their part-time programs in less time will still be required to pay part-time program fees for the outstanding terms before they are approved for graduation.

## Continuing Fees

Students who have completed the required program fee period and have paid all their fees, but are still short of completing their program, must pay a continuing fee until all the academic requirements of the program have been completed. Students are assessed continuing fees on a per-term fee basis. Usually, continuing fees are paid by students who are in the process of completing their thesis.

Graduate students must maintain continuous registration until their program requirements are complete, unless they are granted a formal Leave of Absence.

## Procedures for Payment of Fees

Students will be billed in September for the Fall term; January for the Winter term; and May for the Summer term. Payment in full is due on the last day for registration in each of the terms. Fees not paid by the last day for registration may be subject to interest charges, and the student's registration may be cancelled. NSAC has the right to deduct tuition fees directly from a student's stipend or any other outside scholarship administered by NSAC on behalf of the funding agency.

Graduate students may not submit their approved thesis to Dal, nor will the degree or official transcript be released until outstanding fees are paid in full. Students who have outstanding account balances are not permitted to register for a further term unless they have received permission to register from the Vice President Administration. Students with outstanding balances are required to meet with the Vice President Administration to sign an Outstanding Fee Form detailing in what manner the fees are to be paid and from which sources the funds are expected to arrive.

## COURSE SELECTION AND ENROLLMENT

### Selecting a Program

Students should meet with their supervisors before classes begin and design a complete program of suitable courses for each year of study. It is the student's responsibility to arrange this meeting. In selecting appropriate courses, the student must bear in mind the following:

- All graduate students must enroll for Thesis Research (AGRI9000) every semester even though they may expect to make little progress in that semester.
- Students in the One-year M.Sc. program are strongly encouraged to take all course work during their first year. However, if necessary, courses may be spread over more than one academic year.
- Graduate credit is obtained only for graduate courses, which are denoted by a 5000 number or above.

## FINANCIAL SUPPORT

NSAC offers numerous entrance scholarships and research assistantships to eligible graduate students. All applicants to the Master of Science program are automatically considered for entrance scholarship eligibility. Many research assistantships are posted on the RGS website at

[www.nsac.ca/research/graduatestudies/assistantship.asp](http://www.nsac.ca/research/graduatestudies/assistantship.asp). The availability of research assistantships varies annually and from one area of research to another. Potential students are encouraged to check the site regularly for opportunities in an area of research that may be of interest to them.

Several Differential Fee Waivers are awarded to International students annually. All International applicants are automatically considered. Differential Fee Waivers are awarded on the basis of academic merit.

The M.Sc. program requires that students assist in the teaching of at least one undergraduate course. Not only do students gain teaching experience but they are also reimbursed financially in the form of a

### Teaching Assistantship.

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## Stipends (Research Assistantships)

All graduate student stipends will be classified as scholarships regardless of their source. Graduate students are to be informed of the rate of the stipend prior to registration. Once a stipend rate is selected, that rate normally remains in effect for the duration of the stipend payment (usually 24 months). However, the rate of the stipend may be renegotiated if there is any change in the student's official academic status (e.g., change from full-time to part-time status) or if the student receives a major scholarship.

Stipend payments are managed by and distributed from the NSAC RGS Office. Please contact the RGS Office for paperwork required to initiate stipend payments. Students receiving stipend support will receive payment on a monthly basis at the beginning of each month, via direct deposit to their bank account. For these students, the first payment will be issued 30 days following initial registration (e.g., if the program start date is September 1, the first stipend payment will be issued on October 1, etc.). Graduate students funded under provincial or national scholarships will also receive their scholarships on a monthly basis at the beginning of each month. NSAC has the right to deduct tuition fees directly from the student's scholarship should the student's account go into arrears. Students with questions regarding their stipend payments are encouraged to contact the RGS Office.

## Research Costs

A student's supervisor is responsible for all costs directly associated with the thesis research project. Sometimes, the student must incur costs for the research project (e.g., costs associated with field travel, and purchase of supplies) and in these circumstances, the student is reimbursed for the expense by the supervisor. Students must always receive the prior approval of their supervisor for costs associated with the research project.

To be reimbursed for travel costs, students must complete either a Travel Expense Claim Form or a Cheque Request Form. Students who are on casual payroll at the time of expense submission (e.g., completing their TA) would complete a Travel Expense Claim; students who are not on casual payroll (e.g., receiving stipend only) would complete a Cheque Request Form. Travel expenses are to be submitted monthly, for a full month's travel costs. Claims received in Financial Services, with appropriate approvals and documentation requirements, are posted daily and included on the next regular travel cheque run. Students are advised that if they are required to travel out of province and/or country, they must first obtain permission to do so by completing an Out-of-Province/Country Travel Form. These forms are available from the Department administrative assistant or on the

website at [www.nzac.ca/research/researchers/forms.asp](http://www.nzac.ca/research/researchers/forms.asp). The approved Out-of-Province/Country Travel Form must be attached to the Travel Expense Claim (or Cheque Request). Both Travel Expense Claim and Cheque Request Forms and detailed instructions are available on the NSAC website at [www.nzac.ca/finance/forms.asp](http://www.nzac.ca/finance/forms.asp). The Travel Expense Claim Form must be certified to be accurate by the Department administrative assistant and signed by the student and the student's supervisor. The Cheque Request Form must be signed by the student's supervisor. Please contact the RGS Office for assistance in determining which format you are to use for your travel expenses and for any clarification in completing the form.

Students can be reimbursed for a research purchase up to \$50 in value via petty cash provided that the purchase has been authorized by the student's supervisor and the transaction complies with the Nova Scotia Purchasing Agency regulations. Petty Cash expenses are not to be accumulated. The Petty Cash form is available on the website at [www.nzac.ca/finance/forms.asp](http://www.nzac.ca/finance/forms.asp). Original receipts must be attached (detailed receipts showing the tax breakdown are required; credit card slips are not acceptable) and the supervisor's signature is required. The form and original documents are to be taken to Financial Services, 2nd Floor Cumming Hall, for reimbursement. Petty Cash cannot be used to reimburse travel expenses. If the student's supervisor has authorized that the student be reimbursed for a purchase or accumulated receipts totalling over \$50, the Cheque Request Form should be used for reimbursement purposes. Students are advised to seek the assistance of the administrative assistant within their department of study for the completion of financial forms (travel expense claims, cheque requests, etc.) for reimbursement purposes.

Students are responsible for all costs associated with writing and presenting the thesis.

Students are encouraged to meet with the Heads of their departments of study to obtain their department's policies and procedures on photocopying within the department, availability of office supplies from the department, etc.

Students are encouraged to discuss with their supervisors what financial assistance is available to assist with miscellaneous costs associated with their programs, such as photocopy charges (e.g., photocopying of journals at the library, etc.), printing charges (e.g., of the ATC research proposal and thesis), and NSAC MacRae Library charges (e.g., Novanet document delivery and interlibrary loan charges). It is recommended by the Graduate Program Committee that supervisors provide their graduate students with a minimum of \$30 per year for photocopying purposes.

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## Self-support

On the few occasions when a student is accepted to the M.Sc. program with no financial support, NSAC requires that the student submit a letter waiving any responsibility on the part of NSAC for financial support for the duration of the given program.

The student is required to pay the first year's tuition in advance.

## Conference Grants

Students planning to present their research at a scientific meeting may apply to the RGS Office for a grant towards their expenses. An application form (Travel Bursary Form) is available from the website at [www.nzac.ca/research/graduatestudies/forms/default.asp](http://www.nzac.ca/research/graduatestudies/forms/default.asp). Proof that an oral or poster presentation of the student's research has been accepted at the conference must be submitted with the completed Travel Bursary Form. A student will receive a maximum of one conference grant up to a total of \$500 during the course of the M.Sc. program, subject to the approval of the RGS Office, as financing permits. Students will only be reimbursed for actual expenses paid, and receipts are required. Normally, students receive reimbursement by submitting a Travel Expense Claim form (or Cheque Request Form), with receipts attached, upon return from the conference. If the student's supervisor has paid all of the student's travel and conference expenses from a research project account, the travel bursary will be transferred to the supervisor's account from which the travel was paid.

## 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:

- (i) to ensure that NSAC is in compliance with the Canadian Council on Animal Care (CCAC) with respect to standards and guidelines for the use of animals in research, teaching, and testing, and
- (ii) 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.

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. The student's supervisor is responsible for completing and submitting the form.

The Canadian Council on Animal Care ([www.ccac.ca](http://www.ccac.ca)) requires all animal users in government-funded institutions to be properly trained. Graduate students working with animals must complete a short course entitled "Experimental Animal User Training". This course on the background theory of animal care is a "self-taught" package comprised of reading and multiple-choice questions. Instructions for completing this training are available at [nsac.ns.ca/pas/animalcare](http://nsac.ns.ca/pas/animalcare). To obtain a username and password, contact Linda Jack ([ljack@nsac.ca](mailto:ljack@nsac.ca)). Successful completion of this course is a mandatory component of the Admission to Candidacy requirements for those students working with animals.

#### Research Involving Human Subjects

All thesis research involving human subjects must be approved by the NSAC Research Ethics Board (REB). Projects which might typically arise at NSAC and which would require REB review are questionnaires, surveys, or interviews of individuals, where the human being is the subject of the investigation and personal opinions and practices are documented. Students whose research requires REB approval must provide proof of completion of the Tutorial for the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans. This tutorial is available online at [pre.ethics.gc.ca/english/tutorial](http://pre.ethics.gc.ca/english/tutorial). A copy of the certificate of completion must be submitted to the RGS Office at the time the student submits his/her research for the approval of the NSAC REB. Graduate students are required to review their proposals with their supervisors before submission to REB. Submission deadlines, procedures, guidelines and forms are available on the website at [www.nzac.ca/research/researchers/ethics.asp](http://www.nzac.ca/research/researchers/ethics.asp). Students should allow six to eight weeks for processing. A copy of the NSAC letter of ethics approval will be forwarded to Dalhousie University to be put in the student's official file.

#### Research Involving Biohazards

Researchers, graduate students and instructors who are conducting, or propose to conduct, research involving biosafety hazards (e.g., infectious agents of animals including bacteria, viruses, prions, fungi, and parasites; infectious agents of plants including bacteria, viruses, viroids, and fungi; recombinant DNA, cell lines, and microbial toxins) must adhere to the standards outlined in the Laboratory Biosafety Guidelines, which can be obtained in electronic copy from Kalyani Prithiviraj, NSAC Biosafety Officer.



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Graduate students and researchers must obtain certification from the NSAC Biosafety Officer that the laboratory procedures being used comply with the safety precautions necessary for the level of containment required by the research. Researchers who are proposing to work with biosafety hazards are asked to contact the NSAC Biosafety Officer for specific details regarding the approval process, as certificates are customized for each research project. Research must comply with federal, provincial, and municipal requirements for disposal of hazardous materials and chemical and biological wastes, and for their use in the workplace.

## **Research Involving Radioactive Materials**

Researchers, graduate students, and instructors proposing to use radioactive materials must obtain permission from the NSAC Radiation Safety Office. The NSAC Site Radiation Safety Officer is Anne LeLacheur, Department of Environmental Sciences ([alelacheur@nsac.ca](mailto:alelacheur@nsac.ca)). The following forms are available from the Radiation Safety Office:

- Application for Internal Permit for Acquisition and Use of Radioactive Materials
- Application for Internal Permit for Use of Radioisotope Using Animals

All researchers, graduate students and staff who wish to use radioactivity must provide proof of completion of a radiation use and safety training program to the NSAC Radiation Safety Office.

## **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 Dal FGS and conform to Dal's requirements for a thesis. The FGS Regulations for the Submission of Theses is available from the NSAC RGS Office and from the FGS website ([dalgrad.dal.ca/currentstudents/thesesanddefences/forms](http://dalgrad.dal.ca/currentstudents/thesesanddefences/forms)). The regulations give details on originality, format and style, the order of contents, mailing costs, and other pertinent information. All thesis students must obtain a copy of these regulations, and students are responsible for ensuring that their thesis complies with all aspects of these regulations. Failure to do so may cause delays in completion, and may even result in the cancellation of a scheduled defence. Students and supervisors are referred to the *CBE Style Manual for Authors, Editors and Publishers* as a possible resource for guidelines of thesis style.

The thesis must be written by the student, but advice and constructive criticism from members of the supervisory committee should be sought during its preparation. Students are also encouraged to present a synopsis for discussion and conditional approval before beginning to write, but formal approval by the supervisory committee is not mandatory. Responsibility for the document presented rests with the student. The examining committee, in judging the thesis, is concerned primarily with the quality of the work and evidence of research contributions to knowledge. Students are encouraged to publish the results of their work at any stage of their graduate program but must avoid conflict of copyright or contractual agreement. Students who have concerns regarding conflict of copyright or contractual agreement are urged to discuss these issues with their supervisor or to contact the NSAC RGS Office for further information.

## **Manuscripts in Thesis (Submission of Papers to Journals Prior to Defence or Completion)**

It may be appropriate for the thesis to include published or accepted manuscripts, papers or reports authored or co-authored by the student. Students who wish to pursue this option must have the prior consent of their supervisory committees, and must obtain appropriate copyright permission.

It is expected that the student has made a substantial contribution to any such manuscripts. Where a co-authored manuscript is included in the thesis, the student's contribution must be clearly indicated on the Student Contribution to Manuscripts in Thesis form.

Students are strongly encouraged to publish their M.Sc. research in refereed journals before, during or after their defence. However, if a student has submitted the thesis or chapters of the thesis in identical text as a manuscript to a journal prior to submitting the approved thesis to FGS for binding, the student must complete the Manuscripts in Thesis form and obtain a Copyright Release from the journal to which the manuscript has been submitted. The Student Contribution to Manuscripts in Thesis Form and the Copyright Release Request template letter are available at [dalgrad.dal.ca/currentstudents/thesesanddefences/forms](http://dalgrad.dal.ca/currentstudents/thesesanddefences/forms).

A Copyright Release Request template letter must be sent to each journal to which a manuscript has been submitted, regardless of whether it is accepted for publication either before or after the defence. Please include an appropriate letter to present to the journal publishers with the first draft of each journal manuscript submitted. The signed Copyright Release Request letters must be included in an Appendix at the end of the thesis. In addition, the first page of each chapter that has been accepted for publication must state "This

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chapter has [or Parts of this chapter have] been accepted to be included in the [title of publication]”.

All papers accepted by journals are to be summarized on the Manuscript in Thesis form. Thus, there must be a signed Copyright Release form to match each entry on the Manuscript in Thesis form. Note that the Manuscript in Thesis form is not to be included in the thesis for binding. Rather, it is to be submitted to Dal FGS at the same time that the thesis is submitted.

The publication or acceptance of such manuscripts before the thesis defence in no way supersedes the examination committee’s evaluation of the work, including requesting revisions.

## Thesis Originality and Editing

A thesis must present the student’s own work, and all students are advised to read the university’s regulations on plagiarism (including self-plagiarism). Dalhousie University’s regulations on plagiarism can be found in the FGS *Policy on Integrity in Scholarly Activity* (available from Dal).

All students are expected to write their theses 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 extensive correction to the standard of English. 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.

Writing and expression, as well as academic content of the thesis, must reflect the student’s own work. While students are encouraged to make use of standard spelling and grammatical checkers within their word processing software and to have individuals proofread their papers and draft manuscripts, the use of “professional” editorial services (other than strict proofreading and formatting) is prohibited.

## Submission of Thesis for Examination: M.Sc. Thesis

All students must refer to the Schedule of Academic Deadlines in the *Dalhousie University Graduate Studies Calendar* for submission deadlines and registration deadlines. Students must be registered for the term in which they have their defence and for the term in which they present their approved unbound theses to FGS. Students will not be permitted to submit their theses to RGS NSAC or proceed to defence until they have appropriately registered and all fees have been paid. Deadlines for the submission of fully completed and

approved theses (following examination and revision) are final in all cases. Failure to meet the deadlines will result in additional registration fees being applied and a delay in graduation. It is the responsibility of the student to ensure that all regulations have been met.

Students must submit a completed Thesis Defence Planning form, a signed Thesis Submission form, and sufficient copies of the M.Sc. thesis for each member of the examining committee to the NSAC RGS Office before the date of the thesis defence is finalized. Both the Thesis Defense Planning Form and Thesis Submission Form are available on the RGS website at [www.nsic.ca/research/graduatestudies/forms/default.asp](http://www.nsic.ca/research/graduatestudies/forms/default.asp). The thesis must be complete and suitable for printing, if accepted. The defence date is set for a minimum of three weeks following the receipt of the thesis and accompanying documentation at the RGS 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 consultation with the student. The external examiner must not have been involved with the supervision or direction of the thesis, and must be in a position to render an objective and impartial assessment of the quality of the work. The external examiner may be faculty of another university or may be a non-faculty member (such as a practicing professional who does not hold an Adjunct appointment with a university) when it is deemed that they have the appropriate professional and academic qualifications and expertise to assess a graduate thesis. In all cases, the external examiner must be approved by the Vice President Academic, NSAC. The external examiner does not necessarily attend the defence but may instead submit a written report and questions prior to the examination.

The main role of the Chair is to ensure that the procedures are carried out in an appropriate manner, to record the examiners’ written comments and the results of the examination for inclusion in the student’s file, and to inform the RGS Office of the outcome.

Supervisors, in consultation with their students, are responsible for completing the Thesis Defence Planning form. This form must be submitted to the NSAC RGS Office at least four weeks prior to the intended defence date and serves to:

- notify the RGS Office when the student is ready to defend;

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- provide the names of three potential External Examiners; and
- provide the RGS office with all relevant information regarding the proposed date of the defence, and the availability of supervisory committee members.

Students and supervisors are advised that they are not to arrange for an external examiner for the thesis defence. The external examiner will be arranged by the RGS Office in cooperation with the Office of the Vice President Academic. Room bookings and notices for thesis examinations are arranged by the Graduate Program Assistant of the RGS Office, in consultation with the supervisor and student. The student is responsible for booking any AV equipment (e.g., computer projection unit, laptop computer, overhead, etc.) needed during the examination.

## **Examination Format**

The thesis shall be defended orally before the Thesis Examining Committee and any other interested persons who choose to attend. A public announcement of the examination shall normally be posted at least two weeks before the event. A defence consists of a 15- to 20-minute presentation by the candidate of the scope of the subject and the main achievements in the research. This is followed by questions and comments from the external examiner and committee members, and by the student's responses. After the members of the Thesis Examining Committee and the audience have questioned the candidate, the Thesis Examining Committee deliberates in private, 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 the members of the Thesis Examining Committee present. The thesis will be either approved or not approved, in one of the following categories:

- *Approved as submitted.*
- *Approved upon specific corrections being made.* A clear timetable for completion of the revisions must be presented to the student, normally with a maximum of one month to complete the revisions. The supervisor is usually asked to monitor the required changes. Usually at least two members of the examining committee read the revised thesis to provide final approval.
- *Rejected but with permission to re-submit a revised thesis for re-examination.* A clear timetable for completion must be presented, normally with a maximum of one year to re-submit. Major revisions may be on grounds of form as well as content. When re-submitted,

the thesis will be re-read by an examining committee that includes 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 re-submit by a specific date, the Faculty Graduate Coordinator must send a written notification of failure to Dal FGS.

## **Presentation of Thesis for Graduation**

### **Deadlines**

Students are responsible for presenting to Dal FGS 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 FGS (the deadline date is published annually in the *Dalhousie University Graduate Studies Calendar*).

### **Binding and Distribution**

Students must now submit an electronic file in PDF/A format for the Dalhousie and National Libraries. It is the student's responsibility to ensure that the PDF/A formatted thesis displays properly. PDF/A formatted documents can be exported from the latest versions of Microsoft Word and many other software platforms. As well, the full version of Adobe Acrobat can convert ordinary PDF documents to the PDF/A format. The Dalhousie Libraries have provided a basic PDF/A converter at [dalspace.library.dal.ca:8080/converter](http://dalspace.library.dal.ca:8080/converter). Support for the PDF/A format is available from NSAC IT Services.

Please note that the electronic copy of the thesis CANNOT contain any signatures. The original signature page will be retained in paper files at FGS after the required paper forms have been submitted. Full

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instructions on the electronic thesis submission process can be found at [dalgrad.dal.ca/currentstudents/thesesanddefences/etheses](http://dalgrad.dal.ca/currentstudents/thesesanddefences/etheses).

NSAC students will be required to arrange to bind four paper copies (for student, supervisor, Department and NSAC library). Students can arrange for binding online at [www.pageforpage.com](http://www.pageforpage.com) or at another bindery of their choice. Students are required to submit one copy of the approved unbound thesis to the RGS Office.

## CONVOCAATION

Graduate students have the option of attending convocation ceremonies at either NSAC or Dal. Convocation ceremonies are held at NSAC in May and at Dal in May and October. Students must fulfill all requirements, including the payment of all fees, prior to graduation. Applications to graduate (Intent to Graduate form) are available at the RGS Office or on Dal's website ([registrar.dal.ca/forms](http://registrar.dal.ca/forms)) and must be submitted to the RGS Office by the appropriate deadline.

Any graduating student who is unable to appear at convocation is expected to notify the RGS Office in writing prior to April 15 for Spring convocation (or October 1 for Fall convocation at Dal). Students whose accounts are delinquent on these dates will not receive their degree parchments or their transcripts.

When a student has fulfilled all the requirements for the degree (including payment of all fees) in advance of the official graduation date, a letter to that effect can be obtained from the FGS at Dal. The Confirmation Letter Request form is located on the FGS website ([dalgrad.dal.ca/currentstudents/forms](http://dalgrad.dal.ca/currentstudents/forms)).

## ADDITIONAL INFORMATION AND REGULATIONS

For additional information pertaining to the graduate program (e.g., academic deadlines, mandatory training requirements, change of supervision, rights and responsibilities of students and supervisors, appeal processes, etc.), graduate students are advised to consult the Graduate Studies website at [www.nsac.ca/gradstudies](http://www.nsac.ca/gradstudies).

## 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 required by all graduate students and enrollment is restricted to graduate students only.

AGRI5700: Communication Skills and Graduate Seminar

AGRI9000: Graduate Thesis

### Recommended Regular Courses

Where an undergraduate student wishes to take one of the graduate courses listed below, the following signatures are required for approval: the instructor(s), the relevant Department Head(s), and the Faculty Graduate Coordinator.

AGRI5630: Intermediate Statistical Methods

AGRI5710: Module Course I

AGRI5720: Applied Statistics and Experimental Design for Agriculture

### Regular Courses

Where an undergraduate student wishes to take one of the following graduate courses, signatures of the instructor(s), the relevant Department Head(s), and the Faculty Graduate Coordinator are required for approval.

AGRI5270: Economic Entomology

AGRI5350: Animal Research Methods

AGRI5360: Protein Nutrition

AGRI5365: Vitamins in Animal Nutrition

AGRI5380: Quantitative Genetics

AGRI5390: Molecular Genetic Analysis of Populations

AGRI5440: Organic Environmental Analysis

AGRI5520: Plant Breeding Methods

AGRI5530: Nitrogen in Crop Production

AGRI5560: Advanced Crop Physiology

AGRI5705: Module Course II

AGRI5740: Advanced Studies in Food Chemistry

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## Special Topics and Directed Studies Courses

These courses may be taken by undergraduate students only under exceptional circumstances. In those cases, signatures are required from the instructor(s), the relevant Department Head(s), and the Faculty Graduate Coordinator before registering.

- AGRI5230: Directed Studies in Environmental Sciences
- AGRI5260: Special Topics in Plant Pathology
- AGRI5280: Directed Studies in Pest Management
- AGRI5310: Special Topics in Applied Ethology
- AGRI5320: Special Topics in Animal Nutrition
- AGRI5340: Special Topics in Animal Physiology
- AGRI5370: Special Topics in Animal Breeding and Genetics
- AGRI5400: Directed Studies in Soil Science
- AGRI5460: Special Topics in Soil and Water Management
- AGRI5480: Directed Studies in Analytical Instrumentation
- AGRI5510: Special Topics in Plant Breeding
- AGRI5540: Special Topics in Crop Physiology (A)
- AGRI5570: Special Topics in Agricultural Biotechnology
- AGRI5610: Special Topics in Animal Product Technology
- AGRI5730: Directed Studies in Food and BioProduct Science

## Cross-referenced Courses

*Cross-references with undergraduate courses are shown in brackets.*

- AGRI5250: Soil Microbiology (MICR4000)
- AGRI5450: Environmental Soil Chemistry (SOIL4000)
- AGRI5620: Ruminant Digestive Physiology and Metabolism (NUTR4000)
- AGRI5630: Intermediate Statistical Methods (STAT4000)
- AGRI5750: Biotechnology (GENE4003)

## GRADUATE COURSE DESCRIPTIONS

### AGRI5230: Directed Studies in Environmental Sciences

Coordinator: **Prof. Lada**

*Prerequisites:* permission of the instructor and Faculty Graduate Coordinator

This course aims to provide to graduate students an opportunity for detailed study and critical thinking in an environmental sciences research area of interest. Through individual study and research, with guidance and instruction provided by a professor, students will leave the course with comprehensive knowledge of a contemporary topic(s) in the discipline, with improved skills in comprehension, problem formulation, writing/communication and critical thinking.

Fall or Winter semester – to be arranged with the instructor (individual work/lectures and discussion with instructor).

### AGRI5250: Soil Microbiology

*Cross-referenced as* MICR4000

Instructor: **Prof. Burton**

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, and 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 2012/2013.

### AGRI5260: Special Topics in Plant Pathology

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

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 instructors.

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## **AGRI5270: Economic Entomology**

Instructor: **Prof. Cutler**

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); 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 – Lecture 2 hours, tutorial 1 hour per week.

## **AGRI5280: Directed Studies in Pest Management**

Coordinator: **Prof. Cutler**

*Prerequisites:* permission of the instructor and Faculty Graduate Coordinator

This course aims to provide to graduate students an opportunity for detailed study and critical thinking in a pest management research area of interest. Through individual study and research, with guidance and instruction provided by a professor, students will leave the course with comprehensive knowledge of a contemporary topic(s) in the discipline, and with improved skills in comprehension, problem formulation, writing/communication and critical thinking.

Fall or Winter semester – to be arranged with the instructor (individual work/lectures and discussion with instructor).

## **AGRI5310: Special Topics in Applied Ethology**

Instructor: **Prof. Jendral**

Course content will vary. Topics covered will be chosen so as to meet the requirements of individual graduate students. Aspects could include the assessment of farm animal welfare, foraging behaviour, environmental enrichment, social dynamics of livestock, and early rearing environment and the effect on later behaviour.

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

## **AGRI5320: Special Topics in Animal Nutrition**

Instructors: **Profs. Anderson, Fredeen or Rouvinen-Watt**

The course is designed to provide an opportunity to study specific aspects of animal nutrition. Aspects could include study of a particular nutrient, a process in nutrition, a nutritional state, or nutrient metabolism of a specific species, with focus on the research method. Students are advised to consult with their supervisors to determine the specific scope of the topic to be studied.

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

## **AGRI5340: Special Topics in Animal Physiology**

Instructors: **Profs. Duston, MacLaren or Rouvinen-Watt**

This course is for students with a major interest in animal physiology. The course will consist of discussions, term papers, and presentations. Students will be expected to nominate topics for consideration and to prepare major reviews and class presentations of selected topics.

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

## **AGRI5350: 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 instructors.

## **AGRI5360: 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 2012/2013.

# Graduate Program

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## **AGRI5365: Vitamins in Animal Nutrition**

Instructor: **Prof. Anderson**

Vitamins and vitamin-like compounds are discussed in relation to the normal function of the animal. Vitamin metabolic interrelationships, assessments of adequacy, treatments of deficiency, and sources both natural and synthetic are addressed for all vitamins. Current literature relating to each vitamin as bioactive molecules is discussed.

Winter semester – to be arranged with instructor. Offered in alternate years; next offered in 2013/2014.

## **AGRI5370: 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 and 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 instructors.

## **AGRI5380: Quantitative Genetics**

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

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 around the world.

Winter semester – to be arranged with the instructors.

## **AGRI5390: 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 (e.g., 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 interpopulation populations (heterozygosity, Hardy-Weinberg equilibrium) and interpopulation parameters (test of heterogeneity of allele frequency distributions, genetic distances, phylogenetic analysis, bootstrapping, F-statistics) will be covered.

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

## **AGRI5400: Directed Studies in Soil Science**

Coordinator: **Prof. Burton**

*Prerequisites:* permission of the instructor and Faculty Graduate Coordinator

This course aims to provide to graduate students an opportunity for detailed study and critical thinking in a soil science research area of interest. Through individual study and research, with guidance and instruction provide by a professor, students will leave the course with comprehensive knowledge of a contemporary topic(s) in the discipline, and with improved skills in comprehension, problem formulation, writing/communication and critical thinking.

Fall or Winter semester – to be arranged with the instructor (individual work/lectures and discussion with instructor).

## **AGRI5440: Organic Environmental Analysis**

Instructor: **Prof. Hoyle**

This course has limited enrollment.

The course will involve the study of the analytical chemical techniques used in the analysis of environmental samples obtained from the atmosphere, hydrosphere, and lithosphere. Included in this study will be the sampling methods used for air, water, soil, food, and wastes, and modelling of environmental contamination. In addition, government regulations, hazard assessment, and public awareness of these issues will be discussed. In addition to successfully completing examinations, graduate students will be required to:

- write a major paper on an important topical issue
- present that paper as a seminar before departmental faculty, staff, and students, and
- write a research proposal prior to starting the laboratory project.

Fall semester – to be arranged with the instructor. Offered in alternate years; next offered in 2012/2013.

# Graduate Program

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## **AGRI5450: Environmental Soil Chemistry**

*Cross-referenced as SOIL4000*

Instructor: **Prof. Hoyle**

Minimum enrollment: 10 students

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 2013/2014.

## **AGRI5460: Special Topics in Soil and Water Management**

Instructors: **Prof. Havard**

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.

## **AGRI5480: Directed Studies in Analytical Instrumentation**

Coordinator: **Prof. Pitts**

*Prerequisites:* permission of the instructor and Faculty Graduate Coordinator

This course aims to provide graduate students with an opportunity for detailed study and critical thinking in specific areas of analytical instrumentation as it relates to their research area. Through individual study and research, with guidance and instruction provided by a professor, students will leave the course with comprehensive knowledge of a contemporary topic(s) in the discipline, and with improved skills in comprehension, problem formulation, writing/communication and critical thinking.

Fall or Winter semester – to be arranged with the instructor (individual work/lectures and discussion with instructor).

## **AGRI5510: Special Topics in Plant Breeding**

Instructor: **Prof. McLean**

This course is designed to meet the specific needs of graduate students specializing in the area of Plant Breeding who need further specific knowledge and/or skills.

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

## **AGRI5520: 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 instructors.

## **AGRI5530: Nitrogen in Crop Production**

Instructors: **Profs. Lynch and Burton**

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 instructors. Offered in alternate years; next offered in 2012/2013.

## **AGRI5540: Special Topics in Crop Physiology (A)**

Instructors: **Profs. Caldwell, Asiedu, Goodyear, and Lada**

This course is designed to meet the specific needs of graduate students specializing in the area of Crop Physiology who need further specific knowledge and/or skills.

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

## **AGRI5560: 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 2013/2014.



# Graduate Program

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## **AGRI5570: Special Topics in Agricultural Biotechnology**

Instructor: **Prof. Benkel**

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.

## **AGRI5610: 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 instructors.

## **AGRI5620: Ruminant Digestive Physiology and Metabolism**

*Cross-referenced as NUTR4000*

Instructor: **Prof. Fredeen**

*Prerequisites:* NUTR3000, CHEM3006

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

Fall semester – Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

## **AGRI5630: Intermediate Statistical Methods**

*Cross-referenced as STAT4000*

Instructor: **Prof. Astatkie**

*Prerequisite:* STAT3000, or permission of the instructor

Analysis of single-factor experiments, randomized blocks, latin squares, and factorial and two-level fractional factorial designs.

Fall semester – Lecture 3 hours, computer lab 1 hour per week.

## **AGRI5700: Communication Skills and Graduate Seminar**

Instructor: **Prof. Price**

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 – Lecture 2 hours, seminar 1 hour per week. Enrollment per term may be capped.

## **AGRI5705: Module Course II**

Coordinator: **Prof. Corscadden**

*Prerequisite:* AGRI5710

This course normally consists of three modules. Each module consists of one month of lectures or assignments dealing with a topic in the lecturer's area of expertise. Research interests of incoming students are taken into account each year when module topics are solicited. Students should not apply to take a module unless they have at least a second-year undergraduate background in the focus area. A formal evaluation is made at the end of each module.

Fall/Winter semester: Students registering for the module course in September must complete three modules between September and April (8 months).

Winter/Summer semester: Students registering for the module course in January must complete three modules between January and August (8 months).

## **AGRI5710: Module Course I**

Coordinator: **Prof. Corscadden**

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/Winter semester: Students registering for the module course in September must complete three modules between September and April (8 months).

Winter/Summer semester: Students registering for the module course in January must complete three modules between January and August (8 months).

# Graduate Program

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## **AGRI5720: Applied Statistics and Experimental Design for Agriculture**

Instructor: **Prof. Astatkie**

*Prerequisite:* STAT4000, AGRI5630, 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 – Lecture 3 hours per week.

## **AGRI 5730: Directed Studies in Food and BioProduct Science**

Coordinator: **Prof. Rupasinghe**

*Prerequisites:* permission of the instructor and Faculty Graduate Coordinator

This course aims to provide to graduate students an opportunity for detailed study and critical thinking in a food and bioproduct research area of interest. Through individual study and research, with guidance and instruction provided by a professor, students will leave the course with comprehensive knowledge of a contemporary topic(s) in the discipline, and with improved skills in comprehension, problem formulation, writing/communication and critical thinking. Fall or Winter semester – to be arranged with the instructor (individual work/lectures and discussion with instructor).

## **AGRI5740: Advanced Studies in Food Chemistry**

Instructor: **Prof. Pitts**

*Prerequisite:* one undergraduate food science course or equivalent

This course is designed to allow graduate students to explore in detail various aspects of the chemical nature of agri-food products. This may include, but is not limited to, a study of naturally occurring components (functional foods and nutraceuticals), nutritional changes during value-added processing, and product formulation. The exact focus of the course will depend on the expressed interest of students in the course.

Fall or Winter semester, to be arranged with the instructor – Lecture 1 hour, discussion 1 hour per week.

## **AGRI5750: Biotechnology**

*Cross-referenced as* GENE4003

Instructor: **Prof. Wang-Pruski**

*Prerequisite:* GENE2000 or equivalent

This course is to provide students with general information on the theory and technologies that are currently used in biotechnology. Course topics will include gene identification, transformation and expression regulations, tissue culture and cell culture techniques, and other genomics-related agricultural applications. Nutraceutical and pharmaceutical applications will also be discussed.

Fall semester – Lecture 3 hours per week. Offered in alternate years; next offered in 2013/2014.

## **AGRI9000: Graduate Thesis**

Students register for this course when they are engaged in research work for credit towards the M.Sc. in Agriculture degree.

# Scholarships, Bursaries and Academic Prizes

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Scholarship information and application forms are available on the website ([www.nsac.ca/awardsoffice](http://www.nsac.ca/awardsoffice)). Specific inquiries regarding scholarships and bursaries should be directed to NSAC's Awards Office, Room 106, Cox Institute, phone (902) 893-6729, fax (902) 895-5529, [bcrouse@nsac.ca](mailto:bcrouse@nsac.ca).

NSAC's Scholarship Committee reserves the right to authorize changes at any time to the selection criteria, value, and awarding of scholarships, bursaries, and prizes. Some awards may not be awarded as advertised.

## DEFINITION OF TERMS

### Award

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

### Governor General's Medal

The Governor General's Medals are awarded to the students with the highest academic standing graduating each year in the Technology, Bachelor's (B.Sc.(Agr.) and B.Tech), and Master's 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 criterion is not academic performance.

### Prize/Gift

A prize or gift is an award given to a student based on the selection of the donor.

### International Students

For scholarship purposes, all students paying the International tuition differential are eligible for scholarships for International students.

**Note:** Where the selection criteria are not specified in the descriptions of the various scholarships, bursaries, and prizes that follow, the above guidelines apply.

Selection of scholarship and bursary winners is 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 in a program of study to be considered for scholarship and bursary selection; preference will usually be given to students completing 8 courses per year with no fewer than 3 courses per semester. Scholarship selections are made by NSAC, the NSAC Scholarship Committee, or Donors or their Administrators.

*Publicity Disclaimer:* It is the policy of NSAC to publish the names, home towns and photos, 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 APPLICATIONS

The following guidelines determine year of study for students in the B.Sc.(Agr.) program:

1st year	0–7 courses
2nd year	8–18 courses
3rd year	19–27 courses
4th year	28+ courses

### To Receive Application Forms

Application forms for most of the awards offered through NSAC are available by visiting our website [www.nsac.ca/awardsoffice](http://www.nsac.ca/awardsoffice).

Simply double-click on any title to print off a copy. If unable to do this, please contact the NSAC Awards Office ([bcrouse@nsac.ca](mailto:bcrouse@nsac.ca)) to have forms sent out to you.

# Scholarships, Bursaries and Academic Prizes

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## Application Selection Process

When applying for scholarships, bursaries, or awards at NSAC please note that the selection review is not a quick process. In most cases applications are reviewed by the NSAC Scholarship Committee from mid-September to mid-October. The complete list of winners will be posted one week prior to the Scholarship Banquet. Awards won through the Scholarship Banquet selection process are credited to student accounts in January, unless special written requests are made. Students should budget accordingly.

## Scholarship Renewal Criteria

1. Renewable scholarships are renewed automatically at their initial value provided the student has maintained an average of 80% or greater (unless otherwise specified) for every year of study for which the scholarship was renewable. Renewable scholarships are renewed annually on a continuous basis, based on the work of the previous year; once they are forfeited they cannot be re-instated.
2. Scholarships are renewed based on an 80% average for the full year of study (80% is not required in each semester). A year of study is normally defined as September 1 to August 31; students who do not follow the normal year of study will be considered by the Scholarship Committee on an individual basis.
3. To be eligible for scholarship renewal, students must maintain registration in at least 80% of the number of courses for the normal course load per semester for both the previous and the current year.
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 (CHEM0050, MATH0050 and PHYS0050) are included in the calculation of the year's average for degree students.
6. To be eligible for scholarship renewal, a student may not have any failed courses (including Drop Fails).
7. A student who does not satisfy all the above criteria due to medical or other extenuating circumstances may appeal in writing to the Awards Office.

**Note:** *The above criteria generally apply to all renewable scholarships (e.g., Harrison McCain Scholarships, NSAC Entrance Scholarships for CEC Students, Atlantic Scholars Awards, President's Scholarship, NS Power and Isgonish IODE bursaries).*

## PROCEDURE FOR APPEALS OF SCHOLARSHIP RENEWAL DECISIONS

Students may appeal scholarship renewal decisions based on extenuating circumstances. Generally, reasons must be severe and must be documented. 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:

1. medically documented/supported personal illness or psychological/physical trauma
2. 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.

## CREDIT OF SCHOLARSHIPS/BURSARIES TO STUDENT ACCOUNTS

Credits will be made to student accounts in January for the start of the winter semester, unless otherwise directed by the student. On special request, a student can have scholarship amounts credited to their account before the beginning of the winter semester in January.

## APPLYING FOR NON-APPLICATION AWARDS

Students interested in being considered for non-application awards should advise the Awards Office of their wish to be considered for a particular award and to ask about the process of selection for non-application based awards.

## STAGGERED APPLICATION DEADLINES

To help with the processing of applications received for the fall selection process, there is a staggered schedule of application deadlines. Please note application deadlines, which are indicated in the award descriptions.

# Scholarships, Bursaries and Academic Prizes

## I. ENTRANCE SCHOLARSHIPS AND BURSARIES

### I. ENTRANCE SCHOLARSHIPS AND BURSARIES

#### 2012 NSAC Entrance Scholarships at a Glance

<p><b>\$ 39,000*</b>  <b>Atlantic Scholars Awards</b>            (\$9,800 per year)            (Estimate of potential total value based on projected costs of a 4-year program)</p>	<p>At least five renewable scholarships (full tuition and residence at shared-room rate) to top students from Atlantic Canada with minimum average of 85% on required courses.  <i>Application deadline is March 21, 2012.</i>            * Value of scholarships is dependent on number of courses taken and whether residence portion is accepted. Value given is based on 2011/2012 fees.</p>
<p><b>\$39,000*</b>  <b>President's Scholarship</b>            (\$9,800 per year)            (Estimate of potential total value based on projected costs of a 4-year program)</p>	<p>At the discretion of the President's Office, the President's Scholarship will be awarded to an outstanding applicant from outside Canada. The scholarship provides for the International tuition differential plus residence at the shared-room rate.            * Value of scholarships is dependent on number of courses taken and whether residence portion is accepted. Value given is based on 2011/2012 fees.</p>
<p><b>\$16,000</b>            (\$4,000 per year)</p>	<p>Three Harrison McCain Scholarships are awarded to Canadian students entering first year of any program with minimum 80% average. The primary consideration is given to financial need, recognized initiative in funding own education, and leadership qualities.  <i>Application deadline is March 21, 2012.</i></p>
<p><b>\$ 8,348*</b>            (\$4,174 per year)</p>	<p>Five scholarships valued at the shared-room rate of residence, each renewable for one year, will be awarded to outstanding applicants not selected for other major Entrance Scholarships.  <i>No application is required.</i>            * Value given is based on 2011/2012 fees.</p>
<p><b>\$2,500</b></p>	<p>Scholarships to all students admitted with averages in required courses of 90% or greater.  <i>No application is required.</i></p>
<p><b>\$1,500</b></p>	<p>Scholarships to all students admitted with averages in required courses between 85% and 89%.  <i>No application is required.</i></p>
<p><b>\$1,000</b></p>	<p>Scholarships to all students admitted with averages in required courses between 80% and 84%.  <i>No application is required.</i></p>
<p><b>\$1,000 to \$5,000</b></p>	<p>Scholarships to outstanding International students enrolling full-time in a program of study. See details under "Scholarships for International Students".</p>

**Note:** For scholarship purposes, averages are calculated to the nearest whole number.

### Other Scholarships Ranging in Value from \$500 to \$2,000

Both application-based and non-application-based scholarships, with various deadlines, are selected and awarded in the fall. See details on the various entrance scholarships on the following pages.

### Guaranteed Entrance Scholarships to NSAC

All Canadian high school students with averages\* of 80% or greater who are entering a program of full-time study in any undergraduate or technical program at NSAC will receive an entrance scholarship. Consideration is automatic; no application is required. Scholarships are awarded based on the averages of the high school courses required for admission.

- **\$2,500 Scholarships to all students admitted with averages of 90% or greater**
- **\$1,500 Scholarships to all students admitted with averages between 85% and 89.4%**
- **\$1,000 Scholarships to all students admitted with averages between 80% and 84.4%**

Students receiving other Entrance Scholarships (Atlantic Scholars Awards, NSAC/CEC Entrance Scholarships, or National Level Garfield Weston Merit Scholarships) are not eligible for the above scholarships.

For the program to be considered full-time for scholarship consideration, students must maintain registration in at least 80% of the normal course load per semester.

Scholarships are tenable for one year and are awarded in two installments; to receive the second installment, full-time study must be maintained.

\* For Entrance Scholarship purposes, averages are calculated to the nearest whole number (if an average falls exactly between two whole numbers, the average is rounded up). The determining average is based on either:

1. the average of the courses required for admission to the respective program of study from first-term or final Grade 12 marks, or
2. the average of the final marks of the courses required for admission from first semester Grade 12 and the final marks of the remaining required courses from Grade 11.

### IB SCHOLARSHIP PROGRAM

All students graduating with an IB Diploma will receive an Entrance Scholarship to attend NSAC.

#### Atlantic Scholars Award – IB

At least one renewable scholarship valued at \$9,800 per year (providing full tuition and residence at shared-room rate) will be awarded to an outstanding student graduating with an IB Diploma. Applicants must have a predicted score of 36 and be entering a full-time program of study at NSAC to be eligible.

#### Renewable Entrance Scholarships – IB

- **\$10,000 total value** (\$2,500 per year) – renewable Entrance Scholarships will be awarded to IB Diploma candidates with an overall predicted score of 36 or higher. To be eligible for scholarship renewal, students must maintain an 80% average each year and an on-going registration in at least 80% of the normal course load for the program. Proof of graduation with an IB diploma will be required.
- **\$7,000 total value** (\$2,500 for first year, and renewed at \$1,500 per year) – renewable Entrance Scholarships will be awarded to IB Diploma candidates with an overall predicted score of 33–35. To be eligible for scholarship renewal, students must maintain an 80% average each year and an on-going registration in at least 80% of the normal course load for the program. Proof of graduation with an IB diploma will be required.

#### Guaranteed Entrance Scholarships – IB

NSAC guarantees Entrance Scholarships to all students who graduate with IB diplomas. Students not qualifying for the above-noted awards will receive Entrance Scholarships for studies beginning in September on the following basis:

- **\$2,500 (non-renewable)** – Entrance Scholarships of \$2,500 will be awarded to IB Diploma graduates with predicted scores of 30–32.
- **\$1,500 (non-renewable)** – Entrance Scholarships of \$1,500 will be awarded to IB Diploma graduates with predicted scores of 28–29.
- **\$1,000 (non-renewable)** – Entrance Scholarships of \$1,000 will be awarded to IB Diploma graduates with predicted scores of 24–27.

Entrance scholarships valued at 50% of the above amounts are also available to students who begin their studies in January.

Offers of the above scholarships to IB students will be guaranteed based on predicted scores. Actual scholarship awards will be increased to the respective level if final IB scores move a student to a higher category than the predicted-score scholarship offer. For students whose final IB scores drop lower than the predicted score, the initial scholarship offer will be maintained. NSAC's IB Scholarship Program is dedicated to students who graduate with IB diplomas. IB students who do not satisfy the requirements for the diploma will receive scholarships through the regular Guaranteed Entrance Scholarship Program.

### **Atlantic Scholars Awards**

NSAC annually awards at least five renewable entrance scholarships to students entering a full-time program of study either directly from high school or with no advanced standing from other post-secondary study. Atlantic Scholars Awards will provide tuition (for the respective program of study) and residence costs (at shared-room rate, for as long as the recipient chooses to live in residence). The scholarship does not cover meals, books, and student fees. In order to qualify for the value of the shared-room portion of room and board fees, the recipient must reside in residence for the full academic year, each year the scholarship is held. Students entering either technical or degree programs at the university are eligible. Only those applicants who have achieved a minimum average of 85% on the courses required for admission shall be considered. Selection criteria include academic performance (on courses required for admission), geographic distribution (in most years at least one student from each of the Atlantic Provinces will be awarded a scholarship), extracurricular activity, and a recommendation from an official representative (e.g., Guidance Counsellor) of the high school or other previously attended post-secondary educational institution. The Atlantic Scholars Awards are tenable for a maximum of four years. To be eligible for scholarship renewal, students must maintain an annual average of 85%. (See information on criteria for renewable scholarships on page XXX.) Recipients of Atlantic Scholars Awards are not eligible to receive other guaranteed entrance scholarships. Recipients of renewed Atlantic Scholars Awards are also not eligible for internally selected In-Program scholarships. The Atlantic Scholars Awards are valued at approximately \$9,800 for the first year and have a potential total value over four years of \$39,000. The actual value is dependent on the number of courses taken and whether the residence portion is accepted. Applications must be submitted to the NSAC Awards Office no later than March 21, 2012.

### **Doug Bailey Memorial Bursary**

Farmers Dairy awards a \$2,000 bursary to a student in any year of any program at NSAC who is a family member of a Farmers Dairy shareholder or employee. The bursary is named in memory of Doug Bailey, a former President and CEO. Selection criteria include leadership, extracurricular and community activities, financial need, and a sound academic record. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **Bible Hill Garden Club Bursary**

The \$500 Bible Hill Garden Club Bursary is awarded to an NSAC student from the Truro area. Preference is given to students in at least the second year of study in Horticulture, preferably a landscape program. Selection criteria include academic performance and financial need. Applications must be submitted to the NSAC Awards Office by October 5.

### **Vera Caldwell Memorial Bursary**

This \$500 bursary will be awarded annually, based on financial need, to a deserving International student studying at NSAC. The bursary is in memory of Vera Caldwell, a teacher and life-long learner who actively supported education for students from developing nations. Students in all programs of study at NSAC who are paying international student fees are eligible. Preference will be given to students studying full-time in undergraduate or diploma programs. Applications must be submitted to the NSAC Awards Office no later than October 5.

### **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, who is 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 no later than May 14.

### **Randy Carey Memorial Scholarship**

A \$1,000 scholarship is awarded annually to a student from the Annapolis Valley entering a degree/diploma program at NSAC who is interested in pursuing a career in agriculture. As a memorial to Randy Carey, who worked for Stirling Fruit Farms for much of his career, preference will be given to students with interests in the Horticulture industry. Selection criteria include farm background, career plans, and academic performance. Applications must be submitted to the NSAC Awards Office by May 14.

### **Chicken Producers of Nova Scotia Bursary**

The \$1,000 Chicken Producers of Nova Scotia bursary is awarded to an NS student at NSAC who shows a demonstrated interest in pursuing the study of poultry. Preference will be given to applicants with a farming background. Students in all years of study are eligible. A student may not receive this scholarship more than once. Applications must be submitted to the NSAC Awards Office by September 20.

### **George & Lottie Cook Memorial Scholarship**

The \$500 George and Lottie Cook Memorial Scholarship is awarded annually to an NS student enrolled in the first or second year of any program of study at NSAC. Selection criteria include academic performance and financial need. No application is required.

### **Co-op Atlantic Agricultural Scholarship**

Two scholarships are available to first-year students at NSAC who are Atlantic Canadian residents: one \$1,000 scholarship to a technology program student and one \$3,000 scholarship to a degree program student. Both scholarships are non-renewable, and are not based on financial need. To be eligible, an applicant must be a member or full-time employee of a member co-operative of Co-op Atlantic, or have a parent/guardian who is a member or employee of a member co-operative of Co-op Atlantic. Selection criteria include academic performance, extracurricular and community involvement, work experiences and the applicant's exposure to or understanding of agricultural co-operatives. Applications, accompanied by a 500-word essay, must be submitted to the NSAC Awards Office by September 20.

### **Dairy Farmers of New Brunswick Scholarship**

The Dairy Farmers of New Brunswick offers a \$750 scholarship to an NB resident who is enrolled in any year of an approved technician or technology diploma or certificate program relating to agriculture. For further information and application form, contact [nbmilk@nbmilk.com](mailto:nbmilk@nbmilk.com) or (506) 432-4330. Application deadline is June 15.

### **Dairy Farmers of New Brunswick Memorial Scholarship**

The Dairy Farmers of New Brunswick offers a \$750 scholarship to an NB resident who is enrolled in the first year of a recognized post-secondary agricultural program. For further information and application form, contact [nbmilk@nbmilk.com](mailto:nbmilk@nbmilk.com) or (506) 432-4330. Application deadline is June 15.

### **Dykeview Farms Ltd. Scholarship**

Dykeview Farms Ltd. offers a \$1,000 scholarship to NS students entering a program of study at NSAC. Preference will be given to students from Kings County (with additional preference to students from Northeast Kings Education Centre) planning to study in a program directly related to farming and production agriculture (e.g., Diploma in Business Management – Agriculture, or B.Sc.(Agr.) in Agricultural Business, Plant Science, or Integrated Environmental Management). Selection is based on financial need, community involvement, and academic performance. Application deadline is May 7.

### **Fall River Garden Club Bursary**

The \$250 Fall River Garden Club Bursary will be presented to a student entering a program of study relating to horticulture. Selection will be based on financial need and career plans. Preference will be given to students from the Fall River, Waverley, Wellington, Oakfield, Lakeview or Windsor Junction, NS, areas. Other NS students will be considered. Applications must be submitted to the NSAC Awards Office by October 5.



### **T. Beverly Milligan Gale Memorial Bursary**

The T. Beverly Milligan Gale Memorial Bursary was established in 2010 by Bev's husband, Bob, in recognition of her spirit and love of the gardens at NSAC. This \$1,000 award will go annually to an NSAC student enrolled in any year of study at NSAC who has shown an interest in horticulture, particularly landscape design and care. Preference will be given to mature students. Selection criteria will include career plans, academic performance, and financial need. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **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 who have aspirations of working in the agricultural industry. Selection criteria include academic performance, extracurricular activities, part-time employment, and career plans. Application forms with copies of transcripts must be received by August 26 at: Windsor Agricultural Society, PO Box 368, Windsor, NS B0N 2T0.

### **Kings County Federation of Agriculture Bursary**

The \$500 Kings County Federation of Agriculture Bursary is awarded to a resident of Kings County, NS, entering the first year of full-time study at NSAC. Selection criteria include financial need, academic performance, and contribution to and participation in the agricultural industry of Kings County. The selection will be made by the donor. Applications are available from and must be received by June 1 at: 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 three \$1,000 scholarships to NS students, in any year of any program of study at NSAC. At least one of the scholarships annually will be available to a student in a technology program of study. Selection criteria include: financial need, academic performance, and demonstrated interest in a career in the Agri-food industry as reflected by summer employment and/or extracurricular involvement. This scholarship is not available to students receiving other scholarships totalling \$1,000 or more. Applications must be submitted to the NSAC Awards Office no later than October 1.

### **C. C. MacDougall Memorial Scholarship**

This \$250 scholarship is awarded to a student pursuing a degree or diploma in Agriculture, Home Economics, or Veterinary Medicine. To be eligible, a student must have been a 4-H member from Kings County, NB, or have parents who raise or breed Guernseys anywhere in NB. The application form must be submitted to the NSAC Awards Office no later than September 20.

### **Bill Mathewson Memorial Bursary**

In memory of Professor Emeritus Bill Mathewson, who taught Animal Science course work at NSAC for twenty years, a \$1,000 bursary will be awarded annually to a student in any year of any program to assist in furthering their education through study/travel in another country. This bursary has been made available through generous contributions from students, NSAC colleagues, and friends and associates at church and within the agricultural industry, in particular the sheep breeders of Nova Scotia. In applying for consideration, students will submit a proposal to participate in such activities as a study semester abroad, a specialized training course, an internship or a development project, or to attend a conference to make a presentation. Applications must be submitted to the NSAC Awards Office no later than October 5.

### **Harrison McCain Scholarships**

Valued at \$16,000 over four years, or \$8,000 over two years for students entering two-year programs of study (\$4,000 per year), the Harrison McCain Scholarships will be awarded to three students entering the first year of any program of study at NSAC. This scholarship is open to Canadian high school graduates who are maintaining an 80% average in their senior year of high school. Primary consideration will be given to financial need, leadership qualities, and a recognized initiative in funding their own education. The scholarship is renewed based on the recipient maintaining full-time study (at least four courses per semester) and carrying an academic average of 60% in year one, 70% in year two, and 75% in year three. The Harrison McCain Scholarship is tenable at NSAC for a maximum of four years of study and is not transferable. Applications are due at the NSAC Awards Office by March 21, 2012.

### Donald McInnes Award

This \$750 scholarship is sponsored by Pictou Mutual Insurance Company to commemorate the 40 years of service Donald McInnes provided on their Board of Directors. This award is open to all students at NSAC. Selection criteria include commitment to and involvement in the community and leadership provided in student activities, academic performance and financial need. A student may not be selected for this award more than once. Applications must be submitted to the NSAC Awards Office no later than September 20.

### Newfoundland and Labrador Federation of Agriculture Scholarships

To encourage local students to pursue careers in the Agri-products industry, the Newfoundland and Labrador Federation of Agriculture awards two \$1,000 scholarships to Newfoundland and Labrador students (preferably one from the East Coast and one from the West Coast) entering studies at NSAC. Selection criteria include academic performance and financial need. No application is required.

### Newfoundland and Labrador Provincial Scholarships

The Newfoundland and Labrador government, through its Department of Education, awards three scholarships of \$1,000 each to NL students entering a degree program at NSAC. Selection will be based on academic performance. No application is required.

### NSAC Alumni Family Bursaries

Several \$1,000 and \$500 bursaries will be awarded annually to family members of NSAC Alumni studying at NSAC. Selection criteria include academic performance and financial need. Students in any year of any program are eligible. Applications are to be submitted online. The deadline is September 20.

[www.nzac.ca/alumni/alumnifamilybursary/apply](http://www.nzac.ca/alumni/alumnifamilybursary/apply)

### NSAC Bursaries

NSAC provides \$1,000 bursaries to students in need of financial assistance. To be eligible students must be in good standing, must have spent at least one term of full-time study at NSAC, and must be registered on a full-time basis for both semesters of the academic year.

NSAC students in need of financial assistance can apply for an NSAC bursary on an ongoing basis throughout the academic year. Applications should be submitted to the NSAC Awards Office.

### NSAC Entrance Scholarships to Cobequid Educational Centre Students

The NSAC Entrance Scholarship for students from the Cobequid Educational Centre will cover the full first-year tuition for the technical or degree program which the student has chosen. The first-year value of the scholarship is approximately \$5,660 for degree students and \$4,200 for technical students.

*Eligibility:* The top three students graduating from CEC and entering the first year of study in any NSAC program\* will be awarded the NSAC Entrance Scholarships for CEC Students. Selection will be based on the average from the required courses (minimum average of 80%) combined with the school's final rankings. *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. *Presentation:* The NSAC Entrance Scholarships for CEC Students will be announced at CEC's graduation and will be formally presented at NSAC's Scholarship Banquet in October.

\* In the case where one of the top three students from the Cobequid Educational Centre entering studies at NSAC receives an Atlantic Scholars Award, that student would not be eligible to receive the NSAC Entrance Scholarships 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 receive another guaranteed entrance scholarship.

### NSAC Scholarships for International Students (including US Students)

Scholarships from \$1,000 to \$5,000 will be awarded to selected International students enrolled for the full year in a program of study at NSAC. All students paying the International tuition differential are eligible for consideration. The awards are merit-based and normally require registration in 80% of the normal course load for the program of study in both the previous and current years of study.

Entrance scholarships will be awarded to outstanding applicants who have a minimum of 80% or equivalent average on the courses required for admission. The number and value of awards will be dependent on the number of International students eligible for consideration. 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 \$750 scholarship is awarded to an NS student with a farm background who has a solid academic record and financial need. Students studying in any year of any program who have not qualified for other significant awards are eligible. Applications must be submitted to the NSAC Awards Office no later than October 1.

### **Nova Scotia Power Inc. University Scholarship**

The \$1,500 Nova Scotia Power Inc. university entrance scholarship is awarded to an NS student entering on a full-time basis the first year of an undergraduate degree program at NSAC. The scholarship is tenable for up to four years (renewed by having maintained 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 by October 1.

### **Nova Scotia Technology Education Association Scholarship**

The Nova Scotia Technology Education Association is pleased to offer an entrance scholarship in the amount of \$500 to NSAC's Bachelor of Technology in Applied Science program. Flexibility is the key to this innovative program, the first degree of its kind in Eastern Canada. The program provides a hands-on applied science degree with a curriculum that includes lab work and group projects. Upon completion, students can apply for direct admission in Acadia's Bachelor of Education Degree in Technology. The application deadline is March 31.

*nstea.nstu.ca*

### **Nova Scotia Veterinary Medical Association Bursary**

The \$500 Nova Scotia Veterinary Medical Association Bursary will be awarded to an NS student in the first year of the Veterinary Technology program. Selection criteria include financial need and academic performance. Applications must be submitted to the NSAC Awards Office no later than October 5.

### **Operation Red Nose Bursaries**

Two bursaries are sponsored by NSAC's Students' Union, funded by donations to their Operation Red Nose (ORN) campaign. A \$200 bursary will be awarded to a student beginning studies at NSAC who participated in ORN or was active in MADD/SADD or other similar organizations in his/her high school or home community. A \$400 bursary will be awarded to a returning student active in his/her home community and at NSAC. Secondary consideration will be given to academic performance and financial need. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **RBC Financial Group Entrance Scholarship**

RBC Financial Group, through the RBC Foundation, sponsors a \$1,000 Entrance Scholarship to be awarded to a student from a farm family who is entering the first year of the B.Sc.(Agr.) program at NSAC. Selection criteria include academic performance, extracurricular involvement, and career goals. Secondary consideration may also be given to geographic location. Applications must be submitted to the NSAC Awards Office no later than May 22.

### **Ted Rose Memorial Bursary**

The \$500 Ted Rose Memorial Bursary will be awarded to a student who plans to operate a livestock farm. Selection criteria include a documented commitment to animal welfare, financial need, and sound academic performance. Applications must be submitted to the NSAC Awards Office by October 5.

### **George James Schaller Memorial Scholarship**

In memory of George J. Schaller, Class of 1948, a \$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.

### **Anna Helvig Schousboe Memorial 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 at a post-secondary institution. Application information is available at the NSAC Awards Office. The application deadline is September 20.

### **B. S. Sodhi Memorial Bursary**

The \$1,000 B. S. Sodhi Memorial Bursary is awarded annually to a student paying International student fees. Students in all programs of study are eligible. Preference will be given to students in undergraduate and technical programs, and selection will be based on financial need. Applications must be submitted to the NSAC Awards Office no later than October 5.

### **Sport Leadership Award**

The \$1,000 Sport Leadership Award recognizes a high school varsity athlete enrolling full-time in a program of study and planning on participating in a sport at the varsity level at NSAC. To be eligible, applicants must have a high school average of 75% in the courses required for admission to NSAC. Recipients of other major entrance scholarships are not eligible. Selection criteria include financial need, sport skills, and leadership. The Sport Leadership Award may be renewable for one year, conditional on the recommendation of the varsity coach(es) in the sport(s) of participation and an average of at least 65% from the first year of full-time study. Applications, including two letters of reference (one of which is from a high school coach commenting on excellent sport skills, athletic ability, team leadership, coach ability, and positive attitude) and a resumé, must be submitted to the NSAC Awards Office by May 14.

### **Stewiacke Valley Garden Club Bursary**

The \$250 Stewiacke Valley Garden Club Bursary is awarded to a student from the Stewiacke Valley area of Nova Scotia studying at NSAC. Selection criteria include involvement in extracurricular and community activities, financial need, and academic performance. Applications must be submitted to the NSAC Awards Office by October 5.

### **F. W. Walsh Memorial Scholarship**

In memory of the outstanding agriculturalist F. Waldo Walsh, this \$500 scholarship is awarded to a student who is admitted to the first year of a degree program at NSAC. Selection is based primarily on academic performance. Financial need and participation in school and community affairs will also be considered. Applications must be submitted to the NSAC Awards Office no later than October 5.

### **Wentworth Valley Garden Club Bursary**

The \$500 Wentworth Valley Garden Club Bursary is awarded to a student from the Colchester or Cumberland County area of Nova Scotia studying in a program at NSAC related to Horticulture. Selection will be based primarily on financial need, with sound academic performance secondary. Applications must be submitted to the NSAC Awards Office by October 5.

### II. CONTINUATION SCHOLARSHIPS AND BURSARIES

The following scholarships and bursaries are available exclusively to students returning to studies beyond the first year of the various programs at NSAC. Students are encouraged as well to check the scholarship listings in Section VII (*Other Continuing External Scholarships and Bursaries*).

#### **Acadian Seaplants Limited Scholarship**

A \$1,000 scholarship will be presented annually to a senior undergraduate or graduate Aquaculture student at NSAC, preferably undertaking course or project work related to aspects of marine bioproducts or the plant sciences. Applications must be submitted to the NSAC Awards Office no later than September 24.

#### **Animal Nutrition Association of Canada (Atlantic Division) Scholarship**

The Atlantic Division of the Animal Nutrition Association of Canada awards a \$700 scholarship to a student who is entering the third year of the B.Sc.(Agr.) program. Selection criteria include academic performance and leadership in student and community affairs. This scholarship is not available to students receiving other scholarships of higher value. No application is required.

#### **Ralph H. Armstrong Memorial Bursary**

The family and friends of the late Ralph Hallett Armstrong award a memorial bursary of \$250 to a student who has successfully completed at least one year of study at NSAC. Former and current 4-H club members from Kings and Annapolis counties in Nova Scotia are eligible to apply. Selection is based on financial need and involvement in school, athletic, and/or community organizations. Applications must be submitted to the NSAC Awards Office no later than September 24.

#### **Atlantic Council of Crop Life Canada Bursaries**

Two \$500 bursaries will be awarded to technical students from agricultural backgrounds who plan to pursue employment in the agricultural sector following studies at NSAC. Preference will be given to students whose backgrounds, course and project work, summer employment, and career plans reflect an interest in the crop protection industry. The Atlantic Council of Crop Life Canada is the organization of distributors, dealers, and suppliers of crop protection products in Atlantic Canada. As part of the application, students will write a brief essay (maximum of 500 words) on their background and their future plans, and how their course of study is serving to prepare them for a future in the industry. Applications must be submitted to the NSAC Awards Office no later than September 24.

#### **Atlantic Farm Mechanization Show Scholarship**

The Atlantic Farm Mechanization Show awards one \$1,000 scholarship to a student from the Atlantic Provinces who has completed at least one year of study at NSAC in the Engineering Diploma program or the Integrated Environmental Management major 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 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.

#### **Paul Babineau Memorial Scholarship**

The Atlantic Farm Mechanization Show awards a \$1,000 scholarship in memory of Paul Babineau, a long-time director on their board, to a student from the Atlantic Provinces who has completed at least one year of study at NSAC in the Engineering Diploma program or the Integrated Environmental Management major 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.

### **The Honourable Dr. Roger S. Bacon Scholarship in Agriculture**

In keeping with the Honourable Dr. Roger S. Bacon's lifetime interest in and service to agriculture, a \$1,500 scholarship will be awarded annually to an NS student entering the final year of any program at NSAC (technical, undergraduate or graduate) who has plans to pursue a long-term career in agriculture. Dr. Bacon was a dairy farmer and blueberry producer from Cumberland County, NS, who served as an MLA for his constituency; during his political career he was a well-respected and long-serving Minister of Agriculture and, for a time, Premier of NS. Selection criteria include career plans, academic performance, and financial need. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **Doug Bailey Memorial Bursary**

Farmers Dairy awards a \$2,000 bursary to a student in any year of any program at NSAC who is a family member of a Farmers Dairy shareholder or employee. The bursary is named in memory of Doug Bailey, a former President and CEO. Selection criteria include leadership, extracurricular and community activities, financial need, and a sound academic record. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **A. B. Banks Memorial Scholarship**

The \$500 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.

### **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 will be awarded annually to an NB resident who is enrolled in a post-secondary agricultural program. Selection will be based on academic achievement, financial need, involvement in agriculture, and interest in the poultry or food industry. Applications must be submitted to the NSAC Awards Office no later than October 15.

### **Bible Hill Garden Club Bursary**

The \$300 Bible Hill Garden Club Bursary is awarded to an NSAC student from the Truro area. Preference is given to students in at least the second year of study in Horticulture, preferably the Managed Landscapes program. Selection criteria include academic performance and financial need. Applications must be submitted to the NSAC Awards Office by October 5.

### **David W. Brown Memorial Bursary**

The ACA Co-operative Limited/Eden Valley Farms Limited awards two \$500 bursaries to students from either Nova Scotia or Prince Edward Island entering a second year of study. Selection criteria include academic performance, financial need, and interest in farming (the poultry industry in particular). Applications must be submitted to the NSAC Awards Office no later than September 24.

### **Dr. John Bubar Scholarship**

Two \$1,000 Dr. John Bubar Scholarships will be awarded annually to NB students in the B.Sc.(Agr.) program in the second or third year of study who are not in receipt of other significant scholarships. Selection criteria include academic performance and financial need. No application is required.

### **Merle Cail Memorial Scholarship**

The \$750 Merle Cail Memorial Scholarship is awarded annually to a senior undergraduate student or a graduate student from Atlantic Canada at NSAC whose course or project work reflect an interest in organic agriculture. Selection criteria include academic performance, financial need, and commitment to organic agriculture. Application forms, accompanied by one letter of recommendation, must be submitted to the NSAC Awards Office no later than September 20.

### **Vera Caldwell Memorial Bursary**

This \$500 bursary will be awarded annually, based on financial need, to a deserving International student studying at NSAC. The bursary is in memory of Vera Caldwell, a teacher and life-long learner who actively supported education for students from developing nations. Students who are paying International student fees in all programs of study at NSAC are eligible. Preference will be given to students studying full-time in undergraduate or diploma programs. Applications must be submitted to the NSAC Awards Office by October 5.

### **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, who is 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 no later than May 14.

### **James Card Bursaries**

At least three awards with a total value of \$4,000, sponsored by James Card, will be awarded annually to students in financial need. Preference will be given to International students. Applications will be reviewed December 7.

### **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 NS Federation of Agriculture who was also active in other local farm and community organizations. Selection criteria include financial need, involvement in community activities, and leadership experience. In the event that two or more students possess otherwise equal qualifications, preference will be given to a student from Inverness County. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **Chartwells Scholarships**

Compass Group Canada awards \$4,000 in scholarships annually to outstanding students with high academic performance who, for one reason or another, have not qualified for other significant awards. Preference will be given to students living in residence. No application is required.

### **Chicken Producers of Nova Scotia Bursary**

The \$1,000 Chicken Producers of Nova Scotia bursary is awarded to an NS student at NSAC who shows a demonstrated interest in pursuing the study of poultry. Preference will be given to applicants with a farming background. Students in all years of study are eligible. A student may not receive this award more than once. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **Class of 1950 Bursary Fund**

The Class of 1950, in commemoration of their fiftieth anniversary of graduation from NSAC, provides an annual \$1,000 bursary to assist NSAC students in financial need. Applications must be submitted to the Awards Office by October 5.

### **Donald E. Clark Memorial Scholarship**

In memory of Donald E. Clark, former Professor and Head of the Engineering Department, one or more scholarships (with total value of \$500) are awarded to final-year students in the Engineering Department. Selection criteria include academic performance, interest, and aptitude in the engineering field. No application is required.

### **Colonel Charles Coll Memorial Scholarship**

In memory of Colonel Charles H. Coll, a \$250 scholarship is awarded to a student in the final year of an Animal Science option. Selection criteria include academic performance, involvement and interest in poultry, and achievement in and contribution to 4-H. No application is required.

### **Charles M. Collins Memorial Scholarship**

A \$1,000 scholarship will be awarded annually to a student at NSAC who is enrolled in a program of study relating to Horticulture. The scholarship is in memory of Charles McKittrick Collins, who taught Horticulture at NSAC for twenty-five years and supervised the landscaping and maintenance of the campus grounds, and for whom the Collins Horticultural Building was named in 1975. Preference will be given to students studying in the Bachelor of Technology program in Environmental Landscape Horticulture who have not qualified for other significant awards. No application is required.

### **George & Lottie Cook Memorial Scholarship**

The \$500 George and Lottie Cook Memorial Scholarship is awarded annually to an NS student enrolled in the first or second year of any program of study at NSAC. Selection criteria include academic performance and financial need. No application is required.

### **The Renée Covill Scholarships**

Five \$2,000 scholarships will be awarded to Atlantic Canadian students at NSAC studying in a program leading to a Bachelor's degree with a major in Plant Science (Agronomy or Horticulture) or Environmental Landscape Horticulture. Preference will be given to students who have course and project work that reflect a commitment to environmental issues and career interests in growing plants (including farming). Selection criteria are academic performance, financial need, and career plans. Applications must be submitted to the NSAC Awards Office by September 20.

### **Dorothy Creelman Cox Memorial 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 is based on academic performance in the first year. No application is required.

### **Dr. Kenneth Cox Memorial Scholarship**

In memory of Dr. Kenneth Cox, former Principal, this \$100 scholarship is awarded to a student entering the final year of the B.Sc.(Agr.) program. No application is required.

### **Dairy Farmers of New Brunswick Scholarship**

The Dairy Farmers of New Brunswick offers a \$750 scholarship to an NB resident who is enrolled in any year of an approved technician or technology diploma or certificate program relating to agriculture. For further information and application form, contact [nbmilk@nbmilk.com](mailto:nbmilk@nbmilk.com) or (506) 432-4330. Application deadline is June 15.

### **Dairy Farmers of Nova Scotia Bursary**

The Dairy Farmers of Nova Scotia awards a \$1,000 bursary to an NS student doing project or course work related to the dairy industry. Students in the third or fourth year of the B.Sc.(Agr.) program (any option) or graduate students undertaking course or project work related to the dairy industry are eligible. Selection criteria include proven interest and experience in the dairy industry, the potential beneficial impact of study on the Nova Scotia dairy industry, and academic performance. Applications must be submitted to the NSAC Awards Office no later than September 24.

### **Dartmouth Horticultural Society Bursary**

The Dartmouth Horticultural Society sponsors two \$500 bursaries to students who have completed at least one year of study in a plant-related program of study at NSAC. Selection criteria include financial need and academic performance. Preference will be given, in the following order, to students from HRM, from Nova Scotia, and from elsewhere in Canada. Applications must be submitted to the NSAC Awards Office by October 5.

### **Eastern Veterinary Technicians Association Bursary**

The Eastern Veterinary Technicians Association awards a \$100 bursary and a stethoscope (value \$100) to a second-year student in the Veterinary Technology program. This bursary will be awarded to the student who best demonstrates proficiency in veterinary clinical skills during the first year and externship at the Atlantic Veterinary College. No application is required.

### **Ernest L. Eaton Memorial Scholarships**

One \$1,000 scholarship will be awarded to a student entering the third year of the B.Sc.(Agr.) program who has not received scholarships of higher value. Selection is based on the student's average in the second year of the program. No application is required.

### **Egg Producers of Newfoundland & Labrador Scholarship**

The Egg Producers Association of Newfoundland and Labrador awards a \$1,000 scholarship to an NL student entering the third or fourth year of the B.Sc.(Agr.) program. No application is required.

### **Farm Credit Canada Scholarship**

The Atlantic Region of Farm Credit Canada awards a \$750 scholarship to a Canadian student entering the fourth or final year of the B.Sc.(Agr.) program in the Agricultural Economics or Agricultural Business option. Selection criteria include academic performance; interest and competence in farm management and in the subjects associated with the economics of the farm business; interest and involvement in university 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.



### **Ena Fenton Memorial Scholarship**

Sponsored by the Bedford Horticultural Society, the \$800 Ena Fenton Memorial Scholarship is awarded to a second-year student from the Bedford–Sackville–Waverley district of NS, studying Horticulture or Environmental Studies at NSAC. In years when no student from Bedford, Sackville, or Waverley applies for the scholarship, consideration will be given to other students from HRM (excluding Halifax and Dartmouth). Selection will be based on financial need, career plans, and academic performance. Applications must be submitted to the NSAC Awards Office by October 5.

### **T. Beverly Milligan Gale Memorial Bursary**

The T. Beverly Milligan Gale Memorial Bursary was established in 2010 by Bev's husband, Bob, in recognition of her spirit and love of the gardens at NSAC. This \$1,000 award will go annually to an NSAC student enrolled in any year of study at NSAC who has shown an interest in horticulture, particularly landscape design and care. Preference will be given to mature students. Selection criteria will include career plans, academic performance, and financial need. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **Kevin Grant Memorial Scholarships**

In memory of Kevin Grant, who graduated from NSAC in 1975 with an Animal Science Technician diploma, two \$800 scholarships will be awarded to final-year students in a two-year technology program of study at NSAC. Selection criteria include academic performance, leadership and contribution to campus life, career plans, and financial need. Preference will be given to students enrolled on a full-time basis. Applications must be submitted to the NSAC Awards Office no later than September 24.

### **Chuck Harrison Memorial Bursary**

In memory of Chuck Harrison, Class of 1970, a \$200 bursary is awarded to a final-year Diploma in Business Management student. Selection criteria include leadership and involvement in athletic and other activities at NSAC, and a sound academic record. No application is required.

### **Bonnie R. Haviland Memorial Bursary**

The \$1,000 Bonnie R. Haviland Memorial Bursary will be awarded annually to a student entering the second year of the Veterinary Technology program whose performance in the program 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.

### **John Higgins Memorial Bursary**

In memory of John Higgins, who taught at NSAC, the Atlantic Association of Landscape Designers sponsors a \$500 prize and a free association membership to a student entering the third year of the Bachelor of Technology in Environmental Landscape Horticulture program who has excelled in the area of landscape design during the Diploma in Managed Landscapes Technology program. Selection criteria include academic performance (a minimum 70% average in the second year of the program), and skill and interest in landscape design. 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 an 80% average. One award will be presented, 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 by September 24.

### **Dr. Bill Jenkins Memorial Scholarship**

In memory of Dr. Bill Jenkins, a graduate of the Class of 1938 who served as NSAC Principal from 1964 to 1972, a \$750 scholarship will be awarded to a second- or third-year undergraduate student in any of the Business degree programs at NSAC. Selection criteria will include overall academic performance, leadership record and financial need. No application is required.

### **Randy and Gladys Keddy Memorial Bursary**

The \$1,000 Randy and Gladys Keddy Memorial Bursary will be awarded to a second-year technical or third-year degree student whose background, program of study, course and project work, and summer employment show a genuine interest in working in the agricultural industry following graduation. Selection criteria include career goals, solid academic performance, and financial need. Students receiving other scholarships valued at \$1,000 or greater will not be eligible for this scholarship. Given similar or equal qualifications of candidates, preference will be given to students from the Annapolis Valley of Nova Scotia with farm backgrounds. Applications must be submitted to the NSAC Awards Office by September 20.

### **Kings Mutual Insurance Scholarships**

In memory of Past Directors, the Kings Mutual Insurance Company awards three \$1,000 scholarships to NS students, in any year of any program of study at NSAC. At least one scholarship will be awarded to a technical student. 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 totaling \$1,000 or more. Applications must be submitted to the NSAC Awards Office no later than October 1.

### **P. Max Kuhn Scholarship**

The \$2,000 P. Max Kuhn Scholarship will be awarded annually to an NS student with a farm background who is enrolled full-time in any year of any program and whose course and project work and summer employment demonstrate an interest in working in the agriculture industry after graduation. Selection criteria include financial need and academic performance. Preference will be given to students who have completed at least one year of study. A student may receive this scholarship only once. Applications must be submitted to the NSAC Awards Office by September 20.

### **Landscape Nova Scotia Bursary**

Landscape Nova Scotia awards a \$500 bursary to an NS student studying in a landscape-related program. Selection criteria include academic performance and financial need. No application is required.

### **Lunenburg/Queens Federation of Agriculture Scholarship**

The \$300 Lunenburg/Queens Federation of Agriculture Scholarship is awarded to a student from Lunenburg County or Queens County in NS who has 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 by October 1.

### **C. C. MacDougall Memorial Scholarship**

This \$250 scholarship is awarded to a student pursuing a degree or diploma in Agriculture, Home Economics or Veterinary Medicine. To be eligible, a student must have been a 4-H member from Kings County, NB, or have parents who raise or breed Guernseys anywhere in NB. The application form must be submitted to the NSAC Awards Office no later than September 20.

### **Angus and Tena MacLellan Memorial Scholarship**

This \$250 scholarship is awarded to a student entering the third or fourth year of a degree program. Angus and Tena MacLellan farmed in Cloverville, Antigonish County, NS. No application is required.

### **Paul R. MacPhail PEI Potato Industry Scholarship**

In memory of Paul R. MacPhail, the PEI Potato Board offers a \$500 scholarship to PEI students studying at the graduate or undergraduate level of an agricultural degree program at any recognized Canadian agricultural institution, or to students in a postgraduate degree program at a recognized Canadian university, carrying out research projects related to potato production and utilization (including all disciplines, e.g., biotechnology, pathology, entomology, etc.). Undergraduate students must demonstrate through course work, summer employment and/or home farm background an interest in working in the potato industry. Selection criteria for potential undergraduate scholarships include academic performance, extracurricular activities, and employment history. Graduate students will be considered on the basis of academic performance and relevance of the project to the improvement of the PEI potato industry. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **Dr. Herbert F. MacRae Memorial NSAC/Macdonald College Exchange Award**

This \$1,000 award is designed to support student and staff exchange between NSAC and Macdonald College of McGill University. Students considering a semester or a year of study at Macdonald College as part of the requirements of a program of study at NSAC, or students transferring to a program of study at Macdonald College, should inquire at the Awards Office for details.

### **Joseph E. Mapplebeck Memorial Bursaries**

In honour 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 technology students at NSAC. Eligible candidates will have successfully completed the first year of a technology program and demonstrate financial need. A letter of recommendation from a faculty member must accompany this application. At least one of the two awards will be made available annually to a student in the Plant Science Technology program. Applications must be submitted to the NSAC Awards Office no later than September 24.

### **Donald McInnes Award**

A \$750 scholarship is sponsored by Pictou Mutual Insurance Company to commemorate the 40 years of service Donald McInnes provided on their Board of Directors. This award is open to all students at NSAC. Selection criteria include commitment to and involvement in the community, leadership provided in student activities, academic performance, and financial need. A student may not be selected for this award more than once. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **H. A. L. McLaughlin Memorial Scholarship**

In memory of H. A. L. McLaughlin, who taught horticulture at NSAC from 1953 to 1971, this \$100 scholarship is awarded to a student in Horticulture. No application is required.

### **Bill Mathewson Memorial Bursary**

In memory of Professor Emeritus Bill Mathewson, who taught Animal Science course work at NSAC for twenty years, a \$1,000 bursary will be awarded annually to a student in any year of any program to assist in furthering their education through study/travel in another country.

This bursary has been made available through generous contributions from students, NSAC colleagues, and friends and associates at church and within the agricultural industry, in particular the sheep breeders of Nova Scotia. In applying for consideration, students will submit a proposal to participate in such activities as a study semester abroad, a specialized training course, an internship or a development project, or to attend a conference to make a presentation. Applications must be submitted to the NSAC Awards Office by October 15.

### **Karen Meek Memorial Scholarship**

In memory of Karen Meek, who studied Agricultural Business at NSAC 1980–82, a \$1,500 scholarship will be awarded annually to a student who has completed at least one year in the B.Sc.(Agr.) Environmental Science program. Selection criteria include academic performance, financial need, and contribution to campus life. This scholarship is not available to students receiving other scholarships totaling \$1,000 or more. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **John Miller Memorial Bursary**

The \$500 John Miller Memorial Bursary is awarded to an NS student, in any year of any program at any agricultural university/college in Canada, whose course and project work and career plans reflect an interest in the hog industry or whose application shows interest, understanding, and appreciation for Nova Scotia's hog industry. The bursary is in memory of John Miller, who served as Secretary/Manager of Pork Nova Scotia from 1983 to 1997. Applications must be submitted to the NSAC Awards Office no later than October 1.

### **John Reginald (Reg) Moore Memorial Bursaries**

In memory of J. R. (Reg) Moore, who graduated from NSAC in 1947 and retired from a career with Farm Credit Canada, two \$600 bursaries will be awarded to students from Colchester County, NS, who have completed at least one year of study in any program. Selection will be based on financial need and sound academic performance. To be eligible students must be maintaining a minimum cumulative average of 70%. Preference will be given to students studying full-time. Applications must be submitted to the NSAC Awards Office no later than September 24.

### **A.C. Neish Memorial Trust Scholarship**

The A.C. Neish Memorial Trust awards a \$750 scholarship to an NSAC student entering the final year of the B.Sc.(Agr.) program. Selection criteria include outstanding 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 no later than September 24.

### **New Brunswick Institute of Agrologists Scholarship**

The New Brunswick Institute of Agrologists awards a \$1,000 scholarship to an NB student entering the third year of a degree program in Agriculture at a recognized Canadian institution. Students should indicate their enrollment in one of the following Agrology disciplines: Agricultural Economics and Farm Management; Plant, Animal, Soil and Environmental Sciences; Pest Management; or Agrometeorology. Selection criteria include academic performance, participation in extracurricular activities, and financial need. Applications must be submitted no later than October 1 to either the NSAC Awards Office or Registrar, New Brunswick Institute of Agrologists, PO Box 3479, Station B, Fredericton, NB E3A 5H2. [www.nbagrologists.nb.ca](http://www.nbagrologists.nb.ca)

### **NSAC Bursaries**

NSAC provides \$1,000 bursaries to students in need of financial assistance. To be eligible students must be in good standing, must have spent at least one term of full-time study at NSAC, and must be registered on a full-time basis for both semesters of the academic year.

NSAC students in need of financial assistance can apply for an NSAC bursary on an ongoing basis throughout the academic year. Applications should be submitted to the NSAC Awards Office.

### **NSAC Athletic Bursaries**

Five \$500 awards will be presented to returning student athletes at NSAC. Selection criteria include financial need, involvement in/member of a university varsity team, recommendation from a coach, and satisfactory academic performance. Applications must be submitted to the NSAC Awards Office no later than October 5.

### **NSAC Alumni Family Bursaries**

Several \$1,000 and \$500 bursaries will be awarded annually to family members of NSAC Alumni studying at NSAC. Selection criteria include academic performance and financial need. Students in any year of any program are eligible. Applications are submitted online. The deadline is September 20.

[www.nsac.ca/alumni/alumnifamilybursary/apply](http://www.nsac.ca/alumni/alumnifamilybursary/apply)

### **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 technology student) to returning NS students studying in an animal-related program whose home farm backgrounds, course and project work, and career interests reflect an interest in the dairy or beef industry. To be eligible, students must not have received other major scholarships. Applications must be submitted to the NSAC Awards Office no later than September 24.

### **Nova Scotia Egg Producers Association Scholarships**

Two \$1,500 scholarships will be awarded annually by the Nova Scotia Egg Producers Association to students enrolled in the Animal Science major of the B.Sc.(Agr.) program at NSAC whose course and project work show an interest in poultry. At least one scholarship will be awarded to a final-year student conducting a poultry-related research project in RESM4002 and RESM4003. No application is required.

### **Nova Scotia Federation of Agriculture Bursaries**

The Nova Scotia Federation of Agriculture awards two \$500 bursaries to second-year NS students with farm or 4-H backgrounds (one technology 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 \$750 scholarship is awarded to an NS student with a farm background, who has a solid academic record and financial need. Students studying in any year of any program who have not qualified for other significant awards are eligible. Applications must be submitted to the NSAC Awards Office no later than October 5.

### **Nova Scotia 4-H Council Award**

A \$300 scholarship will be awarded to a second-year NS student in any program. Selection criteria include academic performance, financial need, and participation in 4-H club activities. Applications must be submitted to the NSAC Awards Office no later than September 24.

### **Nova Scotia Institute of Agrologists Scholarships**

The NSIA awards two \$1,000 scholarships to NS students. One will be awarded to a student entering the third year of the B.Sc.(Agr.) program at NSAC; the second, recognizing the current anniversary of NSIA, to a student entering the second, third or fourth year of the B.Sc.(Agr.) program. In awarding these scholarships, the selection committee will take into consideration academic performance, participation in school and community activities, and degree of interest in studying agrology and pursuing a career in the Agri-food industry. Financial need may also be considered. A student may receive this award only once. Applications must be submitted to the NSAC Awards Office by September 20.

### **NSERC Undergraduate Student Research Awards (USRA)**

The Natural Sciences and Engineering Research Council of Canada sponsors a program of summer research awards to encourage outstanding undergraduate students to undertake graduate studies and pursue research careers in the natural sciences and engineering disciplines at NSAC. The purpose of the award is to supplement the salary of a summer student who is working on an individual research project designed in conjunction with a faculty member who holds an NSERC research grant. The award is for a minimum of sixteen weeks on a full-time basis in research and development in natural sciences and engineering. To be eligible, students must be Canadian citizens or permanent residents, registered full-time as undergraduate students in a natural science or engineering discipline, and have completed at least one year of study with a minimum 70% cumulative average. Applications must be submitted to the Office of Graduate Studies and Research by February 24.

### **Nutreco Canada Inc. Scholarship**

Nutreco Canada Inc. awards a \$1,000 scholarship to a final-year B.Sc.(Agr.) student in the Animal Science option. Selection criteria include academic performance, leadership qualities, and participation in student & community affairs. Applications must be submitted to the NSAC Awards Office no later than September 24.

### **Operation Red Nose Bursaries**

Two bursaries are sponsored by NSAC's Students' Union, funded by donations to their Operation Red Nose (ORN) campaign. A \$200 bursary will be awarded to a student beginning studies at NSAC who participated in ORN or was active in MADD/SADD or other similar organizations in his/her high school or home community. A \$400 bursary will be awarded to a returning student active in his/her home community and at NSAC. Secondary consideration will be given to academic performance and financial need. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **Don Palfrey Memorial Scholarship**

A \$1,000 scholarship will be awarded annually in recognition of the many years of service and contributions to weed science in NS by Don Palfrey. The scholarship will be awarded to an undergraduate student who is carrying out a senior-year research project in the area of pest management, with preference given to students involved in weed science, either through academic work or summer employment. Applications are due at the NSAC Awards Office no later than September 20.

### **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.

### **Passionate Plants Person Award**

The \$750 Passionate Plants Person Award, established by the Atlantic Rhododendron & Horticulture Society, is awarded to a second-year NS student in the Diploma in Managed Landscapes program. The recipient will also receive a one-year membership with ARHS. Preference is given to students whose passion for plants is infectious and who will most impact the way we regard and understand plants in both public and private environments. Other criteria include communication and leadership abilities and financial need. Applications must be submitted to the NSAC Awards Office by October 5.

### **Pork Nova Scotia Prize**

Pork Nova Scotia sponsors a \$350 prize to an NS student with an interest and/or background in swine production. Selection criteria include demonstrated interest in the swine industry (through course or project work), academic performance, and financial need. Applications should be submitted to the NSAC Awards Office no later than October 1.

### **Prajna Athletic Bursaries**

Two \$200 awards (one to a male student and one to a female student) will be presented to returning students at NSAC. These awards were established by Dr. Andre Lirette, a former Professor in the former Animal Science Department at NSAC. To be eligible, students must maintain sound academic performance and have been involved in either a varsity team or an intramural/recreational team at NSAC. Selection criteria include financial need, leadership, and contribution to student life. Applications must be submitted to the NSAC Awards Office no later than October 5.

### **Prince Edward Island Dairy Youth Trust Scholarship**

This \$1,000 bursary is available to the son or daughter of a PEI resident currently pursuing studies at a post-secondary level. Preference will be given to undergraduate students with an interest in animal science, animal genetics and/or business. Applicants must have successfully completed at least the first year of a university/college program. A student may receive the award once. Applications are available online. Application deadline is June 1. [www.holsteinpei.com](http://www.holsteinpei.com)

### **Prince Edward Island Institute of Agrologists Scholarship**

The \$1,000 PEI Institute of Agrologists scholarship is awarded annually to a student from PEI in the third or fourth year of the B.Sc.(Agr.) program who is intending a career as a professional agrologist. In awarding this scholarship the Selection Committee will take into consideration academic performance, university and community involvement, and financial need. A student may receive this award only once. Applications must be submitted to the NSAC Awards Office no later than September 24.

### **Stuart Rath Junior A Bearcat Hockey Education Award Fund**

Awards are available to members of the Truro Junior A Bearcats Hockey Club who are studying at NSAC. Selection is based on academic performance, community service, and the recommendation of the team coaches. Students in second semester and second year must successfully complete the course work in the previous semester to be eligible for continued support. No application is required.

### **Cliff & Grace Retson Memorial Bursary**

In memory of Cliff & Grace Retson, Class of 1934, a \$600 bursary is awarded to an International student 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 no later than October 1.

### **Ira L. Rhodenizer Memorial Scholarship**

In memory of Ira L. Rhodenizer, the Nova Scotia Federation of Agriculture awards a \$500 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 no later than September 24.

### **Dr. Robert G. Rix Bursary**

This bursary of \$300 is awarded to a deserving student. No application is required.

### **J. Arnold Roberts Memorial Scholarship**

In memory of J. Arnold Roberts, a \$750 scholarship is awarded to an outstanding student from Atlantic Canada studying in any year of any program who has not received scholarships of greater value. No application is required.

### **Roop Realities Ltd. Scholarship**

The renewable \$500 Roop Realities Ltd. Scholarship is awarded to a student studying in a landscape-related program who has completed at least one year of study in either the technology or the B.Tech program, with a minimum 80% cumulative average. The scholarship is open to all students, either full-time or part-time, with preference given to students who have had to work hard to maintain their academic standing. No application is required.

### **Howard W. Roper Memorial Bursary**

In memory of Howard W. Roper, a \$500 bursary will be awarded annually by the Nova Scotia/Newfoundland Branch of Holstein Canada to a student who has completed at least one year in any program. Preference will be given to second-year students in the Diploma in Business Management – Dairy Farming. Residents of Nova Scotia or Newfoundland and Labrador who are members of Holstein Canada or members of families with Holstein Canada membership are eligible to apply. 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 no later than October 1.

### **Ted Rose Memorial Bursary**

The \$500 Ted Rose Memorial Bursary will be awarded to a student who plans to operate a livestock farm eventually. Selection criteria include financial need, sound academic performance, and a documented commitment to animal welfare. Applications must be submitted to the NSAC Awards Office by October 5.

### **Rotary Club of Truro International Student Bursary**

This \$1,000 bursary will be awarded annually by the Rotary Club of Truro to an International student studying at NSAC. All undergraduate and graduate students paying the International tuition differential are eligible for consideration. Preference will be given to students registered in a full-time program of study, with additional preference given to students studying for the full year (i.e., at least four courses per semester for undergraduate students). Special consideration will be given to students from a developing country who plan to return and apply their education from NSAC. Selection criteria include financial need and potential impact of the bursary on the student's lifestyle while at school, and future plans. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **Rick Russell Memorial Bursary**

In memory of Rick Russell, a long-time woodsmen coach and Animal Science Technician graduate, a \$500 bursary will be awarded to a woodsmen athlete in the second, third, or fourth year of study in any program at NSAC. The selection criteria include financial need, involvement and leadership in the woodsmen program, and satisfactory academic performance. No application is required.

### **Anna Helvig Schousboe Memorial 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 at a post-secondary institution. Application information is available at the NSAC Awards Office. The application deadline is September 20.

### **George James Schaller Memorial Scholarship**

In memory of George J. Schaller, Class of 1948, a \$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.

### **Scholarships for In-Program Students**

At the discretion of the Scholarship Committee, scholarships of varying amounts will be awarded to students who perform well in their studies at NSAC. The minimum requirement is an 80% average in work of the previous year and no failed courses (including Drop Fails), with preference given to students who have, in addition, maintained a cumulative average of 80%. The average is determined from the full year of study, which is normally defined as September 1 to August 31. The average is determined by all marks earned by the student in the previous year (non-credit courses are included in the calculation of the year's average for degree students). For scholarship purposes, averages are calculated to the nearest whole number (if an average falls exactly between two whole numbers, the average is rounded up). To be eligible, 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 current years. In the event that a recipient is not able to complete the full year, on completion of the first semester on a full-time basis he/she would be entitled to receive half the award announced at the Scholarship Banquet. Students who were registered for the full year in the previous year will be eligible for in-program scholarships for the one remaining semester in the current year if they only have one remaining semester to complete their program requirements.

### **Scholarships for International Students**

Scholarships from \$1,000 to \$5,000 will be awarded to selected International students enrolled for the full year in a program of study at NSAC. The maximum award will be half the tuition for the year of study. All students paying the International tuition differential are eligible for consideration. The awards are merit-based and normally require registration in 80% of the normal course load for the program of study in both the previous and current years of study. In-program scholarships will be offered to outstanding transfer students (an 80% or equivalent average from other post-secondary study is required for consideration) or to returning NSAC students who have a minimum average of 80% in the work of the previous year at NSAC with no failed courses (including Drop Fails). Preference is given to students who have, in addition, maintained a cumulative average of 80%. The number and value of awards will be dependent on the number of International students eligible for consideration. No application is required.

### **Gail Semple Memorial Bursary**

In memory of Gail Semple (née Johnson, of Truro, NS), who had a strong commitment to animal welfare, a \$1,000 bursary is awarded annually to a student planning to study veterinary medicine who has completed at least one year of study at NSAC or who was admitted to the Atlantic Veterinary College in the current year. To be eligible, applicants must be either currently or previously registered in the Pre-Veterinary program at NSAC or currently in the first year of the DVM program at AVC, having completed the Pre-Veterinary requirements at NSAC. Selection criteria include financial need, academic performance, and a background with demonstrated experience in animal welfare. Application forms must be submitted to the NSAC Awards Office no later than September 24.

### **George W. Slipp Memorial Scholarship**

The Chicken Farmers of NB Marketing Board awards an annual \$1,000 scholarship, in memory of George W. Slipp, to an NB resident who is enrolled in a post-secondary agricultural program. Selection is based on academic achievement, financial need, involvement in agriculture, and interest in the poultry or food industry. Applications are available at the NSAC Awards Office, or by e-mail from [nbchicken@rogers.com](mailto:nbchicken@rogers.com). Applications must be submitted to the NSAC Awards Office no later than October 15.



### **G. G. Smeltzer Memorial Bursary**

The \$750 G. G. Smeltzer Memorial Bursary is awarded to a third- or fourth-year student from Atlantic Canada in the B.Sc.(Agr.) program majoring in Plant Science (Agronomy specialization). Selection criteria include a genuine interest in the area of field crops, reflected through course and project work and summer employment, and financial need. No application is required.

### **B. S. Sodhi Memorial Bursary**

The \$1,000 B. S. Sodhi Memorial Bursary is awarded annually to a student paying International student fees. Students in all programs of study are eligible. Preference will be given to students in undergraduate and technology programs and will be based on financial need. Applications must be submitted to the NSAC Awards Office not later than October 5.

### **St. Margaret's Bay Garden Club Bursary**

The \$500 St. Margaret's Bay Garden Club Bursary is awarded to a student from the St. Margaret's Bay area (i.e. from West Dover to Bayswater, NS, and inland from the Bay a distance of 15 km) who is entering or studying Horticulture at NSAC. The application consists of a letter giving the student's name and home address, the reason for choosing a Horticultural program, his/her plans for using the training in Horticulture, and a reason why he/she deserves the bursary; reference letters and a confirmation of enrollment form indicating program of study must be included. Send the application letter to: P.R. Warman, Chair of the Bursary Committee, SMBGC, 268 Boutilliers Point Rd, Boutilliers Point, NS B3Z 1V1. Application deadline is March 15.

### **Jennifer Hayes Starratt Scholarship**

In honour of Jennifer Hayes Starratt, who graduated in 1996 with a B.Sc.(Agr.) degree majoring in Environmental Biology, a \$5,500 scholarship will be awarded to a female student entering the final year of the B.Sc.(Agr.) program. Selection will be based on academic performance, leadership, and involvement in campus activities. The scholarship will not be awarded to a student receiving other significant scholarships. Preference will be given to students who have completed the first three years at NSAC. No application is required.

### **Stewiacke Valley Garden Club Bursary**

The \$250 Stewiacke Valley Garden Club Bursary is awarded to a student from the Stewiacke Valley area of Nova Scotia studying at NSAC. Selection criteria include involvement in extracurricular and community affairs, financial need, and academic performance. Applications must be submitted to the NSAC Awards Office by October 5.

### **William Swetnam Memorial Scholarship**

In memory of William Swetnam, Class of 1956, this \$2,000 scholarship will be awarded to a student from Atlantic Canada in the third or fourth year of the B.Sc.(Agr.) program who has displayed leadership qualities at NSAC. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **Syngenta Pest Management Awards**

Syngenta awards two \$500 scholarships to students at NSAC whose course and project work reflect an interest in the Maritime potato industry. Applicants will be required to submit an essay (300–500 words) expressing an opinion on a topic relating to the crop protection industry; suggested topics include the future of genetically modified plants/crops, or the future of crop protection products in Maritime agriculture (the fit and relevance of the agri-chemical industry to today's agri-food industry). Selection criteria include academic performance, interest in the Maritime potato industry, and potato farm experience or background. Applications must be submitted to the NSAC Awards Office no later than September 24.

### **Bruce Trenholm/Atlantic 1986 Scholarship**

A \$500 prize is awarded to an Atlantic Canada student entering the final year of any program who has 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 no later than October 5.

### **Vice-President's Scholarship**

This \$300 scholarship is awarded to a final-year B.Sc.(Agr.) student. No application is required.

### **Florence (Pineo) Ward Memorial Awards**

In memory of Florence (Pineo) Ward, three to five bursaries with a total value of \$1,500 will be awarded annually to NSAC students in financial need. Recipients will have completed at least one year of study in a technology, B.Tech, or B.Sc.(Agr.) program. Preference will be given to students with sound academic background who have come to NSAC for technical training to enhance their employability but whose financial constraints are limiting their ability to continue their studies. In the event that two or more candidates otherwise qualify equally for one of the awards, preference will be given to students from Boutilier's Point, Halifax County, or Advocate, Cumberland County, in NS. Application forms must be submitted to the NSAC Awards Office no later than October 5.

### **Raymond Webber Memorial Scholarship**

Landscape Nova Scotia and the New Brunswick Horticultural Association jointly award a \$600 scholarship to the most promising second-year Diploma in Managed Landscapes Technology student. Selection criteria include academic performance and practical work skills. No application is required.

### **Wentworth Valley Garden Club Bursary**

The \$500 Wentworth Valley Garden Club Bursary is awarded to a student from the Colchester or Cumberland county area of Nova Scotia studying at NSAC in a program related to Horticulture. Selection will be based primarily on financial need, with sound academic performance secondary. Applications must be submitted to the NSAC Awards Office by October 5.

### **George B. Whalen Memorial Scholarship**

The New Brunswick Milk Marketing Board awards a \$750 scholarship in memory of George B. Whalen, who dedicated a great part of his life to the promotion of a more viable dairy industry in New Brunswick. Applicants must be 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, and involvement in community and future plans. Applications including an essay (300–500 words), two letters of recommendation, and a transcript of marks must be submitted no later than June 15 to: Scholarship Committee, NB Milk Marketing Board, PO Box 490, Sussex, NB E0E 1P0.

[www.nb4h.com/ewelcome/escholarship/escholarship.htm](http://www.nb4h.com/ewelcome/escholarship/escholarship.htm)

### **Michael Whidden Memorial Award**

The \$2,000 Michael Whidden Memorial Award will be awarded to a student who has provided leadership on NSAC's Woodsmen Team, and has maintained a sound academic performance. No application is required.

### **Eric Williams Memorial Scholarships**

Two \$1,000 scholarships sponsored by the Dairy Farmers of Newfoundland and Labrador are awarded to students from Newfoundland and Labrador who have completed at least one year of study at NSAC in any program (generally, one to a technology student and one to a degree student). Selection will be based on academic performance. No application is required.

### **Wild Blueberry Producers Association of Nova Scotia**

#### **Scholarship**

The Wild Blueberry Producers Association of Nova Scotia awards a \$750 scholarship to a Plant Science student entering the third or fourth year of the B.Sc.(Agr.) program. Selection will be based on academic performance and financial need. Preference will be given to someone with interest and experience in small fruits. Applications must be submitted to the NSAC Awards Office no later than October 1.

#### **Young Farmer's Bursary**

One \$500 bursary, sponsored by the PEI Young Farmer's Association, will be presented to a student returning to NSAC for the last year of studies in either the degree program or another multiple-year program. To be eligible, a student must be a PEI resident who will be returning to the farm after completion of the program of studies. The application must include a 250-word essay on why he/she has chosen to return to the farm; four paragraphs describing what the PEI Young Farmers' Association is and what it does year-round for its members; and proof of enrollment at NSAC. Applications must be submitted to the NSAC Awards Office by September 20.

### III. GRADUATE SCHOLARSHIPS AND BURSARIES

The following scholarships are available exclusively to M.Sc. students studying at NSAC.

Graduate students are encouraged to look through the scholarship descriptions listed in Section II (*Continuation Scholarships and Bursaries*), Section V (*Scholarships and Bursaries for Continuing Studies Beyond NSAC*) and Section VII (*Other Continuing External Scholarships and Bursaries*) for awards available to students in any year of any program. M.Sc. students are eligible for consideration for awards targeted to any year of any program.

#### **Acadian Seaplants Limited Scholarship**

A \$1,000 scholarship will be presented annually to a senior undergraduate or graduate Aquaculture student at NSAC, preferably undertaking course or project work related to aspects of marine bioproducts or the plant sciences. Applications must be submitted to the NSAC Awards Office no later than September 24.

#### **Stuart & Ruth Allaby Graduate Studies Scholarship**

The \$1,000 Stuart and Ruth Allaby Graduate Studies Scholarship is awarded to a 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 Atlantic Canadian M.Sc. student at NSAC conducting research in engineering. No application is required.

#### **The Honourable Dr. Roger S. Bacon Scholarship in Agriculture**

In keeping with the Honourable Dr. Roger S. Bacon's lifetime interest in and service to agriculture, a \$1,500 scholarship will be awarded annually to an NS student entering the final year of any program at NSAC (technical, undergraduate or graduate) who has plans to pursue a long-term career in agriculture. Dr. Roger S. Bacon was a dairy farmer and blueberry producer from Cumberland County, NS, who served as an MLA for his constituency; during his political career he was a well-respected and long-serving Minister of Agriculture and, for a time, Premier of NS. Selection criteria include career plans, academic performance, and financial need. Applications must be submitted to the NSAC Awards Office no later than September 20.

#### **Doug Bailey Memorial Bursary**

Farmers Dairy awards a \$2,000 bursary to a student in any year of any program at NSAC who is a family member of a Farmers Dairy shareholder or employee. The bursary is named in memory of Doug Bailey, a former President and CEO. Selection criteria include leadership, extracurricular and community activities, financial need, and a sound academic record. Applications must be submitted to the NSAC Awards Office no later than September 20.

#### **Merle Cail Memorial Scholarship**

The \$750 Merle Cail Memorial Scholarship is awarded annually to a senior undergraduate student or a graduate student at NSAC whose course or project work reflects an interest in organic agriculture. Selection criteria include academic performance, financial need, and commitment to organic agriculture. Application forms accompanied by one letter of recommendation must be submitted to the NSAC Awards Office no later than September 20.

#### **Vera Caldwell Memorial Bursary**

This \$500 bursary will be awarded annually, based on financial need, to a deserving International student studying at NSAC. The bursary is in memory of Vera Caldwell, a teacher and life-long learner who actively supported education for students from developing nations. Students who are paying international student fees in all programs of study at NSAC are eligible. Preference will be given to students studying full-time in undergraduate or diploma programs. Applications must be submitted to the NSAC Awards Office by October 5.

#### **Canadian Dairy Commission Scholarship Program**

This program provides scholarships of \$20,000, renewable for a second year, to high-calibre students enrolled in a research-based M.Sc. program at NSAC who are conducting a thesis research project that has application to the dairy industry in one of the following areas: agricultural economics and policy, food/dairy science, or animal science. In addition, students who receive the scholarship may apply for a one-time additional sum of up to \$5,000 for travel costs to further their education or research program, on the advice of their thesis supervisor. Recipients of this award must be registered as full-time students. Application deadlines are May 1 and October 15. [www.nsac.ca/gradstudies/graduate/CDCscholarshipprogram.asp](http://www.nsac.ca/gradstudies/graduate/CDCscholarshipprogram.asp)

### **Canard Conservation Fund Graduate Scholarship**

The Canard Conservation Fund provides a \$1,500 scholarship to a graduate student at NSAC conducting research work on environmental issues. Selection criteria include research aptitude and experience, relevance of the applicant's research to 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 should include an essay on the importance of the research to conservation issues, a resumé, and an official transcript. Applications must be submitted to the NSAC Awards Office no later than July 27.

### **Class of 1956 Graduate Student Scholarship**

A scholarship of \$5,000 per year for up to two years is available to graduate students (M.Sc. or Ph.D.) at NSAC conducting a research project in one of the following areas of study: Agricultural Economics and Policy, Social Sciences, Engineering and Environmental Sciences. The scholarship is intended to stimulate research on rural water supply and rural watershed management in Atlantic Canada. Further details are available at the NSAC Awards Office. Application deadline is June 15.

### **Chartwells Graduate Student Scholarship**

One \$5,500 scholarship will be awarded to a student entering the M.Sc. degree program at NSAC on a full-time basis. The scholarship will be awarded on the basis of academic performance. Recipients of NSAC Graduate Entrance Scholarships and students on employment leave with salary continuation are not eligible. No application is required.

### **Chicken Producers of Nova Scotia Bursary**

The \$1,000 Chicken Producers of Nova Scotia Bursary is awarded to an NS student at NSAC who shows a demonstrated interest in pursuing the study of poultry. Preference will be given to applicants with a farming background. Students in all years of study are eligible. A student may not receive this scholarship more than once. Application must be submitted to the NSAC Awards Office no later than September 20.

### **Clean Nova Scotia Scholarships**

In celebration of their 20<sup>th</sup> anniversary, Clean Nova Scotia established a scholarship fund in 2007 to award \$2,000 each year for 10 years to graduate students (M.Sc. and Ph.D.) studying within NS and conducting research in the area of Environmental Studies. The intent of this scholarship is to support education and research in those areas in which Clean Nova Scotia seeks to effect change: climate change and energy, waste, water, air quality, environmental education, and the interactions of environment and health. For the purposes of this scholarship, "environmental studies" encompasses environmental science, engineering, management and conservation, as well as environment-related programs in other disciplines. The application deadline is January 12.

[clean.ns.ca/about-us/cns-scholarship](http://clean.ns.ca/about-us/cns-scholarship)

### **Dairy Farmers of Nova Scotia Bursary**

The Dairy Farmers of Nova Scotia awards a \$1,000 bursary to an NS student doing project or course work related to the dairy industry. Students in the third or fourth year of the B.Sc.(Agr.) program (any option) or graduate students undertaking course or project work related to the dairy industry are eligible. Selection criteria include proven interest and experience in the dairy industry, the potential beneficial impact of the study on the Nova Scotia dairy industry, and academic performance. Applications must be submitted to the NSAC Awards Office no later than September 24.

### **Gordon B. Kinsman Memorial Graduate Scholarships**

Two \$1,500 Gordon B. Kinsman Memorial Graduate Scholarships are awarded annually to graduate students in Horticulture at NSAC. At least one of the scholarships each year will be awarded to a student conducting research work related to the blueberry industry. Applications must be submitted to the NSAC Awards office no later than July 27.

### Graduate Research Training Initiative (GRTI) Scholarships

This program provides scholarships to high-calibre students who are engaged in a research-based graduate program at NSAC and who are conducting research that will benefit Nova Scotia's agriculture and agri-food industry. This initiative is intended to ensure a reliable supply of highly-qualified personnel to meet the future needs of Nova Scotia's agri-food industry. The value of the awards is \$17,300 per year for up to two years for full-time students and \$8,650 per year for up to two years for part-time students. Application deadlines are February 1, June 1 and October 1 annually.

[www.nzac.ca/research/graduatestudies/scholarship.asp](http://www.nzac.ca/research/graduatestudies/scholarship.asp)

### Robert P. Longley Memorial Graduate Scholarships

Two \$6,000 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 and students on employment leave with salary continuation are not eligible. No application is required.

### Paul R. MacPhail PEI Potato Industry Scholarship

In memory of Paul R. MacPhail, the PEI Potato Board offers a \$500 scholarship to PEI students studying at the graduate or undergraduate level of an agricultural degree program at any recognized Canadian agricultural institution, or to students in a postgraduate degree program at a recognized Canadian university, carrying out research projects related to potato production and utilization (including all disciplines, e.g., biotechnology, pathology, entomology, etc.). Undergraduate students must demonstrate through course work, summer employment and/or home farm background an interest in working in the potato industry. Selection criteria for undergraduate scholarships include academic performance, extracurricular activities, and employment history. Graduate students will be considered on the basis of academic performance and relevance of the project to the improvement of the PEI potato industry. Applications must be submitted to the NSAC Awards Office no later than September 20.

### NSAC Association of Graduate Students Bursary

This \$500 bursary is awarded to a full-time or part-time graduate student of NSAC in any year. Selection is based on financial need. Applications must be submitted to the Awards Office no later than October 5.

### NSAC Graduate Entrance Scholarships

NSAC offers up to five scholarships of \$5,000 to students approved (or conditionally approved) for admission to the NSAC/Dal M.Sc. program. Students who have applied for admission to the graduate program at NSAC by the end of June each year will be considered for these awards. Only those applicants entering graduate studies on a full-time basis who have achieved a minimum admission average of 80% (cumulative undergraduate average) or equivalent will be considered. Although academic performance will be the prime selection basis, consideration will also be given to the diversity of backgrounds of candidates (including gender, country of origin, institution of origin, minority groups, supervisors, and programs of study). No application is required.

### NSAC International Student Fee Waivers

The NSAC awards several differential fee waivers to International students admitted to the M.Sc. program. Differential fee waivers are available to students in their first year of the program only. Selection is based on academic merit and on financial need. No application is required.

### NSERC Postgraduate Scholarships

The Natural Sciences and Engineering Research Council of Canada provides postgraduate scholarships to high-calibre scholars who are engaged in masters 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 who 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 \$21,000 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 October 26.

### **Nova Scotia Fur Institute Scholarship**

The Nova Scotia Fur Institute annually awards a \$2,500 scholarship to a graduate student. The scholarship is open to any graduate student who is pursuing research in fur production and is attending full-time graduate studies at a recognized Canadian University (**Note:** *individuals enrolled outside of Canada but attending Canadian institutions would be eligible*). Selection will be based on an assessment of the proposed research using the following weighting criteria: relevance of the research to fur production issues, innovativeness of the proposed research, presentation and clarity of the research proposal, project progress at time of application, plans for use of funds, and responses to questions. Final scholarship selection will be made by the Fur Institute. Letter of application (with transcript and resumé) must be submitted no later than July 27 to: Director, Nova Scotia Fur Institute, Nova Scotia Department of Agriculture, Room 217, Harlow Institute, 176 College Road, PO Box 550, Truro, NS B2N 5E3.

### **Rotary Club of Truro International Student Bursary**

This \$1,000 bursary is awarded annually by the Rotary Club of Truro to an International student studying at NSAC. All students paying the International tuition differential are eligible for consideration. Students in both undergraduate and graduate programs qualify. Preference will be given to students registered in a full-time program of study, with additional preference given to students studying for the full year. Special consideration will be given to students from a developing country who plan to return and apply their education from NSAC. Selection criteria include financial need, potential impact of the bursary on the student's lifestyle while at school, and their future plans. Applications must be submitted to the NSAC Awards Office no later than September 20.

### **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 related to the dairy industry. Applicants who have completed their undergraduate degree at NSAC and wish to pursue their master's degree 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 no later than July 27.

### **George James Schaller Memorial Scholarship**

In memory of George J. Schaller, Class of 1948, a \$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.

### **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 no later than July 27.

### **Syngenta Graduate Scholarship**

The \$1,000 Syngenta graduate scholarship will be awarded annually to a M.Sc. student at NSAC conducting research pertaining to sustainable agriculture. For the purposes of this award, "sustainable agriculture" will be described as a balance between social, environmental, and economic priorities. Project areas eligible for support will focus on environmental quality and resource management, land management, integrated pest management, introduction of new technologies, economic viability, and rural community sustainability. Selection criteria include academic performance and research goals consistent with sustainable agriculture. Applications must be submitted to the NSAC Awards Office no later than July 27.

### IV. MEDALS AND PRIZES

#### Canadian Agricultural Economics Association Prize

The Canadian Agricultural Economics Association presents a book prize at Spring Convocation to a graduating student from the Agricultural Economics or Agricultural Business option of the B.Sc.(Agr.) program. This award is selected on the basis of overall performance. No application is required.

#### Canadian Society of Animal Science Prize

The Canadian Society of Animal Science presents a book prize at the Scholarship Banquet 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 technical 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 18. The award is presented at the graduation class banquet prior to Convocation.

#### Etta PHYS0050 Prize

A \$100 NSAC Bookstore voucher will be presented to an outstanding returning student who achieves the highest mark in the PHYS0050 course. The prize may not be awarded every semester; alternatively, more than one prize may be awarded in any given semester. No application is required.

#### Farm Credit Canada Business Planning Awards

Sponsored by Farm Credit Canada, the purpose of this award program is to encourage agricultural students to apply their knowledge and create “real-life” farm and related business plans for their operations (home, existing, or start-up). The awards are open to students in the final year of the Diploma in Enterprise Management program who complete business plans during the business project course (MGMT0201). Projects will be evaluated on the following basis: 60% on content, including realistic basis and accurate calculations; 40% on writing, format and presentation. A student who has received an FCC Farm Business Planning Award is not eligible for a second one.

Cash prizes are distributed based on the number of submissions from participating students (as individuals or teams). Prize monies are to be distributed to individuals or jointly to teams as follows:

- Less than nine submissions – no award
- 10 to 25 submissions – \$4,000 (1<sup>st</sup> prize \$2,500; 2<sup>nd</sup> prize \$1,500)
- 26+ submissions – \$6,000 (1<sup>st</sup> prize \$2,500; 2<sup>nd</sup> prize \$1,500; 3<sup>rd</sup> prize \$1,000, 4<sup>th</sup> prize \$1,000)

Prizes are presented at Convocation. No application is required.

#### H. J. Fraser Memorial Prize for English

In memory of the late Professor H. J. Fraser, a prize is awarded to a second-year student who has achieved excellence and provided significant contribution to the discussion in a first-year English course at NSAC. No application is required.

#### Dr. Gerry W. Friars Undergraduate Research Prize

The \$250 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 the fourth-year project requirements. Dr. Friars, an NSAC Alumnus from 1948, was introduced to scientific research by an undergraduate research project, thus beginning a career in research and teaching. No application is required.



### **Governor General's Medals**

The gold Governor General's Medal is awarded to the M.Sc. graduate from the current year with the highest compiled score for the thesis, thesis defence, graduate course record, and teaching performance.

The silver Governor General's Medal is awarded to the Bachelor's graduate (B.Sc.(Agr.) or B.Tech) who achieves the highest cumulative academic standing in the program. The bronze Governor General's Medal is awarded to the technology graduate who achieves the highest academic standing in the program. To be eligible, students must have completed at least half of their program at NSAC. No application is required.

### **Hanna CHEM0050 Prize**

A \$100 NSAC Bookstore voucher will be presented to an outstanding returning student who achieves the highest mark in the CHEM0050 class. The prize may not be awarded every semester; alternatively, more than one prize may be awarded in any given semester. No application is required.

### **JebJeb Prize for Preparatory Studies**

A \$100 NSAC Bookstore voucher will be presented to a mature student who achieves outstanding performance in all three preparatory courses completed in one academic year. No application is required.

### **Ketchum Manufacturing Company Limited Prize**

The \$100 Ketchum Manufacturing Company Limited Prize is awarded to a graduate of the Animal Science major. No application is required.

### **Leelee MATH0050 Prize**

A \$100 NSAC Bookstore voucher will be presented to an outstanding returning student who achieves the highest mark in the MATH0050 class. The prize may not be awarded every semester; alternatively, more than one prize may be awarded in any given semester. No application is required.

### **Novartis Award**

The Novartis Award is presented at Convocation to the top all-round student graduating from the Veterinary Technology program who has particularly excelled in the area of parasitology. No application is required.

### **Patterson Law Prize**

Patterson Law offers a \$500 prize to any full-time student enrolled at NSAC who has lived or worked on a farm. Applicants are required to submit an essay (500–1000 words) regarding any major issue facing the farming community. The student who receives the award will be chosen on the basis of the quality of the essay written. Essays will be evaluated on insight into issues, quality of writing and readability, and organization. Applications must be submitted to the Awards Office no later than September 20.

## V. SCHOLARSHIPS AND BURSARIES FOR CONTINUING STUDIES BEYOND NSAC

### APENS Scholarships and Awards

The Association of Professional Engineers of Nova Scotia (APENS) provides a number of scholarships and awards valued at \$500, \$1,000 and \$1,500. Six \$1,000 awards are presented to students graduating with an Engineering Diploma or Certificate (one from each of the Associated Universities in NS) who best demonstrates outstanding abilities to serve the society in an ethical manner as a Professional Engineer. Selection criteria include: ethical conduct, extracurricular activities, industry and intelligence, scholastic achievement, service to fellow students, technical skills, and need. The APENS Prize is awarded to one of the APENS Award recipients for academic excellence. Six \$1,500 Entrance Scholarships are awarded to graduating students (one from each of the Associated Universities) who exhibit academic excellence; the scholarships are held at Dalhousie University. As well, \$500 scholarships are available for children of members of Engineers NS who are enrolled in first-year Engineering studies at any recognized university or college. Details and deadlines for all of these awards can be found on the website. [www.apens.ns.ca/student-services.asp?PageID=12](http://www.apens.ns.ca/student-services.asp?PageID=12)

### Cobequid Dog Club Scholarship

The Cobequid Dog Club awards a \$400 scholarship to an NS student from NSAC who is admitted to a veterinary college. No application is required.

### Harney Estate Scholarships

Renewable \$5,000 scholarships are awarded annually to NSAC graduates who are accepted or registered at Macdonald College or the University of Guelph for graduate work in agriculture. These scholarships are granted, based on high academic records, to students who are committed to research excellence. Dr. Patricia Harney, NSAC Diploma Class of 1948 and OAC Professor in Horticultural Sciences, has made generous provision through her estate to support NSAC students who wish to pursue graduate studies in agriculture at McGill University's Macdonald College or at the University of Guelph. The scholarships from this fund serve to preserve the long-standing links between NSAC, Macdonald College and the University of Guelph. This award is 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%). While registered at the University of Guelph or Macdonald College the recipient 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. See the NSAC Awards Office for further application information. Application deadline is March 31.

### Dr. Allan and Barbara MacKay Scholarship

The \$1,000 Dr. Allan and Barbara MacKay scholarship is awarded annually to a student from NSAC admitted to the Atlantic Veterinary College. In recognition of his long association with the practice of veterinary medicine in NS and with NSAC, Dr. J. Allan MacKay, NSAC class of 1943, has established this scholarship, which will be presented at NSAC's Scholarship Banquet. No application is required.

## **Edith Main Memorial Bursary**

In memory of Edith Main, the auxiliary to the Nova Scotia Veterinary Medical Association awards a \$100 bursary to an NS student who has attended NSAC and has been admitted to a Canadian veterinary college. No application is required.

## **Nova Scotia Power Inc. Centennial Scholarships**

Nova Scotia Power sponsors five \$2,000 scholarships with two-year tenure to Engineering students at the Associated Universities in NS who will be entering the third year of the B.Eng. program at Dalhousie University in September. Selection criteria include academic performance, personal attributes, and involvement in extracurricular activities. Applications from NSAC students must include a resume, transcript and essay, and be submitted to the Head of the Engineering Department at NSAC by January 27.

### VI. OTHER ENTRANCE EXTERNAL SCHOLARSHIPS AND BURSARIES

Although not exclusive to NSAC students, the following scholarships/awards are available to students entering NSAC.

#### **African Nova Scotian Student University Entrance Scholarships**

Valued at \$4,500, these scholarships are available to African Nova Scotian students who successfully complete Grade 12 in the public school system of NS within the current year, have obtained an average of 75% in select courses, and are enrolled in a full-time degree program at a university in the academic year immediately following Grade 12. Application deadline is May 31.

[acs.ednet.ns.ca/content/university-entrance-scholarship](http://acs.ednet.ns.ca/content/university-entrance-scholarship)

#### **Wallace Anderson Memorial Scholarship Fund**

This scholarship is for manual Deaf students(s) living in southwestern New Brunswick who wish to further their educational goals on a full-time or part-time basis. Application forms must be submitted no later than April 30 to: Saint John Deaf and Hard of Hearing Services Inc., c/o Scholarship Fund Committee, 302-646 Fairville Blvd., Saint John, NB E2M 4Y7.

[www.sjdhhs.com/ScholarshipForm.doc](http://www.sjdhhs.com/ScholarshipForm.doc)

#### **Aquaculture Association of Canada Scholarship**

Three \$1,000 scholarships will be awarded annually to AAC student members enrolled in a post-secondary institution in an aquaculture-related program. Selection is based on scholastic ability (transcript of marks required); interest and involvement in aquaculture (e.g., summer employment); publication record, if any; and a 250-word essay on where the applicant sees him/herself contributing to sustainable aquaculture development in the future. Contact the NSAC Awards Office or check the website for further details. Application deadline is March 18.

[www.aquacultureassociation.ca/awards/aac-student-scholarship](http://www.aquacultureassociation.ca/awards/aac-student-scholarship)

#### **Association of Nova Scotia Housing Authorities Awards**

Several \$1,000 renewable awards are awarded each year to NS residents who live in housing units administered by a Nova Scotia Housing Authority and need financial assistance to enable them to continue their education at a post-secondary level (e.g., university, community college, trade school, or technical school). Awards are tenable at any legally recognized educational institution chosen by the applicant and approved by ANSHA. The application deadline is May 1. Information and application forms are available at: ANSHA Student Awards Committee, PO Box 753, Amherst, NS B3H 4B9.

#### **Atlantic Canada Marine Biodiversity Essay Contest**

The Centre for Marine Biodiversity has an annual essay contest open to all Grade 12 students in NL, NS, NB, and PE. The essay contest will provide an opportunity for students at the pre-university level of education to learn about marine biodiversity in Canada and to share what is learned in a creative and effective manner. Students are asked to write an original essay that highlights recent Canadian marine biodiversity research. Application deadline is April 15.

[www.marinebiodiversity.ca/cmb/education/atlantic-canada-marine-biodiversity-essay-contest](http://www.marinebiodiversity.ca/cmb/education/atlantic-canada-marine-biodiversity-essay-contest)

#### **Alexander Graham Bell Association for the Deaf Scholarship Awards**

The Alexander Graham Bell Association for the Deaf and Hard of Hearing offers several scholarships for full-time students who are deaf or hard of hearing and who are pursuing an undergraduate or graduate degree at an accredited mainstream college or university. Awards range from \$1,000 to \$10,000. This is a merit-based scholarship program. Listening and spoken language must be the applicant's primary mode of communication. Hearing loss must have been diagnosed before the applicant's fourth birthday. Applications must be submitted by March 1.

[agbell.org/NetCommunity/Page.aspx?pid=493](http://agbell.org/NetCommunity/Page.aspx?pid=493)

### **Bell Aliant Pioneer Volunteer Awards**

This scholarship is awarded to a person with vision loss, living in NS or PEI, to assist with tuition costs while attending a post-secondary program. Under the management of the Aliant Pioneer Volunteers and a CNIB selection committee, a candidate will be awarded a scholarship in the amount of \$2,000. The candidate must be aged 25 years or under, with a visual acuity of 20/70 or less with correction. Candidates must be graduating from Grade 12 during the application year (or be a high school graduate) and registered in a post-secondary educational program. Candidates should have a reasonable level of achievement and a genuine need for financial assistance. Application deadline is April 30.

[www.cnib.ca/en/ns-pei/awards/alliant-pioneer-award](http://www.cnib.ca/en/ns-pei/awards/alliant-pioneer-award)

### **Arlene Burris Memorial Scholarship**

The Arlene Burris Memorial Scholarship is awarded to a person studying in any field that will prepare him or her to work with children who are deaf or hard of hearing, or to an individual who is deaf or hard of hearing pursuing post-secondary studies. Application deadline is May 1. For more information please contact Programs for Students who are Deaf or Hard of Hearing, Atlantic Provinces Special Education Authority, (902) 424-8500 or [dhh@apsea.ca](mailto:dhh@apsea.ca).

[www.apsea.ca](http://www.apsea.ca)

### **Canadian Forces Personnel Assistance Fund**

Assistance is in place to assist serving and former members and their dependents with costs of post-secondary education. Applications will be accepted throughout the year until funds are exhausted; however, to obtain the loan in time for the semester beginning in September, submissions should arrive at CFPAP by June 30.

[www.sisip.ca/en/Downloads\\_e/ealp\\_e.asp](http://www.sisip.ca/en/Downloads_e/ealp_e.asp)

### **Canadian Hard of Hearing Association Scholarship**

This scholarship program offers financial assistance and recognition to hard-of-hearing and deafened students registered in a full-time program at a recognized Canadian college or university, in any area of study, with the ultimate goal of obtaining a diploma or degree. Three \$1,000 awards are available to first-year or returning students. The application deadline is February 28.

[chha.ca/chha/scholarships-index.php](http://chha.ca/chha/scholarships-index.php)

### **Canadian Meat Science Association Scholarships**

The Canadian Meat Science Association (CMSA) has recently set up scholarships to promote quality education and development of meat science in Canada. For graduate students studying meat science in Canada, the \$3,000 Percy Gitelman Memorial Scholarship and the \$3,000 CMC Associate Members Scholarship are offered. For undergraduate students, two \$2,500 Ronald A. Chisholm Undergraduate Scholarships are offered. Graduate students must be conducting applied or basic meat research in any year of a recognized full-time M.Sc. or Ph.D. program at a Canadian university.

Undergraduate students must be in any year of a recognized full-time B.Sc. program in Agriculture and/or Food Science at a Canadian university, and be interested in studying Meat Science in Canada. More information can be found on the website. Application deadline is January 9.

[cmsa-ascv.ca](http://cmsa-ascv.ca)

### **CIBC 4-H Secondary Education Scholarship**

CIBC and Canadian 4-H Council are proud to award three scholarships per year (for two years), valued at \$2,500 each, for 4-H members in their last year of high school or CEGEP. Applicants will be awarded nationally and based on a combination of the numerical grade point average for their most recent school year, and their community involvement and experience. A transcript of marks, a 500-word essay, and three reference letters should also be included with the application package. Application deadline is December 5.

[www.4-h-canada.ca/core/scholarships](http://www.4-h-canada.ca/core/scholarships)

### **Co-op Atlantic McEwen Scholarship**

Two university entrance awards of \$1,000 are open to employees and dependents of members of Co-op Atlantic. These are four-year renewable scholarships. Selection criteria include academic performance, demonstrated leadership ability, and interest in co-operation and co-operatives. The application deadline is March 1.

[www.coopatantic.ca/htm.aspx?id=135](http://www.coopatantic.ca/htm.aspx?id=135)

### **Copnick/Hilliard Scholarship Fund**

Each year, a \$1,000 award is provided to a post-secondary Canadian student with severe mobility impairment. Applicants are encouraged to submit up to three letters of reference. Evidence of the applicant's disability status must be verified by a qualified healthcare professional (e.g., physician, rehabilitation counsellor, nurse, etc.) and submitted with the application. Applicants are responsible for ensuring that the selection committee receives all necessary documentation, such as letters of reference and transcripts of the last two years of study.

Application deadline is August 15.

[www.canparaplegic.org/pdf/1/CopnickHilliard2006.pdf](http://www.canparaplegic.org/pdf/1/CopnickHilliard2006.pdf)

### **Dairy Farmers of New Brunswick Scholarship**

The Dairy Farmers of New Brunswick offers a \$750 scholarship to an NB resident who is enrolled in any year of an approved technician or technology diploma or certificate program relating to agriculture. For further information and application form, contact [nbmilk@nbmilk.com](mailto:nbmilk@nbmilk.com) or (506) 432-4330. Application deadline is June 15.

[www.nbmilk.org/en/index.shtml](http://www.nbmilk.org/en/index.shtml)

### **Dairy Farmers of New Brunswick Memorial Scholarship**

The Dairy Farmers of New Brunswick offers a \$750 scholarship to an NB resident who is enrolled in the first year of a recognized post-secondary agricultural program. For further information and application form, contact [nbmilk@nbmilk.com](mailto:nbmilk@nbmilk.com) or (506) 432-4330.

Application deadline is June 15.

[www.nbmilk.org/en/index.shtml](http://www.nbmilk.org/en/index.shtml)

### **Donald E. Curren Scholarship**

The Donald E. Curren Scholarships are open to mobility-impaired students who have been accepted by a university in the Atlantic Provinces, with preference given to applicants who are paraplegic or quadriplegic. Recipients must be Canadian citizens or permanent residents and reside in the Atlantic Provinces. The deadline for applications is July 31.

[www.nsnet.org/cpans/schol.html](http://www.nsnet.org/cpans/schol.html)

### **Epilepsy Association of NS Memorial Scholarship/Bursary and the James Russell Kline Memorial Bursary**

The EANS offers two \$500 scholarships and two \$500 bursaries. Potential applicants should take note of the basis on which the scholarships and bursaries are awarded and apply for the one that best fits their situation. Students may apply for either a scholarship or a bursary, but not both. Scholarships are awarded based on the scholastic achievement, volunteer and work experience and extracurricular activities. Bursaries are awarded based largely on financial need but volunteer and work experience, scholastic achievement and extracurricular activities will be taken into consideration. The deadline is June 15.

[epilepsyns.com/eans/awards.html](http://epilepsyns.com/eans/awards.html)

### **Epilepsy Canada Scholarships**

This initiative, which is funded by Lundbeck Canada Inc., will help 30 young people with epilepsy across Canada continue their college or university studies. Each of these students will receive an award worth \$1,000 applicable to the current academic year. The scholarship award program is open to all young people between the ages of 16 and 29 who are under the care of a Canadian physician for the treatment of epilepsy. The deadline is February 25.

[www.epilepsy.ca/en-CA/Epilepsy-Canada.html](http://www.epilepsy.ca/en-CA/Epilepsy-Canada.html)

### **Terry Fox Humanitarian Award Program**

This 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 \$7,000 per year for a maximum of four years or until the first degree is obtained. The deadline for applications is February 1.

[terryfoxawards.ca](http://terryfoxawards.ca)

### **Walter and Wayne Gretzky Scholarship Foundation for the Blind Youth of Canada**

Scholarships of \$3,000 to \$5,000 are available to applicants who are blind or living with vision loss, entering their first year of post-secondary education. Applicants must be Canadian citizens or have held landed immigrant status for one year prior to the date of application. All scholarships are awarded on the basis of academic excellence, service to the community, and financial need. Applicants will be expected to have achieved a high academic standing and to have exhibited superior leadership. Applications must be received by May 31.

[www.cnib.ca/en/about/awards/scholarships/wgs](http://www.cnib.ca/en/about/awards/scholarships/wgs)

### **Jamie Irving Memorial 4-H Scholarship**

The \$500 Jamie Irving Memorial 4-H Scholarship is presented to a PEI student with a 4-H background entering a recognized post-secondary institution. Selection criteria include 4-H background, community involvement, goals and ambitions, an interview, and an essay. Application deadline is April 13.

[pei4h.pe.ca/page/Scholarships.aspx](http://pei4h.pe.ca/page/Scholarships.aspx)

### **Warwick Kimmins Science Scholarship**

Immovaccine Inc. offers this \$1,000 scholarship in memory of the company's founder, Dr. Warwick Kimmins. Applicants must be Grade 12 students residing in Atlantic Canada who are planning on furthering education in pursuit of a B.Sc. degree. An essay on a selected topic, a transcript of marks or a copy of the university acceptance letter, and a brief personal reference must be provided. Application deadline is May 4.

[immovaccine.com/news.php](http://immovaccine.com/news.php)

### **Kin Canada Bursaries**

The Hal Rogers Endowment Fund provides \$1,000 bursaries to full-time Canadian students demonstrating financial need, extracurricular involvement, high ideals, and qualities of citizenship who have not already received a bursary from the Hal Rogers Endowment Fund. The deadline is February 1.

[www.bursary.ca](http://www.bursary.ca)

### **Maritimes & Northeast Pipeline Liaison Scholarships & Academic Achievement Awards**

The Assembly of Nova Scotia Mi'kmaq Chiefs and Maritimes & Northeast Pipeline (M&NP) are committed to the development of future generations of Mi'kmaq students through academic and personal development. They have made available \$1,000 scholarships for full-time and part-time students enrolled in university, college, vocational school, or technical institute, and \$500 Academic Achievement Awards for students graduating from high school, Adult High School, or academic upgrading. To be eligible, students must be registered with a Nova Scotia Mi'kmaq band, enrolled either full-time or part-time and expect to return the following year to their field of study, and graduating from high school or a university program. Call (902) 490-2209 for more information. The application deadlines are June 17 for scholarships and July 15 for academic achievement awards. [www.mnpp.com/canada/firstnations](http://www.mnpp.com/canada/firstnations)

### **Mattinson Endowment Fund Scholarship for Disabled Students**

This program is to encourage Canadian students with a disability to obtain a first university degree. Eight \$2,500 awards will be awarded. Applicants must be Canadian citizens or have lived in Canada for two years as legal permanent citizens. Candidates must be diagnosed with a documented permanent disability that is the primary disability for which they are applying, and they must have a minimum average of 75%. Recipients may re-apply. The application deadline is June 1. [juno.aucc.ca/wes/hes.aspx?pg=934&oth=0001442011&lg=1](http://juno.aucc.ca/wes/hes.aspx?pg=934&oth=0001442011&lg=1)

### **Monsanto Canada Inc. Scholarships**

Monsanto Canada Inc. awards \$1,500 scholarships to high school students from agricultural or forestry family farms across Canada entering the first year of Agriculture (any discipline), Forestry, Agri-Science, or Management (Marketing/Finance) degree or diploma programs at Canadian educational institutions. Selection criteria include academic performance and leadership in the community. Application forms are available on the website. For more information, call 1-800-667-4944. Applications must be postmarked no later than May 27.

[monsanto.ca/ourcommitments/Pages/OpportunityScholarship.aspx](http://monsanto.ca/ourcommitments/Pages/OpportunityScholarship.aspx)

### **National Aboriginal Achievement Foundation**

The National Aboriginal Achievement Foundation has evolved into the largest non-governmental funding body for First Nations, Inuit, and Métis post-secondary students across Canada. Bursary and scholarship awards are provided to students annually across a diverse range of disciplines. Further details are available on the website.

[www.naaf.ca/scholarships](http://www.naaf.ca/scholarships)

### **National Educational Association of Disabled Students (NEADS) Scholarships**

The NEADS National Student Awards Program is offered to encourage full access to post-secondary education for persons with disabilities. Students must currently be registered in and continuing at a post-secondary institution, and provide documented proof of registration as part of the application and also on receipt of the award. The award will be offered to outstanding applicants who meet the criteria of the program. Selection is based on a strong commitment to academic discipline, exemplary record of volunteerism and/or employment and demonstrated potential to be an outstanding participant in the community. Eight awards are available. For more information, please contact the NEADS office: National Educational Association of Disabled Students, Room 426 Unicentre, Carleton University, Ottawa, ON K1S 5B6, (613) 380-8065. The application deadline is March 1.

[www.neads.ca/en/about/projects/ete2/scholarship](http://www.neads.ca/en/about/projects/ete2/scholarship)

### **National Union of Public and General Employees (NUPGE) Scholarships**

Each year, the National Union of Public and General Employees (NUPGE) offers four \$1,500 scholarships that reflect its pursuit of equal opportunity for all workers. They are open to the children of the National Union's 340,000 members who are starting a post-secondary education. Details are available on the website. Application deadline is June 30.

[www.nupge.ca/scholarships](http://www.nupge.ca/scholarships)

### **New Brunswick Fruit Growers' Association Scholarship**

The \$300 New Brunswick Fruit Growers' Association Scholarship is awarded to an NB resident entering a program of study in horticulture or related courses at an agricultural college or university with the purpose of returning to, or working in, the New Brunswick tree fruit industry. Selection criteria include academic performance, involvement in community activities, volunteer work, farming or orchard experience, interest in the fruit-growing industry, and future career plans.

Applications must be submitted no later than September 30 to: NBFGA, Scholarship Committee, 1115 Regent Street, Suite 206, Fredericton, NB E3B 3Z2.

### **NS Department of Agriculture 4-H Scholarships**

The Nova Scotia Department of Agriculture awards four \$1,000 scholarships to students with NS 4-H backgrounds entering a Bachelor's degree program at a recognized university. At least one scholarship will be presented to a student enrolling in the first year of an agricultural or veterinary science program. Applications, including an essay (2,500–4,000 words) on the topic "*The Importance of Nova Scotia's Agriculture*" and a transcript of marks, must be received by April 1.

[www.gov.ns.ca/agri/4h/glkit/app\\_forms.shtml](http://www.gov.ns.ca/agri/4h/glkit/app_forms.shtml)

### **NSGEU Bursaries**

The Nova Scotia Government & General Employees Union (NSGEU) offers bursaries to dependents of NSGEU members. The bursary will be tenable for a program of study leading to a degree, diploma or certificate at any recognized post-secondary institution. The bursaries are awarded once a year, and the application deadline is October 15.

[www.nsgeu.ca/Education/index.cfm](http://www.nsgeu.ca/Education/index.cfm)



### **NSGEU Scholarships**

The Nova Scotia Government & General Employees Union offers scholarships to dependent children of NSGEU members. The applicant must be a dependent child of a member in good standing (for at least 12 months prior to the application), the dependent child of a retired member (for at least 12 months prior to retirement was a member in good standing), or the dependent child of a deceased member. These scholarships are awarded once a year. The application deadline is October 15.

[www.nsg.eu.ca/Education/index.cfm](http://www.nsg.eu.ca/Education/index.cfm)

### **Nova Scotia Equestrian Federation Education Bursary Program**

The NSEF Education Bursary Program is a financial bursary to assist NSEF members attending a post-secondary educational institution. Up to four awards of \$500 each will be awarded yearly to active members to exemplify the objectives of the NSEF. A candidate may only receive the bursary once. Applicants must be registered at or attending an accredited post-secondary institution on a full-time basis to be eligible. Application deadline is May 1.

[www.horsenovascotia.ca/docs/Youth-Bursary-Program.pdf](http://www.horsenovascotia.ca/docs/Youth-Bursary-Program.pdf)

### **Nova Scotia 4-H Council Scholarship**

The Nova Scotia 4-H Council awards a \$1,000 scholarship to a student with an NS 4-H background who is entering post-secondary study. Applications, including a 1,500-word essay on *"How I Have Benefited from My 4-H Career,"* must be received by April 1.

[www.gov.ns.ca/agri/4h/gkkit/app\\_forms.shtml](http://www.gov.ns.ca/agri/4h/gkkit/app_forms.shtml)

### **Nova Scotia Fruit Growers' Association Scholarship**

The Nova Scotia Fruit Growers' Association awards a \$500 bursary to a student entering or already in a post-secondary education program in the field of Tree Fruit Production or a related science program which might include the following: Biology, Chemistry, Food Science, Plant Science, Environmental Science, Business or Agri-Business. Selection criteria include academic achievement, participation in school and community activities, and interest in the tree fruit industry.

Applications, including a resumé, university/college acceptance letter or transcript, and an essay outlining career and life goals, must be received no later than May 31 by: Education Committee, NS Fruit Growers' Association, Blair House, 32 Main Street, Kentville, NS B4N 1J5.

### **Nova Scotian Institute of Science Mentorship Program**

This mentorship program is aimed at university students (undergraduate and graduate) seeking guidance regarding their career opportunities in science. For more information or to request a mentor, interested students must send an e-mail to the Mentorship Program Chair, Dr. Robert Boudreau ([rtmboudreau@hotmail.com](mailto:rtmboudreau@hotmail.com)). The deadline for requests is January 6.

[www.chebucto.ns.ca/Science/NSIS/students.html](http://www.chebucto.ns.ca/Science/NSIS/students.html)

### **Nova Scotia Technology Education Association Scholarship**

The Nova Scotia Technology Education Association is pleased to offer two entrance scholarships in the amount of \$250 to the NSAC Bachelor of Technology in Applied Science program, the first degree of its kind in Eastern Canada. Flexibility is the key to this innovative program, which provides a hands-on applied science degree with a curriculum that includes lab work and group projects. Upon completion, students can apply for direct admission to Acadia University's Bachelor of Education in Technology program. Application deadline is May 31.

[nstea.nstu.ca](http://nstea.nstu.ca)

### **Partnership for Access Awareness Nova Scotia Scholarships**

Partnership for Access Awareness Nova Scotia (PAANS), with the assistance of the Collaborative Partnership Network (CPN), sponsors scholarships to students with disabilities who are planning to pursue further studies. To qualify, a student must have a permanent disability, be a permanent resident of NS, be entering or returning to a Canadian post-secondary institution which is recognized by the Association of Universities and Colleges of Canada, and not be involved in the selection process or related to any PAANS scholarship selection committee member. Application deadline is April 13.

[www.paans.ca](http://www.paans.ca)

### **Pengrowth–Nova Scotia Energy Scholarship Program**

Scholarships are available to well-rounded individuals with a variety of interests who have an established track record of community involvement through activities like volunteer work, sports and other community-based activities. Applicants must be Canadian citizens or permanent residents of Nova Scotia, prepared to demonstrate interest in an energy-related career through an essay or similar means, graduating from an NS secondary school with an average mark of 75% (or 'B') in a full academic course load in Grade 12, and be accepted into an accredited post-secondary institution for studies in science, engineering or business at the Bachelor level. Application deadline is April 27.

[www.gov.ns.ca/energy/careers-training](http://www.gov.ns.ca/energy/careers-training)

### **PEI Mutual Education Trust Fund Centennial Scholarship**

Twenty \$ 500 entrance scholarships are available to PEI students who are attending any post-secondary institution. Selection criteria are based on academic performance and financial need. Students are encouraged to check with high school guidance counsellors. The deadline is May 31.

[www.edu.pe.ca/agriculture/entrancescholar.html](http://www.edu.pe.ca/agriculture/entrancescholar.html)

### **Pet Industry Joint Advisory Council of Canada (PIJAC) Scholarships**

Two \$1,000 scholarships are awarded annually to PIJAC Canada members, their staff and immediate family who are pursuing post-secondary studies in one of the fields pertinent to this industry. Application deadline is April 29. For information call 1-800-667-7452.

[www.pijaccanada.com](http://www.pijaccanada.com)

### **Prince Edward Island Dairy Youth Trust Scholarship**

This \$1,000 bursary is available to the son or daughter of a PEI resident currently pursuing studies at a post-secondary level. Preference will be given to undergraduate students with an interest in animal science, animal genetics and/or business. Applicants must have successfully completed at least the first year of a university/college program. A student may receive the award only once. Applications are available online. Application deadline is June 1.

[www.holsteinpei.com](http://www.holsteinpei.com)

### **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 who is entering post-secondary study. Selection criteria include knowledge of 4-H history, community involvement, goals and ambitions, an essay, and an interview. Further information is available from PEI high school guidance counsellors. The deadline is April 13.

[pei4h.pe.ca/page/Scholarships.aspx](http://pei4h.pe.ca/page/Scholarships.aspx)

### **Rixon Rafter Scholarship Fund and the Judge Brian Stevenson Scholarship Fund**

The Judge Brian Stevenson Scholarship Fund and the Rixon Rafter Scholarship Fund are available to blind students attending post-secondary programs. These scholarships, ranging from \$300 to \$500, are given to successful candidates based on their financial needs, academic achievement, and career goals. Both scholarships are administered through the Ross Macdonald School in Ontario. Application forms are available from CNIB Divisional Offices or the Ross Macdonald School: Rixon Rafter Scholarship Committee/Judge Brian Stevenson Scholarship Committee, Ross Macdonald School, Brantford, ON N3T 3J9, (519) 759-0730.

### **Rotary Club of Truro Post-Secondary Entrance Educational Bursary**

The Rotary Club of Truro offers two \$1,500 post-secondary entrance educational bursaries to students wishing to pursue post-secondary studies at a college or university. The bursaries are tenable only at recognized post-secondary institutions and are awarded to students who reside in the geographic area served by the Rotary Club of Truro, Nova Scotia. These are non-renewable bursaries. Selection criteria include academic standing, community involvement, and need. Further details are on the website. Application deadline is May 1.

[www.rotarycluboftruro.ca](http://www.rotarycluboftruro.ca)

### Royal Canadian Legion Bursaries/Scholarships

These awards are available to Grade 12 students entering first-year studies at university, community college, or trade school. The following bursaries/scholarships are offered: Nova Scotia/Nunavut Command Bursary; Jack Moore Memorial Dominion Command Bursary; LAC Bursary; Wales Scholarship (for disabled students); Elsie Jean Lambert Scholarship; Halifax Poppy Fund Bursary. Complete information on the bursaries and scholarships is available at the Legion branches.

[www.legion.ca/Poppy/scholarship\\_e\\_cfm](http://www.legion.ca/Poppy/scholarship_e_cfm)

### TD Canada Trust Scholarships

Twenty TD Canada Trust Scholarships are awarded honouring Canadian high school students for outstanding community leadership. The scholarships, worth \$70,000, include full tuition to a Canadian university or college, an extra \$7,500 a year for living expenses, and summer employment at TD Canada Trust for up to four years. Application deadline is October 31.

[tdcanadatrust.com/products-services/banking/student-life/index.jsp](http://tdcanadatrust.com/products-services/banking/student-life/index.jsp)

### TD 4-H Agriculture Scholarships

TD Bank Financial Group and the Canadian 4-H Council sponsor up to ten \$2,500 scholarships for 4-H members in their last year of high school who are planning to enroll in post-secondary education in a discipline related to agriculture or agri-business. Applications including a transcript of marks must be received at Canadian 4-H Council by October.

[www.gov.ns.ca/agri/4h/glkit/app\\_forms.shtml](http://www.gov.ns.ca/agri/4h/glkit/app_forms.shtml)

### Carol Thomson Memorial Fund

This \$1,000 scholarship is awarded annually to recognize a student with a learning disability seeking to use his or her potential to its maximum. The student must be attending a Canadian post-secondary institution. The application deadline is May 15.

[www.ldac-taac.ca/Scholarships/thomson\\_criteria-e.asp](http://www.ldac-taac.ca/Scholarships/thomson_criteria-e.asp)

### Toyota Earth Day Scholarship Program

The Toyota Earth Day Scholarship Program offers twenty \$5,000 scholarships to students across Canada who have distinguished themselves through environmental community service, extracurricular and volunteer activities, and academic excellence. One exceptional student will also be presented with the *Toyota Earth Day Scholarship National Award* and a Panasonic notebook computer. The application and information are available online. The deadline is January 31.

[www.earthday.ca/scholarship](http://www.earthday.ca/scholarship)

### Young Canada Works

Each year Young Canada Works (YCW) creates approximately 2,650 jobs for students and young graduates. YCW supports four summer job programs for students and two internship programs for unemployed or underemployed college and university graduates. Youth and employers can find more information and can apply on the website. The application deadline is February 1.

[www.pch.gc.ca/ycw-jct/index-eng.cfm](http://www.pch.gc.ca/ycw-jct/index-eng.cfm)

### Robert Walker Memorial Scholarship

Established in 1975 as a memorial to Robert Walker, who lost his life in a farm accident, scholarships are awarded to NB students entering a first year of post-secondary study. Applicants must have been active 4-H members in the Southern District of New Brunswick and have a farm background. Application information is available from NB Department of Agriculture, Fisheries and Aquaculture, 701 Main St., PO Box 5305, Sussex, NB E4E 7H7; phone (506) 432-2150; fax (506) 432-2044. The application deadline is July 31.

[www.nb4h.com/ewelcome/escholarship/escholarship.htm](http://www.nb4h.com/ewelcome/escholarship/escholarship.htm)

### Wanderer's Amateur Athletic Scholarship

This award is open to students who have had an injury leading to paraplegia or quadriplegia, who have been accepted at a post-secondary institution in the Atlantic Provinces. Applicants must be Canadian citizens or permanent residents residing in Atlantic Canada prior to applying. For information e-mail [Halifax@canparaplegic.org](mailto:Halifax@canparaplegic.org). The deadline is July 31.

[www.nsnet.org/cpans/schol.html](http://www.nsnet.org/cpans/schol.html)

### **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 New Brunswick, 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.

[nb4h.com](http://nb4h.com)

### **Garfield Weston Awards – Entrance Awards**

The Garfield Weston Merit Scholarship for Colleges program provides scholarships for students entering two-year programs of study at eligible colleges in Canada. NSAC is a participant in the GWMSC Consortium. There are up to 25 national awards, comprising a tuition waiver from a consortium college renewable for one or two additional years; an \$8,000 stipend renewable for one or two additional years; access to summer program funding, up to \$3,500; and mentorship. Applicants must be either Canadian citizens or permanent residents and be entering a recognized diploma program leading to a first diploma or certificate to be eligible at an approved Canadian post-secondary educational institution. At NSAC, students entering two-year Technical diploma programs (Enterprise Management, Managed Landscapes Technology, Plant Science Technology, and Veterinary Technology) are eligible. Application deadline is March 28.

[www.garfieldwestonawards.ca](http://www.garfieldwestonawards.ca)

### **F. J. L. Woodcock/Sir Arthur Pearson Association of War-blinded Scholarship Fund**

Students who have not more than 20/70 vision after correction and who are continuing either their vocational or academic education at the post-secondary level are eligible to apply for a scholarship.

Students should have a high degree of motivation, a reasonable level of achievement, and a need for assistance. Completed applications must be received at the SAPA National Office by April 30.

[www.cnib.ca/en/about/awards/scholarships/sapa](http://www.cnib.ca/en/about/awards/scholarships/sapa)

# Scholarships, Bursaries and Academic Prizes

## VII. OTHER CONTINUING EXTERNAL SCHOLARSHIPS AND BURSARIES FOR STUDENTS IN UNDERGRADUATE AND GRADUATE PROGRAMS

### VII. OTHER CONTINUING EXTERNAL SCHOLARSHIPS AND BURSARIES FOR STUDENTS IN UNDERGRADUATE AND GRADUATE PROGRAMS

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 this program is to provide incentives to encourage more students to pursue graduate degrees in disciplines related to agriculture and agri-food so as to promote the development of sufficient expertise in the agri-food sector. Graduate studies may be in 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. Scholarship amounts are \$15,000 at the Master's level with a possibility to renew for one additional year, and \$17,000 at the Ph.D. level. Nominations must be received by July 2.

#### **American Society for Enology and Viticulture Scholarships**

The American Society for Enology and Viticulture annually awards numerous scholarships to students enrolled in a major, or in a graduate group, emphasizing enology or viticulture or in a curriculum emphasizing a science basic to the wine and grape industry. The awards are not in predetermined amounts and may vary from year to year. To be eligible, students must be residents of Canada, US or Mexico and enrolled in (or accepted into) a full-time accredited four-year college or university undergraduate or graduate program. Application deadline is March 1.  
[asev.org/scholarship-program](http://asev.org/scholarship-program)

#### **Animal Nutrition Association of Canada Graduate Scholarship**

\$1,000 ANAC Graduate Scholarships are awarded to Canadian university graduate students (including landed immigrants) enrolled in Animal Science or a related field of study with a specific interest in animal nutrition (shown by research project/course selection). Applications must include a completed ANAC scholarship application form; a resumé; a reference from the applicant's university department advisor and/or department head; a one-page report detailing what role the applicant sees for him/herself in the Canadian animal nutrition field in the future; and a list of nutrition-related courses currently enrolled in and those completed (with final grade), in the form of an official transcript or a list signed by the applicant's academic advisor. The deadline for applicants from universities east of the Ontario/Manitoba border is March 30; for the Western competition the deadline is June 30. See the NSAC Awards Office for application form.  
[www.anac-anac.ca](http://www.anac-anac.ca)

#### **Aquaculture Association of Canada Scholarship**

Student scholarships valued at \$1,000 each will be awarded to winning students enrolled in a post-secondary institution in an aquaculture-related program. Selection is based on scholastic ability (transcript of marks is required), interest and involvement in aquaculture (e.g., summer employment); publication record (if any); a single letter of support and a 250-word essay on where the applicant sees him/herself contributing to sustainable aquaculture development in the future. The application deadline is March 18.  
[www.aquacultureassociation.ca/awards/aac-student-scholarship](http://www.aquacultureassociation.ca/awards/aac-student-scholarship)

#### **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 will be awarded annually to an NB resident who is enrolled in a post-secondary agricultural program. Selection will be based on academic achievement, financial need, involvement in agriculture, and interest in the poultry or food industry. Applications must be submitted to the NSAC Awards Office no later than October 15.

## **Canadian Association of Diplomas in Agriculture Programs (CADAP) Bursaries**

The Canadian Association of Diplomas in Agriculture Programs is an organization of post-secondary educational institutions offering diploma programs in agriculture. Its membership consists of institutions from across the country with a variety of programs emphasizing the agriculture of their region. To enable students from member institutions to benefit from this diversity in programs, the geographical variation, and the differing cultural backgrounds, CADAP will be offering, annually, \$1,000 bursaries for two students from different CADAP institutions to participate in an exchange between member institutions. Duration of the exchanges will be one or two semesters or practical experience work sessions of at least 12 weeks. Students wishing to participate should make their interests known to the NSAC Vice-President Academic by December 15.

## **Canadian Co-operative Association Scholarships**

Graduate and undergraduate students are invited to apply for scholarships supporting research in co-operatives and co-operation which will contribute to the co-operative movement in Canada or abroad. The application deadline is March 31.

[www.coopscanada.coop/en/about\\_cca/Awards](http://www.coopscanada.coop/en/about_cca/Awards)

## **Canadian Engineering Memorial Foundation Scholarships**

Ten scholarships totaling \$80,000 will be awarded to women studying engineering at the Bachelor's, Master's and Ph.D. levels in the coming year. Undergraduates are invited to apply for one of five \$5,000 CEMF Undergraduate Engineering Scholarships (one scholarship in each region). Three \$10,000 Vale Undergraduate Engineering Scholarships and one \$10,000 Vale Master's Engineering Scholarship are also available. These scholarships are open to women interested in mining and metallurgical engineering (or a related field). One \$15,000 Claudette MacKay-Lassonde Scholarship is also available to a woman who has acted as a leader in her community, been involved in research and teaching, and is enrolled full-time in a graduate engineering program at the Ph.D. level. Application deadline is January 13.

[www.cemf.ca](http://www.cemf.ca)

## **Canadian Federation of University Women (Truro Branch) Scholarship**

Scholarships are awarded to mature women (over the age of 25) attending a degree-granting university or college on a full-time basis. Applicants must be Canadian citizens and residents of the town of Truro or the County of Colchester in Nova Scotia. The applicants must have been out of school for at least five years before embarking on their present program of study. A candidate is eligible to apply during any year of a degree-granting program. If still eligible, an applicant may re-apply for this scholarship if the application during the previous year was unsuccessful. For more information, contact the CFUW – Truro Branch at (902) 897-0185. The application deadline is May 11.

## **Canadian Forces Personnel Assistance Fund**

Assistance is in place to assist serving and former members and their dependents with costs of post-secondary education. Applications will be accepted throughout the year until funds are exhausted; however, to obtain the loan in time for the semester beginning in September, submissions should arrive at CFPAP by June 30.

[www.sisip.ca/en/Downloads\\_e/ealp\\_e.asp](http://www.sisip.ca/en/Downloads_e/ealp_e.asp)

## **Canadian Golf Superintendents Association Scholarships**

The Canadian Golf Superintendents Association supports CGSA member students who are attending educational programs as a means of enhancing their knowledge and skills for the turfgrass profession. The Scholars Fund is available to those currently enrolled in at least the second semester of a recognized turfgrass program of two years' duration or longer. Selection criteria include academic performance, financial need, and the content of the application which demonstrates the applicant's interest in the field of turf grass as a career. Applications are due by November 30.

[golfsupers.com/en/node/81](http://golfsupers.com/en/node/81)

## **Canadian Hard of Hearing Association Scholarship**

This scholarship program offers three \$1,000 awards and recognition to hard-of-hearing and deafened students registered in a full-time program at a recognized Canadian college or university, in any area of study, with the ultimate goal of obtaining a diploma or degree. The awards are available to first-year or returning students. The application deadline is February 28.

[chha.ca/chha/scholarships-index.php](http://chha.ca/chha/scholarships-index.php)

## **Canadian International Farm Show Youth in Agriculture Bursaries**

The Canadian International Farm Show Youth in Agriculture bursaries, presented by Master Promotions Ltd. in partnership with the Junior Farmers' Association of Ontario, are designed to give back to the agricultural community by supporting the development of the next generation of agricultural leaders. A bursary worth \$2,500 will be awarded to students currently in the first year of an agriculture-related program at an accredited Canadian university or college. Applicants must show both academic achievement and financial need, and must not have reached the age of 30 before January 1, 2012. Strong preference will be given to applicants who demonstrate rural leadership or strong community involvement in organizations like the Junior Farmers' Association of Ontario. Applications should include: a completed application form; a cover letter outlining the applicant's background, involvement in the agricultural community, goals for post-graduation, how the applicant's program relates to pursuing an agriculture-related career and how receiving the CIFS bursary would better enable them to pursue their studies; an up-to-date resume; an official transcript showing final marks for all completed first-term courses; and two letters of recommendation, including one on letterhead from a university/college faculty or staff member. It is recommended the second letter be from an established member of a local farm/rural organization that the applicant is involved in. Both letters must be sent directly to JFAO by March 1.

[www.jfao.on.ca/scholarships](http://www.jfao.on.ca/scholarships)

## **Canadian Meat Science Association Scholarships**

The Canadian Meat Science Association (CMSA) has recently set up scholarships to promote quality education and development of meat science in Canada. For graduate students studying meat science in Canada, the \$3,000 Percy Gitelman Memorial Scholarship and the \$3,000 CMC Associate Members Scholarship are offered. For undergraduate students, two \$2,500 Ronald A. Chisholm Undergraduate Scholarship are offered. Graduate students must be conducting applied or basic meat research in any year of a recognized full-time M.Sc. or Ph.D. program at a Canadian university. Undergraduate students must be in any year of a recognized full-time B.Sc. program in Agriculture and/or Food Science at a Canadian university, and be interested in studying Meat Science in Canada. More information can be found on the website. Application deadline is January 9.

[cmsa-ascv.ca](http://cmsa-ascv.ca)

## **Canadian Western Agribition Scholarships**

Several \$1,000 scholarships are awarded to students who have participated in the Canadian Western Agribition as exhibitors. Applicants must have completed at least one year of post-secondary study to be eligible. For further details contact: Canadian Western Agribition, PO Box 3535, Regina, SK S4P 3J8; phone (306) 565-0565, fax (306) 757-9963; e-mail [agribition@sk.sympatico.ca](mailto:agribition@sk.sympatico.ca). The application deadline is July 1.

## **Florence M. Christie Memorial Bursary for Women**

The Greater Saint John Community Foundation awards annual \$1,500 scholarships to women of Saint John, NB. Applicants must be mature female students (i.e., out of high school at least one year) with demonstrated financial need, entering or returning to full- or part-time studies at a post-secondary institution in September. The bursary must be applied to tuition. High academic standing is not a requirement. The application must include the completed application form, a statement of income and expenses, three letters of reference, a transcript of marks, volunteer experience/school participation, and future goals. The application deadline is March 31.

[www.saint-john-foundation.nb.ca/Scholarships.html](http://www.saint-john-foundation.nb.ca/Scholarships.html)

## **Harry Colnett Memorial Scholarship**

This \$1,000 scholarship was instituted in 1976 in memory of Harry Colnett, who was a member of the National Association of United Church AOTS Club. This scholarship is available to any male or female studying agriculture and willing to spend time in an underprivileged country. For further details contact the National Secretary.

[www.aots.ca/project.htm](http://www.aots.ca/project.htm)

## **Communities in Bloom Foundation Bursaries**

Two \$1,000 bursaries will be awarded to eligible successful individuals. Applicants must be registered in, and successfully complete, a full-time post-secondary level pertaining to ornamental and/or environmental horticulture programs in an accredited institution. Applicants must be involved in a community participating in the Communities in Bloom program (national or provincial editions). Application deadline is September 30.

[communitiesinbloom.ca](http://communitiesinbloom.ca)

# Scholarships, Bursaries and Academic Prizes

## VII. OTHER CONTINUING EXTERNAL SCHOLARSHIPS AND BURSARIES FOR STUDENTS IN UNDERGRADUATE AND GRADUATE PROGRAMS

### **Dairy Farmers of New Brunswick Scholarship**

The Dairy Farmers of New Brunswick offers a \$750 scholarship to an NB resident who is enrolled in any year of an approved technician or technology diploma or certificate program relating to agriculture. For further information and application form, contact [nbmilk@nbmilk.com](mailto:nbmilk@nbmilk.com); phone (506) 432-4330. The application deadline is June 15.

### **Datatel Scholars Foundation Scholarship**

Datatel provides scholarship support for students currently attending an eligible Datatel client college or university. NSAC is a client of Datatel. Scholarship amounts range from \$1,000 to \$2,400, based on the undergraduate tuition at the college or university the applicant attends. The application packages will include personal statement essays which should summarize educational goals and objectives, where the applicants have been as individuals, and where they hope their education will take them. They should also indicate the difference a Datatel scholarship would make in their lives and to those around them. The application deadline is January 29.

[www.datatelscholars.org](http://www.datatelscholars.org)

### **Cathy Enright Scholarship**

A \$1,000 scholarship has been established by the Aquaculture Association of Nova Scotia (AANS) to recognize Dr. Cathy Enright's contribution to the field of Aquaculture. The scholarship is designated for Honours and Master's students studying in NS who are conducting research projects related to aquaculture (any field). Applicants are asked to submit a 200-word abstract to AANS by January 18. Further details are on the website.

[www.aansonline.ca](http://www.aansonline.ca)

### **Entomological Society of Canada Postgraduate Awards**

The Society offers two \$2,000 postgraduate awards to students in study and research leading to a postgraduate degree in entomology. The postgraduate awards will be made on the basis of high scholastic achievement. The Society will normally award one to an M.Sc. student and one to a Ph.D. student. Applicants must be enrolled at a Canadian university and their studies and research must be carried out at a Canadian university. Information on applications and evaluation procedures is on the website. The application deadline is February 16.

[www.esc-sec.ca/postgradtext.html](http://www.esc-sec.ca/postgradtext.html)

### **Robert Felix Memorial Scholarship**

Established by the Tree Care Industry Association (TCIA) through the former National Arborist Foundation, four \$3,000 scholarships are given annually to college students studying arboriculture, urban forestry or related fields with the intention of entering arboriculture.

The application deadline is April 1.

[www.treefund.org/scholarships/tree-fund-scholarships](http://www.treefund.org/scholarships/tree-fund-scholarships)

### **Terry Fox Humanitarian Award Program**

This 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 \$7,000 per year for a maximum of four years or until the first degree is obtained. The deadline for applications is February 1.

[www.terryfoxawards.ca/english/information.html](http://www.terryfoxawards.ca/english/information.html)

### **Garden Writers Association Scholarships**

General scholarship grants are provided for college-level juniors and seniors enrolled as full-time students majoring in Horticulture, Plant Science, and Journalism with an interest in garden communication, including garden photography. Application forms are available at Canadian colleges and universities. The application deadline is December 1.

[www.gardenwriters.org](http://www.gardenwriters.org)

### **Keith Gilmore Foundation Scholarships**

The Keith Gilmore Foundation provides two \$2,500 scholarships to individuals in a postgraduate degree program, up to four \$2,000 scholarships to individuals in an undergraduate degree program, and four \$1,500 scholarships to individuals in a recognized diploma program in agriculture, agricultural journalism or veterinary medicine at a recognized university, leading to a career in the field of agriculture. Selection is based on academic merit, contribution to school and/or community, an indication of career objectives, and involvement and accomplishments in a youth program. The successful applicants will have already completed a minimum of one year in their programs. The application deadline is May 15.

[keithgilmorefoundation.com/scholarships.htm](http://keithgilmorefoundation.com/scholarships.htm)



# Scholarships, Bursaries and Academic Prizes

## VII. OTHER CONTINUING EXTERNAL SCHOLARSHIPS AND BURSARIES FOR STUDENTS IN UNDERGRADUATE AND GRADUATE PROGRAMS

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### **John Gyles Education Awards**

The John Gyles Education Awards of up to \$3,000 are available each year to male and female students for all areas of post-secondary study in both Canada and the United States. Applicants must have a minimum GPA of 3.5 on a scale of 4.0 (or similar grade assessment) and must also have citizenship in either the US or Canada. Additional criteria are listed on the application form. Further application details are on the website. Applications must be mailed by June 1.

[www.johngyleseducationcenter.com/scholarship.html](http://www.johngyleseducationcenter.com/scholarship.html)

### **Hants County Exhibition Scholarship**

This \$1,000 scholarship, sponsored by the Windsor Agricultural Society, is offered to residents of Hants County, NS, entering any year of any program at a recognized agricultural or veterinary college who have aspirations of working in the agricultural industry. Selection criteria include academic performance, extracurricular activities, part-time employment, and career plans. Application forms with copies of transcripts must be received by August 26 at: Windsor Agricultural Society, PO Box 368, Windsor, NS B0N 2T0.

### **Anna Helvig Schousboe Memorial 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 at a post-secondary institution. Application information is available at the NSAC Awards Office. The application deadline is September 20.

### **Holstein Canada Bursaries**

Holstein Canada offers six \$750 bursaries: one in Atlantic Canada, two in Ontario, two in Quebec, and one in Western Canada. Applicants must be regular or junior members of Holstein Canada, or children of members; must have completed at least one year of university/college (or CEGEP in Quebec), and must be returning to school within the school year. Applications must include an official original transcript, a resume, and a completed application form. Application forms are available on the website or from the NSAC Awards Office. The application deadline is November 30.

[www.holstein.ca](http://www.holstein.ca)

### **Arlen Kerr Memorial Scholarship**

The Canada Mink Breeders Association awards a \$2,000 renewable scholarship to a Canadian graduate student engaged in mink research who is attending any Canadian university or veterinary college. Applicants should submit their education profiles and research proposals by January 15 to: Karlene Hart, Executive Secretary, Canada Mink Breeders Association, 65 Skyway Ave., Suite B, Rexdale, ON M9W 6C7.

### **Kin Canada Bursaries**

The Hal Rogers Endowment Fund provides \$1,000 bursaries to full-time Canadian students demonstrating financial need, extracurricular involvement, high ideals, and qualities of citizenship who have not already received a bursary from the Hal Rogers Endowment Fund. The deadline is February 1.

[www.bursary.ca](http://www.bursary.ca)

### **The Leonard Foundation**

The Leonard 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 about \$1,250. Applications are available from: The Provincial Nominator, The Leonard Foundation, 1774 Pryor St., Halifax, NS B3H 4G8. Applications must be submitted and an interview arranged with the Nominator nearest you (listed on insert in application) by March 15.

[www.leonardfnd.org](http://www.leonardfnd.org)

### **Terry MacDonald Memorial Scholarship**

This scholarship is awarded to a Southern District NB 4-H member from a farm family who is entering or enrolled in post-secondary study. An interview is part of the application process. Applications are available from: Ron Menzies, RR #4, Norton, NB E0G 2N0. The application deadline is July 31.

[www.nb4h.com/ewelcome/escholarship/escholarship.htm](http://www.nb4h.com/ewelcome/escholarship/escholarship.htm)

## **C. C. MacDougall Memorial Scholarship**

This \$250 scholarship is awarded to a student pursuing a degree or diploma in Agriculture, Home Economics or Veterinary Medicine. To be eligible, a student must have been a 4-H member from Kings County, NB, or have parents who raise or breed Guernseys anywhere in NB. The application form must be submitted to the NSAC Awards Office no later than September 20.

## **Paul R. MacPhail PEI Potato Industry Scholarship**

In memory of Paul R. MacPhail, the PEI Potato Board offers a \$500 scholarship to PEI students studying at the graduate or undergraduate level of an agricultural degree program at any recognized Canadian agricultural institution, or to students in a postgraduate degree program at a recognized Canadian university, carrying out research projects related to potato production and utilization (including all disciplines, e.g., biotechnology, pathology, entomology, etc.). Undergraduate students must demonstrate through course work, summer employment and/or home farm background an interest in working in the potato industry. Selection criteria for potential undergraduate scholarships include academic performance, extracurricular activities, and employment history. Graduate students will be considered on the basis of academic performance and relevance of the project to the improvement of the PEI potato industry. Applications must be submitted to the NSAC Awards Office no later than September 20.

## **Maritime Dairy Industry Scholarship**

Two individual scholarships of \$2,000 will be awarded. To be eligible for this scholarship, a student must be currently attending a post-secondary education institution within Canada, have completed at least two years of study in a program that has application to the dairy industry, show professional and academic promise, and have a commitment to and interest in the dairy industry. Applicant must be a resident of NS, NB, or PEI. Applicants must send a completed application form, a resume, a one-page letter stating their commitment and interest in the dairy industry, an official transcript of marks for all completed years in post-secondary education, and three reference letters (at least one from a professor). Selection will be based on application requirements, academic standing, and potential contribution and commitment to the dairy industry. Applications must be submitted by April 30.

[www.dairynutrition.ca/the-maritime-dairy-industry-award](http://www.dairynutrition.ca/the-maritime-dairy-industry-award)

## **Maritimes & Northeast Pipeline Liaison Scholarships & Academic Achievement Awards**

The Assembly of Nova Scotia Mi'kmaq Chiefs and Maritimes & Northeast Pipeline (M&NP) are committed to the development of future generations of Mi'kmaq students through academic and personal development. They have made available \$1,000 scholarships for full-time and part-time students enrolled in university, college, vocational school, or technical institute, and \$500 Academic Achievement Awards for students graduating from high school, Adult High School, or academic upgrading. To be eligible, students must be registered with a Nova Scotia Mi'kmaq band, enrolled either full-time or part-time and expect to return the following year to their field of study, and graduating from high school or a university program. Call (902) 490-2209 for more information. The application deadlines are June 17 for scholarships and July 15 for academic achievement awards.

[www.mnpp.com/canada/firstnations](http://www.mnpp.com/canada/firstnations)

## **Mattinson Endowment Fund Scholarship for Disabled Students**

This program is to encourage Canadian students with a disability to obtain a first university degree. The award is \$2,500; the number awarded each year will be based on the funding available for that year. Applicants must be Canadian citizens or have lived in Canada for two years as legal permanent citizens. All applicants must be entering or currently enrolled in a first undergraduate program at a Canadian post-secondary institution. Recipients may re-apply. The deadline to apply is June 1.

[juno.ucc.ca/wes/hes.aspx?pg=934&oth=0001442009](http://juno.ucc.ca/wes/hes.aspx?pg=934&oth=0001442009)

## **Margaret McNamara Memorial Fund**

Since 1981 the Margaret McNamara Memorial Fund (MMMMF), a 501(c)(3) not-for-profit public charity, has awarded scholarships to outstanding women from developing countries who are completing degrees at US/Canadian universities and are committed to improving the well-being of women and children in developing countries. Individual MMMF Scholarships are between \$12,000 and \$15,000 and must be used during the 2012/2013 academic year. Complete information about the MMMF, scholarship eligibility, online application instructions, and deadlines are available on the website. The deadline is January 17.

[www.mmmf-grants.org](http://www.mmmf-grants.org)

## **Douglas McRorie Memorial Scholarships**

Six \$1,500 scholarships are sponsored by RBC Foundation in memory of Douglas McRorie, in recognition of his significant contribution to agricultural finance throughout his career with RBC and his professional involvement with AIC. The scholarships are available to Master's or Ph.D. students specializing in Agricultural Business, Economics, Finance, or Trade. Selection criteria include academic record, leadership and community service, work experience, and career interests. The application deadline is March 2.

[www.aic.ca/about/foundation\\_initiatives.cfm](http://www.aic.ca/about/foundation_initiatives.cfm)

## **John Miller Memorial Bursary**

The \$500 John Miller Memorial Bursary is awarded to an NS student, in any year of any program at any agricultural university/college in Canada, whose course and project work and career plans reflect an interest in the hog industry or whose application shows interest in, understanding of, and appreciation for Nova Scotia's hog industry. The bursary is in memory of John Miller, who served as Secretary/Manager of Pork Nova Scotia from 1983 to 1997. Applications must be submitted to the NSAC Awards Office no later than October 1.

## **National Aboriginal Achievement Foundation**

The National Aboriginal Achievement Foundation has evolved into the largest non-governmental funding body for First Nations, Inuit, and Métis post-secondary students across Canada. Bursary and scholarship awards are provided annually to students across a diverse range of disciplines. Further details are on the website.

[www.naaf.ca/scholarships](http://www.naaf.ca/scholarships)

## **New Brunswick Institute of Agrologists Scholarship**

The New Brunswick Institute of Agrologists awards a \$1,000 scholarship to an NB student entering the third year of a degree program in Agriculture at a recognized Canadian institution. Students should indicate their enrollment in one of the following Agrology disciplines: Agricultural Economics and Farm Management; Plant, Animal, Soil and Environmental Sciences; Pest Management; or Agrometeorology. Selection criteria include academic performance, participation in extracurricular activities, and financial need.

Applications must be submitted no later than October 1 to either the NSAC Awards Office or Registrar, New Brunswick Institute of Agrologists, PO Box 3479, Station B, Fredericton, NB E3A 5H2.

[www.nbagrologists.nb.ca](http://www.nbagrologists.nb.ca)

## **New Brunswick Milk Marketing Board Scholarship**

The NB Milk Marketing Board awards a \$750 scholarship to an NB resident who is enrolled in a technician or technology diploma or 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. The application deadline is July 3.

[www.nb4h.com/ewelcome/escholarship/escholarship.htm](http://www.nb4h.com/ewelcome/escholarship/escholarship.htm)

## **Nova Scotia Equestrian Federation Education Bursary Program**

The NSEF Education Bursary Program is a financial bursary to assist NSEF members attending a post-secondary educational institution. Up to four awards of \$500 each will be awarded yearly to active members to exemplify the objectives of the NSEF. A candidate may only receive the bursary once. Applicants must be registered at or attending an accredited post-secondary institution on a full-time basis to be eligible. Application deadline is May 1.

[www.horsenovascotia.ca/docs/Youth-Bursary-Program.pdf](http://www.horsenovascotia.ca/docs/Youth-Bursary-Program.pdf)

## **Nova Scotia Fruit Growers' Association Scholarship**

The Nova Scotia Fruit Growers' Association awards a \$500 bursary to a student entering or already in a post-secondary education program in the field of Tree Fruit Production or a related science program, which might include Biology, Chemistry, Food Science, Plant Science, Environmental Science, or Business or Agri-Business. Selection criteria include academic achievement, participation in school and community activities, and interest in the tree fruit industry.

Applications, including a resumé, university/college acceptance letter or transcript, and an essay outlining career and life goals, must be received no later than May 31 by: Education Committee, Nova Scotia Fruit Growers' Association, Blair House, 32 Main St., Kentville, NS B4N 1J5.

[www.farmcentre.com/english/courses/ss.asp](http://www.farmcentre.com/english/courses/ss.asp)

## **Nova Scotia Fur Institute Scholarship**

The Nova Scotia Fur Institute annually awards a \$2,500 scholarship to a graduate student. The scholarship is open to any graduate student who is pursuing research in fur production and is attending full-time graduate studies at a recognized Canadian University (**Note: individuals enrolled outside of Canada but attending Canadian institutions would be eligible**). Selection will be based on an assessment of the proposed research using the following weighting criteria: relevance of the research to fur production issues, innovativeness of the proposed research, presentation and clarity of the research proposal, project progress at time of application, plans for use of funds, and responses to questions. Final scholarship selection will be made by the Fur Institute. Letter of application (with transcript and resumé) must be submitted no later than July 27 to: Director, Nova Scotia Fur Institute, Nova Scotia Department of Agriculture, Room 217, Harlow Institute, 176 College Road, PO Box 550, Truro, NS B2N 5E3.

## **Nova Scotian Institute of Science Mentorship Program**

This mentorship program is aimed at university students (undergraduate and graduate) seeking guidance regarding their career opportunities in science. For more information or to request a mentor, interested students must send an e-mail to the Mentorship Program Chair, Dr. Robert Boudreau ([rtmboudreau@hotmail.com](mailto:rtmboudreau@hotmail.com)).

[www.chebucto.ns.ca/Science/NSIS/students.html](http://www.chebucto.ns.ca/Science/NSIS/students.html)

## **Nova Scotian Institute of Science Student Writing Competition**

The Nova Scotian Institute of Science (NSIS) sponsors an annual Student Science Writing Competition. The importance of effective writing in the communication of science has long been recognized as an important aspect of the scientific profession and the NSIS considers this competition as a means to promote the writing skills of young scientists. The deadline for notification of intent to enter the competition is January 6.

[www.chebucto.ns.ca/Science/NSIS/students.html](http://www.chebucto.ns.ca/Science/NSIS/students.html)

## **NSGEU Bursaries**

The Nova Scotia Government & General Employees Union (NSGEU) offers bursaries to dependents of NSGEU members. The bursary will be tenable for a program of study leading to a degree, diploma, or certificate at any recognized post-secondary institution. The bursaries are awarded once a year, and the application deadline is October 15.

[www.nsgeu.ca/Education/index.cfm](http://www.nsgeu.ca/Education/index.cfm)

## **NSGEU Scholarships**

The Nova Scotia Government & General Employees Union offers scholarships to dependent children of NSGEU members. The applicant must be a dependent child of a member in good standing (for at least 12 months prior to the application), the dependent child of a retired member (for at least 12 months prior to retirement was a member in good standing), or the dependent child of a deceased member. These scholarships are awarded once a year. The application deadline is October 15.

[www.nsgeu.ca/Education/index.cfm](http://www.nsgeu.ca/Education/index.cfm)

## **Nova Scotia Power Environment Scholarship**

Five \$1,000 scholarships are awarded to individuals currently enrolled at any NS post-secondary institution in an environmental-related program, which can include, but is not limited to, engineering, sciences and social sciences. Selection is based on the following: solid academic record (minimum 80%); demonstrated leadership in their communities in the areas of environmental protection, resource management, or environmental sustainability; positive reference letter; and an essay on the subject of their environmental accomplishments and ambitions. Applicants must be Canadian citizens and resident in NS for the last three years, and have completed at least one semester in an undergraduate environment-related program at a NS post-secondary institution. Deadline for applications is January 27. [www.nspower.ca/en/home/community/scholarships/environmentscholarship.aspx](http://www.nspower.ca/en/home/community/scholarships/environmentscholarship.aspx)

## **Nuffield Canada Scholarships**

Nuffield Canada awards three scholarships of \$15,000 each to enterprising Canadian individuals for agriculture. The scholarship is to be used for travel (a minimum of 8 weeks) for the purpose of study. Recipients can come from any field of agriculture, such as livestock, grain or vegetable production, forestry, horticulture, etc., and can come from any aspect of the industry, for instance owners, managers, employees, administrators or bureaucrats. Application deadline is April 30. [nuffield.ca/scholarships](http://nuffield.ca/scholarships)

## **Partnership for Access Awareness Nova Scotia Scholarships**

Partnership for Access Awareness Nova Scotia (PAANS), with the assistance of the Collaborative Partnership Network (CPN), sponsors scholarships to students with disabilities who are planning to pursue further studies. To qualify, a student must have a permanent disability, be a permanent resident of NS, be entering or returning to a Canadian post-secondary institution which is recognized by the Association of Universities and Colleges of Canada, and not be involved in the selection process or related to any PAANS scholarship selection committee member. Application deadline is April 13. [www.paans.ca](http://www.paans.ca)

## **Pengrowth – Nova Scotia Innovation Grant**

Up to four non-renewable grants of \$15,000 each will be available each year to Nova Scotians who are preparing to begin full-time studies in a Master's program in Earth Sciences, Business or Engineering at an NS university. The application deadline is January 20. [www.gov.ns.ca/energy/careers-training/scholarship-program.asp](http://www.gov.ns.ca/energy/careers-training/scholarship-program.asp)

## **Alvin Rowledge Bursary Award**

The Atlantic Golf Superintendents Association (AGSA) has established the Alvin Rowledge Bursary Award with the purpose of providing a bursary of up to \$1,000 annually to a qualified student (or students) registered in a sanctioned turfgrass program, at a recognized educational institute. To be eligible, a student must be a resident of Atlantic Canada; be an AGSA member in good standing; have a minimum of two seasons as a golf course maintenance employee; and be presently enrolled in (at least) a two-year program. Applications, including an official transcript of academic records and letters of recommendation from both the golf course Superintendent at the place of employment and a current turfgrass program instructor from the institution, must be sent by registered mail to the AGSA Office, PO Box 2063, Fall River, NS B2T 1K6 by September 20. [www.agsa.ca](http://www.agsa.ca)

## **George W. Slipp Memorial Scholarship**

The Chicken Farmers of New Brunswick Marketing Board awards an annual \$1,000 scholarship, in memory of George W. Slipp, to an NB resident who is enrolled in a post-secondary agricultural program. Selection is based on academic achievement, financial need, involvement in agriculture, and interest in the poultry or food industry. Applications are available at the NSAC Awards Office, or e-mail [nbchicken@rogers.com](mailto:nbchicken@rogers.com). Applications must be submitted to the NSAC Awards Office no later than October 15.

## **Southern District 4-H Council Scholarship**

The Southern District 4-H Club Council in New Brunswick 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. [www.nb4h.com/ewelcome/escholarship/escholarship.htm](http://www.nb4h.com/ewelcome/escholarship/escholarship.htm)

## **Norah Stephen Oncology Scholar Awards**

A maximum of nine \$6,500 studentships will be awarded. Three awards will be allocated to cancer-related research projects in discovery science, three to clinical training projects and three to cancer-related research in any other discipline. Application details can be found on the website. The application deadline is February 1. [www.bhcri.ca/nsoa](http://www.bhcri.ca/nsoa)

## **Garfield Weston Merit Scholarship for Colleges – Upper-Year Awards**

The W. Garfield Weston Foundation, through the Garfield Weston Merit Scholarships for Colleges, has established an Upper-year Awards program to recognize and reward outstanding college students who are passionate about their fields of study; curious and willing to try new things; caring about their families, neighbourhoods and communities; and truly interested in becoming involved and making a difference in society. For 2011/2012, GWMSC will provide 25 Upper-Year Garfield Weston Awards comprising a tuition waiver, an \$8,000 stipend, access to summer program funding up to \$3,500, and mentorship. Recipients also receive a \$4,000 retroactive award to help defray accumulated education costs.

To be eligible, a student must be a Canadian citizen or permanent resident, be enrolled full-time in college studies leading to a diploma or applied degree, have at least one full academic year remaining in his or her current college program, be pursuing his or her remaining studies on a full-time basis, have a minimum academic average of 73%, and be nominated by the Scholarship Committee at NSAC. NSAC can nominate up to three students for national consideration. Students who are currently GWMSC National Scholars are not eligible to apply. At NSAC, only students in the two-year Technical programs (Diploma in Business Management, Diploma in Managed Landscape, Plant Science Technology and Veterinary Technology) who will be continuing in the second year of the program and students in the Bachelor of Technology in Environmental Horticulture who will be continuing into second, third or fourth year on a full-time basis are eligible. Further information and an application form are available on the website. The application deadline is March 16. [www.garfieldwestonawards.ca](http://www.garfieldwestonawards.ca)

## **George B. Whalen Memorial Scholarship**

The New Brunswick Milk Marketing Board awards a \$750 scholarship in memory of George B. Whalen, who dedicated a great part of his life to the promotion of a more viable dairy industry in New Brunswick. Applicants must be 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, or agricultural economics. Selection will be based on financial need, academic performance, and involvement in community and future plans. Applications including an essay (300–500 words), two letters of recommendation, and a transcript of marks must be submitted no later than June 15 to: Scholarship Committee, NB Milk Marketing Board, PO Box 490, Sussex, NB E0E 1P0. [www.nb4h.com/ewelcome/escholarship/escholarship.htm](http://www.nb4h.com/ewelcome/escholarship/escholarship.htm)

**VIII. OTHER SCHOLARSHIP, BURSARY, AND AWARD  
RESOURCE LIST**

The following is a list of other resources that may be useful in finding information for awards. Students are also encouraged to check with their local high school guidance office for scholarships and bursaries available to them. Service groups and community organizations may also sponsor awards for students pursuing post-secondary studies.

**Nova Scotia 4H Scholarships**

[www.gov.ns.ca/agri/4h/glkit](http://www.gov.ns.ca/agri/4h/glkit)

**Province of Nova Scotia, Department of Education**

[www.ednet.ns.ca](http://www.ednet.ns.ca)

**New Brunswick 4H Scholarships**

[www.nb4h.com/ewelcome/escholarship/escholarship.htm](http://www.nb4h.com/ewelcome/escholarship/escholarship.htm)

**Province of New Brunswick, Department of Education**

[www.gnb.ca/0000/sb-e.asp](http://www.gnb.ca/0000/sb-e.asp)

**Prince Edward Island 4H Scholarships**

[www.pei4h.pe.ca/page/Scholarships.aspx](http://www.pei4h.pe.ca/page/Scholarships.aspx)

**Province of Newfoundland & Labrador, Department of  
Education**

[www.ed.gov.nl.ca/edu](http://www.ed.gov.nl.ca/edu)

**Association of Universities and Colleges of Canada**

[juno.uacc.ca/wes/hes.aspx?pg=834&oth=&lg=1](http://juno.uacc.ca/wes/hes.aspx?pg=834&oth=&lg=1)

**Agriculture Scholarships across Canada**

[www.farmcentre.com/Resources/scholarships](http://www.farmcentre.com/Resources/scholarships)

**Student Awards**

[www.studentawards.com](http://www.studentawards.com)

**Scholarships Canada**

[www.scholarshipscanada.com](http://www.scholarshipscanada.com)

**Canadian Bureau for International Education**

[www.cbie.ca/english/scholarship](http://www.cbie.ca/english/scholarship)

**Canada's Higher Education & Career Guide**

[www.canadian-universities.net/Scholarships](http://www.canadian-universities.net/Scholarships)

# Administration and Faculty

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### Associate VP Academic Programs (Interim), and

#### Faculty Graduate Studies Coordinator

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J. M. Smith, B.P.Ed. (Dalhousie)

### Assistant Dean Recruitment and Awards

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### Assistant Dean Health Services

L. Young, RN

### Manager of Research & Graduate Studies

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### Manager, Continuing Education

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### Dean, Teaching and Learning

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### Coordinator, Alumni and Public Relations

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### Coordinator of Marketing

S. G. Morris, B.A. (Acadia), BPR (Mount St. Vincent)

### Administrative Secretary

T. E. Blois

### Vice-Principal Emeritus

I. M. Fraser, B.Sc. (Dalhousie), M.A. (Maine), M.B.A. (Dalhousie)

### Dean Emeritus

A. D. Eells, B.Sc.(Agr.) (McGill), M.A. (Acadia)

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*-Professor*

K. M. Kevany, B.A. (Carleton), M.Ed. (Toronto), Ed.D. (Toronto)

*-Assistant Professor and Director of Adult Learning*

R. E. Lewis, B.Comm (Dalhousie), MBA (Ivey)

*- Assistant Professor*

J. Lu, B.A. (China Renmin U), M.A. (Beijing Normal U), Ph.D. (McGill)

*-Assistant Professor*

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*-Associate Professor*

P. M. Sanger, B.A. (Melbourne), B.Ed. (Acadia), M.A. (Victoria)

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-Professor, and CEO, Atlantic Bioventure Centre

T. Astatkie, B.Sc., M.Sc. (Addis Ababa), Ph.D. (Queen's)

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A. Georgallas, B.Sc. (Queen Elizabeth College), Ph.D. (London)

-Associate Professor

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-Associate Professor

T. Nguyen Quang, B.Sc. (Nat. Polytechnic Inst. of Grenoble), M.Sc.

(Joseph Fourier), Ph.D. (Montreal, Mediterranean)

- Assistant Professor

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- Assistant Professor

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-Associate Professor

D. L. Burton, B.Sc. (Dalhousie), M.Sc. (Guelph), Ph.D. (Alberta)

-Professor

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-Professor

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-Canada Research Chair in Agricultural Biotechnology

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-Associate Professor

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-Professor

T. Tennessen, B.A., B.Sc., M.Sc., Ph.D. (Alberta)

-Professor

G. Wang-Pruski, B.Sc. (Tian Jin), Ph.D. (Alberta)

-Professor

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-Adjunct

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-Adjunct
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-Adjunct
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-Adjunct
- C. Embree, B.Sc. (Guelph), M.Sc. (British Columbia)  
-Adjunct
- K. C. Falk, B.Sc., M.Sc.(Agr.) (Guelph), Ph.D. (Saskatchewan)  
-Adjunct
- C. Forney, B.Sc., M.Sc. (Pennsylvania), Ph.D. (Oregon)  
-Adjunct
- D. J. Garbary, Ph.D. (Liverpool)  
-Adjunct
- S. O. Gaul, B.Sc. (Mount St. Vincent), M.Sc. (Dalhousie), Ph.D.  
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-Adjunct
- J. M. Hardman, B.Sc. (Dalhousie), M.Sc. (London, UK), Ph.D.  
(Simon Fraser)  
-Adjunct
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-Adjunct
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-Adjunct
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-Adjunct
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-Adjunct
- R. Kemp, B.Sc., Ph.D. (Guelph)  
-Adjunct
- S. Lall, B.Sc. (Allahabad), M.Sc., Ph.D. (Guelph)  
-Adjunct
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-Adjunct
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-Adjunct
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-Adjunct
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-Adjunct
- H. W. Platt, B.Sc. (Manitoba), Ph.D. (Saskatchewan)  
-Adjunct
- J. P. Privé, B.Sc. (Winnipeg), M.Sc. (Guelph)  
-Adjunct
- J. Y. Raggett, M.Ed. (Greenwich), Ph.D. (York)  
-Adjunct
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Ph.D. (Saskatchewan)  
-Adjunct
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-Adjunct
- A. R. Robinson, B.Sc.(Agr.), M.Sc., Ph.D. (McGill)  
- Adjunct
- M. C. Robinson, B.Sc. (Acadia), M.Sc., Ph.D. (Simon Fraser)  
-Adjunct
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- Adjunct

F. Shahidi, Ph.D. (McGill)

-Adjunct

F. G. Silversides, B.S.A. (Saskatchewan), M.S. (Massachusetts),  
Ph.D. (Saskatchewan)

-Adjunct

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-Adjunct

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-Adjunct

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-Adjunct

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-Adjunct

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-Honorary Research Associate

## Teaching Staff and Sessional Instructors

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M. Brodie

R. Chapman

O. W. Ferguson, B.A., B.Ed. (Acadia), M.A. (St. Mary's), Ph.D.  
(Southern Mississippi)

A. S. Fernández, D.V.M. (UNCPBA, Argentina), Ph.D. (RVAU,  
Denmark)

G. R. Fraser, B.Sc.(Agr.), M.Sc (NSAC)

H. A. R. Grant, B.Sc.(Agr.) (NSAC), M.Sc. (Alberta)

A. Kernohan, S.B. (MIT), M.Sc. (Uof T), MA. (Dal), Ph.D. (U of T)

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L. Jack, B.Sc.(Agr.) (NSAC), A.G.D.D.E.(T) (Athabasca)

D. C. Jans, B.Sc.(Agr.) (UBC), Ph.D. (Alberta)

T. Landry, B.Sc., B.A. M.A., BSW, MSW (Dal)

D. MacCallum, B.Sc.(Agr.) (NSAC)

P. MacCormick, B.A., M.Ed., MBA (Dal), CMA

M. MacLeod, B.A. (Dalhousie), M.A. (Toronto), Ph.D. (Ottawa).

T. M. MacLeod, AHT Dip (NSAC)

G. A. Martin, B.Sc.(Agr.), M.Sc. (NSAC)

T. L. M. Masters, B.Sc.(Agr.) (NSAC), D.V.M. (UPEI)

M. Medina, B.Sc. (Costa Rica), M.Sc. (Dalhousie)

J. Morigan, M.Sc. (Dalhousie)

R. Moskovits

K. Murray, AHT Dip (NSAC)

L. MacIntosh, Animal Care Tech Dip (St. Lawrence College)

M. MacKay, AHT Dip (NSAC)

P. A. Nelson, B.Sc. (McMaster), M.Sc. (Guelph), Ph.D. (Clemson)

F. Nicholson, B.Sc.(Agr.) (Guelph)

D. Pelkey-Field, B.Sc.(Agr.) (NSAC)

W. B. Ramsay, D.V.M. (Guelph)

M. C. Sani-Berry, B.A. (Mt. St. Vincent), P.S. Dip. (NSAC)

T. Semple, D.V.M. (Guelph)

C. Spears, AS Dip, AHT Dip (NSAC)

## Appendix I: Course Numbers and Designations

This appendix lists the courses that are available (course number, course title, and course designation).

Designations are (A) for Agriculture courses, (AS) for Animal Science electives, (H) for Humanities courses/Social Sciences, (PDN) for Plant Production courses, (PS) for Plant Science, and **DE** for Distance Education courses.

These designations will assist students in determining program requirements as described in the program syllabi.

<b>COURSE</b>	<b>DESIGNATION</b>	<b>COURSE</b>	<b>DESIGNATION</b>
ACAD0020		Skills for Academic Success	
ACAD0021		University Study Skills	
AGRI1000	(A)	Agricultural Ecosystems	
AGRI1001	(A) <b>DE</b>	Food Security*	
AGRI1003	(A)	Agriculture Today*	
AGRI2000	(A) <b>DE</b>	Transition to Organic Agriculture	
AGRI3000		Agrometeorology*	
AGRI3001	(A, H) <b>DE</b>	Issues in Agricultural Health and Safety	
AGRI4000	(A)	Contemporary Issues in Agriculture	
AGRI5210		Special Topics in Environmental Microbiology*	
AGRI5220		Special Topics in Weed Science*	
AGRI 5230		Directed Studies in Environmental Science	
AGRI5240		Special Topics in Environmental Impact*	
AGRI5250		Soil Microbiology	
AGRI5260		Special Topics in Plant Pathology	
AGRI5270		Economic Entomology	
AGRI 5280		Directed Studies in Pest Management	
AGRI5310		Special Topics in Applied Ethology	
AGRI5320		Special Topics in Animal Nutrition	
AGRI5340		Special Topics in Animal Physiology	
AGRI5350		Animal Research Methods	
AGRI5360		Protein Nutrition	
AGRI5365		Vitamins in Animal Nutrition	
AGRI5370		Special Topics in Animal Breeding and Genetics	
AGRI5380		Quantitative Genetics	
AGRI5390		Molecular Genetic Analysis of Populations	
AGRI 5400		Directed Studies in Soil Science	
AGRI5410		Special Topics in Soil Fertility*	
		AGRI5430	Special Topics in Environmental Analysis
		AGRI5440	Organic Environmental Analysis
		AGRI5450	Environmental Soil Chemistry
		AGRI5460	Special Topics in Soil and Water Management
		AGRI5470	Special Topics in Analytical Instrumentation for Researchers
		AGRI 5480	Directed Studies in Analytical Instrumentation
		AGRI5510	Special Topics in Plant Breeding
		AGRI5520	Plant Breeding Methods
		AGRI5530	Nitrogen in Crop Production
		AGRI5540	Special Topics in Crop Physiology
		AGRI5560	Advanced Crop Physiology
		AGRI5570	Special Topics in Agricultural Biotechnology
		AGRI5580	Plant Biotechnology I*
		AGRI5610	Special Topics in Animal Product Technology
		AGRI5620	Ruminant Digestive Physiology and Metabolism
		AGRI5630	Intermediate Statistical Methods
		AGRI5700	Communication Skills and Graduate Seminar
		AGRI5705	Module Course II
		AGRI5710	Module Course I
		AGRI5720	Applied Statistics and Experimental Design for Agriculture
			Directed Studies in Food and BioProduct Science
		AGRI5740	Advanced Studies in Food Chemistry
		AGRI5750	Biotechnology
		AGRI5760	Special Topics in Ecology*
		AGRI9000	Graduate Thesis

## Appendix I: Course Numbers and Designations

COURSE	DESIGNATION	COURSE	DESIGNATION	
AGRN0200	Potato Production	ANSC0213	Equine Growth and Nutrition	
AGRN0201	Cereal-Based Cropping Systems	ANSC0214	Equine Health, Genetics, and Reproduction	
AGRN0202	Forage-Based Cropping Systems	ANSC0215	Equine Facilities Management	
AGRN2000	Organic Field Crop Management	(A, P, D, N, PS) DE	ANSC0216	Equine Health and Fitness
AGRN2001	Cereal-Based Cropping Systems	(A, P, D, N, PS)	ANSC0217	Companion Animal Behaviour
AGRN2002	Forage-Based Cropping Systems	(A, P, D, N, PS)	ANSC0218	Beef Production and Management
AGRN2008	Potato Production	(A, P, D, N, PS)	ANSC0219	Equine Behaviour & Learning
AGRN4000	Agronomy*	(A, PS)	ANSC2001	Animal Agriculture II * (A, AS)
ANSC0020	Dairy Industry I		ANSC2002	The Horse: Its Biology and Use (A, AS)
ANSC0021	Dairy Industry II		ANSC2003	Companion Animal Behaviour (AS)
ANSC0022	Equine Industry		ANSC2004	Organic Livestock Production (A, AS) DE
ANSC0023	Equine Workshop*		ANSC2005	Animal Agriculture (A, AS)
ANSC0112	Animal Biology and Management		ANSC2006	Equine Health, Genetics and Reproduction (AS)
ANSC0113	Principles of Animal Welfare & Husbandry		ANSC2007	Beef Production and Management (A, AS)
ANSC0114	Animal Feed and Nutrition Management		ANSC3000	Animal Breeding (A, AS)
ANSC0115	Introduction to Animal Production*		ANSC3001	Animal Health (A, AS)
ANSC0116	Companion Animal Enterprise		ANSC3002	Domestic Animal Behaviour (A, AS)
ANSC0117	Companion Animal Growth, Development, and Nutrition		ANSC3003	Eggs and Dairy Products (A, AS)
ANSC0118	Animal Products*		ANSC3004	Meat Science (A, AS)
ANSC0119	Equine Behavior and Learning*		ANSC3005	Animal Welfare (A, AS)
ANSC0204	Dairy Herd Health and Nutrition Management		ANSC3006	Companion Animal Biology (AS)
ANSC0205	Optimizing Bovine Reproductive and Genetic Performance		ANSC4000	Topics in Animal Production I* (A, AS)
ANSC0206	Managing Dairy Milking Systems and Housing Facilities		ANSC4001	Topics in Animal Production II*
ANSC0207	Records Management and Decision-making for Dairy Herds		ANSC4003	Avian Production Systems (A, AS)
ANSC0208	Biology and Care of Aquarium Fish and Reptiles		ANSC4004	Ecology of Milk Production in Ruminants (A, AS)
ANSC0209	Biology and Care of Pet Birds and Small Mammals		ANSC4005	Swine Science and Pork Production (A, AS)
ANSC0210	Introduction to Companion Animal Health		ANSC4006	The Science of Modern Sheep Farming (A, AS)
ANSC0211	Companion Animal Facilities Management		ANSC4007	Pastures in Sustainable Livestock Systems (A, AS)
ANSC0212	Companion Animal Genetics and Reproduction		ANSC4008	Carnivore Biology (AS)
			ANSC4009	DS in Animal Science (AS)
			AQUA2000	Introduction to Aquaculture (A, AS)
			AQUA3000	Fish Health (A, AS)
			AQUA4000	Finfish Production (AS)
			AQUA4001	Shellfish Production (AS)
			ARTS2000	Nature's Image: A Survey of Landscape Art (H)

## Appendix I: Course Numbers and Designations

COURSE	DESIGNATION	COURSE	DESIGNATION
BIOL0101	Plant Pathology	CHEM3004	Instrumental Analytical Chemistry II*
BIOL0102	Plant Physiology and Stress Management	CHEM3005	Instrumental Analytical Chemistry III*
BIOL0103	Weed Science	CHEM3006	Mammalian Biochemistry
BIOL0200	Entomology	CHEM3007	Food Chemistry II (A)
BIOL1002	Biology I	CHEM3008	Intermediate Food Chemistry (A)
BIOL1003	Biology II	CHEM3009	Environmental Chemistry
BIOL2000	Cell Biology	CHEM3010	Bio-Analytical Chemistry
BIOL2001	Cell Biology Laboratory	CHEM4000	Advanced Integrated Chemistry Laboratory II*
BIOL2002	Plant Physiology	CHEM4001	Directed Studies in Chemistry
BIOL2004	Structural Botany	CMMT0020	Career and Employment Skills
BIOL2005	Principles of Plant Pathology (A)	CMMT0021	Introduction to Public Speaking
BIOL2006	Mammalian Physiology (AS)	CMMT0030	English for Academic Purposes
BIOL2007	Mycology	CMMT0101	Communication Skills*
BIOL2008	Plant Diversity	CMMT3000	Communication Theory and Skills (H)
BIOL3000	General Entomology (A)	CMMT3001	Teaching English as a Second Language
BIOL3001	Ecology	CSCI0200	Computer Methods
BIOL3002	Weed Science (A)	CSCI1000	Computer Methods
BIOL3003	Comparative Vertebrate Anatomy	CSCI2000	Computer Science
BIOL3004	Environmental Physiology (A, AS)	CSCI3000	Data Structures and Numerical Methods
BIOL3005	Physiology of Aquatic Animals (A, AS)	ECON0100	Introductory Microeconomics
BIOL3006	Aquatic Ecology (AS)	ECON0202	Production Economics
BIOL3008	Growth, Reproduction and Lactation (A, AS)	ECON1000	Principles of Microeconomics (A)
BIOL4000	Avian Biology (A, AS)	ECON1001	Principles of Macroeconomics
BIOL4001	Animal Cell Culture* (AS)	ECON2000	Intermediate Microeconomics
BIOL4002	Conservation Biology	ECON2001	Intermediate Macroeconomics
BIOL4003	Plant-Microbe Interactions (AS)	ECON2002	Production Economics (A)
BIOL4004	Animal Adaptation and Stress	ECON2003	Agricultural Futures and Options (A)
CHEM0050	Preparatory Chemistry	ECON2004	Issues in Environmental Economics (A)
CHEM1000	General Chemistry I	ECON3000	Mathematical Economics
CHEM1001	General Chemistry II	ECON3001	Environmental Economics*
CHEM2000	Organic Chemistry I	ECON3002	Agricultural and Food Policy (A)
CHEM2001	Organic Chemistry II	ECON3003	Mathematical Programming (A)
CHEM2002	Analytical Chemistry I*	ECON3004	Agricultural Markets and Prices (A)
CHEM2003	Food Chemistry I (A)	ECON3006	Statistics for Economics and Business
CHEM2004	Introductory Food Chemistry (A)	ECON3007	Environmental and Resource Economics
CHEM3000	Biochemistry*	ECON4000	Advanced Microeconomics
CHEM3001	Biochemistry**		
CHEM3002	Radiotracers in Agriculture* (A)		
CHEM3003	Advanced Integrated Chemistry Laboratory I		

## Appendix I: Course Numbers and Designations

<b>COURSE</b>	<b>DESIGNATION</b>	<b>COURSE</b>	<b>DESIGNATION</b>
ECON4001	Agri-food Policy Analysis*	(A)	ENGN2012 Intro to Bioresource Systems (A)
ECON4002	Topics in Advanced Farm Management*	(A)	ENGN2013 Machinery and Building Technology (A)
ECON4003	Resource Economics*		ENGN2014 Bioresource Processing
ECON4004	Trade	(A)	ENGN3000 Electric Circuits
ECON4005	Advanced Macroeconomics		ENGN3001 Electrotechnology (A)
ENGL0101	Writing for Business		ENGN3002 Thermo-fluids I
ENGL1000	Composition	(H)	ENGN3003 Technology for Precision Agriculture**
ENGL1001	The Novel	(H)	ENGN3004 Digital Circuits
ENGL1002	Nature in English and American Literature	(H)	ENGN3006 Engineering II
ENGL1005	Academic Writing: International Students	(H)	ENGN3007 Structures and Their Environment* (A, AS)
ENGL3000	Literature of Atlantic Canada	(H)	ENGN3008 Electrical Circuits II
ENGN0100	Surveying		ENGN3009 Materials Handling and Processing* (A)
ENGN0101	Horticultural Engineering		ENGN3010 Soil and Water* (A)
ENGN0102	Soil and Water Resources Management*		ENGN3011 Thermo-fluids II
ENGN0200	Environmental Management		ENGN3012 Principles of Agricultural Machinery*
ENGN0201	Machinery and Building Technology		ENGN3013 Aquacultural Engineering (A)
ENGN1000	Computer Aided Graphics and Projection		ENGN3015 Irrigation and Drainage
ENGN1001	Engineering Design I		ENGN3016 Engineering Economy
ENGN1002	Engineering I		ENGN3017 Engineering Design II
ENGN1003	Practices and Mechanics of Materials		ENGN3018 Technology Modules
ENGN1004	Wood Construction Technology I		ENGN3019 Communications Technology
ENGN1005	Metal Construction Technology I		ENGN3020 Energy Production and Utilization
ENGN2000	Environmental Impacts and Resource Management	(A)	ENGN3021 Ecohydrology (A)
ENGN2001	Agricultural Machinery*		ENGN4000 Water and Water Quality Management* (A)
ENGN2002	Bioresource Systems Analysis		ENGN4001 Water Quality Issues (A)
ENGN2003	Food Processing Systems*	(A)	ENGN4002 Management of Mechanized Agricultural Systems* (A)
ENGN2004	Aquacultural Environment	(A)	ENGN4003 Senior Design Project for Engineers I
ENGN2005	Dynamics		ENGN4004 Energy Conversion and Assessment
ENGN2006	Surveying*		ENGN4005 Waterscape Ecology and Management (A)
ENGN2007	Fluid Power Technology		ENGN4006 Wastewater Management (A)
ENGN2008	Digital Electronics and Computer Interfacing		ENVS2000 Environmental Studies I (A)
ENGN2009	Metal Construction Technology II		ENVS2001 Environmental Studies II (A)
ENGN2010	Wood Construction Technology II		ENVS2002 Composting and Compost Use (A) <b>DE</b>
ENGN2011	Technology for Precision Agriculture		ENVS3000 Environmental Impact Assessment
			ENVS3001 Environmental Sampling and Analysis
			ENVS3002 Waste Management and Site Remediation (A)



## Appendix I: Course Numbers and Designations

COURSE	DESIGNATION	COURSE	DESIGNATION	
ENVS3003	Environmental Studies Field Course	HORT0101	Landscape Plants II	
ENVS3004	Principles of Pest Management	(A)	HORT0102	Turfgrass Production and Management
ENVS4000	Pesticides in Agriculture	(A)	HORT0103	Landscape Horticulture I
ENVS4002	Economic Entomology	(A)	HORT0200	Landscape Plant Nursery Management
ENVS4003	Advanced Weed Science	(A)	HORT0201	Greenhouse & Floriculture Crop Management
ENVS4005	Geographic Information Systems (GIS)	(A)	HORT0202	Small Fruit Crops
ENVS4006	Air, Climate and Climate Change	(A)	HORT0203	Tree Fruit Crops
ENVS4007	Directed Studies in Environmental Science		HORT0204	Landscape Plants III
ENVS4008	Directed Studies in Pest Management	(A)	HORT0205	Residential Landscape Design and Construction
EXTE3000	Extension Education in the Rural Community*		HORT0206	Landscape Techniques*
EXTE3001	Leadership Development and the Social Action Process	(H)	HORT0207	Arboriculture
FOOD0020	Topics in Agriculture & Food Enterprise Management		HORT0208	Landscape Maintenance
FOOD3000	Food Quality Assurance	(A)	HORT0209	Landscape Horticulture II
FOOD3001	Functional Foods and Nutraceuticals	(A)	HORT0210	Landscape Installation
FOOD4000	Directed Studies in Food and Bioproduct Science	(A)	HORT0211	Vegetable Production
FREN1000	French Language I	(H)	HORT2000	Vegetable Production (A, PDN, PS)
FREN1001	French Language II	(H)	HORT2001	Principles of Organic Horticulture (A, PDN, PS) DE
GENE2000	Genetics		HORT2002	Landscape Horticulture Work Program I*
GENE3000	An Introduction to Molecular Genetics		HORT2003	The British Garden (PS)
GENE3001	Population and Quantitative Genetics	(AS)	HORT2004	Introduction to Viticulture (A, PDN, PS)
GENE4000	Molecular Applications to Animal Production	(A, AS)	HORT2005	Design And Construction of Turf Facilities (PS)
GENE4003	Biotechnology		HORT2006	Tree Fruit Crops (A, PDN, PS)
GENE4004	Laboratory Techniques in Genomics		HORT2007	Small Fruit Crops (A, PDN, PS)
GEOG1000	Introductory Human Geography	(H)	HORT2009	Landscape Plant Nursery Management (A, PDN, PS)
GEOG3000	Rural Geography	(H)	HORT2010	Greenhouse & Floriculture Crop Management (A, PDN, PS)
GEOL2000	Introduction to Geology		HORT3000	Environmental Processes and Natural Landscape Functions (PS)
HIST1000	Introduction to Canadian History I: 1000–1867	(H)	HORT3001	Landscape Project Management (PS)
HIST1001	Introduction to Canadian History II: 1867–Present	(H)	HORT3006	Landscape Horticulture Work Program II*
HIST3000	Rural History	(H)	HORT3007	Environmental Horticulture Project I*
HORT0100	Landscape Plants I		HORT3008	Horticulture Therapy (H, PS)
			HORT4000	Urban Tree Management (PS)
			HORT4001	Horticulture* (A, PS)

# Appendix I: Course Numbers and Designations

<b>COURSE</b>	<b>DESIGNATION</b>	<b>COURSE</b>	<b>DESIGNATION</b>
HORT4002	Management of Specialized Turf* (A, PDN, PS)	MGMT2004	Financial Accounting
HORT4004	Environmental Horticulture Project II*	MGMT2005	Financial Accounting II*
INTD2000	Food Systems in the Tropics (A)	MGMT2006	Advertising and Promotion
INTD2001	Agricultural Systems of Central Europe	MGMT2007	Retail Sales Management
INTD2002	International Rural Development (H)	MGMT2008	Managing Retail Operations and Physical Resources
INTD2003	Food Production & Rural Development in Cuba (A, H)	MGMT2009	Customer Relations Management
INTD3000	Tropical Agriculture (A, PS)	MGMT3000	Management Accounting
INTD3001	DS in International Development (A)	MGMT3001	International Marketing
INTD4000	Global Seminar on Rural Sustainability (A)	MGMT3002	Consumer Behaviour
INTE0100	Internship	MGMT4000	Strategic Management
MATH0050	Functions	MGMT4001	Advanced Entrepreneurship (A)
MATH0100	Business Math	MICR2000	Microbiology
MATH1000	Introductory Calculus I	MICR3000	Food Microbiology (A)
MATH1001	Introductory Calculus II	MICR4000	Soil Microbiology (A)
MATH2000	Multivariable Calculus	NUTR3000	Animal Nutrition (A, AS)
MATH2001	Differential Equations	NUTR3001	Applied Animal Nutrition (A, AS)
MATH3000	Applied Linear Algebra	NUTR3002	Fish Nutrition (A, AS)
MATH4000	Agricultural Modelling	NUTR4000	Ruminant Digestive Physiology and Metabolism (AS)
MGMT0020	Business Leadership, Ethics, and Professionalism	PHIL3000	Environmental and Agricultural Ethics (H)
MGMT0100	Accounting	PHYS0050	Introductory Physics
MGMT0101	Applied Accounting and Taxation	PHYS1000	Physics for the Life Sciences I
MGMT0102	Agricultural Marketing*	PHYS1001	Physics for the Life Sciences II
MGMT0103	Business Law	PHYS1002	Physics I
MGMT0104	Small Business Entrepreneurship	PHYS1003	Physics II
MGMT0201	Business Project	PLSC0020	Farm Workplace Skills Module*
MGMT0202	Managing Retail Operations and Physical Resources	PLSC0100	Utilization of Plant Resources
MGMT0203	Customer Relations Management	PLSC0200	Plant Propagation
MGMT0204	Financial Management (A)	PLSC0201	Technology Project
MGMT0205	Human Resource Management	PLSC0202	Plant Science Techniques
MGMT0206	Marketing	PLSC0203	Plant Products Physiology*
MGMT0207	Advertising and Promotion	PLSC1000	Farm Woodlot Management (A, PDN, PS)
MGMT0208	Retail Sales Management	PLSC2000	Specialty Crops (A, PDN, PS)
MGMT1000	Small Business Entrepreneurship	PLSC2001	Theory and Practice of Plant Propagation* (A)
MGMT2000	Human Resource Management	PLSC3000	Theory and Practice of Plant Propagation (A, PDN, PS)
MGMT2001	Introduction to Business Law	PLSC4000	Plant Breeding (A, PS)
MGMT2002	Marketing	PLSC4002	Plant Ecophysiology (A, PS)
MGMT2003	Financial Management (A)	PLSC4003	Problem Solving in Plant Science (A)

## Appendix I: Course Numbers and Designations

<b>COURSE</b>	<b>DESIGNATION</b>	<b>COURSE</b>	<b>DESIGNATION</b>
PLSC4004	Root Physiology: Underground Secrets (A, PS)	SPEC2000	Topics in Economics and Business Management (A)
POLS1000	Introduction to Political Science (H)	SPEC2001	Topics in International Development (A)
POLS1001	Structure and Function of Government (H)	SPEC4000	Special Topics in Animal Science or Aquaculture (AS)
PSYC1000	Introductory Psychology I (H)	SPEC4001	Special Topics in Agribiology I* (A)
PSYC1001	Introductory Psychology II (H)	SPEC4002	Special Topics in Agribiology II * (A)
RESM4000	Bio-Environmental Systems Management Project-Seminar I (A)	SPEC4003	Special Topics in Chemistry and Soil Science I* (A)
RESM4001	Bio-Environmental Systems Management Project-Seminar II (A)	SPEC4004	Special Topics in Chemistry and Soil Science II* (A)
RESM4002	Animal Science Project-Seminar I (A)	SPEC4005	Special Topics in Agricultural Economics and Business I (A)
RESM4003	Animal Science Project-Seminar II (A)	SPEC4006	Special Topics in Agricultural Economics and Business II (A)
RESM4004	Research Methods for Economics and Business (A)	SPEC4007	Special Topics in Environmental Studies (A)
RESM4005	Project-Seminar for Economics and Business (A)	SPEC4008	Special Topics in Environmental Studies II* (A)
RESM4006	Environmental Sciences Project-Seminar I (A)	SPEC4009	Special Topics in Rural Studies (H)
RESM4007	Environmental Sciences Project-Seminar II (A)	SPEC4010	Special Topics in Plant Science I (A, PS)
RESM4008	Plant Science Project-Seminar I (A)	SPEC4011	Special Topics in Plant Science II (A, PS)
RESM4009	Plant Science Project-Seminar II (A)	SPEC4012	Directed Studies in Agricultural Engineering I (A)
RESM4010	Aquaculture Project-Seminar I (A)	SPEC4014	Directed Studies in Agricultural Engineering II (A)
RESM4011	Aquaculture Project-Seminar II (A)	STAT2000	Introduction to Statistics
RURS2000	Rural Community Development* (H)	STAT2001	Probability and Statistics for Engineering
RURS3000	Rural Community Economic Development (H)	STAT3000	Introduction to Planned Studies: Surveys and Experiments
SOCI1000	Introductory Sociology (H)	STAT4000	Intermediate Statistical Methods
SOCI1001	Introductory Sociology II (H)	VTEC0034	Externship in Specialty Field
SOCI3000	Rural Sociology (H)	VTEC0111	Animal Medicine and Nursing I
SOIL0100	Principles of Soil Science (A)	VTEC0112	Clinical Exercises I
SOIL0200	Soil Management (A)	VTEC0113	Veterinary Clinical Pathology I
SOIL2000	Introduction to Soil Science (A)	VTEC0114	Fundamentals in Veterinary Technology I
SOIL3000	Soil Fertility & Nutrient Management (A)	VTEC0115	Anatomy-Physiology-Pathophysiology I
SOIL3001	Soil Conservation in Agriculture (A)	VTEC0121	Animal Medicine and Nursing II
SOIL4000	Environmental Soil Chemistry (A)		
SOIL4001	Directed Studies in Soil Science (A)		
SPAN1000	Basic Spanish I (H)		
SPAN1001	Basic Spanish II (H)		

# Appendix I: Course Numbers and Designations

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<b>COURSE</b>	<b>DESIGNATION</b>
VTEC0122	Clinical Exercises II
VTEC0123	Veterinary Clinical Pathology II
VTEC0124	Fundamentals in Veterinary Technology II
VTEC0125	Anatomy-Physiology- Pathophysiology II
VTEC0131	Internship in Veterinary Technology
VTEC0132	Externship at the Atlantic Veterinary College
VTEC0133	Externship in General Veterinary Practice
VTEC0211	Animal Medicine and Nursing III
VTEC0212	Clinical Exercises III
VTEC0213	Veterinary Clinical Pathology III
VTEC0214	Fundamentals in Veterinary Technology III
VTEC0215	Livestock and Equine Principles
VTEC0221	Animal Medicine and Nursing IV
VTEC0222	Clinical Exercises IV
VTEC0223	Veterinary Clinical Pathology IV
VTEC0224	Fundamentals in Veterinary Technology IV
VTEC0225	Laboratory Animal and Alternative Pet Medicine

\* no longer offered

\*\* course number changed

## Appendix II: Courses Eligible for Admission to Atlantic Veterinary College

This list was compiled to help applicants choose courses that meet both degree and DVM admissions requirements (Atlantic Veterinary College, PEI). Please note that courses must also meet other prerequisite criteria as listed in the Supplementary Application to AVC, including “Rigor,” “Age of Credits,” “Science Courses,” “Animal Biology Courses,” “Graduate Courses,” and “Repeated Courses.”

### Biology

ANSC3001	Animal Health
ANSC3006	Companion Animal Biology
ANSC4008	Carnivore Biology
AQUA3000	Fish Health
BIOL1000	Botany*
BIOL1001	Zoology*
BIOL1002	Biology I
BIOL1003	Biology II
BIOL2006	Mammalian Physiology
BIOL3003	Comparative Vertebrate Anatomy
BIOL3004	Environmental Physiology
BIOL3005	Physiology of Aquatic Animals
BIOL3008	Growth, Reproduction & Lactation
BIOL4000	Avian Biology
BIOL4001	Animal Cell Culture*
BIOL-4004	Animal Adaptation and Stress
GENE2000	Genetics
GENE3000	An Introduction to Molecular Genetics
GENE3001	Population & Quantitative Genetics
GENE4000	Molecular Applications to Animal Production
MICR2000	Microbiology
MICR3000	Food Microbiology
MICR4000	Soil Microbiology

### Microbiology

MICR2000	Microbiology
MICR3000	Food Microbiology
MICR4000	Soil Microbiology

### Genetics

GENE2000	Genetics
GENE3000	An Introduction to Molecular Genetics
GENE3001	Population & Quantitative Genetics
GENE4000	Molecular Application to Animal Production

### Chemistry

CHEM1000	General Chemistry I
CHEM1001	General Chemistry II
CHEM2000	Organic Chemistry I
CHEM2002	Analytical Chemistry I*
CHEM2003	Food Chemistry I
CHEM2005	Biochemistry I*
CHEM3000	Biochemistry*
CHEM3001	Biochemistry**
CHEM3003	Advanced Integrated Chemistry Lab I
CHEM3004	Instrumental Analytical Chemistry II*
CHEM3005	Instrumental Analytical Chemistry III*
CHEM3007	Food Chemistry II
CHEM3010	Bio-Analytical Chemistry
FOOD3001	Functional Foods and Nutraceuticals

### Organic Chemistry

CHEM2000	Organic Chemistry I
CHEM2003	Food Chemistry I
CHEM3007	Food Chemistry II

### Humanities/Social Science

AGRI1001	Food Security
AGRI1003	Agriculture Today*
ARTS2000	Nature's Image: A Survey of Landscape Art
CMMT3000	Communication Theory & Skills
ECON1000	Principles of Microeconomics
ECON1001	Principles of Macroeconomics
ECON2000	Intermediate Microeconomics
ECON2001	Intermediate Macroeconomics
ECON2002	Production Economics
ECON3001	Environmental Economics*
ECON3002	Agricultural and Food Policy
ECON4000	Advanced Microeconomics
ECON4001	Agri-food Policy Analysis*

## Appendix II: Courses Eligible for Admission to Atlantic Veterinary College

ECON4003	Resource Economics*
ENGL1000	Composition
ENGL1001	The Novel
ENGL1002	Nature in English & American Literature
ENGL3000	Literature of Atlantic Canada
EXTE3001	Leadership Development & Social Action Process
FREN1000	French Language I
FREN1001	French Language II
GEOG1000	Introductory Human Geography
GEOG3000	Rural Geography
HIST1000	Introduction to Canadian History I
HIST1001	Introduction to Canadian History II
HIST3000	Rural History
HORT3008	Horticulture Therapy
INTD2002	International Rural Development
INTD2003	Food Security & Rural Development in Cuba
PHIL3000	Environmental & Agricultural Ethics
POLS1000	Intro to Political Science
POLS1001	Structure & Function of Government
PSYC1000	Introductory Psychology I
PSYC1001	Introductory Psychology II
RURS3000	Rural Community Economic Development
SOCI1000	Introductory Sociology
SOCI1001	Introductory Sociology II
SOCI3000	Rural Sociology
SPAN1000	Basic Spanish I
SPAN1001	Basic Spanish II

### Physics

ENGN1002	Engineering I
ENGN2005	Dynamics
ENGN3000	Electric Circuits
ENGN3002	Thermo-fluids I
ENGN3011	Thermo-fluids II
PHYS1000	Physics for Life Sciences I
PHYS1001	Physics for Life Sciences II
PHYS1002	Physics I
PHYS1003	Physics II

### Math

ECON3000	Mathematical Economics
ECON3005	Econometrics*
MATH1000	Introductory Calculus I
MATH1001	Introductory Calculus II
MATH2000	Multivariable Calculus
MATH2001	Differential Equations
MATH3000	Applied Linear Algebra
MATH4000	Agricultural Modelling
STAT2000	Introduction to Statistics
STAT2001	Probability & Statistics for Engineering
STAT3000	Introduction to Planned Studies: Surveys & Experiments
STAT4000	Intermediate Statistical Methods

### Statistics

ECON3005	Econometrics*
STAT2000	Introduction to Statistics
STAT3000	Introduction to Planned Studies: Surveys & Experiments
STAT4000	Intermediate Statistical Methods

### English Composition

ENGL1000	Composition
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### English

CMMT3000	Communication Theory & Skills
ENGL1000	Composition
ENGL1001	The Novel
ENGL1002	Nature in English & American Literature
ENGL3000	Literature of Atlantic Canada

\* no longer offered

## Appendix III: Course Designations

NSAC courses designated as Animal Science electives for the major, or courses for the minor, include the following:

ANSC2000	Animal Agriculture I*	(A)
ANSC2001	Animal Agriculture II*	(A)
ANSC2002	The Horse: Its Biology and Use	(A)
ANSC2003	Companion Animal Behaviour	
ANSC2004	Organic Livestock Production	(A)
ANSC2005	Animal Agriculture	(A)
ANSC2006	Equine Health, Genetics and Reproduction	
ANSC2007	Beef Production and Management	(A)
ANSC3000	Animal Breeding	(A)
ANSC3001	Animal Health	(A)
ANSC3002	Domestic Animal Behaviour	(A)
ANSC3003	Eggs and Dairy Products	(A)
ANSC3004	Meat Science	(A)
ANSC3005	Animal Welfare	(A)
ANSC3006	Companion Animal Biology	
ANSC4000	Topics in Animal Production I*	(A)
ANSC4001	Topics in Animal Production II*	(A)
ANSC4003	Avian Production Systems	(A)
ANSC4004	Ecology of Milk Production in Ruminants	(A)
ANSC4005	Swine Science and Pork Production	(A)
ANSC4006	The Science of Modern Sheep Farming	(A)
ANSC4007	Pastures in Sustainable Livestock Systems	(A)
ANSC4008	Carnivore Biology	
ANSC4009	Directed Studies in Animal Science	
AQUA2000	Introduction to Aquaculture	(A)
AQUA3000	Fish Health	(A)
AQUA4000	Finfish Production	
AQUA4001	Shellfish Production	
BIOL2006	Mammalian Physiology	
BIOL3004	Environmental Physiology	(A)
BIOL3005	Physiology of Aquatic Animals	(A)
BIOL3006	Aquatic Ecology	
BIOL3008	Growth, Reproduction and Lactation	(A)
BIOL4000	Avian Biology	(A)
BIOL4001	Animal Cell Culture*	
BIOL4004	Animal Adaptation and Stress	
GENE3001	Population and Quantitative Genetics	
GENE4000	Molecular Applications to Animal Production	(A)
NUTR3000	Animal Nutrition	(A)
NUTR3001	Applied Animal Nutrition	(A)
NUTR3002	Fish Nutrition	
NUTR4000	Ruminant Digestive Physiology and Metabolism	
SPEC4000	Special Topics in Animal Science or Aquaculture	

\* no longer offered

**NSAC courses classified as Plant Production courses:**

AGRN2000	Organic Field Crop Management	(A)
AGRN2001	Cereal-Based Cropping systems	(A)
AGRN2002	Forage-Based Cropping Systems	(A)
AGRN2008	Potato Production	(A)
HORT2000	Vegetable Production	(A)
HORT2001	Principles of Organic Horticulture	(A)
HORT2004	Introduction to Viticulture	(A)
HORT2006	Tree Fruit Crops	(A)
HORT2007	Small Fruit Crops	(A)
HORT2009	Landscape Plant Nursery Management	(A)
HORT2010	Greenhouse & Floriculture Crop Management	(A)
HORT4002	Management of Specialized Turf*	(A)
PLSC1000	Farm Woodlot Management	(A)
PLSC2000	Specialty Crops	(A)
PLSC2001	Theory and Practice of Plant Propagation*	(A)
PLSC3000	Theory and Practice of Plant Propagation	(A)

**NSAC courses classified as Plant Science electives for the major, or courses for the minor, include the following:**

AGRNXXXX	<i>any course with AGRN prefix</i>
HORTXXXX	<i>any course with HORT prefix</i>
INTD3000	Tropical Agriculture
PLSCXXXX	<i>any course with PLSC prefix</i>
SPEC4010	Special Topics in Plant Science I
SPEC4011	Special Topics in Plant Science II

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