

2005-2006 Undergraduate Calendar

The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2005-2006 academic year, including the Summer Semester 2005, the Fall Semester 2005 and the Winter Semester 2006.

For your convenience the Undergraduate Calendar is available in PDF format.

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Disclaimer

University of Guelph 2005

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The University reserves the right to change without notice any information contained in this calendar, including any rule or regulation pertaining to the standards for admission to, the requirements for the continuation of study in, and the requirements for the granting of degrees or diplomas in any or all of its programs. 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.

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X. Degree Programs

Specializations and Their Degrees

Subject Area		Honours			General	Co-op
		Major	Minor	Area of Emphasis		
Agricultural Business	AGBU	BComm				BComm
Agricultural Economics	AGEC	BA BSAG				
Agriculture	AGRS	BSAG				
Agroecosystem Management	AGMN	BSAG				
Agronomy	AGRO	BSAG				
Animal Biology	ABIO	BSC				
Animal Science	ANSC	BSAG				
Anthropology	ANTH	BA	BA BAS		BA	
Applied Economics	APEC	BA				
Applied Human Nutrition	AHN	BASc				
Applied Mathematics & Statistics	APMS					BSC
Applied Pharmaceutical Chemistry	APPC					BSTC
Art History	ARTH	BA	BA BAS			
Arts and Sciences		BAS				
Atmospheric Resources	AR			BSES		
Art Theory and Criticism	ATC		BA BAS			
Biochemistry	BIOC	BSC	BAS BSC			BSC
Biological Chemistry	BCHM	BSC				
Biological Engineering	BENG	BSEN				BSEN
Biological Science	BIOS	BSC			BSC	
Biology	BIOL		BAS BSC			
Bio-Medical Science	BIOM	BSC				
Biomedical Toxicology	BTOX	BSC				BSC
Biophysical Environment & Development	BED			BAH.ID		
Biophysics	BIOP	BSC				BSC
Biotechnology	BIOT		BAS BSC			
Biotic Systems	BS			BSES		
Business Administration	BADM		BA BAS BSC			
Chemical Physics	CHPY	BSC				BSC
Chemistry	CHEM	BSC	BAS BSC			BSC
Child, Youth and Family	CYF	BASC				BASC
Classical Languages	CLAL	BA	BA BAS			
Classical Studies	CLAS	BA	BA BAS			
Cognitive Neuropsychology	CGNR		BA BAS			
Computing		BCOMP	BCOMP		BCOMP	BCOMP
Computing & Information Science	CIS	BA BSC	BA BAS BSC		BA	BA BSC
Criminal Justice & Public Policy	CJPP	BA	BA BAS			
Crop Ecology	CE			BSES		

Developmental Psychology	DPSY		BA BAS			
Development & Stewardship	DS			BSES		
Drama	DRMA	BA	BA BAS		BA	
Earth & Atmospheric Science	EAAS	BSES				BSES
Earth Surface Science	ESS	BSC				
Ecology	ECOL	BSC BSES	BAS BSC			BSES
Economic & Business Development	EBD			BAH.ID		
Economics	ECON	BA	BA BAS		BA	BA
Educational Psychology	EPSY		BA BAS			
Engineering Systems & Computing	ESC	BSES				BSES
English	ENGL	BA	BA BAS		BA	
Environmental Administration	EA			BSES		
Environmental Biology	ENVB	BSc				
Environmental Degradation	ED			BSES		
Environmental Economics & Policy	EEP	BSES				BSES
Environmental Engineering	ENVE	BSEN	BSEN			BSEN
Environmental Geography	ENVG	BSES				BSES
Environmental Impact Assessment	EIA			BSES		
Environmental Management in the U.S.	EMUS			BSES		
Environmental Monitoring & Analysis	EMA	BSES				BSES
Environmental Protection	ENVP	BSES				BSES
Environmental Quality	EQ			BSCH.ENVB		
Environmental Studies	ENVS		BA BAS			
Environmental Toxicology	ETOX	BSC				BSC
Environmetrics	ENVM	BSES				BSES
European Culture & Civilization	ECC			BAH.EURS		
European Business Studies	EBS			BAH.EURS		
European Studies	EURS	BA				
Experimental Ecology	EECO			BSCH.ECOL		
Family & Child Studies	FCS		BA BAS			
Finance	FIN			BCOMM		
Food Engineering	FENG		BSEN			
Food Science	FOOD	BSC	BAS BSC			BSC
Forest Science	FORS		BAS BSC			
French Studies	FREN	BA	BA BAS		BA	
Functional Foods & Nutraceuticals	FFAN		BAS BSC			
Gender and Development	GAD			BAH.ID		
General Ecology	GECO			BSCH.ECOL		
Genetics	GEN		BAS BSC			
GIS & Environmental Analysis	GIS		BAS BSC			
Geography	GEOG	BA	BA BAS		BA	
Geology	GEOL		BAS BSC			

German	GERM		BA BAS			
Gerontology	GERN	BASC				BASC
Historical Perspective in Development	HPD			BAH.ID		
History	HIST	BA	BA BAS		BA	
Horticultural Science	HORT	BSAG				
Horticulture Management	HM	BBRM				
Hotel & Food Administration	HAFA	BComm				BComm
Housing & Real Estate Management	HREM	BComm				BComm
Human Kinetics	HK	BSC				
Human Resources Management	HRM	BComm				
Individual Studies	IS	BA				
Industry	IND			BCOMM		
Information Systems & Human Behaviour	ISHB	BA				
International Development	ID	BA	BA BAS		BA	
Interpretive Ecology	IE			BSCH.ECOL		
Italian	ITAL		BA BAS			
Land Resources	LR			BSES		
Landscape Architecture		BLA				
Landscape Ecology	LE			BSES		
Latin American Studies	LAS			BAH.ID		
Marine & Freshwater Biology	MFB	BSC				
Management Economics in Industry & Finance	MEIF	BComm				BComm
Marketing Management	MKMN	BComm	BA BAS			BComm
Mathematical Economics	MAEC	BA				
Mathematical Modelling & Risk Assessment	MMRA			BSES		
Mathematical Science	MSCI		BAS BSC			
Mathematics	MATH	BA BSC	BA BAS BSC		BA	
Microbiology	MICR	BSC	BAS BSC			BSC
Molecular Biology & Genetics	MBG	BSC				
Museum Studies	MS		BA BAS			
Music	MUSC	BA	BA BAS		BA	
Natural Resources Management	NRM	BSES				BSES
Neuroscience	NEUR		BAS BSC			
Nutritional Science	NSCI		BAS BSC			
Nutritional & Nutraceutical Sciences	NANS	BSC				
Organic Agriculture	OAGR	BSAG				
Organizational Behaviour	OBEH		BA BAS			
Philosophy	PHIL	BA	BA BAS		BA	
Physical Science	PSCI	BSC			BSC	
Physics	PHYS	BSC	BAS BSC			BSC
Physics & Technology	PHTC					BSTC
Plant Biology	PBIO	BSC	BAS BSC			

Plant Biotechnology	PBTC	BSC				
Plant Protection	PP			BSCH.ENVB		
Political Economy & Administrative Change	PEAC			BAH.ID		
Political Science	POLS	BA	BA BAS		BA	
Psychology	PSYC	BA BSC	BSC			BA
Public Management	PMGT	BComm				
Resource Conservation	RC			BSCH.ECOL		
Rural & Agricultural Development	RAD			BAH.ID		
Rural & Development Sociology	RDS	BA				
Rural Extension Studies	RES		BA BAS			
Social Psychology	SPSY		BA BAS			
Sociology	SOC	BA	BA BAS		BA	
Spanish	SPAN	BA	BA BAS		BA	
Statistics	STAT	BA BSC	BA BAS BSC		BA	
Studio Art	SART	BA	BA BAS			
Theoretical Physics	THPY	BSC				
Tourism Management	TMGT	BComm				
Veterinary Medicine		DVM				
Visual Arts of the Americas	VAA		BA BAS			
Water Resources	WR			BSES		
Water Resources Engineering	WRE	BSEN				BSEN
Wild Life Biology	WLB	BSC				
Women's Studies	WMST	BA	BA BAS		BA	
Zoology	ZOO	BSC	BAS BSC			

Bachelor of Applied Science (B.A.Sc.)

Program Information

The University of Guelph offers an 8 semester (20.00 credits) honours program leading to a Bachelor of Applied Science (B.A.Sc.) degree. Students must select one of the 3 following major areas of study:

Applied Human Nutrition
Child, Youth and Family
Gerontology

Co-operative Education is available in the following programs:

Child, Youth and Family
Gerontology

Given the professional and applied character of the program, there are no minors associated with the degree. Elective offerings enable students to select courses which support or complement their primary field of study.

The program is interdisciplinary and provides a distinctive and integrated focus of applied social science in each of the 3 majors. Courses from the traditional disciplines in other departments in the University are coupled with courses offered by faculty members in the Department of Family Relations and Human Development whose own backgrounds reflect the interdisciplinary nature of the program.

Laboratory, practicum and field experiences enhance the students' opportunities to grasp the contributions of the social, physical and biological sciences to significant facets of human behaviour and experience, whether in family, community, or in educational settings.

Academic Counselling

Program Counselling

A B.A.Sc. program counsellor is available to assist prospective students in the selection of their major and initial courses, and to respond to questions regarding any other aspects of their anticipated program. The program counsellor will also assist in-course students who need information or advice about their program or other academic regulations, who seek information on services and resources available to students or who are contemplating transfer into or out of their current major or degree program.

Academic Advising

On entering the program all students are assigned to a departmental advisor by major. Co-operative Education students in all majors are also assigned to an advisor. This advisor is thoroughly familiar with the academic requirements of the program and is also knowledgeable about career opportunities which relate to a student's specific major. Students are strongly encouraged to attend all meetings called by their departmental advisors, and to set up individual meetings with them when they have questions or concerns about their major, or their performance in the program.

Continuation of Study

Students are advised to consult the regulations for Continuation of Study which are outlined in detail in Section VIII--Undergraduate Degree Regulations & Procedures. Students in the B.A.Sc. program may repeat any failed course only once. Failure to successfully complete a required (core) credit on the second attempt results in the student not being permitted to continue in his/her major and/or program.

Conditions for Graduation

To qualify for the degree Bachelor of Applied Science, the student must satisfy the following conditions:

- the student must have successfully completed the schedule of studies requirements for the specified major
- the student must have a cumulative average of 60% or higher
- the student must have a term academic standing of Eligible to Continue or Continue on Probation

Schedule of Studies

Courses specified in the Schedule of Studies are required courses and must be completed successfully. A full course load normally includes 2.50 credits (normally 5 courses). The requirements for each major are set out below.

Special Expenses

Expenses for field trips can range from \$20 to \$30 per semester in the first 4 semesters and from \$25 to \$50 in each of the last 4 semesters. In certain courses modest expenses will be incurred for supplies and where appropriate for laboratory costs. According to recent Ontario legislation, agencies licensed by the Ministry of Community and Social Services which care for, or provide service to, children or vulnerable adults are required to do criminal reference checks on all their employees. Students enrolled in practica or field placement courses may be required to submit to the agency with which they are placed, personal information about any criminal convictions and pending criminal charges. The cost of acquiring this criminal reference check (Canadian Police Information Check) will be the responsibility of each student.

Applied Human Nutrition (AHN)

Department of Family Relations and Applied Nutrition, College of Social and Applied Human Sciences.

The Applied Human Nutrition major recognizes both the biological and the social facets of human nutrition. It focuses on nutrition from a preventive, maintenance and therapeutic perspective, all of which require a thorough understanding of the related biological sciences and of selected aspects of the behavioral sciences. Students learn about nutrition and its application to the maintenance of health and the prevention and treatment of disease. They also learn about individual and social behaviour, particularly in family settings, and the implications of behavioral factors in the establishment of good nutrition status from conception through to old age.

The B.A.Sc. Applied Human Nutrition program is accredited by the Dietitians of Canada.

All students in the Applied Human Nutrition major must include the core of 14.00 required and 1.50 restricted electives in the minimum of 20.00 passed credits. Students normally register for courses according to the semesters indicated below for Fall and Winter sequencing.

Those students wishing to compete for admission to a post-graduate dietetic internship will be assisted by departmental advisors in the selection of courses that will meet the academic requirement of the Dietitians of Canada and the College of Dietitians of Ontario for eligibility for internship and/or membership.

Successful completion of the requirements will allow students to compete for a limited number of dietetic internship positions. Most graduates completing dietetic internships are employed in hospitals and other health care agencies such as community health centres and long-term care facilities. Others find employment in a wider range of vocations including those associated with health and education in the government or private sectors, or with the food industry. Still others proceed to graduate study in fields such as nutrition, public health nutrition, medicine or education.

Major

Semester 1

CHEM*1040	[0.50]	General Chemistry I
HTM*2700	[0.50]	Introductory Foods
MICR*1020	[0.50]	Fundamentals of Applied Microbiology
PSYC*1200	[0.50]	Dynamics of Behaviour
SOC*1100	[0.50]	Sociology

Note: Students who do not have standing in OAC Biology, or equivalent, must substitute BIOL*1020 for SOC*1100 in Semester 1. Semester 2 must include SOC*1100 if this substitution is made.

Semester 2

CHEM*1050	[0.50]	General Chemistry II
FRHD*1020	[0.50]	Couple and Family Relationships
NUTR*1010	[0.50]	Nutrition and Society
PSYC*1100	[0.50]	Principles of Behaviour

Semester 3

BIOC*2580	[0.50]	Introductory Biochemistry
HTM*2030	[0.50]	Control Systems in the Hospitality and Tourism Industry
NUTR*2050	[0.50]	Family and Community Nutrition
STAT*2080	[0.50]	Introductory Applied Statistics I

One of:

CIS*1200	[0.50]	Introduction to Computing
COST*2020	[0.50]	Information Management

Note: HTM*2030 may be taken in Semester 4.

Semester 4

BIOC*3560	[0.50]	Structure and Function in Biochemistry
NUTR*3210	[0.50]	Fundamentals of Nutrition
STAT*2090	[0.50]	Introductory Applied Statistics II

1.00 elective or restricted elective

Semester 5*

BIOM*3100	[0.50]	Mammalian Physiology I
FRHD*3070	[0.50]	Research Methods - Family Studies

1.50 elective or restricted elective

* students planning to apply for a dietetic internship must take HTM*3090 in Semester 5 in place of elective or restricted elective

Semester 6

BIOM*3110	[0.50]	Mammalian Physiology II
FRHD*3400	[0.50]	Communication and Counselling Skills
HTM*3000	[0.50]	Human Resources Management
NUTR*3040	[0.50]	Clinical Nutrition I

0.50 elective or restricted elective

Note: HTM*3000 may be taken in Semester 7.

Semester 7

NUTR*4010	[0.75]	Nutritional Assessment
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NUTR*4040	[0.75]	Clinical Nutrition II
NUTR*4070	[0.50]	Nutrition Education

0.50 elective or restricted elective

Semester 8

NUTR*4900	[0.50]	Selected Topics in Human Nutrition
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2.00 electives or restricted electives

Note: With approval from the instructor, students may substitute NUTR*4810 and NUTR*4910 for NUTR*4900.

Restricted Electives

In addition to the 14.00 required credits listed above, students must take 1.50 restricted electives, including one 3000 level course, from the following list:

FOOD*2010	[0.50]	Principles of Food Science
FOOD*2410	[0.50]	Introduction to Food Processing
FOOD*2420	[0.50]	Introduction to Food Microbiology
FOOD*3010	[0.50]	Food Chemistry
FOOD*3020	[0.50]	Food Chemistry Laboratory
FOOD*3230	[0.75]	Food Microbiology
FOOD*3700	[0.50]	Sensory Evaluation of Foods
HTM*2740	[0.50]	Cultural Aspects of Food
HTM*3780	[0.50]	Economics of Food Usage

Electives

There are 4.50 electives throughout the major which may be fulfilled by electing courses in any subject provided that the student has the prerequisite courses and can schedule them. Some electives and restricted elective courses are intended to contribute to a liberal education, while others permit students to work toward specific academic and career goals. Departmental advisors will assist students in selection of courses that will meet the requirements of the Dietitians of Canada for eligibility for Internship and/or membership, and when requested, can assist in selection of electives to complement the core requirements.

Courses in different departments which complement the major and which may be taken as electives include:

AGR*1250	[0.50]	Agrifood System Trends and Issues
COST*1000	[0.50]	Introduction to Marketing Management
MBG*1000	[0.50]	Genetics and Society
NUTR*3330	[0.50]	Micronutrients, Phytochemicals and Health
NUTR*4200	[0.50]	Nutrition and Immune Function
NUTR*4210	[0.50]	Nutrition, Exercise and Energy Metabolism
NUTR*4850	[0.50]	Field Experience in Nutrition Education
PHIL*2030	[0.50]	Philosophy of Medicine

Child, Youth and Family (CYF)

Department of Family Relations and Applied Nutrition, College of Social and Applied Human Sciences.

The Child, Youth and Family major, administered by the Department of Family Relations and Applied Nutrition, examines the psychological, social and physical conditions which influence the growth and development of children and adolescents. While the primary focus of the major is on children and youth, the program regards the family as a primary context of development and as the key to successful interventions for children with developmental, behavioural, or socio-emotional difficulties. Through the effective use of elective courses, the core requirements in the major can be supplemented to create a program of study which will prepare graduate as for a variety of careers in child and youth services. Graduates are pursuing child and youth-related careers in a variety of settings including child and youth treatment facilities, elementary schools, paediatric wards in hospitals, family and community service agencies, and child care centres. Further academic preparation may be required for certain careers. Many graduates go on to pursue graduate education in fields such as family studies, human development, psychology, counselling psychology, social work, speech pathology, and occupational therapy.

Articulation Agreements

The University of Guelph is a partner in several Articulation Agreements concerning the Child, Youth and Family major. Students who enter the B.A.Sc. Child, Youth and Family major with advanced standing through an articulation agreement should identify themselves to the B.A.Sc. Program Counsellor for specific guidance around their Schedule of Studies (see Section IV of this calendar).

Students in the Child, Youth and Family major who are interested in proceeding to teachers college should refer to Section IV--Admissions Information, Articulation Agreements for information about admission to the Bachelor of Education program at Nipissing University.

Program Requirements

All students in the Child, Youth and Family major must include the following core of 14.50 required credits and 1.00 restricted electives to a minimum of 20.00 passed credits. Students are encouraged to plan their use of electives carefully in order to focus their program on one or a combination of the career options open to graduates. Discussion with a departmental advisor regarding the various choices possible from within the major is strongly recommended. Students will normally register for courses according to the semesters indicated below for Fall and Winter sequencing. Students who register for Summer semesters and other students for whom the semester offerings present difficulty

may, where they have the approval of their departmental advisor, take some courses in alternative semesters.

Major

Semester 1

MBG*1000	[0.50]	Genetics and Society
PSYC*1200	[0.50]	Dynamics of Behaviour

0.50 elective

One of:

ANTH*1150	[0.50]	Anthropology
SOC*1100	[0.50]	Sociology

One of:

ENGL*1200	[0.50]	Reading the Contemporary World
FREN*1200	[0.50]	French Language I

Note: BIOL*1020 must be taken in Semester I if the student does not have OAC Biology or equivalent.

Semester 2

FRHD*1020	[0.50]	Couple and Family Relationships
FRHD*2260	[0.50]	Infant Development
NUTR*1010	[0.50]	Nutrition and Society
PSYC*1100	[0.50]	Principles of Behaviour

0.50 elective

Semester 3

BIOM*2000	[0.50]	Concepts of Physiology
FRHD*2100	[0.50]	Development of Human Sexuality
FRHD*2270	[0.50]	Development in Early and Middle Childhood
STAT*2080	[0.50]	Introductory Applied Statistics I

0.50 elective

Semester 4

FRHD*2060	[0.50]	Adult Development and Aging
FRHD*2110	[0.50]	Exceptional Children and Youth
FRHD*2280	[0.50]	Adolescent Development
STAT*2090	[0.50]	Introductory Applied Statistics II

One of:

FRHD*2040	[0.50]	Principles of Program Design for Children
FRHD*2300	[0.50]	Principles of Program Design for Youth

Semester 5

FRHD*3040	[0.50]	Parenting: Research and Applications
FRHD*3070	[0.50]	Research Methods - Family Studies
FRHD*3150	[0.50]	Strategies for Behaviour Change
FRHD*3200	[1.00]	Practicum--Child, Youth and Family I

Semester 6

FRHD*3120	[0.50]	Families in Canadian Context
FRHD*3180	[0.50]	Observation and Assessment
FRHD*3400	[0.50]	Communication and Counselling Skills

1.00 electives

Semester 7

FRHD*4170	[1.00]	Practicum--Child, Youth and Family II
FRHD*4310	[0.50]	Professional Issues

1.00 electives or restricted electives

Semester 8

FRHD*4320	[0.50]	Social Policies for Children, Youth and Families
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2.00 electives or restricted electives

Restricted Electives

In addition to the 14.50 required credits, 1.00 must be taken from the Department of Family Relations and Applied Nutrition at the 4000 level.

Electives - Recommended and Program Options

Child and Youth Services

Students who intend to pursue a career in child and youth services may wish to choose electives from the following list:

FRHD*3090	[0.50]	Child and Family Poverty
FRHD*3190	[0.50]	Administration of Programs for Children and Youth
FRHD*4020	[0.50]	Family Theory
FRHD*4180	[0.50]	Assessment and Intervention
FRHD*4200	[0.50]	Issues in Human Sexuality
FRHD*4400	[0.50]	Youth, Risk and Resilience
FRHD*4810	[0.50]	Thesis I
FRHD*4910	[1.00]	Thesis II
NUTR*2050	[0.50]	Family and Community Nutrition
PSYC*3440	[0.50]	Cognitive Development
PSYC*3450	[0.50]	Social and Personality Development
PSYC*3710	[0.50]	Psychology of Learning Difficulties and Disabilities I
PSYC*3720	[0.50]	Psychology of Learning Difficulties and Disabilities II
PSYC*3850	[0.50]	Intellectual Disabilities

REXT*3100	[0.50]	Teaching and Learning in Non-Formal Education
SOAN*2290	[0.50]	Identities and Cultural Diversity
SOC*1500	[0.50]	Crime and Criminal Justice
SOC*2070	[0.50]	Social Deviance
SOC*3040	[0.50]	Sociology of Social Welfare
SOC*3710	[0.50]	Young Offenders

Early Childhood Education

Students who intend to pursue a career in early childhood education may wish to choose electives from the following list:

DRMA*2400	[0.50]	Theatre for Young Audiences
ENGL*2740	[0.50]	Children's Literature
FRHD*3090	[0.50]	Child and Family Poverty
FRHD*3190	[0.50]	Administration of Programs for Children and Youth
FRHD*4180	[0.50]	Assessment and Intervention
FRHD*4210	[0.50]	Senior Seminar in Early Education and Care
FRHD*4810	[0.50]	Thesis I
FRHD*4910	[1.00]	Thesis II
NUTR*2050	[0.50]	Family and Community Nutrition
PSYC*3710	[0.50]	Psychology of Learning Difficulties and Disabilities I
PSYC*3720	[0.50]	Psychology of Learning Difficulties and Disabilities II
PSYC*3850	[0.50]	Intellectual Disabilities
SOAN*2290	[0.50]	Identities and Cultural Diversity

Education - Primary / Junior / Intermediate

Graduates interested in elementary school teaching need an additional year of study at a Faculty of Education. For those who wish to teach primary (junior kindergarten to grade 3) or junior (grades 4 to 6), each faculty of education may have certain required courses for admission. Often recommended are courses in visual or performing arts, mathematics, languages, physical or natural sciences, history or geography. Students interested in intermediate (grades 7 to 10) level teaching need to acquire a teachable subject in a specific discipline. Normally, this requirement consists of six semester courses in an area of concentration. **Students are strongly advised to contact the Faculties of Education that interest them early in their programs to determine the specific requirements.**

Graduate and Professional Studies

Students have successfully used the B.A.Sc. degree to gain admission into graduate programs in social work, applied psychology, sociology, anthropology, occupational therapy, speech and language, and social policy. If you plan to enter a graduate program after completing the Child, Youth and Family major of the B.A.Sc. degree program you will need to select certain courses as part of your undergraduate program to meet graduate program admission requirements. Sometimes these requirements are quite particular which means that you must plan your course selections early and carefully.

Although graduate programs differ in their entrance requirements, most graduate programs require that you have taken (at least): one course in research methods; two undergraduate statistics courses; and have completed an undergraduate thesis.

For many of the programs you will be required to take Graduate Record Exams (GREs) in the specific field of study. **You are strongly advised to contact the graduate programs that interest you early in your program to determine the specific entrance requirements of each program.**

Child, Youth and Family (Co-op) (CYF:C)

Department of Family Relations and Applied Nutrition, College of Social and Applied Human Sciences.

The first four semesters are as for the students in the regular program. Students in the co-op program must also complete COOP*1100 in the second academic semester. Thereafter the schedule is as follows:

Summer Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 5 - Fall

FRHD*3040	[0.50]	Parenting: Research and Applications
FRHD*3070	[0.50]	Research Methods - Family Studies
FRHD*3150	[0.50]	Strategies for Behaviour Change
FRHD*3200	[1.00]	Practicum--Child, Youth and Family I

Winter Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 6 - Summer

FRHD*3400	[0.50]	Communication and Counselling Skills
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2.00 electives or restricted electives

Fall Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 7 - Winter

FRHD*3120	[0.50]	Families in Canadian Context
FRHD*3180	[0.50]	Observation and Assessment
FRHD*4320	[0.50]	Social Policies for Children, Youth and Families

1.00 electives or restricted electives

Semester 8 - Fall

FRHD*4170	[1.00]	Practicum--Child, Youth and Family II
FRHD*4310	[0.50]	Professional Issues

1.00 electives or restricted electives

Electives and Restricted Electives

Electives and restricted electives as for the regular program.

Gerontology (GERN)

Department of Family Relations and Applied Nutrition, College of Social and Applied Human Sciences.

The Gerontology major is designed to provide students with an appreciation of the aged and the aging experience from social, psychological, and biological perspectives. The major places this study within the broader framework of life span human development and dynamics of functioning in a variety of social contexts. A focus on basic knowledge of aging as well as the application of that knowledge is reflected in required courses and suggested electives.

Students enrolled in the Gerontology major study aging within the perspective of the family. This approach provides the student with a broad, applied social science education as well as a fully integrated package of aging related courses. Students graduate with a degree leading to a variety of professional career opportunities in the human service, education, mental health, life skills support and counselling, and social policy fields. Our graduates also may pursue graduate study in family studies, human development, or one of the base social science disciplines. All students in the Gerontology Major must complete a minimum of 20.00 credits including the core of 15.00 required credits as outlined in the Schedule of Studies. In addition to these core requirements, there are many courses in various departments throughout the University which may be taken as electives. A list of suggested electives follows the description of required courses.

Major

Semester 1

COST*1800	[0.50]	Housing and Community Planning
FRHD*1010	[0.50]	Human Development
PSYC*1200	[0.50]	Dynamics of Behaviour
SOC*1100	[0.50]	Sociology

One of:

ENGL*1200	[0.50]	Reading the Contemporary World
FREN*1200	[0.50]	French Language I

Semester 2

FRHD*1020	[0.50]	Couple and Family Relationships
FRHD*2060	[0.50]	Adult Development and Aging
NUTR*1010	[0.50]	Nutrition and Society
PSYC*1100	[0.50]	Principles of Behaviour

0.50 elective*

* elective in Semester 2 must be BIOL*1020 if the student does not have standing in OAC

Biology or equivalent

Semester 3

NUTR*2050	[0.50]	Family and Community Nutrition
POLS*1400	[0.50]	Public Management and Administration
STAT*2080	[0.50]	Introductory Applied Statistics I

One of:

BIOM*2000	[0.50]	Concepts of Physiology
MBG*1000	[0.50]	Genetics and Society
PSYC*2410	[0.50]	Behavioural Neuroscience I

0.50 elective

Semester 4

COST*2100	[0.50]	Personal Financial Management
STAT*2090	[0.50]	Introductory Applied Statistics II

1.00 elective

One of:

CIS*1000	[0.50]	Introduction to Computer Applications
CIS*1200	[0.50]	Introduction to Computing
COST*2020	[0.50]	Information Management

Semester 5

FRHD*3060	[0.50]	Principles of Social Gerontology
FRHD*3070	[0.50]	Research Methods - Family Studies

1.50 electives

Semester 6

FRHD*3120	[0.50]	Families in Canadian Context
FRHD*3400	[0.50]	Communication and Counselling Skills
HTM*3000	[0.50]	Human Resources Management

1.00 elective

Semester 7

FRHD*4061	[1.00]	Family and Community: Field Placement
FRHD*4160	[0.50]	Family Relations in Gerontology
FRHD*4190	[0.50]	Assessment in Gerontology

FRHD*4250	[0.50]	Aging and Health
HTM*2200	[0.50]	Organizational Behaviour I

Semester 8

FRHD*4062	[1.00]	Family and Community: Field Placement
FRHD*4260	[0.50]	Social Policy and Gerontology

1.00 elective

Electives

Courses in different departments which complement the major and which may be taken as electives include:

BIOM*4050	[0.50]	Biomedical Aspects of Aging
COST*1000	[0.50]	Introduction to Marketing Management
COST*2810	[0.50]	Social Aspects of Housing
COST*3040	[0.50]	Business and Consumer Law
EDRD*3500	[0.50]	Recreation and Tourism Planning
ENGL*2840	[0.50]	Literature and Aging
FRHD*4810	[0.50]	Thesis I
FRHD*4910	[1.00]	Thesis II
HIST*2800	[0.50]	The History of the Modern Family
PSYC*3570	[0.50]	The Psychology of Death and Dying

Note: Students intending to apply for admission to a graduate program should include among their electives both FRHD*4810 and FRHD*4910.

Gerontology (Co-op) (GERN:C)

Department of Family Relations and Applied Nutrition, College of Social and Applied Human Sciences.

The first four semesters are as for students in the regular program. Students in the Co-op program must also complete COOP*1100 in the second semester. Thereafter, the schedule is:

Summer Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 5 - Fall

FRHD*3060	[0.50]	Principles of Social Gerontology
FRHD*3070	[0.50]	Research Methods - Family Studies

1.50 elective

Winter Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 6 - Summer

FRHD*3400	[0.50]	Communication and Counselling Skills
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2.00 elective

Fall Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 7 - Winter

FRHD*3120	[0.50]	Families in Canadian Context
FRHD*4260	[0.50]	Social Policy and Gerontology
HTM*2200	[0.50]	Organizational Behaviour I
HTM*3000	[0.50]	Human Resources Management

0.50 elective

Semester 8 - Fall

FRHD*4160	[0.50]	Family Relations in Gerontology
FRHD*4190	[0.50]	Assessment in Gerontology
FRHD*4250	[0.50]	Aging and Health

1.00 electives

Restricted Electives and Electives

As for the regular program.

Bachelor of Arts (B.A.)

The University of Guelph offers general and honours programs leading to the B.A. degree. The General Program consists of a minimum of 15.00 credits requiring the equivalent of 6 semesters of successful full time study. The Honours Program consists of a minimum of 20.00 credits requiring the equivalent of 8 semesters of successful full time study. A student may register in Summer, Fall and Winter semesters. The normal course load is 2.50 credits per semester for a full time student on regular status. Students may register for 0.50 credit more at their own discretion. Part time study consists of 1.50 credits or fewer per semester.

Program Information

A student's selection of courses must follow the B.A. Program Regulations (including Distribution Requirements), a pattern of study for either the General or Honours degree (below), and the detailed schedule(s) of studies which follow for any special subject(s) studied.

In fulfilling distribution requirements a) and b) students must in semester 1 choose 2 courses from 2 different schools or departments in the College of Arts and 2 courses from 2 of the following departments in the College of Social and Applied Human Sciences: Economics, Geography, Political Science, Psychology, Sociology and Anthropology.

Students entering the B.A. program with advanced standing must complete the distribution requirements a) and b) as soon as possible after entrance to the program. Requirement c) need not be completed immediately but is a graduation requirement.

Note: Courses taken to satisfy the distribution requirements may also be counted toward a specialization in the general or honours program.

Academic Counselling

Program Counselling

Students are urged to seek the assistance of the counsellors in the B.A. Counselling Office regarding their program and academic regulations, selecting courses, services and resources available on campus, and when they are experiencing difficulties that affect their academic progress.

Departmental Advising

Every academic department has advisors available to assist students in their course selection planning. Students should seek the advice of the departmental advisor when declaring a major, area of concentration, or minor, regarding course scheduling and completing the requirements for the specializations.

Students encountering difficulties within a course should first consult the instructor of the course. Co-operative education students in Computing and Information Science, Economics and Psychology will also have a departmental Co-op Academic Advisor and Co-ordinator, and should consult Co-operative Education Services regarding scheduling work terms and the COOP*1000 course.

Academic Residence Requirements

1. At least 5.00 of the credits required for graduation by the student's program must be taken at the University of Guelph.
2. At least 60% of the 3000 and 4000 level courses required for graduation must be taken at the University of Guelph.

University of Guelph courses include courses taken on exchange and on study abroad programs. Letter of Permission courses are not included.

Continuation of Study

Students are advised to consult the regulations for continuation of study within the program which are outlined in detail in Section VIII--Undergraduate Degree Regulations and Procedures of this calendar.

Conditions for Graduation

In addition to meeting the general and honours degree requirements listed below under Program Regulations, students will not normally be eligible to graduate while on probationary or required-to-withdraw status.

Distribution Requirements

The distribution requirements are designed to provide the student with exposure to and some understanding of a range of disciplines in the Arts, Social Sciences and Mathematical and Natural Sciences.

The distribution requirement of 8 courses (minimum 4.00 credits) is as follows:

- A. A minimum of 1.50 credits over at least 2 different subject areas in the College of Arts:

ARTH Art History
 CLAS Classical Studies
 DRMA Drama
 ENGL English
 EURO European Studies
 FREN French Studies
 GERM German Studies
 GREK Greek

HIST History
 HUMN Humanities
 ITAL Italian Studies
 LAT Latin
 LING Linguistics
 MUSC Music
 PHIL Philosophy
 SART Studio Art
 SPAN Spanish Studies
 WMST Women's Studies

- B. A minimum of 1.50 credits over at least two of the following subject areas in the College of Social and Applied Human Sciences:

ANTH Anthropology
 ECON Economics
 GEOG Geography
 IDEV International Development
 ISS Interdisciplinary Social Science
 POLS Political Science
 PSYC Psychology
 SOAN Sociology and Anthropology
 SOC Sociology
 WMST Women's Studies

- C. 1.00 credit in natural and/or mathematical sciences from the list below.

Natural and Mathematical Science Courses Acceptable for B.A. Distribution Requirements

Students must take 1.00 credit in natural and/or mathematical science courses to fulfill the B.A. science requirements. Students should choose their courses from the list below or any course for which those listed serve as prerequisites. Students are advised to fulfill this requirement before their final semester. Any problems related to this requirement should be discussed with a B.A. Program Counsellor.

Courses recommended for students with limited preparation (e.g., lacking OAC credit in a specific area):

BIOL*1020	[0.50]	Introduction to Biology
BIOL*1120	[0.50]	Environment and Human Health
BIOM*2000	[0.50]	Concepts of Physiology
BOT*1200	[0.50]	Plants and Human Use
CHEM*1060	[0.50]	Introductory Chemistry
CHEM*1100	[0.50]	Chemistry Today
CIS*1000	[0.50]	Introduction to Computer Applications
COST*2020	[0.50]	Information Management
ENVB*2210	[0.50]	Introductory Apiculture
GEOG*1350	[0.50]	Earth: Hazards and Global Change
GEOL*1100	[0.50]	Principles of Geology
MATH*1050	[0.50]	Introduction to Mathematical Modeling
MBG*1000	[0.50]	Genetics and Society
MET*1000	[0.50]	The Atmospheric Environment
MICR*1010	[0.50]	The Microbial World
PHYS*1600	[0.50]	Contemporary Astronomy
PHYS*1810	[0.50]	Physics of Music
SOIL*2010	[0.50]	Soil Science
ZOO*1500	[0.50]	Humans in the Natural World - a Zoological Perspective

Courses available for students with adequate preparation (e.g. Grade 12 in the discipline or its equivalent):

BIOL*1030	[0.50]	Biology I
BIOL*1040	[0.50]	Biology II
CHEM*1040	[0.50]	General Chemistry I
CIS*1XXX	[0.50]	Any CIS course at the 1000 level
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
HK*2XXX	[0.00]	Any HK course at the 2000 level
MATH*1XXX	[0.00]	Any MATH course at the 1000 level
MET*2030	[0.50]	Meteorology and Climatology
MUSC*1090	[0.50]	Physics of Music
PHYS*1XXX	[0.00]	Any PHYS course at the 1000 level
STAT*2XXX	[0.00]	Any STAT course at the 2000 level

Double Counting of Courses

A maximum of 50 percent of the courses in a second major or minor may be courses taken in fulfillment of the first major where required courses are the same. Double counting is not allowed in the General Program.

Program Regulations

The General Degree Program provides the opportunity for a sound general education in the arts and social sciences, mathematics and sciences, while allowing for concentration of studies in one or more subjects.

The Honours Degree Program provides depth of study in one specialization, strengthening written and oral communication skills, research and analytical abilities, as well as ensuring a breadth of study in the arts, social sciences, mathematics and sciences.

General Degree Requirements (BAG)

To graduate from a general program a student must:

- earn 15.00 credits. These must include courses that fulfill the distribution requirements (see below). At least 4.00 credits must be at the 3000 level or above. Not more than 6.00 credits at the introductory (1000) level may be counted towards the 15.00 credit requirement.

9.00 of the required 15.00 credits must be in courses offered by the College of Arts, the departments of Economics, Geography, Political Science, Psychology, Sociology and Anthropology (in the College of Social and Applied Human Sciences), the Department of Computing and Information Science, or the Department of Mathematics and Statistics.

- no more than 11.00 credits in any one subject or discipline, as indicated by the course prefix code, can be counted towards a general degree.

While students are encouraged to complete the requirements of one or more areas of concentration, this is not a graduation requirement.

The requirements for each area of concentration are set out separately in the pages following the list of Honours and General Specializations Available in the B.A. Degree.

Honours Degree Requirements (BAH)

To graduate from an honours program a student must:

- earn 20.00 credits. These must include courses that fulfill the distribution requirements (see below), and courses that fulfill the requirements of at least 1 major. At least 7.00 credits must be at the 3000 level or above. Not more than 6.00 credits from courses at the introductory (1000) level may be counted towards the 20.00 credit requirement.
- fulfill the course and credit requirements of at least one major with a cumulative average of at least 70% in all course attempts at the University of Guelph in that major. Grades in all courses in the discipline area of the major are included in the cumulative average. Grades from those courses in other disciplines listed as options toward the major are also included in the average. (This condition does not apply to majors in the interdisciplinary programs of International Development and European Studies, where only courses in the core and chosen area of emphasis will be counted toward the specialization average.) Students may take more than one major. They may also take one or more minors. The 70% requirement applies to each major and minor.
- no more than 14.00 credits in any one subject or discipline, as indicated by the course prefix code, can be counted towards an Honours Degree.

The requirements for each major and minor are set out separately in the pages following the list of Honours and General Specializations Available in the B.A. Degree.

University recognition that a student has graduated with a particular major or minor requires a cumulative average of 70% for all course attempts at this University in that major or minor.

Students failing to meet the graduation requirements of the Honours Program may apply to graduate with a General Degree if the requirements for the General Degree are met. Students should note that a specialization is not required to graduate with a General Degree.

Honours B.A. students, except those doing a major in Computing and Information Science, Mathematics or Statistics, must take a minimum of 12.00 credits from either or both of the departments in the College of Arts and the departments of Economics, Geography, Political Science, Psychology, Sociology and Anthropology (in the College of Social and Applied Human Sciences).

Semester One Requirements

Students in the General and Honours Programs must take:

Semester 1

1.00 credit from the following:

- Art History - ARTH*1220, ARTH*1510
- Classical Studies -CLAS*1000
- Drama - DRMA*1000, DRMA*1050, DRMA*1090, DRMA*1500
- English - ENGL*1080, ENGL*1200
- European Studies -EURO*1050, EURO*1200
- French Studies -FREN*1000, FREN*1200
- German Studies -GERM*1100, GERM*1110, GERM*2490 (OAC Required)
- Greek - GREK*1100
- History - HIST*1010, HIST*1150, HIST*1250
- Italian Studies -ITAL*1060
- Latin - LAT*1100
- Music - MUSC*1060, MUSC*1120, MUSC*1180, MUSC*1500
- Philosophy - PHIL*1000, PHIL*1010, PHIL*1050
- Studio Art - SART*1050, SART*1060
- Spanish Studies -SPAN*1100, SPAN*1110

Women's Studies -WMST*1000

PLUS

1.00 credit from the following:

- Anthropology - ANTH*1150
- Economics - ECON*1050
- Geography - GEOG*1200, GEOG*1220, GEOG*1300
- Political Science -POLS*1150, POLS*1400, POLS*1500
- Psychology - PSYC*1100, PSYC*1200
- Sociology - SOC*1100, SOC*1500
- Women's Studies -WMST*1000

Study at Other Universities

Students contemplating study at another university for credit towards a Bachelor of Arts degree at the University of Guelph should refer to the general regulations governing Letters of Permission in Section VIII--Degree Regulations & Procedures in this calendar.

Students must obtain approval for the Letter of Permission prior to undertaking studies at another institution. Approval of the request depends on good standing in the program with a minimum average of 60%.

The normal limit of credits taken on a Letter of Permission is 2.50 based on Guelph credits.

Students with a specialization in languages who want to undertake a program of study in Quebec or abroad should consult the appropriate departmental advisor or the Director of the School of Languages and Literatures.

Special Study Option

London Study Semester

A special program of studies designed to make use of the uniquely rich resources of London, England, is offered as a regular part of the B.A. program every Fall semester. The program is supervised by a faculty member from Guelph who directs the studies in London and supervises correspondence with faculty in Guelph. Courses in London are of 2 kinds: London based courses and correspondence courses. London based courses in music, theatre and fine art are given by British tutors, and the coordinator offers courses in his/her area of interest. Students are also permitted to arrange correspondence courses to meet their particular needs. Students wishing to apply for the London Semester should have good academic standing and should have completed at least 2 semesters at the University of Guelph at the time of application; although preference will be given to those with a cumulative average of 70% or above, all applications will be given careful consideration. More detailed information about academic requirements, bursaries, courses, etc. can be obtained from the B.A. Program Counselling Office, Room 130 in the MacKinnon Building.

Honours and General Specializations Available in the B.A. Degree

General Program Areas of Concentration

- Anthropology
- Computing and Information Science
- Drama
- Economics
- English
- French Studies
- Geography
- History
- International Development
- Mathematics
- Music
- Philosophy
- Political Science
- Sociology
- Spanish
- Statistics
- Women's Studies

The schedule of studies for each area of concentration is given on the following pages under its subject heading.

Honours Program Majors

- Agricultural Economics
- Anthropology
- Applied Economics
- Art History
- Classical Languages
- Classical Studies
- Computing and Information Science*
- Criminal Justice and Public Policy

Drama
 Economics*
 English
 European Studies
 French Studies
 Geography
 History
 Individual Studies
 Information Systems and Human Behaviour
 International Development
 Mathematical Economics
 Mathematics
 Music
 Philosophy
 Political Science
 Psychology*
 Rural and Development Sociology
 Sociology
 Spanish
 Statistics
 Studio Art
 Women's Studies

Subjects marked with an asterisk (*) may be available as Co-operative Education programs. The schedule of studies for each major is given on the following pages under its subject heading.

Honours Program Minors

Anthropology
 Art History
 Art Theory and Criticism
 Business Administration
 Classical Languages
 Classical Studies
 Cognitive Neuropsychology
 Computing and Information Science
 Criminal Justice and Public Policy
 Developmental Psychology
 Drama
 Economics
 Educational Psychology
 English
 Environmental Studies
 Family and Child Studies
 French Studies
 Geography
 German
 History
 International Development
 Italian
 Marketing Management
 Mathematics
 Museum Studies
 Music
 Organizational Behaviour
 Philosophy
 Political Science
 Rural Extension Studies
 Social Psychology
 Sociology
 Spanish
 Statistics
 Studio Art
 Visual Arts of the Americas
 Women's Studies

The schedule of studies for each minor is given on the following pages under its subject heading.

Agricultural Economics (AGEC)

Department of Agricultural Economics and Business, Ontario Agricultural College.

The study of agricultural economics prepares students for careers as economic analysts in the agrifood sector and in public agencies. In addition, this major provides excellent background for those students planning to do graduate work in agricultural and resource economics and other fields of applied economics.

Agricultural Economics is offered as a major in the honours program. A detailed program planning guide is available in the Department of Agricultural Economics and Business.

Major (Honours Program)

A minimum of 9.50 credits, consisting of the 15 courses specified below plus 4 restricted electives, is required, including:

AGEC*2220	[0.50]	Financial Accounting
AGEC*2700	[0.50]	Survey of Natural Resource Economics
AGEC*3030	[0.50]	The Firm and Markets
AGEC*4000	[0.50]	Agricultural and Food Policy
AGEC*4500	[0.50]	Decision Science
AGR*1100	[0.50]	Introduction to the Agrifood System
AGR*1250	[0.50]	Agrifood System Trends and Issues
ECON*1050	[0.50]	Introductory Microeconomics
ECON*1100	[0.50]	Introductory Macroeconomics
ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*2770	[0.50]	Introductory Mathematical Economics
ECON*3600	[0.50]	Macroeconomics in an Open Economy
ECON*3710	[0.50]	Advanced Microeconomics
ECON*3740	[0.50]	Introduction to Econometrics

Four additional courses, at least three of which must be in agricultural economics and at least one of which must be at the 4000 level, chosen from the following list:

AGEC*2230	[0.50]	Management Accounting
AGEC*4210	[0.50]	World Agriculture and Economic Development
AGEC*4220	[0.50]	Advanced Farm Management
AGEC*4240	[0.50]	Futures and Options Markets
AGEC*4290	[0.50]	Land Economics
AGEC*4310	[0.50]	Resource Economics
ECON*3510	[0.50]	Money, Credit and the Financial System
ECON*3530	[0.50]	Industrial Organization
ECON*3580	[0.50]	Economics of Regulation
ECON*3610	[0.50]	Public Economics
ECON*3620	[0.50]	International Trade
ECON*3720	[0.50]	History of the World Economy since 1850

Notes: Prerequisites for the above courses will require students to take MATH*1000, MATH*1080, or MATH*1200 during their first year of study. A student may obtain permission to substitute certain other courses for the ones listed if the substitute courses fit with the students program. Approval from a departmental advisor is required.

Unless taken to satisfy the requirements of another program, no student may receive credit in this program for more than one of the following statistics prerequisites ECON*2740, STAT*2040, STAT*2060, or STAT*2080.

Anthropology (ANTH)

Department of Sociology and Anthropology, College of Social and Applied Human Sciences.

The Department of Sociology and Anthropology offers three types of courses: sociology courses with the prefix SOC*; anthropology courses with the prefix ANTH*; and departmental courses with the prefix SOAN*. The departmental category of courses recognizes the fact that the disciplines of sociology and sociocultural anthropology have developed in tandem and it is possible to identify large areas of overlap and convergence in the work of practitioners both historically and in the present. Departmental courses include most of the core theory and methods courses as well as many elective courses. They contribute equally to the subject matter of sociology as well as the subject matter of sociocultural anthropology for purposes of the undergraduate programs of study in both disciplines. Please see the listings for all courses required for the Anthropology program.

Courses will normally be offered in the semesters designated. Please check with the department for information about additional semester offerings. In addition to regularly scheduled courses, students may elect to do independent study. A student who wishes to do a reading course should first consult the professor with whom he/she wishes to work. Please note, a student is allowed a total of 1.00 credits only for reading courses.

Anthropology credit may also be given for some Sociology courses, with the exception of SOC*3840 through SOC*4910 inclusive. See a Sociology/Anthropology Faculty Advisor for approval of substitutions.

Area of Concentration (General Program)

A minimum of 6.00 credits is required, including:

ANTH*1150	[0.50]	Anthropology
ANTH*2160	[0.50]	Social Anthropology
SOAN*2111/2	[1.00]	Classical Theory

SOAN*2120 [0.50] Introductory Methods

One of:

LING*1000 [0.50] Introduction to Linguistics
 MUSC*2110 [0.50] Music of the Circum-Atlantic and the Americas
 MUSC*2200 [0.50] Music of the Near and Far East

2.00 more credits in anthropology (ANTH) courses and 1.00 more credits in departmental (SOAN) courses. 1.50 credits of these 3.00 credits must be at the 3000 level or above.

Major (Honours Program)

A minimum of 9.00 credits is required, including:

ANTH*1150 [0.50] Anthropology
 ANTH*2160 [0.50] Social Anthropology
 ANTH*3690 [0.50] Anthropological Theory
 ANTH*4300 [0.50] Anthropological Issues
 LING*1000 [0.50] Introduction to Linguistics
 SOAN*2111/2 [1.00] Classical Theory
 SOAN*2120 [0.50] Introductory Methods
 SOAN*3070 [0.50] Qualitative and Observational Methods

One of:

MUSC*2110 [0.50] Music of the Circum-Atlantic and the Americas
 MUSC*2200 [0.50] Music of the Near and Far East

2.50 more credits in anthropology (ANTH) courses and 1.50 more credits in departmental (SOAN) courses. 1.00 credits of these 4.00 credits must be at the 4000 level.

Note: SOAN*3120 is recommended, especially for students planning to enter graduate programs.

Minor (Honours Program)

A minimum of 6.00 credits is required, including:

ANTH*1150 [0.50] Anthropology
 ANTH*2160 [0.50] Social Anthropology
 ANTH*3690 [0.50] Anthropological Theory
 SOAN*2111/2 [1.00] Classical Theory
 SOAN*2120 [0.50] Introductory Methods

One of:

LING*1000 [0.50] Introduction to Linguistics
 MUSC*2110 [0.50] Music of the Circum-Atlantic and the Americas
 MUSC*2200 [0.50] Music of the Near and Far East

1.50 more credits in anthropology (ANTH) courses and 1.00 more credits in departmental (SOAN) courses. 1.00 credits of these 2.50 credits must be at the 3000 level or above.

Note: Sociology credit may also be given for most Anthropology courses, with the exception of ANTH*3840 through ANTH*4910 inclusive.

Applied Economics (APEC)

Department of Economics, College of Social and Applied Human Sciences.

The Applied Economics program provides students with an opportunity to pursue the study of economics as it is applied to a particular area. In addition to the Applied Economics core, students identify an Area of Emphasis which includes relevant courses from other disciplines. In the final year of study, students take Applied Econometrics and complete a research project under the supervision of a faculty member.

Students are urged to consult the department's program planning guide and the department's advisors for detailed information about courses and programs and about the course of study most appropriate as preparation for graduate work in economics or business administration, for professional degrees such as the Bachelor's degree in Law, and for careers in business and government.

Note: Students specializing in Applied Economics who fail an Economics course twice will not be permitted to continue in the Applied Economics program.

Major (Honours Program)

Core Requirements

ECON*1050 [0.50] Introductory Microeconomics
 ECON*1100 [0.50] Introductory Macroeconomics
 ECON*2310 [0.50] Intermediate Microeconomics
 ECON*2410 [0.50] Intermediate Macroeconomics
 ECON*2740 [0.50] Economic Statistics
 ECON*2770 [0.50] Introductory Mathematical Economics
 ECON*3600 [0.50] Macroeconomics in an Open Economy
 ECON*3710 [0.50] Advanced Microeconomics
 ECON*3740 [0.50] Introduction to Econometrics
 ECON*3770 [0.50] Mathematical Economics and Game Theory
 ECON*4640 [0.50] Applied Econometrics I
 ECON*4950 [0.50] Applied Economics Research Project

One Economic History Course

One Area of Emphasis

Note: ECON*2770 requires a first year university calculus course.

Areas of Emphasis

Economic Policy

POLS*1400 [0.50] Public Management and Administration

0.50 additional credits in Economics at the 4000 level

Two of:

ECON*2000 [0.50] Contemporary Economic Problems in Canada
 ECON*2500 [0.50] Introduction to the Economics of Law, Crime and Enforcement
 ECON*3300 [0.50] Economics of Health and the Workplace
 ECON*3500 [0.50] Urban Economics
 ECON*3510 [0.50] Money, Credit and the Financial System
 ECON*3580 [0.50] Economics of Regulation
 ECON*3610 [0.50] Public Economics

Note: Only one of ECON*2000 and ECON*2500 may be selected.

One of:

POLS*2250 [0.50] Public Administration
 POLS*2300 [0.50] Canadian Government
 POLS*3250 [0.50] Public Policy: Challenges and Prospects

Two of:

ECON*4500 [0.50] Topics in Urban Economics
 ECON*4750 [0.50] Topics in Public Economics
 ECON*4760 [0.50] Topics in Monetary Economics
 ECON*4860 [0.50] Seminar in Current Economic Problems
 ECON*4880 [0.50] Topics in International Economics

Note: Students who are considering graduate studies in Economics are advised to take the following courses:

ECON*4710 [0.50] Advanced Topics in Microeconomics
 ECON*4810 [0.50] Advanced Macroeconomic Theory

International Trade and Development

ECON*3620 [0.50] International Trade
 1.50 additional credits in Economics to include 1.00 credits at the 4000 level

One of:

ECON*2650 [0.50] Introductory Development Economics
 ECON*3720 [0.50] History of the World Economy since 1850

One of:

ECON*4830 [0.50] Economic Development
 ECON*4880 [0.50] Topics in International Economics

Two of:

IDEV*2010 [0.50] International Development Studies
 GEOG*2030 [0.50] International Political Geography
 POLS*2080 [0.50] Development and Underdevelopment
 POLS*2200 [0.50] International Relations

Labour and Industrial Relations

ECON*3520 [0.50] Labour Economics
 ECON*4790 [0.50] Topics in Labour Market Theory

1.00 additional credits in Economics at the 4000 level

One of:

ISS*2500 [0.50] Management in Organizations
 PSYC*3070 [0.50] Psychology in Human Resource Management
 HTM*4390 [0.50] Individuals and Groups in Organizations

Two of:

ECON*2200 [0.50] Industrial Relations
 ECON*3300 [0.50] Economics of Health and the Workplace
 ECON*3530 [0.50] Industrial Organization

Money and Finance

AGEC*2220 [0.50] Financial Accounting
 AGEC*2230 [0.50] Management Accounting
 ECON*3510 [0.50] Money, Credit and the Financial System
 ECON*3560 [0.50] Theory of Finance
 ECON*3660 [0.50] Economics of Equity Markets

1.00 additional credits in Economics at the 4000 level

One of:

AGEC*4240 [0.50] Futures and Options Markets
 ECON*4760 [0.50] Topics in Monetary Economics

Resources and the Environment

AGEC*2700 [0.50] Survey of Natural Resource Economics
 ECON*2100 [0.50] Economic Growth and Environmental Quality
 ECON*4930 [0.50] Environmental Economics

2.00 additional credits in Economics to include 1.00 credits at the 4000 level

One of:

AGEC*4310 [0.50] Resource Economics
 GEOG*1220 [0.50] Human Impact on the Environment
 PHIL*2070 [0.50] Philosophy of the Environment

Art History (ARTH)

School of Fine Art and Music, College of Arts.

The School provides for concentrated study in Art History or Studio Arts, or for a more balanced study combining the two disciplines. Both Studio Art and Art History degree programs require some work in both the programs. Many Art History courses are also open to non specialized students.

The Art History program covers historical perspectives on the visual arts, study of the methodologies of art history and critical theory, and consideration of contemporary issues in the practice and display of art. Students pursuing a Major or Minor in Art History are required to take a minimum number of courses in each of three areas of focus in the program: Western Art; Visual Arts of the Americas; and Art Theory, Critical Methodology and Museology. The groups of courses that comprise these areas of focus are listed below. Students interested in the study of Art History in conjunction with other programs are recommended to look at the Minors offered in Visual Arts of the Americas, Museum Studies, and Art Theory and Criticism. Specific requirements for the Art History Honours Major and Minor are listed below.

Student Counselling

The students who elect to take a substantial number of courses in Art History with the objective of graduate work are advised to obtain counselling from faculty regarding their choices. It is important to know that graduate studies in Art History will usually require a reading knowledge of at least 2 languages other than English. German, French, Italian and Latin are among the most useful choices. Cognate electives in other disciplines in the College of Arts (such as History) will almost certainly prove an asset.

Art History Core Requirements

All students are required to complete the following core courses [2.00 credits]:

ARTH*1220	[0.50]	The Visual Arts Today
ARTH*1510	[0.50]	Art Historical Studies I
ARTH*1520	[0.50]	Art Historical Studies II

and one [0.50] of the following:

SART*1050	[0.50]	Integrated 2-D Media
SART*1060	[0.50]	Media Convergence

Major (Honours Program)

A minimum of 9.00 credits is required, including:

- the Art History core
- 2.00 credits from the Western Art area of focus including: 0.50 credit in Ancient (ARTH*2150, ARTH*3150), 0.50 credit in Medieval (ARTH*2540, ARTH*3540), 0.50 credit from Renaissance & Baroque (ARTH*2550, ARTH*2950, ARTH*3100, ARTH*3550, ARTH*3640), 0.50 credit from Modern (ARTH*2280, ARTH*2290, ARTH*2580, ARTH*2600, ARTH*3520, ARTH*3570)
- 1.50 credits from the Arts of the Americas area of focus
- 1.00 credits from the Art Theory, Critical Methodology and Museology area of focus
- 2.50 additional credits in Art History

Note: a minimum of 4.00 credits in Art History must be at the 3000 level or above, including at least 1.00 credits in Art History at the 4000 level.

Minor (Honours Program)

A minimum of 5.00 credits is required, including:

- ARTH*1220, ARTH*1510, ARTH*1520
- 3.50 additional credits in Art History including 0.50 credits in each of the three areas of focus and at least 2.00 credits at the 3000 or 4000 level.

Areas of Focus

Western Art

ARTH*2150	[0.50]	Western Art: Greece
ARTH*2280	[0.50]	Western Art: Modern Architecture
ARTH*2290	[0.50]	Western Art: Photographic Media
ARTH*2540	[0.50]	Western Art: Medieval
ARTH*2550	[0.50]	Western Art: Italian Renaissance
ARTH*2580	[0.50]	Western Art: Late Modern
ARTH*2600	[0.50]	Western Art: Early Modern
ARTH*2950	[0.50]	Western Art: Baroque
ARTH*3100	[0.50]	Perspectives: Structure and Space in Renaissance and Baroque Art
ARTH*3150	[0.50]	Space: Roman Art and Urbanism
ARTH*3200	[0.50]	Colour: Practice and Meanings in Western Art
ARTH*3520	[0.50]	Idea: Art Since 1950
ARTH*3540	[0.50]	Image: The Arts in the High Middle Ages
ARTH*3550	[0.50]	Lives: Aspects of High Renaissance Art
ARTH*3570	[0.50]	Display: Visual Culture in Late 19th Century Europe
ARTH*3640	[0.50]	Objects: Baroque Art and Rococo Art
ARTH*4150	[0.50]	Questions in Western Art I
ARTH*4160	[0.50]	Questions in Western Art II

Arts of the Americas

ARTH*2050	[0.50]	Arts of the Americas: Latin America
ARTH*2060	[0.50]	Arts of the Americas: Aboriginal Perspectives
ARTH*2070	[0.50]	Arts of the Americas: The USA
ARTH*2490	[0.50]	Arts of the Americas: Canada
ARTH*3010	[0.50]	Americas: Canada
ARTH*3050	[0.50]	Americas: Meso America
ARTH*3060	[0.50]	Americas: Public Art

ARTH*4050	[0.50]	Questions in the Americas I
ARTH*4060	[0.50]	Questions in the Americas II

Arts Theory, Critical Methodology and Museology

ARTH*2120	[0.50]	Museology
ARTH*2480	[0.50]	Introduction to Art Theory and Criticism
ARTH*3210	[0.50]	Critical Issues
ARTH*3220	[0.50]	Nationalism and Identity in Art
ARTH*3780	[0.50]	Gender and Art
ARTH*4550	[0.50]	Questions in Criticism
ARTH*4620	[0.50]	Museum Studies

Note: Details of advanced standing for transfer students from the Ontario College of Art can be found in the section on Admission Information.

Art Theory and Criticism (ATC)

School of Fine Art and Music.

The Minor program in Art Theory and Criticism offers students the opportunity to engage critically with the most significant interpretative methods art historians and critics use to analyze artwork. Courses will provide an overview of important debates in the field and of their contexts, as well as informed discussions of the issues that are raised when textuality and visuality come together.

This program of study is designed as a complement to a significant number of Major specialization, and is suitable for any student wishing to broaden their knowledge beyond their Major area of study. Students wishing to combine this Minor with a Major in Art History are advised that the selection of their required courses should begin early in their degree, and that they should obtain counselling from faculty to ensure they can achieve the correct distribution.

Minor (Honours Program)

A minimum of 5.00 credits is required, including:

- ARTH*1220 [0.50] The Visual Arts Today
ARTH*1510 [0.50] Art Historical Studies I
ARTH*1520 [0.50] Art Historical Studies II
PHIL*3050 [0.50] Philosophy of Art
- 3.00 additional credits in Art History as follows:

ARTH*2480	[0.50]	Introduction to Art Theory and Criticism
ARTH*3210	[0.50]	Critical Issues
ARTH*3220	[0.50]	Nationalism and Identity in Art
ARTH*3520	[0.50]	Idea: Art Since 1950
ARTH*3780	[0.50]	Gender and Art
ARTH*4550	[0.50]	Questions in Criticism

Business Administration (BADM)

Department of Economics, College of Social and Applied Human Sciences.

Interdisciplinary study in Business Administration is offered as a minor in the honours program. Students in this program will be counselled by the Department of Economics. It is possible for students to pursue a more intensive program in the area of business administration and economics; see the heading Applied Economics in the B.A. degree and the heading Management Economics in Industry and Finance in the B.Comm. degree.

Minor (Honours Program)

A minimum of 5.00 credits is required, including:

AGEC*2220	[0.50]	Financial Accounting
AGEC*2230	[0.50]	Management Accounting
COST*3040	[0.50]	Business and Consumer Law
ECON*1050	[0.50]	Introductory Microeconomics
ECON*1100	[0.50]	Introductory Macroeconomics
ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*3560	[0.50]	Theory of Finance

One of:

AGEC*3310	[0.50]	Operations Management
HTM*4390	[0.50]	Individuals and Groups in Organizations

One of:

AGEC*4370	[0.50]	Marketing Management
COST*1000	[0.50]	Introduction to Marketing Management

Classical Languages (CLAL)

School of Languages and Literatures, College of Arts.

The Classical Languages program imparts an advanced knowledge of Greek and Latin and is designed for students who have a special interest in literature, history and philosophy or plan to do postgraduate study in any area of Classics.

Core Requirements

GREK*1100, GREK*1110, GREK*2020, LAT*1100, LAT*1110, LAT*2000

Major (Honours Program)

A minimum of 9.00 credits is required, including:

- the Classical Languages core

- b. any 5.00 credits from CLAS*3050, CLAS*3060, CLAS*3070, CLAS*3080, CLAS*3090, CLAS*3120, CLAS*4010

- c. LAT*4100, LAT*4150

Minor (Honours Program)

A minimum of 6.00 credits is required, including:

- a. the Classical Languages core
b. any 3.00 credits from those listed under Item (b) above

Classical Studies (CLAS)

School of Languages and Literatures, College of Arts.

The program in Classical Studies is intended particularly for students interested in Greek and Roman culture, society and history.

Core Requirements

- a. CLAS*1000, plus EITHER (GREK*1100, GREK*1110, GREK*2020) OR (LAT*1100, LAT*1110, LAT*2000)
b. one of CLAS*2000, CLAS*2150, CLAS*2350, CLAS*3100
c. one of CLAS*3000, CLAS*3010, CLAS*3020
d. one of CLAS*3030, CLAS*3040
e. one of CLAS*3150, CLAS*3200, HIST*2850, PHIL*2140

Major (Honours Program)

A minimum of 8.00 credits is required, including:

- a. the Classical Studies Core
b. CLAS*4000, CLAS*4150, CLAS*4400
c. 2.50 additional credits in Classics, 1.00 of which may be taken from the following as part of the program:
d. ENGL*1410 [0.50] Major English Writers
HIST*2200 [0.50] The Medieval World
LING*1000 [0.50] Introduction to Linguistics

Minor (Honours Program)

A minimum of 5.00 credits is required, including:

- a. the Classical Studies Core
b. two of CLAS*4000, CLAS*4150, CLAS*4400

Cognitive Neuropsychology (CGNR)

Department of Psychology, College of Social and Applied Human Sciences.

Ellis and Young (1988) defined cognitive psychology as the "study of those mental processes which underlie and make possible our everyday ability to recognize familiar objects and people, to find our way around in the world, to speak, read and write, and to plan and execute actions, to think, make decisions and remember." They proposed two complementary aims in the study of cognitive neuropsychology:

- i. To explain the patterns of impaired and intact cognitive performance seen in brain-injured patients in terms of damage to one or more of the components of a theory or model of normal cognitive functioning.
ii. To draw conclusions about normal, intact cognitive processes from the patterns of impaired and intact capabilities seen in brain-injured patients.

The Minor program in Cognitive Neuropsychology is targeted for students seeking to broaden their knowledge beyond their major area of study. It may be of particular interest to students specializing in biology or computer science. A Minor in cognitive neuropsychology will prove valuable to students seeking careers in research and medicine.

Minor (Honours Program)

(May not be taken in combination with a Psychology Honours Major)

A minimum of 6.00 credits is required, including:

- PSYC*1100 [0.50] Principles of Behaviour
PSYC*1200 [0.50] Dynamics of Behaviour
PSYC*2360 [0.50] Introductory Research Methods
PSYC*2390 [0.50] Principles of Sensation and Perception
PSYC*2410 [0.50] Behavioural Neuroscience I
PSYC*2650 [0.50] Cognitive Psychology
PSYC*3330 [0.50] Memory
PSYC*3340 [0.50] Psycholinguistics
PSYC*3410 [0.50] Behavioural Neuroscience II
PSYC*4600 [0.50] Cognitive Neuroscience

0.50 additional credit in Psychology

One of:

- PSYC*2010 [0.50] Quantification in Psychology
STAT*2040 [0.50] Statistics I

Note: Courses designated with (H) in Section XII--Course Descriptions are Honours level courses requiring for registration a cumulative average of at least 70% in all course attempts in Psychology.

Computing and Information Science (CIS)

Department of Computing and Information Science, College of Physical and Engineering Science.

The Computing and Information Science program emphasizes the applications of computing in other academic disciplines and in business environments. "B" grades are required for but do not guarantee admission to semester three of C.I.S. programs. The BA Program serves students who want computing at the core of a liberal education. The BA is also suited for students who wish to manipulate quantities of data or apply computing techniques across disciplines, especially in the social sciences, humanities or fine arts. Students with a more narrowly focused area of application might consider the BSc program for the natural and biological sciences or the B.Comp Program for other specializations. All three programs can lead to graduate work or positions in industry.

Area of Concentration (General Program)

A minimum of 5.25 credits is required, including:

CIS*1500	[0.50]	Introduction to Programming
CIS*1910	[0.50]	Discrete Structures in Computing I
CIS*2430	[0.50]	Object Oriented Programming
CIS*2500	[0.50]	Intermediate Programming
CIS*2520	[0.50]	Data Structures
CIS*2750	[0.75]	Software Systems Development and Integration
CIS*2910	[0.50]	Discrete Structures in Computing II
CIS*3530	[0.50]	Data Base Systems and Concepts

1.00 additional C.I.S. credits at the 2000 level or higher

Major (Honours Program)

Semester 1

CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I

1.00 elective from different subject areas in the College of Arts (ENGL*1080 or ENGL*1200 is recommended)

0.50 elective from selected subject areas in the College of Social and Applied Human Sciences*

Semester 2

CIS*1910	[0.50]	Discrete Structures in Computing I
CIS*2500	[0.50]	Intermediate Programming

0.50 elective from the College of Arts

1.00 elective from selected subject areas in the College of Social and Applied Human Sciences*

Semester 3

CIS*2030	[0.50]	Structure and Application of Microcomputers
CIS*2430	[0.50]	Object Oriented Programming
CIS*2520	[0.50]	Data Structures
CIS*2910	[0.50]	Discrete Structures in Computing II

0.50 elective

Semester 4

CIS*2750	[0.75]	Software Systems Development and Integration
CIS*3110	[0.50]	Operating Systems
STAT*2040	[0.50]	Statistics I

0.75 elective

Note: 0.50 elective may be selected in semester 4 followed by 0.50 elective in semester 5

Semester 5

CIS*2460	[0.50]	Modelling of Computer Systems
CIS*3530	[0.50]	Data Base Systems and Concepts
CIS*3750	[0.75]	System Analysis and Design in Applications

0.5 C.I.S. elective at 3000 level or above (CIS*3210 [0.50] is recommended)

0.25 electives

Semester 6

CIS*3490	[0.50]	The Analysis and Design of Computer Algorithms
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1.00 C.I.S. electives at 3000 level or above

1.00 electives

Semester 7

1.00 C.I.S.. credits at the 4000 level

1.50 elective

Semester 8

1.00 C.I.S. credit at the 4000 level

1.50 electives

*1.50 electives in semesters 1 and 2 must be from at least two of the following subject areas in the College of Social and Applied Human Sciences: ANTH, ECON, GEOG, POLS, PSYC, SOAN, SOC, WMST

Minor (Honours Program)

A minimum of 5.25 credits is required, including:

CIS*1500	[0.50]	Introduction to Programming
CIS*1910	[0.50]	Discrete Structures in Computing I
CIS*2430	[0.50]	Object Oriented Programming
CIS*2500	[0.50]	Intermediate Programming
CIS*2520	[0.50]	Data Structures
CIS*2750	[0.75]	Software Systems Development and Integration
CIS*2910	[0.50]	Discrete Structures in Computing II
CIS*3530	[0.50]	Data Base Systems and Concepts

1.00 additional credits from C.I.S. or STAT courses at the 2000 level or above

Computing and Information Science (Co-op) (CIS:C)

Department of Computing and Information Science, College of Physical and Engineering Science.

The 4 year Honours Program Major in Computing and Information Science is also available as a Co-operative Education Program. Three co-op work terms are required.

COOP*1100 must be completed in the 2nd academic semester (Winter of year 1). Students may apply for these options at the time of University admission or completion of semester 2. A five year option with four work terms is also available. Please see the department's co-op academic advisor for details.

Conditions for graduation are the same as the corresponding regular B.A. program. In addition, all work reports must have a grade of satisfactory or better.

Recommended work terms are shown below:

Work/Study Semesters

List A

Semester 1(Fall)

CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I

1.00 elective from different subject areas in the College of Arts (ENGL*1080 or ENGL*1200 is recommended)

0.50 elective from selected subject areas in the College of Social and Applied Human Sciences*

Semester 2(Winter)

CIS*1910	[0.50]	Discrete Structures in Computing I
CIS*2500	[0.50]	Intermediate Programming
COOP*1100	[0.00]	Introduction to Co-operative Education

0.50 elective from the College of Arts

1.00 elective from selected subject areas in the College of Social and Applied Human Sciences*

Semester 3(Summer)

CIS*2030	[0.50]	Structure and Application of Microcomputers
CIS*2430	[0.50]	Object Oriented Programming
CIS*2520	[0.50]	Data Structures
CIS*2910	[0.50]	Discrete Structures in Computing II

0.50 elective in the Area of Application or elective

Fall Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4(Winter)

CIS*2750	[0.75]	Software Systems Development and Integration
CIS*3110	[0.50]	Operating Systems
STAT*2040	[0.50]	Statistics I

0.75 elective

Summer Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5(Fall)

CIS*2460	[0.50]	Modelling of Computer Systems
CIS*3530	[0.50]	Data Base Systems and Concepts
CIS*3750	[0.75]	System Analysis and Design in Applications

0.50 C.I.S. elective at 3000 level or above (CIS*3210 recommended)

0.25 electives

Winter Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6(Summer)

CIS*3490	[0.50]	The Analysis and Design of Computer Algorithms
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1.00 C.I.S. electives at 3000 level or above

1.00 electives

Semester 7(Fall)

1.00 C.I.S. credits at the 4000 level

1.50 elective

Semester 8(Winter)

1.00 C.I.S. credit at the 4000 level

1.50 electives

*1.50 electives in semesters 1 and 2 must be from at least two of the following subject areas in the College of Social and Applied Human Sciences: ANTH, ECON, GEOG, POLS, PSYC, SOAN, SOC, WMST

List B

Semester 1(Fall)

CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I

1.00 elective from different subject areas in the College of Arts (ENGL*1060 or ENGL*1200 is recommended)

0.50 elective from selected subject areas in the College of Social and Applied Human Sciences*

Semester 2(Winter)

CIS*1910	[0.50]	Discrete Structures in Computing I
CIS*2500	[0.50]	Intermediate Programming
COOP*1100	[0.00]	Introduction to Co-operative Education

0.50 elective from the College of Arts

1.00 elective from selected subject areas in the College of Social and Applied Human Sciences*

Semester 3(Summer)

CIS*2030	[0.50]	Structure and Application of Microcomputers
CIS*2430	[0.50]	Object Oriented Programming
CIS*2520	[0.50]	Data Structures
CIS*2910	[0.50]	Discrete Structures in Computing II

0.50 elective in the Area of Application or elective

Fall Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4(Winter)

CIS*2750	[0.75]	Software Systems Development and Integration
CIS*3110	[0.50]	Operating Systems
CIS*3490	[0.50]	The Analysis and Design of Computer Algorithms
STAT*2040	[0.50]	Statistics I

0.25 credits in the Area of Application or elective

Summer Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5(Fall)

CIS*2460	[0.50]	Modelling of Computer Systems
CIS*3530	[0.50]	Data Base Systems and Concepts
CIS*3750	[0.75]	System Analysis and Design in Applications

0.75 credits in the Area of Application or elective

Winter Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6(Summer)

Alternative 1 [Recommended]

CIS*3760	[0.75]	Software Engineering
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0.50 C.I.S. elective at the 3000 level or above

1.25 credits in the Area of Application or elective

OR Alternative 2

1.50 C.I.S. electives at the 3000 level or above

1.00 credits in the Area of Application or elective

Semester 7(Fall)

1.00 credits in the Area of Application or elective

0.50 credits in the C.I.S. at 3000 level or above

1.00 credits in C.I.S. at the 4000 level

Semester 8(Winter)

CIS*4000	[0.50]	Applications of Computing Seminar
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1.00 C.I.S. credit at the 4000 level

1.50 credits in the Area of Application or elective

0.50 credits in the C.I.S. at 4000 level

*1.50 electives in semesters 1 and 2 must be from at least two of the following subject areas in the College of Social and Applied Human Sciences: ANTH, ECON, GEOG, POLS, PSYC, SOAN, SOC, WMST

Criminal Justice and Public Policy (CJPP)

Department of Sociology and Anthropology, and the Department of Political Science, College of Social and Applied Human Sciences.

Criminal Justice and Public Policy is offered as a minor in the honours program and as a major in the honours program. It is designed to provide students seeking a career in the criminal justice system, or planning to pursue an advanced degree with a knowledge base that will enable them to pursue their career objectives. The program offers a unique blend of sociological courses dealing with the criminal justice system as well as courses in Political Science dealing with public policy formation and implementation. It also provides students with the conceptual and methodological tools needed for further study.

Students who are not admitted directly into the CJPP major and subsequently wish to declare the specialization must apply directly to the department. In order to be eligible, applicants must have a cumulative average of 70% or better in the following foundation courses:

POLS*1400	[0.50]	Public Management and Administration
POLS*2250	[0.50]	Public Administration
POLS*2300	[0.50]	Canadian Government
SOAN*2120	[0.50]	Introductory Methods
SOC*1500	[0.50]	Crime and Criminal Justice
SOC*2700	[0.50]	Criminological Theory

Note: The requirement for an average of 70% or better applies only to students admitted to the University of Guelph after 30 April 2002.

Students wishing to declare the CJPP minor must also meet the above requirement.

Students from other institutions who transfer to the University of Guelph and wish to declare the CJPP major or minor must also meet the above requirement. If an external transfer student is granted credit for one or more of the foundation courses listed above, then he or she must attain a cumulative average of 70% or better in the remaining required CJPP foundation courses.

Note: There is no CJPP Area of Concentration in the General Program as of Fall 2002.

Major (Honours Program)

A minimum of 9.00 credits is required, including:

PHIL*1010	[0.50]	Introductory Philosophy: Social and Political Issues
POLS*1400	[0.50]	Public Management and Administration
POLS*2250	[0.50]	Public Administration
POLS*2300	[0.50]	Canadian Government
SOAN*2120	[0.50]	Introductory Methods
SOC*1500	[0.50]	Crime and Criminal Justice
SOC*2700	[0.50]	Criminological Theory

One of:

POLS*3650	[0.50]	The Systematic Study of Politics
SOAN*3120	[0.50]	Quantitative Methods

Three of:

SOC*2070	[0.50]	Social Deviance
SOC*2750	[0.50]	Serial Murder
SOC*3490	[0.50]	Law and Society
SOC*3710	[0.50]	Young Offenders
SOC*3730	[0.50]	Courts and Society
SOC*3740	[0.50]	Corrections and Penology
SOC*3750	[0.50]	Police in Society

Three of:

POLS*3110	[0.50]	Politics of Ontario
POLS*3130	[0.50]	Law, Politics, and Judicial Process
POLS*3210	[0.50]	The Constitution and Canadian Federalism
POLS*3250	[0.50]	Public Policy: Challenges and Prospects
POLS*3300	[0.50]	Governing Criminal Justice
POLS*3440	[0.50]	Corruption, Scandal and Political Ethics
POLS*3670	[0.50]	Comparative Public Policy and Administration

One of:

HIST*3130	[0.50]	Popular Culture and Punishment, 1700-1900
PHIL*3040	[0.50]	Philosophy of Law
PHIL*3230	[0.50]	Issues in Social and Political Philosophy
PSYC*3020	[0.50]	Psychology of Law

Three of:

POLS*4100	[0.50]	Women, Justice and Public Policy
POLS*4120	[0.50]	Civil Rights and Civil Liberties in Canada and the U.S.
POLS*4250	[0.50]	Problems in Public Administration and Public Policy
POLS*4260	[0.50]	Topics in Public Policy
SOC*4010	[0.50]	Violence and Society
SOC*4030	[0.50]	Advanced Topics in Criminology
SOC*4200	[0.50]	Advanced Topics in Criminal Justice
SOC*4900	[0.50]	Honours Sociology Thesis I
SOC*4910	[0.50]	Honours Sociology Thesis II

Minor (Honours Program)

A minimum of 6.00 credits is required, including:

PHIL*1010	[0.50]	Introductory Philosophy: Social and Political Issues
POLS*1400	[0.50]	Public Management and Administration
POLS*2250	[0.50]	Public Administration
POLS*2300	[0.50]	Canadian Government
SOAN*2120	[0.50]	Introductory Methods
SOC*1500	[0.50]	Crime and Criminal Justice
SOC*2700	[0.50]	Criminological Theory

Two of:

SOC*2070	[0.50]	Social Deviance
SOC*2750	[0.50]	Serial Murder
SOC*3490	[0.50]	Law and Society

SOC*3710	[0.50]	Young Offenders
SOC*3730	[0.50]	Courts and Society
SOC*3740	[0.50]	Corrections and Penology
SOC*3750	[0.50]	Police in Society
Two of:		
POLS*3110	[0.50]	Politics of Ontario
POLS*3130	[0.50]	Law, Politics, and Judicial Process
POLS*3210	[0.50]	The Constitution and Canadian Federalism
POLS*3300	[0.50]	Governing Criminal Justice
POLS*3250	[0.50]	Public Policy: Challenges and Prospects
POLS*3440	[0.50]	Corruption, Scandal and Political Ethics
POLS*3670	[0.50]	Comparative Public Policy and Administration
One of:		
HIST*3130	[0.50]	Popular Culture and Punishment, 1700-1900
PHIL*3040	[0.50]	Philosophy of Law
PHIL*3230	[0.50]	Issues in Social and Political Philosophy
PSYC*3020	[0.50]	Psychology of Law

Developmental Psychology (DPSY)

Department of Psychology, College of Social and Applied Human Sciences.

The focus of Developmental Psychology is the study of the theory, research, and applied interventions associated with the way humans develop and change over time. This focus is especially significant for anyone interested in how we might solve the challenges presented by life. These include the special challenges presented by schooling, parenting, socialization within and beyond the family, coping with stress, and some of the individual differences and atypical behaviors exhibited by ourselves or others. This program of study is designed as a complement to a significant number of Major specializations, suitable for any student wishing to broaden their knowledge beyond their Major area of study.

Minor (Honours Program)

(May not be taken in combination with a Psychology Honours Major)

A minimum of 6.00 credits is required, including:

PSYC*1100	[0.50]	Principles of Behaviour
PSYC*1200	[0.50]	Dynamics of Behaviour

2.50 credits across 5 Psychology Core Courses, to include PSYC*2330, PSYC*2450, PSYC*2650

2.00 credits from the following courses at the 3000 level:

PSYC*3440	[0.50]	Cognitive Development
PSYC*3450	[0.50]	Social and Personality Development
PSYC*3460	[0.50]	Abnormal Development
PSYC*3710	[0.50]	Psychology of Learning Difficulties and Disabilities I
PSYC*3850	[0.50]	Intellectual Disabilities

0.50 elective credit in Psychology at the 3000 level or above, with PSYC*3570,

PSYC*3800 or the 5th course from the above restricted elective list recommended.

Note: Courses designated with (H) in Section XII--Course Descriptions are Honours level courses requiring for registration a cumulative average of at least 70% in all course attempts in Psychology.

Drama (DRMA)

School of English and Theatre Studies, College of Arts.

The Drama program is a component of a liberal education, and is dedicated to the integrated study of both academic and practical applications of drama and theatre. It offers introductory and advanced courses in dramatic literature, theatre history, criticism and theory, together with directing, acting, design and technical theatre in both general and honours programs. The Drama program has a special interest in the drama and theatre of Canada. Course offerings reflect this interest where appropriate.

Notes:

1. A maximum of 2.00 credits in Directed Readings or Special Studies Courses (DRMA*3410, DRMA*3420, DRMA*3600, DRMA*3610) is allowed in the honours program major. A maximum of 1.00 credits in such courses is allowed in honours program minor or the general program area of concentration. Students will normally be permitted to take only 0.50 credits in Directed Readings or Special Studies courses per semester.
2. Certain approved Dramatic Literature courses from other departments may be counted as Drama equivalents in the honours program major or minor or general program area of concentration. A list of approved courses may be obtained from the School of English and Theatre Studies.
3. In connection with DRMA*1000 students are required as part of the course to attend various specified theatre performances in cities such as Toronto, Stratford, Niagara-on-the-Lake, and London. A special fee is charged for travel to these performances and students will be notified during the first week of classes of the amount of this fee and the dates of the performances.

Area of Concentration (General Program)

A minimum of 5.00 credits in Drama is required, including:

- a. DRMA*1000, DRMA*1050, DRMA*2080, DRMA*2220, DRMA*2300
- b. at least one of DRMA*3180, ENGL*3180, DRMA*3550, DRMA*3850

- c. at least one of DRMA*3080, DRMA*3110, DRMA*3220, DRMA*3430, DRMA*3440, DRMA*3700
- d. 1.50 other credits in Drama

Major (Honours Program)

A minimum of 8.00 credits in Drama is required, including:

- a. DRMA*1000, DRMA*1050, DRMA*2080, DRMA*2220, DRMA*2300
- b. in addition, students must complete at least 0.50 credits at the 3000 level or above from each of the following areas: Dramatic Literature (ENGL*3020, FREN*3020, CLAS*3040, ENGL*3120, ENGL*3180, FREN*3210, FREN*3240, ENGL*3420, ENGL*3450, DRMA*3850, DRMA*4320, DRMA*4330) ; Theatre History (DRMA*3180, DRMA*4300); Theory of Drama and Theatre (DRMA*3550, DRMA*4310); Theatre Design or Technical Theatre (DRMA*3220, DRMA*3230, DRMA*3430, DRMA*3440, DRMA*4210); Acting or Directing (DRMA*3080, DRMA*3110, DRMA*3700, DRMA*4090);
- c. 3.00 other credits in Drama

At least 1.50 credits in Drama must be at the 4000 level, and must include at least one of DRMA*4300, DRMA*4310, DRMA*4320, DRMA*4330.

Minor (Honours Program)

A minimum of 5.00 credits in Drama is required, including :

- a. DRMA*1000, DRMA*1050, DRMA*2080, DRMA*2220, DRMA*2300
- b. at least one of DRMA*3180, ENGL*3180, DRMA*3550, DRMA*3850
- c. at least one of DRMA*3080, DRMA*3110, DRMA*3220, DRMA*3430, DRMA*3440, DRMA*3700
- d. 1.50 other credits in Drama

Economics (ECON)

Department of Economics, College of Social and Applied Human Sciences.

The Department of Economics offers courses in economic theory, applied economics and quantitative methods. Students may take courses leading to a B.A. in either the honours or the general program. It is possible to combine Economics with various other disciplines such as mathematics and statistics, business administration, political science, geography and history. Students are urged to consult the department's program planning guide and the department's advisors for detailed information about courses and programs and about the course of study most appropriate as preparation for graduate work in economics or business administration, for professional degrees such as the Bachelor's degree in Law, and for careers in business and government.

Core Requirements

ECON*1050	[0.50]	Introductory Microeconomics
ECON*1100	[0.50]	Introductory Macroeconomics
ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*2740	[0.50]	Economic Statistics

Area of Concentration (General Program)

A minimum of 5.00 credits in Economics is required, including:

- a. the Economics core
- b. 2.50 other credits in Economics at the 3000 or 4000 level

Major (Honours Program)

A minimum of 9.00 credits in Economics is required, including:

The Economics core requirements

ECON*2770	[0.50]	Introductory Mathematical Economics
ECON*3600	[0.50]	Macroeconomics in an Open Economy
ECON*3710	[0.50]	Advanced Microeconomics
ECON*3740	[0.50]	Introduction to Econometrics
ECON*3770	[0.50]	Mathematical Economics and Game Theory
ECON*4710	[0.50]	Advanced Topics in Microeconomics
ECON*4810	[0.50]	Advanced Macroeconomic Theory

(Note: ECON*2770 requires a first year university calculus course)

One of:

ECON*2720	[0.50]	Business History
ECON*3550	[0.50]	North American Economic History
ECON*3720	[0.50]	History of the World Economy since 1850
ECON*3730	[0.50]	Europe and the World Economy to 1914
ECON*4720	[0.50]	Topics in Economic History

2.50 other credits in Economics at the 3000 or 4000 level, at least 1.50 of which must be at the 4000 level

Note: Students contemplating graduate studies in Economics should take ECON*4640, Applied Econometrics and ECON*4840, Applied Econometrics II.

Minor (Honours Program)

A minimum of 5.00 credits in Economics is required, including:

- a. the Economics core
- b. 2.50 other credits in economics at the 3000 or 4000 level

Notes:

- ECON*3740 is recommended.
- Students wishing to pursue a more structured Economics minor should take ECON*3710 as well as ECON*3740.
- Only one of ECON*2200 or ECON*3200 may be counted towards the minor. ECON*4800 may not be counted at the 4000 level for purposes of satisfying the minimum 4000 level credit requirements in the B.A. Honours Economics major. Only one of ECON*4900 or ECON*4910 may count in the B.A. program towards the minimum 4000 level requirement.

Economics (Co-op) (ECON:C)

Department of Economics, College of Social and Applied Human Sciences.

The Economics Co-op program provides an integrated academic/work experience for students with co-operating employer organizations. Students in the program must complete 4 work terms while fulfilling the requirements of their honours Economics program.

All co-op students must complete the Economics core plus an introductory computer science course (CIS*), ECON*2770 and ECON*3740 in their first 4 semesters. Admission in the co-op program is limited to students of high academic standing and will be considered only at semester 1 entry or at the end of semester 2. The first 2 work terms normally follow completion of the first 4 semesters of academic study. Students will only be permitted to take these work terms if they are eligible to continue in the Honours Economics program, have completed the required courses and are maintaining a satisfactory standing in their Economics program. The 3rd and 4th work terms will normally follow the 6th academic semester. For further information on the Economics Co-op program students are urged to consult the department's Program Guide and Co-operative Education Programs in Section X-degree Programs in this calendar.

Students should review the Economics section in the schedule of studies for additional program information.

Major (Honours Program)

Semester 1

ECON*1050	[0.50]	Introductory Microeconomics
One 1000 level calculus course		
1.50 electives		

Semester 2 (Winter)

ECON*1100	[0.50]	Introductory Macroeconomics
One computer science course		
1.50 electives		

Summer Semester

Optional -- at the discretion of the student.

Semester 3 (Fall)

COOP*1100	[0.00]	Introduction to Co-operative Education
ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*2740	[0.50]	Economic Statistics
ECON*2770	[0.50]	Introductory Mathematical Economics
0.50 elective		

Semester 4 (Winter)

ECON*3740	[0.50]	Introduction to Econometrics
One economic history course*		
1.50 elective		

Summer Semester

COOP*1000	[0.00]	Co-op Work Term I
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Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 (Winter)

ECON*3600	[0.50]	Macroeconomics in an Open Economy
ECON*3770	[0.50]	Mathematical Economics and Game Theory
One 3000 level economics course		
1.00 elective		

Summer Semester

Optional -- at the discretion of the student.

Semester 6 (Fall)

ECON*3710	[0.50]	Advanced Microeconomics
One 4000 level Economics course (ECON*4640 is recommended)		
1.50 electives		

Winter Semester

COOP*3000	[0.00]	Co-op Work Term III
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Summer Semester

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 7 (Fall)

ECON*4710	[0.50]	Advanced Topics in Microeconomics
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One 4000 level Economics course

1.00 electives

0.50 restricted electives

Semester 8 (Winter)

ECON*4810 [0.50] Advanced Macroeconomic Theory

0.50 Economics at the 4000 level

1.50 electives

*the economic history course may be taken in any semester

Educational Psychology (EPSY)

Department of Psychology, College of Social and Applied Human Sciences.

This program allows for specialization in Psychology as it relates to Education. It may be of particular interest to teachers, those considering teaching as a career, or anyone interested in the field of Educational Psychology.

Minor (Honours Program)

(May not be taken in combination with a Psychology Honours Major)

A minimum of 6.00 credits is required, including:

PSYC*1100	[0.50]	Principles of Behaviour
PSYC*1200	[0.50]	Dynamics of Behaviour
PSYC*2010	[0.50]	Quantification in Psychology
PSYC*2450	[0.50]	Introduction to Developmental Psychology
PSYC*3250	[0.50]	Psychological Measurement
PSYC*3710	[0.50]	Psychology of Learning Difficulties and Disabilities I
PSYC*3800	[0.50]	Psychology and Education

0.50 credit from the following courses at the 2000 level:

PSYC*2330	[0.50]	Principles of Learning
PSYC*2650	[0.50]	Cognitive Psychology

2.00 credits from the following courses at the 3000 level:

PSYC*3310	[0.50]	Applied Social Psychology
PSYC*3330	[0.50]	Memory
PSYC*3340	[0.50]	Psycholinguistics
PSYC*3440	[0.50]	Cognitive Development
PSYC*3450	[0.50]	Social and Personality Development
PSYC*3460	[0.50]	Abnormal Development
PSYC*3720	[0.50]	Psychology of Learning Difficulties and Disabilities II
PSYC*3850	[0.50]	Intellectual Disabilities

Note: Courses designated with (H) in Section XII--Course Descriptions are Honours level courses requiring for registration a cumulative average of at least 70% in all course attempts in Psychology.

English (ENGL)

School of English and Theatre Studies, College of Arts.

The School of English and Theatre Studies offers courses in the BA Program in English that focus on the study of literature and related texts across a broad range of theoretical, historical, and geographical sites. The School also welcomes non-majors into its courses, especially at the 1000, 2000, and 3000 levels, suitable to other majors within the College of Arts and beyond. Certain courses in Drama (DRMA) and in Literature in Translation (CLAS, GERM, HUMN, SPAN) may be counted towards a degree in English. Consult the School of English and Theatre Studies for details.

Area of Concentration (General Program)

A minimum of 5.50 English credits is required, including:

- 1.00 credits from ENGL*1080 and ENGL*2080
- 1.00 credits from ENGL*2120 and one of ENGL*2130, ENGL*3940, ENGL*3960
- 2.00 credits from 3000 level lecture courses to fulfill degree requirements as listed below

In addition, students must complete:

- 1.00 credits from any other 3000 level lecture courses
- 0.50 credit from any other seminar or lecture course

It is recommended that students take 0.50 credit at the 2000 level in a lecture course.

General Program Degree requirements to be fulfilled in part through 2.00 credits from 3000 level lecture courses in the following areas:

- 0.50 credit in Early Modern Literature
- 0.50 credit in 18th and 19th Century Literature
- 0.50 credit in Colonialisms/Postcolonialisms
- 0.50 credit in Canadian Literature/American Literature

Major (Honours Program)

A minimum of 8.50 English credits is required, including:

- 1.00 credits from ENGL*1080 and ENGL*2080
- 2.00 credits from ENGL*2120, ENGL*2130, ENGL*3940, ENGL*3960
- 3.50 credits from 3000 level lecture courses which fulfill degree requirements listed below
- 1.00 credits from 4000 level courses

e. 1.00 credits from any other lecture courses on offer.

It is recommended that students take two 2000 level lecture courses.

Honours Program Major Degree Requirements to be fulfilled in part through 3.50 credits from 3000 level lecture courses in the following areas:

- 1.00 credits in Early Modern Literature
- 1.00 credits in 18th and 19th Century Literature
- 0.50 credit in American Literature
- 0.50 credit in Canadian Literature
- 0.50 credit in Colonialisms/Postcolonialisms

Note: 4000 level courses may in some instances fulfill these area requirements, depending on their content. See the School of English and Theatre Studies for details.

Honours students interested in a more concentrated program or contemplating graduate work in English are strongly advised to:

- attain a good reading knowledge of another language, such as French
- take ENGL*3380 (Studies in the History of Literary Production), ENGL*3690 (History of Literary Criticism), ENGL*4690 (Contemporary Literary Theory)
- take at least 2.00 credits in English courses at the 4000 level

The M.A. program in English at Guelph gives preference to qualified applicants with a broad experience in literary and cultural studies and related disciplines.

Minor (Honours Program)

The program of study and requirements are the same as for the Area of Concentration in the General Program.

Environmental Studies (ENVS)

Interdisciplinary Program

Environmental Studies is an interdisciplinary subject stressing the integration of biophysical and human behavioral dimensions of environmental issues. The requirement of 5.00 credits for the minor is broken into 2 groups of courses, required courses and restricted electives. Students should ensure that they obtain standing in the necessary prerequisites for required and restricted elective courses. There are limitations on courses used for credit in other areas of study which may be used for credit in the Environmental Studies minor. Students should seek counselling from the Department of Geography early in their program.

Minor (Honours Program)

A minimum of 5.00 credits is required, including:

BIOL*1030	[0.50]	Biology I
BIOL*2060	[0.50]	Ecology
ISS*4000	[0.50]	Research Project in Environmental Studies

Two of the following social sciences courses:

ECON*2100	[0.50]	Economic Growth and Environmental Quality
GEOG*3210	[0.50]	Management of the Biophysical Environment
POLS*3370	[0.50]	Environmental Policy Formation and Administration

The remaining 2.50 credits required for the minor must be selected from the following list. The social science course listed above not taken as a required course may be taken as a restricted elective. However, students are strongly advised to consult with the program coordinator before choosing electives.

AGEC*2700	[0.50]	Survey of Natural Resource Economics
AGEC*4310	[0.50]	Resource Economics
BIOL*1040	[0.50]	Biology II
BIOL*3450	[0.50]	Introduction to Aquatic Environments
BOT*2050	[0.50]	Plant Ecology
CROP*2280	[0.50]	Crops in Land Reclamation
ECON*4930	[0.50]	Environmental Economics
ENGG*3650	[0.50]	Hydrology
ENVB*2030	[0.50]	Current Issues in Forest Science
ENVB*3000	[0.50]	Nature Interpretation
ENVB*3030	[0.50]	Pesticides and the Environment
ENVB*4780	[0.50]	Forest Ecology
GEOG*1220	[0.50]	Human Impact on the Environment
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
GEOG*2110	[0.50]	Climate and the Biophysical Environment
GEOG*3110	[0.50]	Biotic and Natural Resources
GEOG*3610	[0.50]	Environmental Hydrology
GEOG*4110	[0.50]	Environmental Systems Analysis
LARC*2820	[0.50]	Urban and Regional Planning
PHIL*2070	[0.50]	Philosophy of the Environment
SOC*2280	[0.50]	Society and Environment
SOIL*2010	[0.50]	Soil Science
SOIL*3050	[0.50]	Land Utilization

European Studies (EURS)

Interdisciplinary Program.

Coordinator: Paola Mayer, School of Languages and Literatures, Ext. 58562.

The European Studies program is designed for students who seek a career in International Relations - especially in International Business and Administration - between Canada and Europe. It offers a combination of languages, specially designed courses in European thought, letters and history and specialization in either European Business or European Culture and Civilization

Successful completion of the European Studies major requires proficiency in one of the following languages (French, German, Italian or Spanish). In order to demonstrate language proficiency, students have two options: they may study for a year at a European University, in the country where their chosen core language is spoken, or they may write a final research paper in the chosen core language within a required fourth year European Studies course (see EURO*4740). It is highly recommended that students spend their third year studying at a European university, in the country where their chosen core language is spoken. The benefits of such an experience are considerable, both academically and personally. One specific academic outcome of a successful year abroad will be recognition that the student has fulfilled the program's core language requirement. Those who can demonstrate that they have written a major academic paper or exam in their chosen language while participating in an approved study year may be waived from the required course EURO*4740. See the Coordinator for the European Studies program for more information. See also the course description for EURO*4740.

Major (Honours Program)

A minimum of 13.00 credits is required, including:

- the three components of the European Studies core (8.00 credits)
- 5.00 credits in either the European Culture and Civilization or the European Business Studies area of emphasis

Core Requirements

- | | | |
|-----------|--------|--|
| EURO*1050 | [0.50] | The Emergence of a United Europe |
| EURO*1200 | [0.50] | European Culture from the Mid 18th to the Mid 19th Century |
| EURO*2070 | [0.50] | European Integration, 1957-1992 |
| EURO*2200 | [0.50] | European Culture from the Mid 19th Century to the 1920's |
| EURO*2300 | [0.50] | European Culture since 1920 |
| EURO*4740 | [0.50] | Research Project in European Studies |

Note: in order to demonstrate language proficiency, students must write a research paper (EURO*4740) in their core language unless they have spent one year studying at a European university, in the country where their chosen core language is spoken. Where that is the case, upon approval of the Coordinator for European Studies EURO*4740 will be waived.

- 3.00 credits in one language:

- | | | |
|------------------------|--------|-------------------------------------|
| FREN*2020 | [0.50] | France: Literature and Society |
| FREN*2030 | [0.50] | French Language II |
| FREN*2520 | [0.50] | French Composition I |
| FREN*2540 | [0.50] | Spoken French: Theory and Practice |
| FREN*3520 | [0.50] | French Composition II |
| FREN*3530 | [0.50] | Business French |
| OR | | |
| GERM*2400 | [0.50] | Contemporary Germany |
| GERM*2490 | [0.50] | Intermediate German I |
| GERM*2500 | [0.50] | Intermediate German II |
| GERM*2560 | [0.50] | Themes in German Literature/Culture |
| GERM*3500 | [0.50] | Advanced German |
| GERM*3530 or GERM*2590 | | |

OR

- | | | |
|-------------------------------------|--------|---------------------------------|
| ITAL*2060 | [0.50] | Intermediate Italian I |
| ITAL*2070 | [0.50] | Intermediate Italian II |
| ITAL*2350 | [0.50] | Contemporary Italian Literature |
| ITAL*3060 | [0.50] | Advanced Italian |
| ITAL*3530 or ITAL*3150 or ITAL*3280 | | |
| ITAL*3950 | [0.50] | Topics in Italian Literature |

OR

- | | | |
|-----------|--------|---|
| SPAN*2000 | [0.50] | Spanish Language I |
| SPAN*2010 | [0.50] | Spanish Language II |
| SPAN*2040 | [0.50] | Spanish Civilization |
| SPAN*2990 | [0.50] | Introduction to Hispanic Literary Studies |
| SPAN*3500 | [0.50] | Spanish Grammar and Composition I |
| SPAN*3530 | [0.50] | Business Spanish |

- | | | |
|-----------|--------|--|
| CLAS*1000 | [0.50] | Introduction to Classical Culture |
| ISS*2500 | [0.50] | Management in Organizations |
| HIST*2510 | [0.50] | The Emergence of Modern European Society 1789-1945 |
| POLS*3450 | [0.50] | European Governments and Politics |

Areas of Emphasis

European Business

Required courses:

- | | | |
|-----------|--------|----------------------|
| AGEC*2220 | [0.50] | Financial Accounting |
|-----------|--------|----------------------|

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- | | | |
|-----------|--------|-----------------------------|
| AGEC*2230 | [0.50] | Management Accounting |
| AGEC*3320 | [0.50] | Financial Management |
| ECON*1050 | [0.50] | Introductory Microeconomics |
| ECON*1100 | [0.50] | Introductory Macroeconomics |

One of:

- | | | |
|-----------|--------|-----------------------|
| AGEC*3310 | [0.50] | Operations Management |
| AGEC*4370 | [0.50] | Marketing Management |

2.00 credits (4 courses) chosen from:

One of:

- | | | |
|-----------|--------|-----------------------|
| AGEC*3310 | [0.50] | Operations Management |
| AGEC*4370 | [0.50] | Marketing Management |

Note: each of these courses counts as either required or restricted elective, may not be double counted

- | | | |
|-----------|--------|--|
| AGEC*4250 | [0.50] | Business Policy |
| COST*1000 | [0.50] | Introduction to Marketing Management |
| COST*2100 | [0.50] | Personal Financial Management |
| COST*2600 | [0.50] | Fundamentals of Consumer Behaviour |
| COST*3020 | [0.50] | Services & Retail Marketing |
| COST*3040 | [0.50] | Business and Consumer Law |
| ECON*2310 | [0.50] | Intermediate Microeconomics |
| ECON*2410 | [0.50] | Intermediate Macroeconomics |
| ECON*3560 | [0.50] | Theory of Finance |
| ECON*3660 | [0.50] | Economics of Equity Markets |
| ECON*3720 | [0.50] | History of the World Economy since 1850 |
| ECON*3730 | [0.50] | Europe and the World Economy to 1914 |
| HTM*2200 | [0.50] | Organizational Behaviour I |
| HTM*3000 | [0.50] | Human Resources Management |
| HTM*3100 | [0.50] | Dimensions of Tourism |
| HTM*3160 | [0.50] | Destination Management and Marketing |
| HTM*4170 | [0.50] | International Tourism Development and Management |
| HTM*4390 | [0.50] | Individuals and Groups in Organizations |
| STAT*2060 | [0.50] | Statistics for Business Decisions |

European Culture and Civilization

Students must take 5.00 credits (10 courses) including at least 0.50 credit (1 course) from each of the following four groups. The remaining 3.00 credits may be chosen from any of the courses in the four groups.

Group A

- | | | |
|-----------|--------|--|
| CLAS*2000 | [0.50] | Classical Mythology |
| CLAS*2350 | [0.50] | The Classical Tradition |
| EURO*3150 | [0.50] | Topics in European Film |
| FREN*1000 | [0.50] | Understanding the French Speaking World |
| FREN*2500 | [0.50] | French Translation I |
| GERM*2240 | [0.50] | Germany Through the Ages |
| HIST*2850 | [0.50] | History of Greece and Rome |
| HUMN*3020 | [0.50] | Myth and Fairy Tales in Germany |
| HUMN*3170 | [0.50] | Women, Virtue and Honour in Spanish Drama (In English) |
| HUMN*3450 | [0.50] | 20th-Century German Literature and Film |
| HUMN*4170 | [0.50] | Don Quixote and the Picaresque Novel (In English) |

Group B

- | | | |
|-----------|--------|---|
| HIST*1010 | [0.50] | Europe in the Age of Expansion |
| HIST*2200 | [0.50] | The Medieval World |
| HIST*2820 | [0.50] | Modern France, 1750-1992: From Louis XV to Mitterrand |
| HIST*2830 | [0.50] | The Emergence of Modern Germany 1871-1990 |
| HIST*3090 | [0.50] | Nationalism and Internationalism in Europe 1914-1957 |
| HIST*3290 | [0.50] | Europe in the Age of Revolutions, 1789-1848 |
| HIST*3540 | [0.50] | World War Two |
| HIST*3570 | [0.50] | Women in Modern Europe |
| HIST*3750 | [0.50] | The Reformation |
| HIST*3820 | [0.50] | Early Modern France |
| HIST*4470 | [0.50] | Special History Project Seminar I |
| HIST*4570 | [0.50] | Topics in Revolution |
| HIST*4580 | [0.50] | Topics in Revolution |

Group C

- | | | |
|-----------|--------|--|
| ARTH*1510 | [0.50] | Art Historical Studies I |
| ARTH*1520 | [0.50] | Art Historical Studies II |
| ARTH*2550 | [0.50] | Western Art: Italian Renaissance |
| ARTH*2580 | [0.50] | Western Art: Late Modern |
| ARTH*2600 | [0.50] | Western Art: Early Modern |
| ARTH*3100 | [0.50] | Perspectives: Structure and Space in Renaissance and Baroque Art |
| ARTH*3550 | [0.50] | Lives: Aspects of High Renaissance Art |
| ARTH*3570 | [0.50] | Display: Visual Culture in Late 19th Century Europe |
| ARTH*3640 | [0.50] | Objects: Baroque Art and Rococo Art |
| MUSC*1060 | [0.50] | Introduction to Music |
| MUSC*2280 | [0.50] | Masterworks of Music |

Note: other music history courses may be counted if students with knowledge of music are granted waivers by instructor. The substitution(s) must also be approved by the ESP coordinator.

Group D

PHIL*2140	[0.50]	History of Greek and Roman Philosophy
PHIL*2160	[0.50]	Modern European Philosophy to Hume
PHIL*3060	[0.50]	Medieval Philosophy
PHIL*3080	[0.50]	History of Modern European Philosophy from Kant
PHIL*3200	[0.50]	Contemporary European Philosophy
POLS*3460	[0.50]	Communism and Post-Communism

Study Abroad

Year 3 or year 4 will provide students with the opportunity to continue their studies abroad. Students will select up to 6.00 credits which can be included in the area of emphasis, as electives, or both. They are subject to approval by the program coordinator and the departmental advisor. Courses taken in Europe will not count towards the specialization average.

Practicum Opportunity:

HUMN*3501/2 is available for those students wishing to participate in a practicum experience as part of the year abroad. The practicum must be a job or volunteer experience that contributes to the student's area of study and intended career. It must be approved in advance as a Letter of Permission by the Coordinator. A final report, written in the student's chosen language, is a requirement of this course.

Family and Child Studies (FCS)

Department of Family Relations and Applied Nutrition, College of Social and Applied Human Sciences.

Family and Child Studies is offered as a minor in the honours program. It is designed to provide students with an opportunity to pursue interdisciplinary studies which have a specific focus on human development over the life span and on the applied questions which relate to the needs of children and the functioning of families. Elective courses may be chosen to emphasize the family, the child, or a combination of the two. Students seeking counselling should consult with a departmental advisor in the Department of Family Relations and Applied Nutrition.

Minor (Honours Program)

A minimum of 5.00 credits is required, including:

FRHD*1010	[0.50]	Human Development
FRHD*1020	[0.50]	Couple and Family Relationships
FRHD*2270	[0.50]	Development in Early and Middle Childhood
FRHD*3040	[0.50]	Parenting: Research and Applications
NUTR*1010	[0.50]	Nutrition and Society

A further 2.50 courses offered by the Department of Family Relations and Applied Nutrition (FRHD or NUTR*2050), of which at least 1.50 must be at the 3000 level or above including at least 0.50 at the 4000 level.

Note: where students have or plan to have credit for PSYC*2450, an alternative course to FRHD*2270 must be selected, in consultation with the departmental advisor, from those offered under the Family Studies (FRHD) listings

French Studies (FREN)

School of Languages and Literatures, College of Arts.

All language courses carry 0.50 credit. Please note that students with Ontario Grade 12 credit or its equivalent in French are not normally admitted into FREN*1100. Francophone students may start the program with second-year courses conditional upon approval by the Faculty Advisor. Students majoring in French are advised to take elective courses in another Romance language and in Latin.

It is also recommended that students include CLAS*1000 and LING*1000 among the electives in order to derive the maximum benefit from their studies. Except where stated otherwise, literary texts are, at all levels, studied in the original language. Students registering in French courses are expected to have the appropriate academic background.

Studies in Quebec or Abroad

The French program encourages students to spend 1 or 2 semesters in a French-speaking province or country, or to pursue their studies in an immersion program at the university level. Credit for programs of study successfully completed may be applied towards the University of Guelph degree requirements. Requests should be addressed well in advance of registration to the Director of the School of Languages and Literatures. A letter of permission is required (see the Section VIII--Undergraduate Degree Regulations & Procedures). Students may also take advantage of federal-provincial programs such as the Second-Language Monitor program.

Year in Nice

A special year-long program in Nice, France, is offered to Guelph students at semester levels 5 and 6. All courses for which transfer credits have been arranged are credited at Guelph without the need for letters of permission; students pay only Guelph academic fees and are eligible for OSAP. For further information see the Head of French Studies.

Area of Concentration (General Program)

A minimum of 5.00 French credits taught in French is required, including FREN*1200, FREN*2020, FREN*2030, FREN*2060, FREN*2520, FREN*3520.

Major (Honours Program)

A minimum of 8.00 French credits taught in French is required, including:

- FREN*1200, FREN*2020, FREN*2030, FREN*2060, FREN*2520, FREN*3230
- at least 0.50 credit from FREN*2500, FREN*2540
- at least 2.00 additional credits from FREN*3000, FREN*3010, FREN*3020, FREN*3070, FREN*3150, FREN*3200, FREN*3210, FREN*3220, FREN*3240, FREN*3290, FREN*3560
- at least 1.00 credits from FREN*3500, FREN*3520, FREN*3530
- at least 1.50 credits at the 4000 level

Minor (Honours Program)

A minimum of 5.00 French credits taught in French is required, including:

- FREN*1200, FREN*2020, FREN*2030, FREN*2060, FREN*2520, FREN*3520
- 1.00 credit in French literature from FREN*3000, FREN*3010, FREN*3020, FREN*3070, FREN*3240, FREN*3290, FREN*3560, FREN*4300
- 1.00 additional credits from French

Notes:

- Students are strongly urged to take 0.50 language credit each semester.
- Students in the general program may take 4000 level courses, but must previously have taken FREN*3520.
- Students of French are encouraged to take advantage of the French residence on this campus. Applications for accommodation in the Maison Française should be made well in advance of registration.
- FREN*1000, FREN*1120, FREN*1090, FREN*1100, FREN*1110 are not counted toward a specialization in French.
- Francophone students and Graduates of Highschool French Immersion will not normally be admitted into FREN*1200 and FREN*2030. It is recommended they start their program with FREN*2020, FREN*2060, FREN*2500, or FREN*2520 with the approval of the Faculty Advisor.

Geography (GEOG)

Department of Geography, College of Social and Applied Human Sciences.

The Department of Geography provides students with a broad range of courses in Human and Physical Geography which focus on the nature and evolution of the numerous and complex physical and human environment systems of the world. Students are required to select courses from both the human and physical fields. Within the program of studies it is possible for students through course selection to follow a particular line of interest in, for example, Rural Geography, Resource Management, Urban and Economic Geography, Biophysical Resources or Geomorphology.

The 1000 level courses provide a foundation for the Geography programs and are prerequisites or are strongly recommended for many of the 2000 level courses. The 2000 level systematic courses are prerequisite to the corresponding advanced courses at the 3000 and 4000 level. All students should obtain a copy of the department program planning guide and consult with faculty before planning their course of studies.

Students contemplating graduate or professional programs of study following completion of the honours program should consult a departmental advisor for advice on additional courses that they should take.

The department also offers a B.Sc. honours Earth Surface Science program (jointly with Land Resources Science), a B.Sc.(ENV.) honours Environmental Geography Major program, and a B.Sc. honours program Minor in Geographic Information Systems and Environmental Analysis which are described in the schedule of studies for each of the programs (Section X). Geography B.A. honours Majors are eligible to take the B.Sc. Minor. All Geography students are encouraged to consult with a departmental advisor regarding course selection.

The following courses offered by the Department of Land Resource Science may be counted as Geography credits: GEOL*2150, MET*2030, SOIL*2010.

Area of Concentration (General Program)

A minimum of 5.00 credits in Geography is required, including:

GEOG*1200	[0.50]	Society and Space
GEOG*1220	[0.50]	Human Impact on the Environment
GEOG*1300	[0.50]	Introduction to the Biophysical Environment

2.00 credits at the 3000 level or above

Two of:

GEOG*2000	[0.50]	Geomorphology
GEOG*2110	[0.50]	Climate and the Biophysical Environment
GEOG*2210	[0.50]	Environment and Resources
GEOG*2230	[0.50]	Economic Geography
GEOG*2260	[0.50]	Applied Social Geography

One of:

GEOG*2460	[0.50]	Analysis in Geography
GEOG*2480	[0.50]	Mapping and GIS

Major (Honours Program)

A minimum of 9.00 credits in Geography is required, including:

GEOG*1200	[0.50]	Society and Space
GEOG*1220	[0.50]	Human Impact on the Environment
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
GEOG*2000	[0.50]	Geomorphology
GEOG*2110	[0.50]	Climate and the Biophysical Environment
GEOG*2210	[0.50]	Environment and Resources
GEOG*2230	[0.50]	Economic Geography
GEOG*2260	[0.50]	Applied Social Geography
GEOG*2460	[0.50]	Analysis in Geography
GEOG*2480	[0.50]	Mapping and GIS
GEOG*3480	[0.50]	GIS and Spatial Analysis
GEOG*4880	[0.50]	Contemporary Geographic Thought

3.00 additional credits in Geography at the 3000 level or above including at least 1.50 credits at the 4000 level.

Minor (Honours Program)

A minimum of 5.00 credits in Geography is required, including:

Two of:

GEOG*1200	[0.50]	Society and Space
GEOG*1220	[0.50]	Human Impact on the Environment
GEOG*1300	[0.50]	Introduction to the Biophysical Environment

Two of:

GEOG*2000	[0.50]	Geomorphology
GEOG*2110	[0.50]	Climate and the Biophysical Environment
GEOG*2210	[0.50]	Environment and Resources
GEOG*2230	[0.50]	Economic Geography
GEOG*2260	[0.50]	Applied Social Geography

3.00 credits in Geography at the 3000 level and including at least one course at the 4000 level.

German (GERM)

School of Languages and Literatures, College of Arts.

All language courses carry 0.50 credit. Students with one year of high school German or equivalent may not be admitted into GERM*1100. Students with OAC German may not be admitted into GERM*1100 and GERM*1110. Students with OAC German credit or its equivalent may be admitted into GERM*1110 only with the approval of the department. All language students are strongly advised to include CLAS*1000 and LING*1000 among their electives in order to derive the maximum benefit from their studies. Except where stated otherwise, literary texts are, at all levels, studied in the original language. Students registering in these courses will be expected to have the appropriate knowledge.

Study Abroad

The School of Languages and Literatures encourages students in the German program to spend 1 or 2 semesters in a German speaking country to continue their studies at the University level. Credit for programs of study successfully completed may be applied towards the University of Guelph degree requirements. Requests should be addressed well in advance to either the department or a particular section of the department. A letter of permission is required (see the Section VIII--Undergraduate Degree Regulations & Procedures).

Minor (Honours Program)

A minimum of 5.00 credits in German is required, including:

GERM*2240	[0.50]	Germany Through the Ages
GERM*2490	[0.50]	Intermediate German I
GERM*2500	[0.50]	Intermediate German II
GERM*2560	[0.50]	Themes in German Literature/Culture
GERM*2590	[0.50]	Classics of German Literature
GERM*3500	[0.50]	Advanced German

2.00 credits from (GERM*1100 or GERM*1110), GERM*2400, GERM*3020, GERM*3420, GERM*3430, GERM*3450, GERM*3530

Note that for students beginning with GERM*1100 or GERM*1110 a maximum of 2.50 language credits is allowed. For students with OAC German or equivalent, a maximum of 2.00 language credits is allowed. Language courses beyond the 1000 level include GERM*2490, GERM*2500, GERM*3500, GERM*3530.

Students enrolled in the German program must contact the School of Languages and Literatures for an up-to-date sequence of course offerings.

History (HIST)

Department of History, College of Arts.

Courses marked (H) are designed as honours courses. Students in a general program wishing to take these must obtain the permission of instructors concerned. All other courses may be taken by both general and honours students. Students wishing to take a 3000 level course must have pass standing in at least 5.00 credits in university courses.

Students wishing to take a 4000 level course must have pass standing in at least 10.00 university credits. Access to all 4000 level history courses is restricted to students in the B.A. Honours program with at least a 70% average in all history course attempts. Students should note the prerequisite requirements of upper level courses in planning their individual programs

Students entering semester 1 are advised to choose from 1000 level courses. Second semester students wishing to take an advanced level History course should select that course from the History core.

Core Requirements

- HIST*1010, HIST*2450, HIST*2601/2
- 0.50 credit from each of Pre-Modern and Third World/Thematic course lists (a list of courses for each of these designations is available in the Department of History.)

Area of Concentration (General Program)

A minimum of 5.00 credits in History is required, including:

- at least 1.50 credits in History must be at the 3000 level (excluding HIST*3470 and HIST*3970)
- students should take the History Core Requirements

Note: With the permission of the department, students may select as part of their program 0.50 credit outside the History Department such as ECON*2420 or ECON*3730.

Major (Honours Program)

A minimum of 8.00 credits in History courses is required, including:

- the History Core Requirements
- 5.00 additional credits in History including 1.00 at the 4000 level (excluding HIST*4470 and HIST*4970) and an additional 0.50 credit at the 4000 level which may include either HIST*4470 or HIST*4970

Minor (Honours Program)

A minimum of 5.00 credits in History is required, including:

- the History Core Requirements
- 2.00 other credits in History including 1.00 at the 4000 level

Note: Honours students in History may, with the permission of the department, take up to 1.00 credit from outside the department such as ECON*2420 and ECON*3730. Students considering graduate work are advised to take 2.00 - 3.00 additional upper level History credits perhaps including the Special History Project Seminar (HIST*4470, HIST*4970) and to acquire a reading knowledge of a foreign language. Honours students must complete HIST*2450 by the end of their third semester to be eligible for 3000 level History courses.

Individual Studies (IS)

Interdisciplinary Program.

B.A. Counselling Office, Room 130, MacKinnon Building, Ext. 52140.

Honours B.A. students have the option of doing an Individual Studies Major. Students in the Individual Studies Major have the opportunity to determine the goals and methods of their studies. Areas of study can include courses in any of the colleges and where the University of Guelph has faculty expertise to assist students. Students are encouraged to develop an interdisciplinary perspective, and to explore the methods of inquiry which provide depth of knowledge in a specific subject.

A student submitting a proposal for the Individual Studies Major must submit the complete proposal to the B.A. Program Counsellor before the third week of classes of semester four. The B.A. Program Committee will consider proposals once, and will approve, approve with revisions, or deny the proposal. Proposals cannot be resubmitted.

Proposals will not be considered unless they articulate a detailed rationale for a coherent program of studies that is significantly different from any existing major and minor combination at the University of Guelph, and unless the proposal meets the following criteria:

- minimum of 9.00 credits
- minimum of 4.00 credits at the 3000 level and above, including at least 1.00 credit at the 4000 level
- minimum of 1.00 credit in methods and/or theory
- maximum of 1.50 credits at the 1000 level
- a senior level Directed Readings or Special Project course must be completed. When appropriate, the Committee will identify a faculty member as the supervisor for a student's course of study.

A student wishing to submit a proposed program of studies for the Individual Studies Major must prepare a proposal that will include the following:

- a clear statement of theme or areas of study
- a clear statement of the contribution of the major to a post-graduation field of work or study
- a clearly set out rationale for inclusion of the specific courses and how they relate to or develop the theme or areas of study
- a list of required "core" courses and "restricted electives" following the above criteria. When proposing core and restricted elective credits, students should keep in mind the prerequisites for their desired 3000 and 4000 level courses

Note: Students undertaking the Individual Studies Major must fulfill the requirements of the B.A. Honours Program as set out in Section X. The B.A. Program Counsellor is the academic counsellor. The Individual Studies designation will appear on the student's transcript upon graduation, but the title or subject of the major will not.

Information Systems and Human Behaviour (ISHB)

Interdisciplinary Program

As computers and communications play progressively more subtle and significant roles in society, this program of study brings together the elements of 3 disciplines to provide students with an understanding of technical, behavioural and social aspects of information technology. This program of study is a co-operative effort of the Department of Computing and Information Science, Department of Psychology, and Department of Sociology and Anthropology. Students in this program will be advised by the program coordinator in the Department of Psychology.

Major (Honours Program)

Computing and Information Science Courses

CIS*1500	[0.50]	Introduction to Programming
CIS*1910	[0.50]	Discrete Structures in Computing I
CIS*2430	[0.50]	Object Oriented Programming
CIS*2500	[0.50]	Intermediate Programming
CIS*2520	[0.50]	Data Structures
CIS*2750	[0.75]	Software Systems Development and Integration
CIS*2910	[0.50]	Discrete Structures in Computing II
CIS*3530	[0.50]	Data Base Systems and Concepts
CIS*3750	[0.75]	System Analysis and Design in Applications
CIS*4300	[0.50]	Human Computer Interaction

Psychology Courses

PSYC*1100	[0.50]	Principles of Behaviour
PSYC*1200	[0.50]	Dynamics of Behaviour
PSYC*2360	[0.50]	Introductory Research Methods
PSYC*2390	[0.50]	Principles of Sensation and Perception
PSYC*2650	[0.50]	Cognitive Psychology
PSYC*3080	[0.50]	Organizational Psychology

0.50 elective from a 4000 level Psychology course

One of:

SOAN*2040	[0.50]	Globalization of Work and Organizations
PSYC*2310	[0.50]	Introduction to Social Psychology

One of:

PSYC*3330	[0.50]	Memory
PSYC*3340	[0.50]	Psycholinguistics

Sociology and Anthropology Courses

ANTH*1150	[0.50]	Anthropology
SOC*1100	[0.50]	Sociology
SOC*2190	[0.50]	Technology and Society
SOAN*3070	[0.50]	Qualitative and Observational Methods

0.50 elective from a 4000 level course in ANTH, SOAN or SOC

Statistics Courses

STAT*2040	[0.50]	Statistics I
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International Development (ID)

Interdisciplinary Program

Faculty Advisor: Room 045 MacKinnon Building, ext 56175.

The International Development program provides students with an opportunity to pursue interdisciplinary and comparative studies of long-term change and international inequality. A broad coverage of the process of international development, from the perspectives of history and social science, forms the basis for more in-depth study on such topics as economic growth, the biophysical environment, gender, agriculture and rural life, politics and administration, and the Latin American region.

The primary participating departments are Economics, Geography, Political Science, and Sociology and Anthropology.

Area of Concentration (General Program)

A minimum of 5.00 credits is required, including:

ANTH*1150	[0.50]	Anthropology
ECON*1050	[0.50]	Introductory Microeconomics
ECON*1100	[0.50]	Introductory Macroeconomics
ECON*2650	[0.50]	Introductory Development Economics
GEOG*2030	[0.50]	International Political Geography
GEOG*3050	[0.50]	Development and the City
IDEV*2010	[0.50]	International Development Studies
POLS*2080	[0.50]	Development and Underdevelopment

One of:

ECON*3720	[0.50]	History of the World Economy since 1850
ECON*3730	[0.50]	Europe and the World Economy to 1914

One of:

POLS*3670	[0.50]	Comparative Public Policy and Administration
POLS*3790	[0.50]	The Political Economy of International Relations

Major (Honours Program)

A minimum of 12.00 credits is required, including the core of 7.00 credits and one of seven areas of emphasis for 5.00 credits. The areas are: Economic and Business Development, Gender and Development, Rural and Agricultural Development, Biophysical Environment and Development, Latin American Studies, Political Economy and Administrative Change, and Historical Perspectives in Development. Students must select an area of emphasis by the end of the 4th semester of university study.

International Development students are encouraged to acquire at least one foreign language and to work or study abroad.

With the permission of the International Development Studies faculty advisor, students may replace 0.50 credits from their area of emphasis with IDEV*3200, or 1.00 credits from their area of emphasis with IDEV*4190 and IDEV*4200.

Note: When selecting courses, students should keep in mind the prerequisites for their desired 3000 and 4000 level courses.

Core Requirements

ANTH*1150	[0.50]	Anthropology
ECON*1050	[0.50]	Introductory Microeconomics
ECON*1100	[0.50]	Introductory Macroeconomics
ECON*2650	[0.50]	Introductory Development Economics
GEOG*2030	[0.50]	International Political Geography
GEOG*3050	[0.50]	Development and the City
IDEV*2010	[0.50]	International Development Studies *
IDEV*4500	[0.75]	International Development Seminar **
POLS*2080	[0.50]	Development and Underdevelopment

One of:

IDEV*3010	[0.50]	Case Studies in International Development
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[0.50] credits from an approved semester abroad or exchange program

One of:

HIST*2930	[0.50]	Women and Cultural Change
SOAN*2400	[0.50]	Introduction to Gender Systems
WMST*1000	[0.50]	Introduction to Women's Studies
WMST*2000	[0.50]	Women and Representation

One of:

ECON*3720	[0.50]	History of the World Economy since 1850
ECON*3730	[0.50]	Europe and the World Economy to 1914

One of:

ANTH*2160	[0.50]	Social Anthropology ***
REXT*4020	[0.50]	Rural Extension in Change and Development
SOC*2080	[0.50]	Rural Sociology ****

One of:

POLS*3670	[0.50]	Comparative Public Policy and Administration
POLS*3790	[0.50]	The Political Economy of International Relations

* students must complete IDEV*2010 before Semester 5

** students normally complete IDEV*4500 in their final year of study

*** ANTH*2160 is recommended for the Gender area of emphasis

**** SOC*2080 is recommended for the Rural area of emphasis

Areas of Emphasis

Biophysical Environment and Development

GEOG*1220	[0.50]	Human Impact on the Environment
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
GEOG*2210	[0.50]	Environment and Resources
GEOG*3210	[0.50]	Management of the Biophysical Environment
GEOG*4210	[0.50]	Environmental Resource Analysis

[0.50] additional credits at the 4000 level with a GEOG prefix

One of:

AGEC*2700	[0.50]	Survey of Natural Resource Economics
ANTH*3670	[0.50]	Indigenous Peoples: Global Context
ECON*2100	[0.50]	Economic Growth and Environmental Quality
HIST*2250	[0.50]	Environment and History
PHIL*2070	[0.50]	Philosophy of the Environment
POLS*3370	[0.50]	Environmental Policy Formation and Administration
SOC*2280	[0.50]	Society and Environment

One of:

GEOG*2000	[0.50]	Geomorphology
GEOG*2110	[0.50]	Climate and the Biophysical Environment
GEOG*2460	[0.50]	Analysis in Geography
GEOG*2480	[0.50]	Mapping and GIS

Two of:

GEOG*3020	[0.50]	Global Environmental Change
GEOG*3090	[0.50]	Gender and Environment
GEOG*3110	[0.50]	Biotic and Natural Resources
GEOG*3320	[0.50]	Agriculture and Society
GEOG*3480	[0.50]	GIS and Spatial Analysis

GEOG*3610	[0.50]	Environmental Hydrology
GEOG*3620	[0.50]	Desert Environments

Economic and Business Development

AGEC*2220	[0.50]	Financial Accounting
ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*2740	[0.50]	Economic Statistics *

1.50 additional credits at the 2000-level or above in AGECE or ECON, at least 0.50 being in ECON and at least 1.00 being at the 3000-level or above.

0.50 additional credits with a regional focus at the 2000-level or above in ANTH, GEOG, HIST, IDEV, ISS, POLS, SOAN or SOC.

Two of:

AGEC*4310	[0.50]	Resource Economics
ECON*4720	[0.50]	Topics in Economic History
ECON*4830	[0.50]	Economic Development
ECON*4880	[0.50]	Topics in International Economics
ECON*4890	[0.50]	History of Economic Thought
ECON*4900	[0.50]	Special Study in Economics
ECON*4930	[0.50]	Environmental Economics

* Entry into ECON*2740 requires one of MATH*1050, MATH*1080, MATH*1200.

Gender and Development

ANTH*3400	[0.50]	The Anthropology of Gender
SOAN*2120	[0.50]	Introductory Methods
SOAN*4240	[0.50]	Women and the Development Process

[0.50] additional credits at the 4000 level in ANTH, SOAN, or SOC

One of the following not taken as part of the core:

ANTH*2160	[0.50]	Social Anthropology
SOAN*2040	[0.50]	Globalization of Work and Organizations
SOC*2080	[0.50]	Rural Sociology

One of:

SOAN*3070	[0.50]	Qualitative and Observational Methods
SOAN*3120	[0.50]	Quantitative Methods

Two of:

ANTH*3670	[0.50]	Indigenous Peoples: Global Context
ANTH*3690	[0.50]	Anthropological Theory
ANTH*3770	[0.50]	Kinship and Social Organization
ANTH*3840	[0.50]	Seminar in Anthropology
POLS*3160	[0.50]	Women and Politics in the Third World
SOAN*3100	[0.50]	Comparative Perspectives on Families and Households

Two of the following not taken as part of the core:

ENGL*2880	[0.50]	Women in Literature
GEOG*3090	[0.50]	Gender and Environment
HIST*2800	[0.50]	The History of the Modern Family
HIST*2930	[0.50]	Women and Cultural Change
HIST*3580	[0.50]	Women's History in Asia/Africa
PHIL*2060	[0.50]	Philosophy of Feminism
POLS*3710	[0.50]	Politics and Sexuality

[0.50] credits in WMST

Historical Perspectives in Development

HIST*2450	[0.50]	Historical Methods
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0.50 additional credits with a regional focus at the 2000-level or above in ANTH, GEOG, IDEV, ISS, POLS, SOAN or SOC.

One of:

HIST*1010	[0.50]	Europe in the Age of Expansion
HIST*1150	[0.50]	20th-Century Global History

Two of:

HIST*2070	[0.50]	World Religions in Historical Perspective
HIST*2110	[0.50]	The Atlantic World 1500-1850
HIST*2250	[0.50]	Environment and History
HIST*2500	[0.50]	Britain and the World Since 1600
HIST*2800	[0.50]	The History of the Modern Family
HIST*2890	[0.50]	History of the Islamic World
HIST*2910	[0.50]	History of Modern Asia
HIST*2920	[0.50]	Republican Latin America
HIST*2960	[0.50]	Topics in the History of Slavery

Three of the following not taken as part of the core:

ECON*2420	[0.50]	Canadian Economic History
ECON*3720	[0.50]	History of the World Economy since 1850
ECON*3730	[0.50]	Europe and the World Economy to 1914
HIST*3070	[0.50]	Modern South Asia
HIST*3150	[0.50]	History and Culture of Mexico
HIST*3270	[0.50]	Revolution in the Modern World
HIST*3310	[0.50]	Disease and History
HIST*3380	[0.50]	British Imperialism in Asia and Africa
HIST*3410	[0.50]	The History of Pre-Colonial Africa
HIST*3430	[0.50]	Topics in Environment and Society

HIST*3470	[0.50]	Independent Reading
HIST*3580	[0.50]	Women's History in Asia/Africa
HIST*3590	[0.50]	Culture and Society in South Asia
HIST*3910	[0.50]	Africa Since 1800
Two of:		
HIST*4100	[0.50]	Africa and the Slave Trades
HIST*4120	[0.50]	Topics in Global History
HIST*4280	[0.50]	Poverty and Policy in the Victorian Age
HIST*4470	[0.50]	Special History Project Seminar I
HIST*4560	[0.50]	Topics in Revolution
HIST*4570	[0.50]	Topics in Revolution
HIST*4580	[0.50]	Topics in Revolution
HIST*4670	[0.50]	Seminar in Science and Society
HIST*4900	[0.50]	Imperialism and Nationalism in South Asia

Latin American Studies

SPAN*1110	[0.50]	Intermediate Spanish
SPAN*2000	[0.50]	Spanish Language I
SPAN*2010	[0.50]	Spanish Language II
SPAN*3500	[0.50]	Spanish Grammar and Composition I

One of:

POLS*3650	[0.50]	The Systematic Study of Politics
SOAN*2120	[0.50]	Introductory Methods

Two of:

HIST*2920	[0.50]	Republican Latin America
POLS*3080	[0.50]	Politics of Latin America
SPAN*2990	[0.50]	Introduction to Hispanic Literary Studies
SPAN*3080	[0.50]	Spanish American Culture

Choose Option A or B

Option A:

Any [1.50] additional credits in SPAN at the 3000 level or above, at least [0.50] being at the 4000 level.

Option B:

Any [1.50] additional credits in ANTH, ECON, GEOG, HIST, IDEV, ISS, POLS, SOAN, or SOC with a focus on Latin America or the Caribbean at the 3000 level or above, at least [0.50] being at the 4000 level. The faculty advisor for International Development maintains a list of appropriate courses.

Political Economy and Administrative Change

POLS*3650	[0.50]	The Systematic Study of Politics
POLS*4750	[0.50]	Theories and Problems in Comparative/International Politics

[0.50] additional credits in POLS at the 4000 level

[1.00] additional credits with a regional focus at the 2000 or 3000 level in HIST or POLS, at least 0.50 being in POLS.

Two of:

POLS*2000	[0.50]	Political Theory
POLS*2100	[0.50]	The State in Comparative Perspective
POLS*2200	[0.50]	International Relations

One of the following not taken as part of core:

POLS*3160	[0.50]	Women and Politics in the Third World
POLS*3370	[0.50]	Environmental Policy Formation and Administration
POLS*3390	[0.50]	Comparative Democratic Institutions
POLS*3440	[0.50]	Corruption, Scandal and Political Ethics
POLS*3670	[0.50]	Comparative Public Policy and Administration
POLS*3790	[0.50]	The Political Economy of International Relations

Two of the following not taken as part of the core:

AGEC*4310	[0.50]	Resource Economics
ECON*2100	[0.50]	Economic Growth and Environmental Quality
ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2720	[0.50]	Business History
ECON*3720	[0.50]	History of the World Economy since 1850
ECON*3730	[0.50]	Europe and the World Economy to 1914
ECON*4720	[0.50]	Topics in Economic History
ECON*4830	[0.50]	Economic Development
ECON*4890	[0.50]	History of Economic Thought

Rural and Agricultural Development

SOAN*2120	[0.50]	Introductory Methods
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[0.50] additional credits at the 3000 or 4000 levels in AGR, CROP, ENVB, GEOL, HORT, SOIL or any biophysical course in GEOG.

1.00 additional credits in ANTH, SOAN or SOC at the 4000-level.

One of the following not taken as part of the core:

ANTH*2160	[0.50]	Social Anthropology
SOC*2080	[0.50]	Rural Sociology

One of:

GEOG*3480	[0.50]	GIS and Spatial Analysis
SOAN*3070	[0.50]	Qualitative and Observational Methods
SOAN*3120	[0.50]	Quantitative Methods

Two of the following not taken as part of the core:

AGEC*4210	[0.50]	World Agriculture and Economic Development
ANTH*3670	[0.50]	Indigenous Peoples: Global Context
ANTH*3690	[0.50]	Anthropological Theory
SOAN*3680	[0.50]	Development/Underdevelopment
SOC*3380	[0.50]	Society and Nature

Any REXT courses at the 3000-level or above.

One of:

AGEC*2700	[0.50]	Survey of Natural Resource Economics
AGR*1250	[0.50]	Agrifood System Trends and Issues
AGR*2500	[0.50]	Field Trip in International Agriculture
BOT*1200	[0.50]	Plants and Human Use
ENVB*2010	[0.50]	Food Production and the Environment
GEOG*1220	[0.50]	Human Impact on the Environment
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
GEOG*1350	[0.50]	Earth: Hazards and Global Change
SOIL*2120	[0.50]	Introduction to Environmental Stewardship

One of:

GEOG*2000	[0.50]	Geomorphology
SOIL*2010	[0.50]	Soil Science *

* SOIL*2010 is needed for senior GEOL and SOIL courses relevant to this area.

Minor (Honours Program)

A minimum of 5.50 credits is required, including:

ANTH*1150	[0.50]	Anthropology
ECON*1050	[0.50]	Introductory Microeconomics
ECON*1100	[0.50]	Introductory Macroeconomics
ECON*2650	[0.50]	Introductory Development Economics
GEOG*2030	[0.50]	International Political Geography
GEOG*3050	[0.50]	Development and the City
IDEV*2010	[0.50]	International Development Studies
POLS*2080	[0.50]	Development and Underdevelopment
SOAN*3680	[0.50]	Development/Underdevelopment

One of:

ECON*3720	[0.50]	History of the World Economy since 1850
ECON*3730	[0.50]	Europe and the World Economy to 1914

One of:

POLS*3670	[0.50]	Comparative Public Policy and Administration
POLS*3790	[0.50]	The Political Economy of International Relations

Italian (ITAL)

School of Languages and Literatures, College of Arts.

All language courses carry 0.50 credit. Students with Year 4 or OAC Italian or their equivalent may be admitted into ITAL*1060 or ITAL*1070 only with the approval of the department. Students advancing in a Romance language (French, Spanish, Italian) are advised to take elective courses in a second Romance language and in Latin. All language students are strongly advised to include CLAS*1000 and LING*1000 among their electives in order to derive the maximum benefit from their studies. Except where stated otherwise, literary texts are, at all levels, studied in the original language. Students registering in these courses will be expected to have the appropriate knowledge.

Study Abroad

The School of Languages and Literatures encourages students in modern languages to spend 1 or 2 semesters in another country to study a particular language at the university level. Credit for programs of study successfully completed may be applied towards the University of Guelph degree requirements. Requests should be addressed well in advance to either the School or a particular section of the School. A letter of permission is required (see Section VIII--Undergraduate Degree Regulations and Procedures.)

Italian may be taken as a minor in the honours program. Students in Italian will be counselled by the School of Languages and Literatures.

Minor (Honours Program)

A minimum of 6.00 credits is required, including:

- ITAL*2060, ITAL*2070, ITAL*2350, ITAL*3060, ITAL*3150, ITAL*3280, ITAL*3530 (for E.S.P. students), ITAL*4900
- at least one of ITAL*3950, ITAL*3960, ITAL*3970
- at least 1.00 elective from List B and 1.00 further elective from List A or B

List A - Italian Offerings

ITAL*1060	[0.50]	Introductory Italian I
ITAL*1070	[0.50]	Introductory Italian II
ITAL*2060	[0.50]	Intermediate Italian I
ITAL*2070	[0.50]	Intermediate Italian II
ITAL*2350	[0.50]	Contemporary Italian Literature
ITAL*3060	[0.50]	Advanced Italian
ITAL*3150	[0.50]	Medieval Italian Literature
ITAL*3280	[0.50]	Renaissance Italian Literature
ITAL*3530	[0.50]	Business Italian

ITAL*3950	[0.50]	Topics in Italian Literature
ITAL*3960	[0.50]	Topics in Italian Literature
ITAL*3970	[0.50]	Topics in Italian Literature
ITAL*4900	[0.50]	Research Paper in Italian Studies

List B - Restricted Electives

ARTH*2550	[0.50]	Western Art: Italian Renaissance
ARTH*3550	[0.50]	Lives: Aspects of High Renaissance Art
CLAS*2000	[0.50]	Classical Mythology
HIST*2200	[0.50]	The Medieval World
LAT*1100	[0.50]	Preliminary Latin I
LAT*1110	[0.50]	Preliminary Latin II
LAT*2000	[0.50]	Latin Literature
LING*1000	[0.50]	Introduction to Linguistics
PHIL*2100	[0.50]	Critical Thinking
PHIL*2140	[0.50]	History of Greek and Roman Philosophy
PHIL*3060	[0.50]	Medieval Philosophy

Marketing Management (MKMN)

Department of Marketing and Consumer Studies, College of Social and Applied Human Sciences.

A Marketing Management minor is designed for students who wish to pursue interdisciplinary studies that consider consumers and the marketplace, consumers and their decision processes and behaviours, markets and their structure and various interactive relationships, and issues concerning market management.

Minor (Honours Program)

A minimum of 5.00 credits is required, including:

AGEC*2220	[0.50]	Financial Accounting
COST*1000	[0.50]	Introduction to Marketing Management
COST*2600	[0.50]	Fundamentals of Consumer Behaviour
ECON*1050	[0.50]	Introductory Microeconomics
ECON*1100	[0.50]	Introductory Macroeconomics

One of:

HTM*2200	[0.50]	Organizational Behaviour I
ISS*2500	[0.50]	Management in Organizations

2.00 restricted electives from the list of Restricted Electives, 1.00 of which must be at the 3000 or 4000 level

Restricted Electives

AGEC*4360	[0.50]	Marketing Research
AGEC*4370	[0.50]	Marketing Management
COST*2020	[0.50]	Information Management
COST*3020	[0.50]	Services & Retail Marketing
COST*3030	[0.50]	Research Methods
COST*3040	[0.50]	Business and Consumer Law
COST*3100	[0.50]	Economic Behaviour of Households
COST*3600	[0.50]	Consumer Information Processes
COST*4050	[0.50]	Consumer, Business and Government Relations
ECON*2200	[0.50]	Industrial Relations
ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2720	[0.50]	Business History
ECON*3200	[0.50]	Economics of Industrial Relations
ECON*3560	[0.50]	Theory of Finance

One of:

ECON*2740	[0.50]	Economic Statistics
STAT*2060	[0.50]	Statistics for Business Decisions

Mathematical Economics (MAEC)

Department of Economics, College of Social and Applied Human Sciences.

Most economic theory rests on explicit, formal, mathematical and/or statistical foundations. This specialization articulates and emphasizes these interactions. It is most suitable for students who either have, or wish to develop, a strong analytical background.

Note: Students approaching the end of their program are strongly advised to take, by arrangement with the departmental advisor, at least one of the Special Study in Economics courses (ECON*4900, ECON*4910).

Major (Honours Program)

Semester 1

CIS*1500	[0.50]	Introduction to Programming
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1200	[0.50]	Calculus I

1.00 electives

Semester 2

ECON*1100	[0.50]	Introductory Macroeconomics
MATH*1210	[0.50]	Calculus II

1.50 electives

Semester 3

ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2410	[0.50]	Intermediate Macroeconomics
STAT*2040	[0.50]	Statistics I

1.00 electives

Semester 4

ECON*3740	[0.50]	Introduction to Econometrics
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2.00 electives or restricted electives*

Semester 5

ECON*3710	[0.50]	Advanced Microeconomics
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2.00 electives or restricted electives*

Semester 6

ECON*3600	[0.50]	Macroeconomics in an Open Economy
ECON*3770	[0.50]	Mathematical Economics and Game Theory

1.50 electives or restricted electives*

Semester 7

ECON*4640	[0.50]	Applied Econometrics I
ECON*4710	[0.50]	Advanced Topics in Microeconomics
ECON*4870	[0.50]	Mathematical Economics: Dynamics

1.00 electives or restricted electives*

Semester 8

ECON*4810	[0.50]	Advanced Macroeconomic Theory
ECON*4900	[0.50]	Special Study in Economics

One of:

ECON*4840	[0.50]	Applied Econometrics II
MATH*3200	[0.50]	Real Analysis
STAT*4080	[0.50]	Data Analysis
STAT*4340	[0.50]	Statistical Inference
STAT*4350	[0.50]	Applied Multivariate Statistical Methods
STAT*4360	[0.50]	Applied Time Series Analysis

1.00 electives

*at least 1.00 of the 4.00 restricted electives must be from Mathematics and 1.00 must be from Statistics. The remaining 2.00 can be from either subject area. Of the 4.00 credits, at least 1.00 must be at the 3000 level or above and the remaining 3.00 must be at the 2000 level or above.

Note: Courses from MATH or STATS will be allowed with the appropriate prerequisites, or by permission of the instructor.

Mathematics (MATH)**Department of Mathematics and Statistics College of Physical and Engineering Science.**

Mathematics and Statistics have become crucial components in the understanding and exploration of more and more disciplines. Persons with a strong background in mathematical sciences have access to a broad range of rewarding opportunities. Within the B.A. program, the Department of Mathematics and Statistics offers areas of concentration, majors and minors, both in Mathematics and Statistics. The Mathematics programs are designed to provide considerable flexibility for students to pursue their own interests, whether they be in the concepts of "pure" mathematics or techniques and applications. As a result, these programs open up opportunities for careers in many sectors such as business, education, government, industry, or medicine.

Area of Concentration (General Program)

A minimum of 5.00 Mathematics credits is required, including:

- 4.00 credits in Mathematics, including at least 1.00 from courses at the 3000 level or above
- 1.00 additional credit from Mathematics, Statistics and/or Computing Science

Honours Programs

Students without 4U Advanced Function and Calculus or OAC Calculus should consult with the departmental advisor. Students without 4U Geometry and Discrete Mathematics or OAC Algebra and Geometry should take MATH*2150 and then MATH*2160.

Core Requirements for Honours

MATH*1200	[0.50]	Calculus I
MATH*1210	[0.50]	Calculus II
MATH*2000	[0.50]	Set Theory
MATH*2160	[0.50]	Linear Algebra I
MATH*2200	[0.50]	Advanced Calculus I

Note: For both a major and a minor, it is strongly recommended that PHIL*2110 be included as an elective and be taken as early as possible.

Major (Honours Program)

A minimum of 8.00 credits is required, including:

- the Mathematics core requirements
- MATH*2210
- MATH*3200

- STAT*2040
- 0.50 credit in Statistics
- 0.50 credit in Computing Science (from CIS*1500 or higher)
- 3.00 additional credits in Mathematics from courses at the 2000 level or above, including 1.00 at the 3000 level and 1.00 at the 4000 level

Minor (Honours Program)

A minimum of 5.00 credits is required, including:

- the Mathematics core
- STAT*2040
- 0.50 in Computing Science (from CIS*1500, or higher)
- 1.50 additional Mathematics credits from courses at the 2000 level or above including 1.00 from courses at the 3000 or 4000 level

Museum Studies (MS)**School of Fine Art and Music.**

The Minor program in Museum Studies offers an introduction to museum culture from both theoretical and practical perspectives. Courses in the program cover the history of museums, examination of assumptions that have guided the collecting and classifying of visual culture, and consideration of how these institutions serve the needs of national and group identity construction.

This program of study is designed as a complement to a significant number of Major specializations, suitable for any student wishing to broaden their knowledge beyond their Major area of study.

Minor (Honours Program)**(May not be taken in combination with Art History Honours Major).**

A minimum of 5.00 credits is required, including:

- | | | |
|-----------|--------|---------------------------|
| ARTH*1220 | [0.50] | The Visual Arts Today |
| ARTH*1510 | [0.50] | Art Historical Studies I |
| ARTH*1520 | [0.50] | Art Historical Studies II |
- 3.50 additional credits in Art History including:

ARTH*2120	[0.50]	Museology
ARTH*2480	[0.50]	Introduction to Art Theory and Criticism
ARTH*3220	[0.50]	Nationalism and Identity in Art
ARTH*3570	[0.50]	Display: Visual Culture in Late 19th Century Europe
ARTH*4620	[0.50]	Museum Studies

Music (MUSC)**School of Fine Art and Music, College of Arts.**

The School offers courses in music history, theory, ethnomusicology, and performance. Many courses are open to all students, while others require a knowledge of the rudiments of musical notation or other prerequisites. Students are urged to plan their program in consultation with a Music advisor. Music programs allow considerable flexibility for students to elect one or more areas of interest, such as individual study on an instrument, performing in vocal or instrumental ensembles, specialized historical or theoretical study, directed readings, or an independent project. Physics of Music (MUSC*1090) is strongly recommended for all Music students and will count as one of the courses for the B.A. math/science requirement.

Courses in Music are offered in several of the semesters abroad, especially London. Credit for programs of study successfully completed may be applied towards the University of Guelph degree requirements.

Applied Music

MUSC*1500 is available only by audition. MUSC*1500 is restricted to students in Semesters 1-4. Students who wish to continue to the 2000 level in Applied Music must be enrolled in a Music program, general program; area of concentration; honours program, major or minor.

Applied Music courses are designed to be taken during successive Fall and Winter terms. If this sequence is interrupted for a semester or more, students will be required to reaudition before registering to continue in Applied Music. Students must achieve a minimum grade 70% in Applied Music courses in order to proceed to the next level.

Core Requirements

The Music core is designed to provide the concepts and skills students need for successful study in higher level courses. All students in the general program area of concentration and honours program major must complete the following courses:

MUSC*1180	[0.50]	Musicianship I
MUSC*1250	[0.50]	Melody and Counterpoint
MUSC*2360	[0.50]	Tonal Harmony I
MUSC*2370	[0.50]	Tonal Harmony II
MUSC*2600	[0.50]	Music History I: Chant to Josquin
MUSC*2610	[0.50]	Music History II: The Reformation to J.S. Bach
MUSC*2620	[0.50]	Music History III: Classical and Romantic Eras
MUSC*3630	[0.50]	20th Century Music

Area of Concentration (General Program)

A minimum of 6.00 Music credits is required, including:

- the Music core
- at least 1.00 Music credits at the 3000 level or above

Major (Honours Program)

A minimum of 8.00 Music credits is required, including:

- the Music core
- one of MUSC*2140, MUSC*2110, MUSC*2200
- one of MUSC*3020, MUSC*3030, MUSC*3840, MUSC*3850
- one of MUSC*3800, MUSC*3810
- MUSC*4401/2

Participation in Applied Music courses and/or performing ensembles is strongly recommended for all honours students. Students contemplating graduate studies in Music should consult music faculty early in their program.

Minor (Honours Program)

A minimum of 5.00 Music credits is required, including at least 2.00 Music credits at the 3000 or 4000 level.

Course Groups

Students who wish to concentrate in particular areas of Music should consider selecting one of the following course groups:

Jazz, Popular, and World Music Studies

MUSC*1180	[0.50]	Musicianship I
MUSC*2140	[0.50]	History of Jazz
MUSC*2150	[0.50]	Music and Popular Culture
MUSC*2180	[0.50]	Musicianship II
MUSC*3820	[0.50]	Topics in Ethnomusicology

1.50 other music credits at the 3000 or 4000 level (MUSC*1250 and MUSC*2360 are highly recommended)

One of:

MUSC*2110	[0.50]	Music of the Circum-Atlantic and the Americas
MUSC*2200	[0.50]	Music of the Near and Far East

One of:

MUSC*2610	[0.50]	Music History II: The Reformation to J.S. Bach
MUSC*2620	[0.50]	Music History III: Classical and Romantic Eras

Theory and Analysis

MUSC*1180	[0.50]	Musicianship I
MUSC*1250	[0.50]	Melody and Counterpoint
MUSC*2360	[0.50]	Tonal Harmony I
MUSC*2370	[0.50]	Tonal Harmony II

1.50 other Music credits at the 3000 or 4000 level

One of:

MUSC*2610	[0.50]	Music History II: The Reformation to J.S. Bach
MUSC*2620	[0.50]	Music History III: Classical and Romantic Eras
MUSC*3630	[0.50]	20th Century Music

One of:

MUSC*3020	[0.50]	Tonal Analysis
MUSC*3030	[0.50]	Post-tonal Analysis

History and Literature

MUSC*1180	[0.50]	Musicianship I
MUSC*1250	[0.50]	Melody and Counterpoint
MUSC*2360	[0.50]	Tonal Harmony I

2.00 other Music credits at the 3000 or 4000 level

Three of:

MUSC*2600	[0.50]	Music History I: Chant to Josquin
MUSC*2610	[0.50]	Music History II: The Reformation to J.S. Bach
MUSC*2620	[0.50]	Music History III: Classical and Romantic Eras
MUSC*3630	[0.50]	20th Century Music

Applied Music

MUSC*1180	[0.50]	Musicianship I
MUSC*1500	[0.50]	Applied Music I
MUSC*1510	[0.50]	Applied Music II
MUSC*2180	[0.50]	Musicianship II

2.00 other Music credits at the 3000 or 4000 level

One of:

MUSC*2600	[0.50]	Music History I: Chant to Josquin
MUSC*2610	[0.50]	Music History II: The Reformation to J.S. Bach
MUSC*2620	[0.50]	Music History III: Classical and Romantic Eras
MUSC*3630	[0.50]	20th Century Music

0.50 credits from one of the following 2 sets of 2 courses:

MUSC*2530	[0.25]	Instrumental Ensembles I
MUSC*2540	[0.25]	Instrumental Ensembles II

OR

MUSC*2550	[0.25]	Choral Ensembles I
MUSC*2560	[0.25]	Choral Ensembles II

Honours students considering graduate work in ethnomusicology, performance, theory, and other music specializations should consult the School Director or an academic adviser early in their program. Students should take MUSC*2290, MUSC*2350, MUSC*3020, MUSC*3030, MUSC*3750 and Topics courses (MUSC*3800 to MUSC*3850) covering a broad range of historical periods and methodologies, and also consider courses in Humanities (HUMN), dramatic theory, art history, anthropology, and English literature. A reading knowledge of at least one language other than English is also recommended.

Organizational Behaviour (OBEH)**Department of Psychology, College of Social and Applied Human Sciences.**

The study of behaviour and the behavioural processes of individuals and groups within organizations is an especially important focus for those interested in human welfare and productivity. The Minor in Organizational Behaviour is for students seeking to broaden their knowledge beyond their major area of study and may be of particular value for those interested in the dynamics of organizational structures within the private and/or public domains. Although this program should provide a meaningful complement for a significant number of Major options, the program might be of particular interest to those students considering a future management and/or business career.

Minor (Honours Program)

(May not be taken in combination with a Psychology Honours Major)

A minimum of 6.00 credits is required, including:

PSYC*1100	[0.50]	Principles of Behaviour
PSYC*1200	[0.50]	Dynamics of Behaviour

2.00 credits in 4 Psychology Core Courses, to include PSYC*2310

PSYC*2010	[0.50]	Quantification in Psychology
PSYC*3060	[0.50]	Occupational Health Psychology
PSYC*3070	[0.50]	Psychology in Human Resource Management
PSYC*3080	[0.50]	Organizational Psychology
PSYC*3250	[0.50]	Psychological Measurement

0.50 additional credit in Psychology

Students should note the availability of courses PSYC*3900 and PSYC*3910 when considering potential Psychology electives which would fulfil this requirement. When selecting open electives for completion of the degree, students with this minor should consider selecting the following courses: HTM*4390 and SOAN*2040.

Note: Courses designated with (H) in Section XII--Course Descriptions are Honours level courses requiring for registration a cumulative average of at least 70% in all course attempts in Psychology.

Philosophy (PHIL)**Department of Philosophy, College of Arts.**

The Department of Philosophy offers programs emphasizing the history of philosophy and the study of metaphysics, epistemology, ethics and logic. The requirements for the various Philosophy programs are designed to ensure a basic competence in the discipline while permitting varying degrees of flexibility. It is important that students discuss their programs with a departmental advisor in order to ensure that the best selection of elective Philosophy courses is made. This is especially important for students who are contemplating graduate work in Philosophy.

Students may take PHIL*1000, PHIL*1010 and PHIL*1050 but only one may be counted towards the minimum number of Philosophy courses required for a degree.

Area of Concentration (General Program)

A minimum of 5.00 credits in Philosophy is required, including:

- 1 of PHIL*2140, PHIL*2160, PHIL*3060, PHIL*3080, PHIL*3130, PHIL*3200
- 1 of PHIL*2110, PHIL*2130, PHIL*2180, PHIL*3180, PHIL*3190, PHIL*3420, PHIL*3910, PHIL*3920, PHIL*3930, PHIL*4360, PHIL*4370
- 1 of PHIL*2030, PHIL*2060, PHIL*2070, PHIL*2120, PHIL*2600, PHIL*3040, PHIL*3050, PHIL*3230, PHIL*4310, PHIL*4320, PHIL*4340
- 3.50 additional credits in Philosophy

Note: Students must have at least 1.50 Philosophy credits at the 3000 or 4000 level.

Major (Honours Program)

A minimum of 8.50 credits is required, including:

- PHIL*2110, PHIL*2120, PHIL*2140, PHIL*2160, PHIL*3080
- two of PHIL*2180, PHIL*3180, PHIL*3190, PHIL*4360, PHIL*4370
- two of PHIL*2060, PHIL*3050, PHIL*3230, PHIL*4310, PHIL*4320, PHIL*4340
- two of PHIL*2030, PHIL*2070, PHIL*2130, PHIL*2600, PHIL*3130, PHIL*3200, PHIL*3420, PHIL*3910, PHIL*3920, PHIL*3930
- 3.00 additional credits in Philosophy

Note: Students must have at least 3.50 credits in Philosophy at the 3000 level or above, and at least 1.50 of these at the 4000 level.

Students planning to do graduate studies in philosophy should take PHIL*2110, PHIL*2120, PHIL*2140, PHIL*3080, PHIL*3130, PHIL*3200, PHIL*4800.

Minor (Honours Program)

A minimum of 5.00 credits in Philosophy is required, including:

- one of PHIL*2140, PHIL*2160, PHIL*3060, PHIL*3080
- one of PHIL*2110, PHIL*2180, PHIL*3180, PHIL*3190, PHIL*4360, PHIL*4370
- one of PHIL*2060, PHIL*2120, PHIL*3050, PHIL*3230, PHIL*4310, PHIL*4320, PHIL*4340
- one of PHIL*2030, PHIL*2070, PHIL*2130, PHIL*2600, PHIL*3130, PHIL*3200, PHIL*3420, PHIL*3910, PHIL*3920, PHIL*3930
- 3.00 additional credits in Philosophy

Note: Students must have at least 3.50 credits in Philosophy at the 3000 level or above, and at least 1.50 of these at the 4000 level.

Political Science (POLS)**Department of Political Science, College of Social and Applied Human Sciences.**

The Department of Political Science offers courses in the following areas: Theory and Analysis, Canada and the Americas, Public Policy and Administration, and Comparative / International Development. These areas are listed below to identify 3000 level courses that fulfill prerequisites for selected 4000 level courses (see course descriptions). A brochure describing each of these fields of study, and containing further course information, is available from the departmental office. The Department of Political Science also participates in several interdisciplinary programs, including European Studies and International Development Studies.

Students taking courses in Political Science may enrol initially in POLS*1150, POLS*1400, POLS*1500, the latter 2 courses providing overview and introductory treatments of particular interest to students who wish to take higher level courses in the department but who do not intend to specialize in the discipline. For students intending to pursue a general or honours specialization in Political Science, however, POLS*1150 is required.

Courses at the 2000 level provide students with essential grounding in specific areas of the discipline and are normally prerequisite for enrolment in 3000 and 4000 level courses. Students in the honours program major are required to take POLS*3650. This course is also required for students in the honours program minor.

In addition to the requirements set out in the B.A. Program Regulations, the Department of Political Science requires that students pursuing general and honours programs successfully complete a core requirement of 2.50 credits and meet specific distribution requirements as follows:

Core Requirements

- POLS*1150, POLS*2000, POLS*2300
- POLS*2080 or POLS*2100
- POLS*2200 or POLS*2250

Area of Concentration (General Program)

A minimum of 5.00 credits in Political Science is required, including:

- the Political Science core
- 2.50 additional credits, at least 1.50 of which must be at the 3000 level or above

Major (Honours Program)

A minimum of 9.00 credits in Political Science is required, including:

- the Political Science core
- POLS*3650
- at least 0.50 credit at the 3000 level in three of the four fields in the department
- 2.00 credits at the 4000 level, two of which may include the POLS*4970/POLS*4980 Honours Thesis **

** Students interested in pursuing graduate or professional studies related to Political Science are encouraged to consider taking the POLS*4970/POLS*4980 Honours Thesis sequence. Interested students must obtain instructor consent in order to register for this option.

Minor (Honours Program)

A minimum of 5.00 credits in Political Science is required, including:

- the Political Science core
- POLS*3650
- 0.50 credit at the 4000 level

Choices for fulfillment of prerequisites for 4000 level courses (see course descriptions for corresponding requirements).

4000 Level Prerequisites**Political Theory and Analysis**

POLS*3021/2	[1.00]	History of Political Thought
POLS*3180	[0.50]	Political Inquiry and Analysis
POLS*3280	[0.50]	Modern Political Ideologies
POLS*3710	[0.50]	Politics and Sexuality

Canada and the Americas

POLS*3050	[0.50]	Canadian Political Parties, Elections and Pressure Groups
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POLS*3110	[0.50]	Politics of Ontario
POLS*3130	[0.50]	Law, Politics, and Judicial Process
POLS*3200	[0.50]	Canadian Provincial Politics
POLS*3210	[0.50]	The Constitution and Canadian Federalism
POLS*3270	[0.50]	Local Government in Ontario
POLS*3330	[0.50]	Politics and Trade Liberalization in the Americas
POLS*3390	[0.50]	Comparative Democratic Institutions
POLS*3410	[0.50]	Politics and Government in the United States
POLS*3730	[0.50]	The Americas

Public Policy and Administration

POLS*3110	[0.50]	Politics of Ontario
POLS*3210	[0.50]	The Constitution and Canadian Federalism
POLS*3250	[0.50]	Public Policy: Challenges and Prospects
POLS*3300	[0.50]	Governing Criminal Justice
POLS*3370	[0.50]	Environmental Policy Formation and Administration
POLS*3440	[0.50]	Corruption, Scandal and Political Ethics
POLS*3470	[0.50]	Business-Government Relations in Canada
POLS*3670	[0.50]	Comparative Public Policy and Administration
POLS*3930	[0.50]	Politics of the Agri-Food System
POLS*3940	[0.50]	Accountability and Canadian Government

Comparative/International Development

POLS*3000	[0.50]	Politics of Africa
POLS*3060	[0.50]	Politics of the Middle East and North Africa
POLS*3070	[0.50]	The Politics of Asian Development
POLS*3080	[0.50]	Politics of Latin America
POLS*3160	[0.50]	Women and Politics in the Third World
POLS*3330	[0.50]	Politics and Trade Liberalization in the Americas
POLS*3390	[0.50]	Comparative Democratic Institutions
POLS*3410	[0.50]	Politics and Government in the United States
POLS*3440	[0.50]	Corruption, Scandal and Political Ethics
POLS*3450	[0.50]	European Governments and Politics
POLS*3460	[0.50]	Communism and Post-Communism
POLS*3670	[0.50]	Comparative Public Policy and Administration
POLS*3730	[0.50]	The Americas
POLS*3790	[0.50]	The Political Economy of International Relations
POLS*3890	[0.50]	Government and Politics of India
POLS*3920	[0.50]	Modern China

The Department of Political Science offers a comprehensive counselling service for students in Political Science. As part of their program, the department also permits students to include 0.50 credit towards the general degree and 1.00 credit towards the honours degree from an approved list of courses offered by other departments.

Students are encouraged to consult with the departmental advisor for either of these programs about course selection, substitution of courses offered by other departments, or other matters.

Psychology (PSYC)**Department of Psychology, College of Social and Applied Human Sciences.**

The discipline of Psychology is normally associated with the social sciences, the biological sciences, and the health professions. Specialization in Psychology at Guelph is available as a B.A. honours program major, a B.A. honours program major (co-op), and as an honours specialization in the B.Sc. program (described in the schedule of studies for B.Sc. programs). Through its different undergraduate programs, the Psychology Department attempts to provide a) a broad general education emphasizing psychological theory and methodology, with an empirical basis in course work (e.g. experiments and projects); b) an appropriate background in psychology for those who leave the University with an undergraduate degree to embark on careers in related areas (e.g. social services); and c) a sound preparation for graduate study in psychology. Students intending to apply for admission to graduate programs in Psychology are advised to refer to the Graduate Advisory Note.

A cumulative average of at least 70% in all course attempts in Psychology is required to enter or continue in the Honours Psychology program major in semesters 4, 5, 6, 7, and 8.

Minors

Students interested in a Minor in Psychology should examine the schedule of studies for the Minors in Cognitive Neuropsychology, Developmental Psychology, Educational Psychology, Organizational Behaviour, or Social Psychology. Within the BA Degree program, these are the only Honours Minors available from the Psychology Department. The department does not offer Psychology as an Honours BA Minor, or as an Area of Concentration in the General BA Program.

Note on Honours Courses

Courses marked (H) are designed for students in a psychology honours program, the Information Systems and Human Behaviour program, the Developmental Psychology Minor program, the Educational Psychology Minor program, the Organizational Behaviour Minor program, the Social Psychology program, the Cognitive Neuropsychology Minor program, or Human Resources Management major of the Bachelor of Commerce program.

Students in other programs wishing to take these courses must obtain the permission of the instructors concerned. Unless otherwise specified, all other courses may be taken by general, honours, and students from other programs, providing the prerequisites are met.

Courses designated with (H) are Honours level courses requiring for registration a cumulative average of at least 70% in all course attempts in Psychology, or registration in either the HRM Major or ISHB Major.

Core Requirements

Each of the Psychology programs requires that students complete at least 6 of the following 2000 level Psychology courses (3.00 credits). Psychology students are advised that they are normally expected to complete at least four 2000 level Psychology core courses prior to attempting any 3000 level Psychology courses.

However, students should take the 3000 level methodology courses PSYC*3320(H), PSYC*3370(H) and PSYC*3380 (H) as early as possible, even though 4 core courses may not have been taken.

PSYC*2310	[0.50]	Introduction to Social Psychology
PSYC*2330	[0.50]	Principles of Learning
PSYC*2390	[0.50]	Principles of Sensation and Perception
PSYC*2410	[0.50]	Behavioural Neuroscience I
PSYC*2450	[0.50]	Introduction to Developmental Psychology
PSYC*2650	[0.50]	Cognitive Psychology
PSYC*2740	[0.50]	Personality

Major (Honours Program)

A minimum of 9.00 credits in Psychology is required, including (see notes below):

PSYC*1100	[0.50]	Principles of Behaviour
PSYC*1200	[0.50]	Dynamics of Behaviour
6 of the 2000 level Psychology core courses listed above		
PSYC*2010	[0.50]	Quantification in Psychology
PSYC*2360	[0.50]	Introductory Research Methods
PSYC*3250	[0.50]	Psychological Measurement
PSYC*3320	[0.50]	Statistical Principles in Psychological Research

1.50 additional credits at the 3000 level or above (Students electing to take PSYC*3370 and PSYC*3380 will need to select only 0.50 additional credit at the 3000 level or above in order to satisfy this requirement.) (see Graduate Advisory Note).

1.50 additional psychology credits at the 4000 level (See Graduate Advisory Note).

Notes:

1. PSYC*2010 should normally be completed by the end of semester 3
2. PSYC*2360 should normally be completed by the end of semester 4
3. PSYC*3320 SHOULD NORMALLY BE COMPLETED BY THE END OF SEMESTER 4.
4. **NOTE: that PSYC*3320 is a prerequisite for PSYC*3370 and PSYC*3380 and that PSYC*3320 is an (H) designated course.**

Note: The regulations of the B.A. program govern the number of credits that must be taken at the 3000 level or above (see B.A. Program Regulations). With permission of the Psychology Department PRIOR to course selection, up to 1.00 non-psychology credit that would enhance the student's studies in Psychology, especially in preparation for post-graduate work, may be credited towards the total number of credits required for graduation in the honours program major in Psychology.

Graduate Advisory Note: Most graduate programs require the student to have at least a B+ average in order to be considered for admission. Students contemplating graduate work in Psychology are strongly advised to complete the major by completing 0.50 elective credit at the 3000 level or above and 0.50 elective credit at the 4000 level beyond PSYC*4870 and PSYC*4880 which would otherwise satisfy the 3000-4000 level elective requirement for the major.

These students are encouraged to complete the Psychology major as follows:

- a. PSYC*1100 and PSYC*1200
- b. 6 of the 2000 level Psychology core courses
- c. PSYC*2010 and PSYC*3320
- d. PSYC*2360 and PSYC*3370 and PSYC*3380
- e. an additional 0.50 credit in Psychology at the 3000 level or above
- f. PSYC*3250
- g. PSYC*4370 or PSYC*4900
- h. 0.50 elective at the 4000 level
- i. PSYC*4870 plus PSYC*4880

Students should note that an Honours Thesis is normally taken as a Fall-Winter sequence worth the equivalent of 1.50 credits toward the 20.00 credit Honours B.A. degree requirements.

Psychology (Co-op) (PSYC:C)

Department of Psychology, College of Social and Applied Human Sciences.

Co-operative Education formally integrates the student's academic study with 3 work terms (COOP*1000, COOP*2000, COOP*3000) in co-operating employer organizations. The Co-op program is offered as a B.A. honours program major degree taken as one of

two major options combined with 3 work terms. One of the options is recommended for Co-op students expecting to apply for admission to graduate studies in Psychology. (See Graduate Advisory Note.)

All Co-op students are strongly advised to complete the B.A. requirements by including in their program 3 or more courses from the listing of courses under Business Administration, to ensure that they have 1 or more courses in computer science, accounting and management, or organizational behaviour. (Business Administration is also available as a minor.) Although not required, Co-op students are strongly encouraged to select a minor as part of the program.

Depending on career aspirations, students should have a good working knowledge of one or more of the following before their first work semester: psychological measurement, quantitative methods, computer science, accounting and management, or organizational behaviour.

The first work term normally follows 3 or 4 semesters of academic study (see Section X-Co-operative Education Programs). Students must be eligible to continue in the Honours Psychology program in order to remain in the Co-op program.

Admission to the Co-op program is limited and will be based on academic background. Admission will normally be considered only at semester 1 entry or during semester 2 when the student selects courses for semester 3.

Note: Courses designated with (H) in Section XII--Course Descriptions are Honours level courses requiring for registration a cumulative average of at least 70% in all course attempts in Psychology.

Major (Honours Program) - Stream A

The following Co-op schedule of studies is for students not intending to apply for admission to graduate programs in Psychology (includes 3 work terms).

Note: When selecting core and elective credits the student should keep in mind the prerequisites for their desired 3000 and 4000 level courses. When selecting courses beyond Psychology the student should keep in mind both their second specialization and courses appropriate for potential work-term placements.

Semester 1 - Fall

PSYC*1100	[0.50]	Principles of Behaviour
PSYC*1200	[0.50]	Dynamics of Behaviour
1.50 electives*		

Semester 2 - Winter

COOP*1100	[0.00]	Introduction to Co-operative Education
PSYC*2010	[0.50]	Quantification in Psychology
0.50 Psychology core***		
1.50 electives*		

Summer Semester

Optional, however completion of semester 3 requirements NOW would allow for additional flexibility in the scheduling of future work terms (see also optional schedule below for students intending to apply for graduate programs).

Semester 3 - Fall

PSYC*3320	[0.50]	Statistical Principles in Psychological Research
1.50 Psychology core***		
0.50 elective*		

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

1.00 Psychology core		
1.50 electives****		

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

PSYC*2360	[0.50]	Introductory Research Methods
PSYC*3250	[0.50]	Psychological Measurement
0.50 Psychology credit at the 3000 or 4000 level**		
1.00 elective		

Summer Semester

COOP*3000	[0.00]	Co-op Work Term III
PSYC*4910	[0.50]	Co-operative Education Project I

Semester 6 - Fall

1.00 Psychology elective at the 3000 or 4000 level**		
1.50 electives		

Semester 7 - Winter

1.00 Psychology elective at the 3000 or 4000 level**		
1.50 electives		

Semester 8 - Summer*****

2.00 electives

* B.A. distribution requirements should be satisfied within the first 4 semesters

** at least two of these Psychology courses must be at the 4000 level

*** see Semester 4 requirements as not all core courses are available in the Summer Semester

**** PSYC*2310 and PSYC*2740 are normally available in the Summer Semester

***** the schedule for COOP*3000 and semester 8 requirements can be exchanged

Major (Honours Program) - Stream B

The following Co-op schedule of studies is recommended for those students intending to apply for graduate work in Psychology (includes 3 work terms and 18 Psychology courses).

Semester 1 - Fall

PSYC*1100 [0.50] Principles of Behaviour
PSYC*1200 [0.50] Dynamics of Behaviour

1.50 electives*

Semester 2 - Winter

COOP*1100 [0.00] Introduction to Co-operative Education
PSYC*2010 [0.50] Quantification in Psychology

1.00 Psychology core (other than PSYC*2310 or PSYC*2740)

1.00 electives*

Semester 3 - Summer

PSYC*2310 [0.50] Introduction to Social Psychology

PSYC*2740 [0.50] Personality

1.50 elective*

Semester 4 - Fall

PSYC*2360 [0.50] Introductory Research Methods

PSYC*3320 [0.50] Statistical Principles in Psychological Research

1.00 Psychology core

0.50 elective*

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Summer Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5 - Fall

PSYC*3370 [0.50] Experimental Design and Analysis

2.00 electives*

Semester 6 - Winter

PSYC*3250 [0.50] Psychological Measurement

PSYC*3380 [0.50] Non-experimental Research Methods

1.50 electives*

Summer Semester

Optional

Fall Semester**

COOP*3000 [0.00] Co-op Work Term III

One of:

PSYC*4910 [0.50] Co-operative Education Project I

0.50 PSYC*

0.50 elective

Semester 7 - Winter**

PSYC*4870 [0.50] Honours Thesis I

2.00 electives*

Semester 8 - Summer

PSYC*4880 [1.00] Honours Thesis II

1.00 elective*

*at least 1.00 of the elective credits in semester 5, 6, 7, or 8 must be a 3000 level or above Psychology elective (and include either PSYC*4370 or PSYC*4900). The total of electives should include the B.A. program distribution requirements and the completion of the total number of credits required at the 3000 level or above required by the B.A. degree.

**the schedule for COOP*3000 and semester 7 requirements can be exchanged

Rural and Development Sociology (RDS)

Department of Sociology and Anthropology, College of Social and Applied Human Sciences.

The program of Rural and Development Sociology focuses on the study of rural institutions and processes in industrialized societies with an emphasis on changes in rural communities, agriculture and natural resources, including historical and comparative analyses of the development of rural life. It provides students with major research and conceptual tools needed for the understanding of rural transformation, their interdependence with the natural environment and with urban society.

Major (Honours Program)

A minimum of 8.00 credits in Sociology and Anthropology is required, including:

- a. ANTH*1150, SOAN*2111/2, SOAN*2120, SOAN*3070, SOAN*3120, SOAN*4500, SOC*1100, SOC*2080, (ANTH*3690 or SOC*3310), SOC*3380, SOC*4210,

- b. 4 of SOAN*4220, SOAN*4240, SOC*2010, SOC*2090, SOC*2280, SOC*2390, SOC*4880, SOC*4890, SOC*4900, SOC*4910

- c. at least 1.00 credit at the 4000 level

Rural Extension Studies (RES)

School of Environmental Design and Rural Development, Ontario Agricultural College.

Rural Extension Studies is offered as a minor in the honours program. It is designed to provide students with an opportunity to pursue studies which focus on the development of non formal educational programs for rural people and rural communities and their organizations. The program comprises 5.00 credits. 3.00 of these are drawn from the area of Rural Extension studies; 2.00 electives must be chosen from 1 or several complementary disciplines in the social sciences. Students seeking counselling should consult with a departmental advisor in the School of Rural Extension Studies.

Minor (Honours Program)

A minimum of 5.00 credits is required, including:

REXT*2000 [0.50] Introduction to Rural Extension
REXT*3000 [0.50] Program Development and Evaluation

Four of the following:

REXT*3040 [0.50] Communication Process
REXT*3060 [0.50] International Communication
REXT*3080 [0.50] Technology in Extension
REXT*3100 [0.50] Teaching and Learning in Non-Formal Education
REXT*4020 [0.50] Rural Extension in Change and Development
REXT*4100 [0.50] Leadership Development in Rural Organization

Electives

The remaining credits required for the minor must be selected from the following list. However, students are strongly advised to consult with the departmental advisor before choosing electives.

ECON*4830 [0.50] Economic Development
GEOG*1220 [0.50] Human Impact on the Environment
GEOG*3320 [0.50] Agriculture and Society
POLS*2080 [0.50] Development and Underdevelopment
POLS*2200 [0.50] International Relations
PSYC*2310 [0.50] Introduction to Social Psychology
PSYC*2450 [0.50] Introduction to Developmental Psychology
SOAN*3300 [0.50] Community Development
SOC*2080 [0.50] Rural Sociology

Social Psychology (SPSY)

Department of Psychology, College of Social and Applied Human Sciences.

Social Psychology focuses on the ways in which human experience is grounded in social interactions and social relationships. Although this Minor was designed for any student seeking to broaden their knowledge beyond their Major area of study, it may be of particular interest to students who are considering future careers in human service fields such as Social Work, Counselling, Criminology, and Occupational Therapy. The program may also be of special interest to students associated with the Collaborative Diploma Program in Public/Private Sector Administration.

Minor (Honours Program)

(May not be taken in combination with a Psychology Honours Major)

A minimum of 6.00 credits is required, including:

PSYC*1100 [0.50] Principles of Behaviour
PSYC*1200 [0.50] Dynamics of Behaviour
PSYC*3310 [0.50] Applied Social Psychology

2.50 credits in 5 Psychology Core Courses to include PSYC*2310, PSYC*2450

0.50 credit in a Psychology elective (it is recommended that this elective be chosen from the list of seven restricted electives below)

1.50 credits from three of the following seven courses:

PSYC*3070 [0.50] Psychology in Human Resource Management
PSYC*3080 [0.50] Organizational Psychology
PSYC*3450 [0.50] Social and Personality Development
PSYC*3500 [0.50] Social Interactions
PSYC*3520 [0.50] Political Psychology
PSYC*3690 [0.50] Community Mental Health
PSYC*4310 [0.50] Advanced Topics in Social Psychology

Note: Courses designated with (H) in Section XII--Course Descriptions are Honours level courses requiring for registration a cumulative average of at least 70% in all course attempts in Psychology.

Sociology (SOC)

Department of Sociology and Anthropology, College of Social and Applied Human Sciences.

The Department of Sociology and Anthropology offers three types of courses: sociology courses with the prefix SOC*; anthropology courses with the prefix ANTH*; and departmental courses with the prefix SOAN*. The departmental category of courses

recognizes the fact that the disciplines of sociology and sociocultural anthropology have developed in tandem and it is possible to identify large areas of overlap and convergence in the work of practitioners both historically and in the present. Departmental courses include most of the core theory and methods courses as well as many elective courses. They contribute equally to the subject matter of sociology as well as the subject matter of sociocultural anthropology for purposes of the undergraduate programs of study in both disciplines. Please see the listings for all courses required for the Sociology program. Note: the following courses may be used towards a sociology specialization: FRHD*3060 and PHIL*2180.

Courses will normally be offered in the semesters designated. For information on other semesters these courses will be offered and the semester those courses without designations will be offered, please check with the department. In addition to regularly scheduled courses, students may elect to do independent study. A student who wishes to do a reading course should first consult the professor with whom he/she wishes to work. Please note, a student is allowed a total of 1.00 credits only for reading courses.

Sociology credit may also be given for some Anthropology courses with the exception of ANTH*3840 through ANTH*4910 inclusive. See a Sociology/Anthropology Faculty Advisor for approval of substitutions.

Area of Concentration (General Program)

A minimum of 5.00 credits in Sociology and Anthropology is required, including:

ANTH*1150	[0.50]	Anthropology
SOAN*2111/2	[1.00]	Classical Theory
SOAN*2120	[0.50]	Introductory Methods
SOC*1100	[0.50]	Sociology

2.50 additional credits from the Department of Sociology and Anthropology, including at least 1.00 at the 3000 level

Major (Honours Program)

A minimum of 8.00 credits in Sociology and Anthropology is required, including:

ANTH*1150	[0.50]	Anthropology
SOAN*2111/2	[1.00]	Classical Theory
SOAN*2120	[0.50]	Introductory Methods
SOAN*3070	[0.50]	Qualitative and Observational Methods
SOAN*3120	[0.50]	Quantitative Methods
SOC*1100	[0.50]	Sociology
SOC*3310	[0.50]	Contemporary Theory

4.00 additional credits from the Department of Sociology and Anthropology, including at least 1.50 at the 4000 level

Minor (Honours Program)

A minimum of 5.00 credits in Sociology and Anthropology is required, including:

ANTH*1150	[0.50]	Anthropology
SOAN*2111/2	[1.00]	Classical Theory
SOAN*2120	[0.50]	Introductory Methods
SOC*1100	[0.50]	Sociology

2.50 additional credits from the Department of Sociology and Anthropology, including at least 1.00 credit at the 3000 level or above

The following courses may be used toward a sociology specialization: FRHD*3060 and PHIL*2180.

Note: All Anthropology courses may be used for credit in Sociology except for ANTH*3840 through ANTH*4910 inclusive.

Spanish (SPAN)

School of Languages and Literatures, College of Arts.

All language courses carry 0.50 credit. Students with Year 4 (Grade 12) or OAC Spanish or their equivalent may be admitted into SPAN*1100 only with the approval of the School. Students with OAC Spanish or its equivalent may be admitted into SPAN*1110 only with the approval of the School. Students with native or near native fluency, spoken and written, normally begin language courses with SPAN*2000 and are allowed some flexibility in sequence of language courses. Such students should consult the coordinator before beginning Spanish studies. Students advancing in a Romance language (French, Spanish, Italian) are advised to take electives in a second Romance language and in Latin. All language students are strongly advised to include CLAS*1000 and LING*1000, among their electives in order to derive the maximum benefit from their studies. Students registering in these courses will be expected to have the appropriate knowledge.

Study Abroad

The School of Languages and Literatures encourages students in modern languages to spend 1 or 2 semesters in another country to study a particular language at the university level. Credit for programs of study successfully completed may be applied towards the University of Guelph degree requirements. Requests should be addressed well in advance to either the School or a particular section of the School. A letter of permission is required (see Section VIII--Undergraduate Degree Regulations & Procedures).

Area of Concentration (General Program)

A minimum of 5.00 credits in Spanish is required, including:

- 3.00 credits from SPAN*1100, SPAN*1110, SPAN*2000, SPAN*2010, SPAN*3500, SPAN*3530, SPAN*4500, SPAN*4520
- SPAN*2040, SPAN*2990, SPAN*3080
- 0.50 credit in literature

Major (Honours Program)

A minimum of 8.00 credit in Spanish is required, including:

- SPAN*2000, SPAN*2010, SPAN*2040, SPAN*2990, SPAN*3080, SPAN*3500, SPAN*3530, SPAN*4500, SPAN*4520
- seven literature courses

Note: Students intending to proceed to graduate studies should take SPAN*3170 and SPAN*4170

Minor (Honours Program)

A minimum of 5.50 credits in Spanish is required, including:

- 3.00 credits from SPAN*1100, SPAN*1110, SPAN*2000, SPAN*2010, SPAN*3500, SPAN*3530, SPAN*4500, SPAN*4520
- SPAN*2040, SPAN*2990, SPAN*3080
- 1.00 credit in literature

Note: Students in the Spanish program may include one of the following courses for credit in their program:

HIST*2110	[0.50]	The Atlantic World 1500-1850
HIST*2920	[0.50]	Republican Latin America
POLS*3080	[0.50]	Politics of Latin America

Any other substitution for required courses can only be made with the approval of the faculty advisor.

Statistics (STAT)

Department of Mathematics and Statistics, College of Physical and Engineering Science.

The discipline of Statistics is essential in the social sciences, biological sciences, physical sciences, and health professions. The specialization in Statistics emphasizes applications of statistical theory and methods to other disciplines and is available in the B.A. Honours Program as a major or minor and as an area of concentration in the General Program.

Students are encouraged to combine the study of statistics with another field.

Statistical computing is a fundamental tool for the application of modern statistical methods. Students in these programs will develop skills in computer applications programming using such high-level languages as SAS and S-PLUS.

Area of Concentration (General Program)

A minimum of 5.00 credits in Statistics and Mathematics is required, including:

- no more than 1.00 credit from courses at the 1000 level
- 3.00 credits in statistics (STAT), 2.00 of which must be from courses at the 3000 level or above

Recommended Courses

MATH*1200	[0.50]	Calculus I
MATH*1210	[0.50]	Calculus II
MATH*2150	[0.50]	Applied Matrix Algebra
STAT*2040	[0.50]	Statistics I
STAT*2050	[0.50]	Statistics II
STAT*3100	[0.50]	Introductory Mathematical Statistics I
STAT*3110	[0.50]	Introductory Mathematical Statistics II
STAT*3240	[0.50]	Applied Regression Analysis
STAT*3320	[0.50]	Sampling Theory with Applications

Honours Programs

Students who major or minor in Statistics may not receive credit for the following courses unless taken to satisfy the requirements of another program: ECON*2740, PSYC*2010, PSYC*3320, SOAN*3120.

Major (Honours Program)

Students may enter this major in Semester I or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. A minimum of 20.00 credits is required to complete the degree, with a minimum of 9.50 credits required as below to complete the major.

1.50 credits as follows:

CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I
MATH*1210	[0.50]	Calculus II

5.00 credits in Statistics and Mathematics as follows:

MATH*2130	[0.50]	Numerical Methods
MATH*2200	[0.50]	Advanced Calculus I
STAT*2040	[0.50]	Statistics I
STAT*2050	[0.50]	Statistics II
STAT*3100	[0.50]	Introductory Mathematical Statistics I
STAT*3110	[0.50]	Introductory Mathematical Statistics II

STAT*3210	[0.50]	Experimental Design
STAT*3240	[0.50]	Applied Regression Analysis
STAT*3320	[0.50]	Sampling Theory with Applications
One of:		
MATH*2150	[0.50]	Applied Matrix Algebra
MATH*2160	[0.50]	Linear Algebra I

2.50 credits in Statistics at the 3000 or 4000 level, of which at least 2.00 credits must be at the 4000 level.

0.50 credit in Mathematics or Statistics at the 2000-level or above.

Recommended Schedule of Studies for Major (Honours Program)

Semester 1

MATH*1200	[0.50]	Calculus I
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2.00 electives*

Semester 2

CIS*1500	[0.50]	Introduction to Programming
MATH*1210	[0.50]	Calculus II

1.50 electives

Semester 3

MATH*2200	[0.50]	Advanced Calculus I
STAT*2040	[0.50]	Statistics I

One of:

MATH*2150	[0.50]	Applied Matrix Algebra
MATH*2160	[0.50]	Linear Algebra I

1.00 electives**

Semester 4

MATH*2130	[0.50]	Numerical Methods
STAT*2050	[0.50]	Statistics II

1.50 electives**

Semester 5

STAT*3100	[0.50]	Introductory Mathematical Statistics I
STAT*3240	[0.50]	Applied Regression Analysis
STAT*3320	[0.50]	Sampling Theory with Applications

1.00 elective**

Semester 6

STAT*3110	[0.50]	Introductory Mathematical Statistics II
STAT*3210	[0.50]	Experimental Design

1.50 elective**

Semester 7

2.50 electives**

Semester 8

2.50 electives**

* See "Semester One Requirements" for Bachelor of Arts programs.

**Electives must satisfy the following requirements:

1. Electives must include at least 2.50 credits in Statistics at the 3000 or 4000 level, and an additional 0.50 credit in Statistics or Mathematics at the 2000 level or above.
2. At least 2.00 credits in Statistics must be at the 4000 level.
3. Electives plus core courses must include at least 7.00 credits at the 3000 or 4000 level.

Minor (Honours Program)

At least 5.00 credits in Statistics or Mathematics is required, including:

MATH*1200	[0.50]	Calculus I
MATH*1210	[0.50]	Calculus II
STAT*2040	[0.50]	Statistics I
STAT*2050	[0.50]	Statistics II
STAT*3100	[0.50]	Introductory Mathematical Statistics I
STAT*3110	[0.50]	Introductory Mathematical Statistics II
STAT*3240	[0.50]	Applied Regression Analysis

One of:

MATH*2150	[0.50]	Applied Matrix Algebra
MATH*2160	[0.50]	Linear Algebra I

0.50 additional credit in Statistics

0.50 additional credit in Statistics or Mathematics

Studio Art (SART)

School of Fine Art and Music, College of Arts.

The School offers programs that allow for concentrated study in Art History or in Studio Art, or for a more balanced study in the two disciplines. Both programs, however, require work in both Studio Art and Art History. Specific requirements are listed below.

Cost of Studio Supplies

The majority of the cost of supplies must be borne by the student. In order to permit the University to subsidize this cost and to allow for savings through discount buying, some

materials are obtained through the school by payment of a lab fee. The amount of the fee is established for each semester prior to registration.

Student Counselling

The students who elect to take a substantial number of credits in either Art History or Studio Art with the objective of graduate work are advised to obtain counselling from faculty regarding their choices. However, in general, it is important to know that graduate studies in Art History will usually require a reading knowledge of at least 2 languages other than English. German, French, Italian and Latin are among the most useful choices. Cognate electives in other disciplines in the College of Arts (such as History) will almost certainly prove an asset. A Studio career to the graduate level will normally require some education in all the traditional and contemporary media as well as an awareness of art theory.

Core Requirements

ARTH*1220	[0.50]	The Visual Arts Today
ARTH*1520	[0.50]	Art Historical Studies II
SART*1050	[0.50]	Integrated 2-D Media
SART*1060	[0.50]	Media Convergence

Major (Honours Program)

A minimum of 9.00 credits is required, including:

- a. the Studio Art core
- b. 2.00 additional credits in Studio Art, including at least 0.50 credit from List A and 0.50 from List B
- c. 2.00 additional credits in Art History including:
 - i. 0.50 credit in Canadian Art (ARTH*2060, ARTH*2490, ARTH*3010)
 - ii. 0.50 credit in Western Art (ARTH*2150, ARTH*2280, ARTH*2540, ARTH*2550, ARTH*2950, ARTH*3100, ARTH*3150, ARTH*3200, ARTH*3540, ARTH*3550, ARTH*3640)
 - iii. 0.50 credit in Modern and Contemporary Art (ARTH*2070, ARTH*2290, ARTH*2580, ARTH*2600, ARTH*3520, ARTH*3570)
 - iv. 0.50 credit in Art Theory, Critical Methodology and Museology (ARTH*2120, ARTH*2480, ARTH*3780)
- d. 3.00 additional credits in Studio Art or Art History

Note: at least 1.50 credits from the total of 9.00 credits must be taken in Studio Art or Art History at the 4000 level.

Minor (Honours Program)

A minimum of 6.00 credits is required, including:

- a. the Studio Art core
- b. 0.50 credit in Studio Art or Art History at the 4000 level
- c. 1.50 additional credits in Art History, including:
 - i. 0.50 credits in Canadian Art (ARTH*2060, ARTH*2490, ARTH*3010)
 - ii. 0.50 credit in Modern and Contemporary Art (ARTH*2070, ARTH*2290, ARTH*2580, ARTH*2600, ARTH*3520, ARTH*3570)
- d. 2.00 additional credits in Studio Art, including 0.50 credit from List A and 0.50 from List B

List A

SART*2090	[0.50]	Drawing I
SART*2200	[0.50]	Painting I
SART*2460	[0.50]	Introductory Printmaking I
SART*2470	[0.50]	Introductory Printmaking II
SART*2610	[0.50]	Photography I
SART*2700	[0.50]	Introduction to Computer Graphics
SART*2710	[0.50]	Drawing Graphics on the Computer
SART*3090	[0.50]	Drawing II
SART*3200	[0.50]	Painting II
SART*3410	[0.50]	Intaglio
SART*3450	[0.50]	Lithography
SART*3470	[0.50]	Photo-Printmaking
SART*3750	[0.50]	Photography II
SART*4090	[0.50]	Drawing III
SART*4100	[0.50]	Drawing IV
SART*4200	[0.50]	Painting III
SART*4210	[0.50]	Painting IV
SART*4230	[0.50]	Special Topics in Painting
SART*4410	[0.50]	Experimental Printmaking
SART*4450	[0.50]	Advanced Printmaking
SART*4700	[0.50]	Photography III
SART*4710	[0.50]	Photography IV

List B

SART*2300	[0.50]	Sculpture I
SART*2800	[0.50]	Extended Media I
SART*3300	[0.50]	Sculpture II

SART*3770	[0.50]	Extended Media II
SART*4300	[0.50]	Sculpture III
SART*4310	[0.50]	Sculpture IV
SART*4810	[0.50]	Extended Media III
SART*4820	[0.50]	Extended Media IV

Notes:

1. Students in the Art History Major or Minor cannot count more than 11.00 credits in Art History or 11.00 credits in Studio Arts towards their honours degree.
2. Details of advanced standing for transfer students from the Ontario College of Art and Design (OCAD) can be found in the section on Admission Information.
3. In accordance with the B.A. program regulation limiting the number of credits to be taken in any subject area, OCAD graduates granted the maximum advanced standing of credits in Studio Arts will be limited to 2.00 additional credits in Studio Arts at the University of Guelph.
4. A cumulative average of at least 70% in all course attempts in Studio Arts and Art History is required in order to enter or continue in the Honours Studio Arts program.

Visual Arts of the Americas (VAA) (Minor)**School of Fine Art and Music.**

The Minor program in Visual Arts of the Americas enables students to study the art history of Canada, the United States, and Central and South America as an integrated field where certain basic conditions are shared: the existence of aboriginal traditions persisting from the pre-conquest period, the confrontation of a variety of European, African and Asian cultural heritages, and a continuing post-colonial evolution producing hybrid cultural identities.

This program of study is designed as a complement to a significant number of Major specialization, suitable for any student wishing to broaden their knowledge beyond their Major area of study.

Minor (Honours Program)

(May not be taken in combination with Art History Honours Major).

A minimum of 5.00 credits is required, including:

- a. ARTH*1220 [0.50] The Visual Arts Today
 - ARTH*1510 [0.50] Art Historical Studies I
 - ARTH*1520 [0.50] Art Historical Studies II
- b. 3.50 additional credits in Art History as follows:
 - ARTH*2480 [0.50] Introduction to Art Theory and Criticism
 - ARTH*3220 [0.50] Nationalism and Identity in Art

Two of:

 - ARTH*2050 [0.50] Arts of the Americas: Latin America
 - ARTH*2060 [0.50] Arts of the Americas: Aboriginal Perspectives
 - ARTH*2070 [0.50] Arts of the Americas: The USA
 - ARTH*2490 [0.50] Arts of the Americas: Canada

Two of:

 - ARTH*3010 [0.50] Americas: Canada
 - ARTH*3050 [0.50] Americas: Meso America
 - ARTH*3060 [0.50] Americas: Public Art

One of:

 - ARTH*4050 [0.50] Questions in the Americas I
 - ARTH*4060 [0.50] Questions in the Americas II

Women's Studies (WMST)**Interdisciplinary Program.****Women's Studies Office, College of Arts, Ext. 54344.**

The Women's Studies program offers an interdisciplinary program that uses gender as its focus of analysis.

Area of Concentration (General Program)

A minimum of 5.00 credits is required, including:

- a. 4.50 credits from List A
- b. 0.50 additional credits from Lists A or B

Major (Honours Program)

A minimum of 8.00 credits is required, including:

- a. 4.50 credits from List A
- b. 3.50 additional credits from Lists A or B

At least 4.00 of these credits must be at the 3000 level or above.

Minor (Honours Program)

A minimum of 5.00 credits is required, including:

- a. 4.50 credits from List A
- b. 0.50 additional credits from Lists A or B

List A

WMST*1000	[0.50]	Introduction to Women's Studies
WMST*2000	[0.50]	Women and Representation

WMST*3000	[0.50]	Feminist Theory and Methods
WMST*3010	[0.50]	Gender and Diversity
WMST*4010	[0.50]	Seminar in Women's Studies

Two of:

ARTH*3780	[0.50]	Gender and Art
ENGL*2880	[0.50]	Women in Literature
HIST*2930	[0.50]	Women and Cultural Change
PHIL*2060	[0.50]	Philosophy of Feminism
PHIL*3210	[0.50]	Women in the History of Philosophy

Two of:

ANTH*3400	[0.50]	The Anthropology of Gender
GEOG*3090	[0.50]	Gender and Environment
ISS*3420	[0.50]	Women Social and Political Theorists
POLS*3710	[0.50]	Politics and Sexuality
PSYC*3300	[0.50]	The Psychology of Gender
SOAN*2400	[0.50]	Introduction to Gender Systems

List B

ENGL*4220	[0.50]	Special Topics in Women's Writings
FREN*3560	[0.50]	Contemporary French Women's Writings
HIST*2800	[0.50]	The History of the Modern Family
HIST*3020	[0.50]	Sexuality and Gender in History
HIST*3570	[0.50]	Women in Modern Europe
HUMN*3170	[0.50]	Women, Virtue and Honour in Spanish Drama (In English)
SOAN*3100	[0.50]	Comparative Perspectives on Families and Households
SOAN*4220	[0.50]	Canadian Rural Women
SOAN*4240	[0.50]	Women and the Development Process
WMST*3510	[0.50]	Directed Readings in Women's Studies
WMST*3520	[0.50]	Independent Workplace Learning in Women's Studies
WMST*4510	[0.50]	Advanced Topics in Women's Studies
WMST*4520	[0.50]	Advanced Topics in Women's Studies

An independent study or reading course on an appropriate topic from any subject area of the College of Arts or the College of Social and Applied Human Science may also be included in the program.

Bachelor of Arts and Sciences (B.A.S.)

The University of Guelph offers an 8 semester (20.00 credits) honours program leading to a Bachelor of Arts and Sciences (B.A.S.) degree.

The Bachelor of Arts & Sciences program is designed for students who are motivated equally by the study of Arts/Social Sciences and the Sciences, and who find challenge and satisfaction in testing the traditional boundaries of study through undergraduate level interdisciplinary work. The program meets these objectives through a unique structure that accredits students in an Arts/Social Sciences core, a Sciences core, a Subject Area core of interdisciplinary humanities and sciences courses (ASCI*), and a minor in each of the Arts/Social Sciences and the Sciences (see below for choices of minors). The structure of the program ensures disciplinary rigour and breadth through completion of core requirements for a B.A.S. degree, concentration in two distinct minors, and concentration of learning in an academic cohort of B.A.S. students through the interdisciplinary ASCI courses in the B.A.S. core. This core is open only to students in the B.A.S. program

Program Information

Academic Counselling

The B.A.S. program counsellor assists students in the selection of minors, interpreting program and academic regulations, and with the selection of appropriate courses for chosen minors and distribution requirements. Students should consult the counsellor when experiencing particular difficulties affecting academic standing and progress through the program. Students are encouraged to check the B.A.S. program website regularly for course information and cross-listing of acceptable credits where appropriate.

Counselling on Minors

Academic departments offer the minors in the B.A.S. program and assign faculty advisors to assist students with academic planning (e.g., a faculty advisor in the History department handles queries about a minor in History). Students should consult the appropriate faculty advisor, along with the B.A.S. Program Counsellor, when declaring a minor or requiring advice on the completion of specialization requirements. The list of faculty advisors is available on the Undergraduate Academic Information Centre website: http://www.uoguelph.ca/uaic/students_faculty.shtml or contact the B.A.S. Program Counsellor for further information.

Continuation of Study

To be eligible to continue in the program, students must meet the requirements for Continuation of Study as noted in Section VIII--Undergraduate Degree Regulations & Procedures of this calendar (Schedules 1 and 2).

Conditions for Graduation

To qualify for the degree Bachelor of Arts and Sciences, the student must successfully complete a minimum of 20.00 credits as identified below. In addition, students must meet the continuation of study requirements at the time of graduation and have a 60.00% cumulative average.

Distribution Requirements

This program will require the completion of 20.00 credits as indicated below, with a maximum of 7.00 credits at the 1000 level. First year core courses may be counted towards the minors.

1. First Year Core - 4.00 credits (2.00 Science and 2.00 Arts/Social Sciences).
2. Subject Area Core - (ASCI) - 3.00 credits.
3. Arts/Social Science Minor - 5.00 credits.
4. Science Minor - 5.00 credits
5. Free Electives - 3.00 credits.

1. First-year Core - 4.00 credits

Science Core - 2.00 credits including:

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I

One of:

MATH*1080	[0.50]	Elements of Calculus I
MATH*1200	[0.50]	Calculus I

One of:

PHYS*1000	[0.50]	An Introduction to Mechanics
PHYS*1070	[0.50]	Introductory Physics for Life Sciences
PHYS*1110	[0.50]	Introductory Physics with Applications I

Arts and Social Science Core - 2.00 credits including:

- 1.00 credit over at least 2 different subject areas in the College of Arts: ARTH - Art History; CLAS - Classical Studies; DRMA - Drama; ENGL - English; EURO - European Studies; FREN - French Studies; GERM - German Studies; GREK - Greek; HIST - History; HUMN - Humanities; ITAL - Italian Studies; LAT - Latin Studies; LING - Linguistics; MUSC - Music; PHIL - Philosophy; SART - Studio Art; SPAN - Spanish Studies; WMST - Women's Studies
- 1.00 credit over at least 2 different subject areas in the College of Social and Applied Human Sciences: ANTH - Anthropology; ECON - Economics; GEOG - Geography; IDEV - International Development Studies; ISS - Interdisciplinary Social Science;

POLS - Political Science; PSYC - Psychology; SOAN - Sociology and Anthropology; SOC - Sociology;

2. Subject Area Core - 3.00 credits

• 1.50 credits from:

ASCI*1000	[0.50]	Society and Science I: Historical Perspectives
ASCI*1010	[0.50]	Society and Science II: Current Issues
ASCI*2000	[0.50]	Modes of Inquiry and Communication Across Disciplines

• 0.50 credits from:

ASCI*3000	[0.50]	Arts and Sciences Community Project
or		
ASCI*3100	[0.50]	Case Studies in Arts and Sciences Research

• 1.00 credits from:

ASCI*4000	[0.50]	Arts and Sciences Honours Seminar
ASCI*4010	[0.50]	Arts and Sciences Honours Research Seminar
ASCI*4020	[0.50]	Topics in Arts and Sciences Research
ASCI*4030	[0.50]	Topics in Arts and Sciences Research

Note: Of the 20.00 credits required for this program, 3.00 credits must be completed at the 3000 or 4000 level, and 2.00 credits at the 4000 level. This requirement is partially fulfilled by senior level courses in the Subject Core (ASCI) requirements.

3. Arts/Social Sciences Minors - 5.00 credits

Minors available in the Arts/ Social Sciences core (see B.A. program descriptions):

Anthropology
 Art History
 Art Theory and Criticism
 Business Administration
 Classical Languages
 Classical Studies
 Cognitive Neuropsychology
 Criminal Justice & Public Policy
 Developmental Psychology
 Drama
 Economics
 Educational Psychology
 English
 Environmental Studies
 Family & Child Studies
 French Studies
 Geography
 German
 History
 International Development
 Italian
 Marketing Management
 Museum Studies
 Music
 Organizational Behaviour
 Philosophy
 Political Science
 Rural Extension Studies
 Social Psychology
 Sociology
 Spanish
 Studio Art
 Visual Art of the Americas
 Women's Studies

4. Science Minor - 5.00 credits

Minors available in the Science core (see B.Sc. program descriptions):

Biochemistry
 Biology
 Biotechnology
 Chemistry
 Computing & Information Science
 Ecology
 Food Science
 Forest Science
 Functional Foods & Nutraceuticals

Genetics
Geology
GIS* & Environmental Analysis
Mathematics
Microbiology
Neuroscience
Nutritional Sciences
Plant Biology
Physics
Statistics
Zoology

* Geographic Information Systems

5. Free Electives - 3.00 credits (maximum)

The program includes 3.00 free electives. Electives may be completed in any subject area. The number of free electives is reduced if a minor requires more than 5.00 credits.

This program includes 3.00 credits at the 3000 or 4000 level, including 2.00 credits at the 4000 level. This requirement is partially fulfilled by senior level courses in the Subject Area Core (ASCI) requirements.

A maximum of 7.00 credits at the 1000 level may be counted toward the 20.00 credit requirement.

Double Counting Rule

A maximum of 1.00 credits may be double-counted.

If a credit is double-counted towards both the first year core and one minor, it cannot be counted towards the second minor.

Bachelor of Bio-Resource Management Degree (B.BRM)

The University of Guelph, in collaboration with the regional campus at Ridgetown, offers a 20.00 credit program, normally completed over 8 semesters, leading to a Bachelor of Bio-Resource Management degree (B.BRM). This degree was designed for students who do not intend to pursue post-graduate studies and are strongly focused on securing employment that makes use of the knowledge acquired in their bachelor's degree.

This degree is a unique blend of applied and theoretical learning, with an emphasis on experiential learning opportunities. It is designed for those with a commitment to urban, regional, and/or rural stewardship and service of our living resources.

This degree program is not open until Fall 2006. At that time it is anticipated that two majors, Horticulture Management and Environmental Management (pending), will be available.

Program Information

Students are required to follow the Schedule of Studies for the major in Horticulture Management. A solid grounding in applied aspects of science, technology and business provides graduates with sufficient breadth or expertise to become knowledgeable managers in all aspects of the horticultural business. The first 10.00 credits are available through the Ridgetown campus, and the additional 10.00 credits are available through the Guelph campus.

Academic Advising and Counselling

Program Counselling

Program Counsellors are available at both the Ridgetown and Guelph campuses to assist students with course selection and other questions pertaining to the degree program. For information about how to contact a program counsellor, and for more information about academic advising and program counselling, see Section VII -- Academic Counselling of the current Undergraduate Calendar

Academic Advising

On entering the program all students are assigned to a faculty advisor who will mentor them throughout their first two years. The faculty advisor is familiar with the academic requirements of the program and is aware of career opportunities. Students are strongly encouraged to attend all meetings called by their advisor, and to set up individual meetings with him/her when they have questions or concerns about their performance or progress in the program.

Continuation of Study

Students are advised to consult the regulations for Continuation of Study which are outlined in detail in Section VIII -- Undergraduate Degree Regulations & Procedures in the current calendar. Students in the B.BRM program may repeat any failed course only once. Failure to successfully complete a required (core) credit on the second attempt results in the student not being permitted to continue in his/her major and/or degree program.

Conditions for Graduation

To qualify for the degree Bachelor of Bio-Resource Management, the student must satisfy the following conditions:

- the student must have successfully completed the Schedule of Studies requirements for the specified major
- the student must have a cumulative average of 60% or higher.

Schedule of Studies

Courses specified in the Schedule of Studies are required courses and must be successfully completed. A full time course load normally includes 2.50 credits (normally 5 courses). Students must successfully complete a minimum of 4.00 university credits and/or course equivalents at the 3000 level or higher, of which at least 1.00 credit must be at the 4000 level. In addition to core requirements, students must successfully complete at least 4.00 credits from the list of Restricted Electives.

B.BRM Program Regulations

Entry Credits

Students entering the degree program who are deficient in U level Biology, Mathematics, or Chemistry should consult with the program counsellor. Information about Summer semester courses will be available through Ridgetown College.

It is recommended that prior to enrolment in the degree program, students lacking Grade 12U Advanced Functions and Introductory Calculus enrol in the non-credit course "Getting Ready for Calculus" offered through the Office of Open Learning.

In general, the 4U or OAC credit or its equivalent is required in a subject area to allow entrance to the initial university course. Students who lack this requirement can remedy the deficiency by successful completion of BIOL*1020 for students lacking biology, CHEM*1060 for students lacking chemistry, and MATH*1000 for students lacking "advanced functions and introductory calculus". Not more than one of the above courses will be allowed for credit towards the B.BRM degree.

Special Expenses

Expenses for field trips can range from \$20 to \$50 per semester in the first 4 semesters and from \$25 to \$50 in each of the last 4 semesters. In certain courses modest expenses will be incurred for supplies.

Provisional Schedule of Studies

Horticulture Management Major

This major will require the completion of 20.00 credits.

Semesters 1 to 4 offered at the Ridgetown campus

Semester 1- Fall

AGEC*1100	[0.50]	Introduction to Business
CIS*1000	[0.50]	Introduction to Computer Applications
HORT*1050	[0.50]	Introduction to Horticultural Management
SOIL*2010	[0.50]	Soil Science *

One of:

HORT*1060	[0.50]	Plant Identification I. Woody Landscape Plants
HORT*1080	[0.50]	Fruit and Vegetable Production

*(Note: Students deficient in U level Biology must register in BIOL*1020 in place of this course).

Semester 2 - Winter

BIOL*1030	[0.50]	Biology I
AGR*1050	[0.50]	Communication Skills

0.50 restricted electives

One of:

HORT*1100	[0.50]	Plant Propagation Techniques
ENVB*1010	[0.50]	Food Crop Pest Management**

One of:

SOIL*2010	[0.50]	Soil Science
(if BIOL*1020 was selected in Semester 1)		
(Note SOIL*2010 must be taken if not taken in Semester 1)		
HORT*1200	[0.50]	Advanced Vegetable Production
EDRD*1150	[0.50]	Landscape Design I

**students deficient in either U level Mathematics or Chemistry must register for either MATH*1000 or CHEM*1060 in place of these courses.

Semester 3- Fall

CHEM*1300	[0.50]	Introductory Environmental Chemistry
AGEC*2220	[0.50]	Financial Accounting
AGR*2100	[0.50]	Human Resource Management
BIOL*1040	[0.50]	Biology II

One of:

HORT*2060	[0.50]	Plant Identification II
HORT*2010	[0.50]	Greenhouse Management

Semester 4- Winter

AGEC*2230	[0.50]	Management Accounting
HORT*2200	[0.50]	Integrated Project

1.00 restricted electives

One of:

AGEC*2110	[0.50]	Sales and Sales Management
COST*1000	[0.50]	Introduction to Marketing Management

Semesters 5 to 8 offered on Guelph campus

Semester 5- Fall

AGR*3500	[0.50]	Experiential Education
AGEC*3100	[0.50]	Applied Project and Production Management

1.00 restricted electives

One of:

ENVB*2040	[0.50]	Biology of Plant Pests
BOT*3410	[0.50]	Plant Anatomy

Semester 6 - Winter

STAT*2060	[0.50]	Statistics for Business Decisions
HORT*3150	[0.50]	Environmental Issues in Horticulture

0.50 restricted electives

0.50 electives

One of:

BOT*3310	[0.50]	Plant Physiology
PBIO*3110	[0.50]	Crop Physiology

Semester 7 - Fall

AGR*4150	[0.50]	Experiential Education II
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0.50 restricted electives

One of:

MET*2020	[0.50]	Agrometeorology
SOIL*3080	[0.50]	Soil and Water Conservation

Semester 8 - Winter

AGEC*4100	[0.50]	Strategic Business Project
AGR*4050	[0.50]	Professionalism and Agrology

0.50 restricted electives

1.00 electives

Horticulture Management Major Restricted Electives

In addition to the 13.50 required credits listed above, students must take a minimum of 4.00 restricted electives throughout the program. Students must select at least 2.50 credits from List A (Science and Discipline) and at least 1.50 credits from List B (Business).

List A: Science and Discipline**Available at Regional Campus**

CROP*2150	[0.50]	Organic Crop Production
EDRD*1150	[0.50]	Landscape Design I
EDRD*2050	[0.50]	Landscape Construction and Planning
EDRD*2150	[0.50]	Graphic Communications and CAD
ENVB*2070	[0.50]	Tree Biology and Management
HORT*1200	[0.50]	Advanced Vegetable Production
HORT*2010	[0.50]	Greenhouse Management
HORT*2050	[0.50]	Greenhouse Crop Production
HORT*2080	[0.50]	Horticulture Weed Science
HORT*2100	[0.50]	Nursery Management

Available by Distance Education

LARC*1950	[0.50]	History of Cultural Form I
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Available at Guelph Campus

BOT*2100	[0.50]	Life Strategies of Plants
ENVB*3030	[0.50]	Pesticides and the Environment
ENVB*3040	[0.50]	Natural Chemicals in the Environment
ENVB*3110	[0.50]	Natural History of Insects
ENVB*3210	[0.50]	Plant Pathology
GEOG*3320	[0.50]	Agriculture and Society
HORT*3220	[0.50]	Turf Management
HORT*3340	[0.50]	Culture of Plants
HORT*4250	[0.50]	Nursery Production
HORT*4300	[0.50]	Postharvest Physiology
LARC*2100	[0.50]	Landscape Analysis
LARC*2410	[0.50]	Site Engineering
LARC*2820	[0.50]	Urban and Regional Planning
LARC*3040	[0.75]	Site Planning and Design Studio
LARC*4620	[1.00]	Internship in Landscape Architecture
MET*2020	[0.50]	Agrometeorology
REXT*2000	[0.50]	Introduction to Rural Extension
REXT*3000	[0.50]	Program Development and Evaluation
REXT*3100	[0.50]	Teaching and Learning in Non-Formal Education
REXT*4100	[0.50]	Leadership Development in Rural Organization
SOIL*2120	[0.50]	Introduction to Environmental Stewardship
SOIL*3050	[0.50]	Land Utilization
SOIL*3200	[0.50]	Environmental Soil Biology
SOIL*4090	[0.50]	Soil Management

List B: Business**Available at Regional Campus**

AGEC*2120	[0.50]	Business Marketing
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Available by Distance Education

COST*1000	[0.50]	Introduction to Marketing Management
PSYC*1100	[0.50]	Principles of Behaviour
PSYC*1200	[0.50]	Dynamics of Behaviour
SOC*1100	[0.50]	Sociology

Available at Guelph Campus

AGEC*4210	[0.50]	World Agriculture and Economic Development
AGEC*4250	[0.50]	Business Policy
AGEC*4370	[0.50]	Marketing Management
COST*2600	[0.50]	Fundamentals of Consumer Behaviour
ECON*1100	[0.50]	Introductory Macroeconomics
ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*2740	[0.50]	Economic Statistics
ECON*3560	[0.50]	Theory of Finance
MATH*1080	[0.50]	Elements of Calculus I
REXT*3080	[0.50]	Technology in Extension

Bachelor of Commerce (B.Comm)

The University of Guelph offers an 8 semester honours program leading to a Bachelor of Commerce degree. Students must select one of the following 8 major areas of study:

Agricultural Business
 Hotel and Food Administration
 Housing and Real Estate Management
 Human Resources Management
 Management Economics in Industry and Finance
 Marketing Management
 Public Management
 Tourism Management

The program is of an interdisciplinary nature drawing, according to the major, on appropriate courses in the humanities; social sciences; food, physical and biological sciences. It is designed to give students a broad exposure to the basic disciplines (e.g. economics, psychology or sociology) and a sound professional management education with a focus on specific industry sectors or management functions which prepare the graduates to assume positions of responsibility in particular areas of management and business. The early semesters are devoted to instruction in the basic disciplines while the later semesters are devoted to more professional studies. Students who complete these majors may be given credit on a subject for subject basis for courses in the first year of an M.B.A. program.

Program Information

Academic Counselling

Program Counselling

The B.Comm. program counsellor is available to assist prospective students in the selection of their major and initial courses, and to respond to questions regarding any other aspects of their anticipated program. The program counsellor will also assist in-course students who need information or advice about their program or other academic regulations, who seek information on services and resources available to students or who are contemplating transfer into or out of their current major or degree program.

Departmental Advising

On entering the program, all students are assigned a departmental advisor to whom they may turn for consultation in scheduling of courses and selection of electives, academic requirements of the program, and information concerning career opportunities. The required course selections and, where required, restricted electives are presented in the following pages.

Special Expenses

Expenses may include cost of field trips and supplies and, for some majors, laboratory coats and other protective clothing.

Study Abroad

Global understanding and perspectives are regarded as being of central importance among the university's learning objectives, as they are, also, in understanding the international business environment. On both of these accounts, students enrolled in the B.Comm. program are urged to participate in one of the several exchange and study abroad programs specifically designed for the Commerce program. Planning for such participation is best undertaken quite early in the course of studies. For more specific information on the opportunities provided for a semester in France and other locations refer to Section V--International Study or contact the B.Comm. program counsellor.

Continuation of Studies

Students are advised to consult the regulations for Continuation of Study within the program which are outlined in detail in Section VIII--Undergraduate Degree Regulations and Procedures

Conditions of Graduation

To qualify for a Bachelor of Commerce degree for a specific major the student must successfully complete a minimum of 20.00 approved credits. The requirements for each major are set out in the schedule of studies.

Schedule of Studies

Courses specified in the schedule of studies are required courses and must be completed successfully. A full course load normally involves 2.50 credits. The requirements for each major are set out below.

Agricultural Business (AGBU)

Department of Agricultural Economics and Business, Ontario Agricultural College.

The Agricultural Business major is concerned with the management problems of business firms and prepares students for a range of management careers in agribusiness.

Graduates of the Agricultural Business program meet the educational requirements for membership in the Ontario Institute of Agrologists. The Ontario Institute of Agrologists is the professional organization in agriculture in the Province of Ontario. Professional institutes in the various provinces in Canada and the scientific societies in agriculture

collectively comprise the Agricultural Institute of Canada. The program has been fully accredited by the Agricultural Institute of Canada.

Included in the core requirements, the Agricultural Business program provides students with the option of selecting from the Restricted Electives list courses that will compliment their studies. The first option (List A) is designed for students more interested in the business relationships of farming and involves marketing and advanced farm management. The second option (List B) emphasizes the production aspects of farming and involves biology and either animal or plant systems.

The major is administered by the Department of Agricultural Economics and Business in the Ontario Agricultural College and students are urged to consult the departmental advisor. For this major, 15.00 of the 20.00 credits (including 1.50 credits from List A or List B) are specified as core requirements and the remaining 5.00 credits are specified as electives.

Major

Semester 1

AGR*1100	[0.50]	Introduction to the Agrifood System
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1000	[0.50]	Introductory Calculus

1.00 elective

Note: Students who are exceptionally strong in mathematics may substitute either MATH*1080 or MATH*1200 for MATH*1000.

Semester 2

AGR*1250	[0.50]	Agrifood System Trends and Issues
CIS*1200	[0.50]	Introduction to Computing
ECON*1100	[0.50]	Introductory Macroeconomics
PSYC*1200	[0.50]	Dynamics of Behaviour

0.50 elective

Semester 3

AGEC*2220	[0.50]	Financial Accounting
AGR*2400	[0.50]	Economics of the Canadian Food System
ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2740	[0.50]	Economic Statistics

0.50 from List A or List B

Semester 4

AGEC*2230	[0.50]	Management Accounting
AGEC*2410	[0.50]	Agrifood Markets and Policy
ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*2770	[0.50]	Introductory Mathematical Economics

1 of:

0.50 from List A and 0.50 elective for students selecting List A

1.00 elective for students selecting List B

Semester 5

AGEC*3320	[0.50]	Financial Management
COST*3040	[0.50]	Business and Consumer Law
ECON*3740	[0.50]	Introduction to Econometrics

0.50 from List A or List B

0.50 elective

Semester 6

AGEC*3310	[0.50]	Operations Management
ECON*3560	[0.50]	Theory of Finance
HTM*4390	[0.50]	Individuals and Groups in Organizations

Students choosing List A take 1.00 elective

Students choosing List B take 0.50 from List B and 0.50 elective

Semester 7

AGEC*3030	[0.50]	The Firm and Markets
AGEC*4250	[0.50]	Business Policy
AGEC*4370	[0.50]	Marketing Management

1.00 elective

Semester 8

AGEC*4000	[0.50]	Agricultural and Food Policy
AGEC*4240	[0.50]	Futures and Options Markets
AGR*4500	[0.50]	Agrifood Industry Problem-Solving

1 of:

0.50 from List A and 0.50 elective for students selecting List A

1.00 elective for students selecting List B

Restricted Electives

After completion of the first year of the Agricultural Business program, students have the option of selecting three courses from List A or three courses from List B. In order to satisfy the core requirements, students must complete three courses from one of the lists. Students are encouraged to take these courses in the semester indicated in the schedule of studies.

List A

Semester 3		
COST*1000	[0.50]	Introduction to Marketing Management

Semester 4		
COST*2600	[0.50]	Fundamentals of Consumer Behaviour
Semester 8		
AGEC*4220	[0.50]	Advanced Farm Management

List B*

BIOL*1020 in Semester 3
(2 of ANSC*2340, ANSC*2350, ANSC*2360, ANSC*3150, AGR*2470, and CROP*2110)

* students with OAC Biology may elect to take BIOL*1030 in Semester 3

Agricultural Business (Co-op) (AGBU:C)

Department of Agricultural Economics and Business, Ontario Agricultural College.

Major

Semester 1 - Fall

AGR*1100	[0.50]	Introduction to the Agrifood System
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1000	[0.50]	Introductory Calculus
1.00 elective		

Note: Students who are exceptionally strong in mathematics may substitute either MATH*1080 or MATH*1200 for MATH*1000.

Semester 2 - Winter

AGR*1250	[0.50]	Agrifood System Trends and Issues
CIS*1200	[0.50]	Introduction to Computing
ECON*1100	[0.50]	Introductory Macroeconomics
PSYC*1200	[0.50]	Dynamics of Behaviour
0.50 elective		

Semester 3 - Fall

AGEC*2220	[0.50]	Financial Accounting
AGR*2400	[0.50]	Economics of the Canadian Food System
COOP*1100	[0.00]	Introduction to Co-operative Education
ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2740	[0.50]	Economic Statistics
0.50 elective from List A or List B		

Semester 4 - Winter

AGEC*2230	[0.50]	Management Accounting
AGEC*2410	[0.50]	Agrifood Markets and Policy
ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*2770	[0.50]	Introductory Mathematical Economics
0.50 from List A or List B		

Summer Semester

COOP*1000	[0.00]	Co-op Work Term I
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Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

AGEC*3310	[0.50]	Operations Management
COST*3040	[0.50]	Business and Consumer Law
ECON*3740	[0.50]	Introduction to Econometrics
1.00 electives		

Summer Semester

Optional academic term.

Semester 6 - Fall

AGEC*3320	[0.50]	Financial Management
ECON*3560	[0.50]	Theory of Finance
HTM*4390	[0.50]	Individuals and Groups in Organizations
1.00 elective		

Winter Semester

COOP*3000	[0.00]	Co-op Work Term III
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Summer Semester

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 7 - Fall

AGEC*3030	[0.50]	The Firm and Markets
AGEC*4250	[0.50]	Business Policy
AGEC*4370	[0.50]	Marketing Management

Students choosing List A take 1.00 elective

Students choosing List B take 0.50 from List B and 0.50 elective

Semester 8 - Winter

AGEC*4000	[0.50]	Agricultural and Food Policy
AGEC*4240	[0.50]	Futures and Options Markets
AGR*4500	[0.50]	Agrifood Industry Problem-Solving

Students choosing List A take 0.50 from List A and 0.50 elective

Students choosing List B take 1.00 elective

Restricted Electives

As for the regular program.

Last Revision: October 18, 2005

Hotel and Food Administration (HAFA)

School of Hospitality and Tourism Management, College of Social and Applied Human Sciences.

The Hotel and Food Administration major prepares graduates to assume positions of responsibility in any aspect of the hospitality field. It includes principles of administration, theories of interpersonal relations, human resources management, and communications. Distinctive courses include Hospitality Facilities Management and Design and Lodging Management. The courses in this program relate to the management of both the accommodation and food service facilities used by the public and private sector. The major is administered by the School of Hospitality and Tourism Management and students are urged to consult the departmental advisor.

For this major, 14.50 of the 20.00 credits are specified as core requirements, 3.00 as restricted electives, and 2.50 as electives. Verified work experience in the hospitality industry is required for students to be eligible for graduation.

Group work is a significant part of core credit work.

Major

Semester 1

ECON*1050	[0.50]	Introductory Microeconomics
HTM*1000	[0.50]	Introduction to Hospitality and Tourism Management
POLS*1400	[0.50]	Public Management and Administration
PSYC*1200	[0.50]	Dynamics of Behaviour

One of:*

CHEM*1100	[0.50]	Chemistry Today
HTM*2700	[0.50]	Introductory Foods

*CHEM*1100 must be taken by students without Grade 12U or OAC Chemistry. If CHEM*1100 is not required, then a total of 3.50 restricted electives are required.

Semester 2

ECON*1100	[0.50]	Introductory Macroeconomics
HTM*2000	[0.50]	Hospitality and Tourism Purchasing Management
HTM*2100	[0.50]	Lodging Operations
HTM*2120	[0.50]	Hospitality and Tourism Marketing I

0.50 from List A or List B or electives

Semester 3

2.50 from List A or List B or electives

Semester 4

STAT*2060	[0.50]	Statistics for Business Decisions
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2.00 from List A or List B or electives

Semester 5

HTM*3030	[0.50]	Beverage Management
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2.00 from List A or List B or electives

Semester 6

HTM*3120	[0.50]	Operations Analysis in the Hospitality and Tourism Industry
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2.00 from List A or List B or electives

Semester 7

2.50 from List A or List B or electives

Semester 8

2.50 from List A or List B or electives

List A - Further Required Courses

The following 8.50 credits are also required. Further details on the scheduling of courses will be provided in writing prior to each course selection period by the School's faculty advisor.

Semester 1 or 2

HTM*2700	[0.50]	Introductory Foods
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Semester 2 or 3

HTM*2010	[0.50]	Hospitality and Tourism Business Communications
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Semester 3 or 4

AGEC*2220	[0.50]	Financial Accounting
COST*2020	[0.50]	Information Management
COST*3040	[0.50]	Business and Consumer Law
HTM*2030	[0.50]	Control Systems in the Hospitality and Tourism Industry
HTM*2200	[0.50]	Organizational Behaviour I

Semester 4 or 5

HTM*3070	[0.50]	Hospitality and Tourism Management Accounting
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Semester 5 or 6

AGEC*3320	[0.50]	Financial Management
HTM*3000	[0.50]	Human Resources Management
HTM*3080	[0.50]	Hospitality and Tourism Marketing II
HTM*3090	[1.00]	Foodservice Operations Management

Semester 7 or 8

HTM*4090	[0.50]	Hospitality and Tourism Facilities Management and Design
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HTM*4100	[0.50]	Organizational Behaviour II
HTM*4190	[0.50]	Hospitality and Tourism Operations Planning
HTM*4200	[0.50]	Policy Issues in Hospitality and Tourism Management

List B - Restricted Electives

In addition to the 14.50 required credits listed above, students must take a minimum of 3.00 restricted electives throughout the program. Students may choose to explore a variety of subjects or may choose to study an area allied to their major in some depth. Restricted electives are listed below and have been grouped in major topical areas which are related to, or are an extension of, the professional interests of the major. Students may, however, choose restricted electives from any of those listed without regard to the categories, which are intended to be suggestive.

Courses dealing with the social and economic environment of business firms and other administrative entities in the hospitality industry:

ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*3510	[0.50]	Money, Credit and the Financial System
ECON*3520	[0.50]	Labour Economics
ECON*3560	[0.50]	Theory of Finance
PHIL*1010	[0.50]	Introductory Philosophy: Social and Political Issues
PHIL*2600	[0.50]	Business and Professional Ethics
SOC*2190	[0.50]	Technology and Society

Courses dealing with human behaviour particularly as related to work and work groups:

ANTH*1150	[0.50]	Anthropology
ECON*2200	[0.50]	Industrial Relations
PSYC*2310	[0.50]	Introduction to Social Psychology
SOAN*2040	[0.50]	Globalization of Work and Organizations
SOC*1100	[0.50]	Sociology

Courses dealing with market forces and consumer behaviour:

AGEC*4360	[0.50]	Marketing Research
COST*1000	[0.50]	Introduction to Marketing Management
COST*2600	[0.50]	Fundamentals of Consumer Behaviour
COST*3600	[0.50]	Consumer Information Processes
COST*3620	[0.50]	Advertising Management

Courses related to the study of tourism:

EDRD*3500	[0.50]	Recreation and Tourism Planning
GEOG*1220	[0.50]	Human Impact on the Environment
GEOG*3490	[0.50]	Tourism and Environment
HTM*2050	[0.50]	Dimensions of Tourism
HTM*2170	[0.50]	Canadian Tourism Policy, Planning and Development
HTM*3250	[0.50]	Tourism in Canada

Courses relating to institutional foodservice management:

AGR*1250	[0.50]	Agrifood System Trends and Issues
CHEM*1040	[0.50]	General Chemistry I
CHEM*1050	[0.50]	General Chemistry II
FOOD*2150	[0.50]	Introduction to Nutritional and Food Science
FOOD*3700	[0.50]	Sensory Evaluation of Foods
HTM*2740	[0.50]	Cultural Aspects of Food
NUTR*1010	[0.50]	Nutrition and Society
NUTR*2050	[0.50]	Family and Community Nutrition

Specialized courses in Hospitality and Tourism Management:

HTM*2070	[0.50]	Meetings and Convention Management
HTM*3060	[0.50]	Lodging Management
HTM*3150	[0.50]	Experiential Learning in the Hospitality Industry
HTM*3180	[0.50]	Casino Operations Management
HTM*3200	[0.50]	Club Management Operations
HTM*3780	[0.50]	Economics of Food Usage
HTM*4050	[0.50]	Wine and Oenology
HTM*4110	[0.50]	Restaurant Operations
HTM*4120	[0.50]	Hospitality Business Management
HTM*4130	[0.50]	Current Management Topics
HTM*4140	[0.50]	Current Management Topics
HTM*4150	[0.50]	Current Management Topics
HTM*4500	[0.50]	Special Study in Hospitality and Tourism

Other subjects related to the study of administration:

AGEC*2230	[0.50]	Management Accounting
AGEC*3310	[0.50]	Operations Management
AGEC*3330	[0.50]	Intermediate Accounting
AGEC*4250	[0.50]	Business Policy
AGEC*4370	[0.50]	Marketing Management
AGEC*4410	[0.50]	Sales and Sales Management
COST*2100	[0.50]	Personal Financial Management

Other restricted electives:

CIS*1000	[0.50]	Introduction to Computer Applications
COST*2820	[0.50]	Housing Finance
COST*3010	[0.50]	Quality Management
ECON*3520	[0.50]	Labour Economics
ENGL*1200	[0.50]	Reading the Contemporary World

ENGL*1410	[0.50]	Major English Writers
PHIL*2100	[0.50]	Critical Thinking
REXT*3040	[0.50]	Communication Process
REXT*3060	[0.50]	International Communication

Students may select up to 2.00 credits in any foreign language as restricted electives.

Electives

In addition to the 14.50 required credits and the 3.00 restricted electives, the student has 2.50 electives throughout the program which may be fulfilled by selecting courses in any subject provided that the student is qualified to take the course and can schedule it.

Hotel and Food Administration (Co-op) (HAFA:C)

School of Hospitality and Tourism Management, College of Social and Applied Human Sciences.

The principal aim of the Hotel and Food Administration Co-op program is to facilitate the transition of students from academic studies to a professional work life by enhancing the integration of theory and practice. The major is administered by the School of Hospitality and Tourism Management and students are urged to consult the departmental co-op faculty advisor. The co-op work program consists of one twelve-month period. The work semester begins at the end of the second year and extends from May to April. The co-op program is completed over a 5 year period. The academic program consists of 20.00 credits, 15.00 of which are specified as core requirements, 2.50 as restricted electives, and 2.50 as electives.

Major**Semester 1 - Fall**

ECON*1050	[0.50]	Introductory Microeconomics
HTM*1000	[0.50]	Introduction to Hospitality and Tourism Management
POLS*1400	[0.50]	Public Management and Administration
PSYC*1200	[0.50]	Dynamics of Behaviour

One of:*

CHEM*1100	[0.50]	Chemistry Today
HTM*2700	[0.50]	Introductory Foods

*CHEM*1100 must be taken by students without Grade 12U or OAC Chemistry. If CHEM*1100 is not required, then a total of 3.00 restricted electives are required.

Semester 2 - Winter

ECON*1100	[0.50]	Introductory Macroeconomics
HTM*2000	[0.50]	Hospitality and Tourism Purchasing Management
HTM*2100	[0.50]	Lodging Operations
HTM*2120	[0.50]	Hospitality and Tourism Marketing I

0.50 from List A or List B or electives

Semester 3 - Fall

COOP*1100	[0.00]	Introduction to Co-operative Education
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2.50 from List A or List B or electives

Semester 4 - Winter

STAT*2060	[0.50]	Statistics for Business Decisions
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2.00 from List A or List B or electives

Summer Semester

COOP*1000	[0.00]	Co-op Work Term I
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Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Winter Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 5 - Fall

HTM*3030	[0.50]	Beverage Management
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2.00 from List A or List B or electives

Semester 6 - Winter

HTM*3120	[0.50]	Operations Analysis in the Hospitality and Tourism Industry
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2.00 from List A or List B or electives

Semester 7 - Fall

2.50 from List A or List B or electives

Semester 8 - Winter

HTM*4300	[0.50]	Co-operative Education Seminar
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2.00 from List A or List B or electives

Note: For courses included in List A or List B refer to the regular major.

Housing and Real Estate Management (HREM)

Department of Marketing and Consumer Studies, College of Social and Applied Human Sciences.

The Housing and Real Estate Management major in the B.Comm. program offers a multi-disciplinary approach to the study of housing, focusing on the delivery of housing services, the management of housing and real estate and on the economic and social policy context.

The major shares a common core with other majors in the B.Comm. program. The focus of the major is on the development of conceptual, analytical and management skills required for professional careers in the field of housing and real estate management.

Students in the major study housing and real estate in the context of an assemblage of physical, financial, legal, political and social elements, making linkages between and among elements and then use this knowledge to apply to the management and analysis of housing services systems, and the appraisal of housing policy.

Students graduate with a degree leading to a variety of professional positions in the public and private sectors or continue on to graduate work in business, planning or the social sciences.

Students in the Housing and Real Estate Management major are required to take the courses listed below. In addition, some may wish to make use of groupings of elective courses in order to pursue individual interests or develop additional focus.

Major

Semester 1

COST*1000	[0.50]	Introduction to Marketing Management
COST*1800	[0.50]	Housing and Community Planning
ECON*1050	[0.50]	Introductory Microeconomics
PSYC*1200	[0.50]	Dynamics of Behaviour

0.50 elective

Semester 2

COST*1400	[0.50]	Introduction to Design
ECON*1100	[0.50]	Introductory Macroeconomics
ISS*2500	[0.50]	Management in Organizations
MATH*1000	[0.50]	Introductory Calculus

0.50 elective

Note: Students who are exceptionally strong in mathematics may substitute either MATH*1080 or MATH*1200 for MATH*1000.

Semester 3

AGEC*2220	[0.50]	Financial Accounting
COST*2810	[0.50]	Social Aspects of Housing
ECON*2310	[0.50]	Intermediate Microeconomics
STAT*2080	[0.50]	Introductory Applied Statistics I

0.50 elective

Semester 4

AGEC*2230	[0.50]	Management Accounting
COST*2020	[0.50]	Information Management
COST*2820	[0.50]	Housing Finance
STAT*2090	[0.50]	Introductory Applied Statistics II

0.50 elective

Semester 5

COST*4840	[0.50]	Housing and Real Estate Law
COST*4850	[0.50]	Housing Policies
ECON*2410	[0.50]	Intermediate Macroeconomics
POLS*2300	[0.50]	Canadian Government

0.50 elective

Semester 6

COST*3030	[0.50]	Research Methods
COST*4860	[0.50]	Housing Industry Structure and Process
LARC*2820	[0.50]	Urban and Regional Planning
POLS*2250	[0.50]	Public Administration

0.50 elective

Semester 7

COST*4820	[0.50]	Real Estate Appraisal
ECON*3500	[0.50]	Urban Economics
ECON*3510	[0.50]	Money, Credit and the Financial System
ECON*3560	[0.50]	Theory of Finance

0.50 elective

Semester 8

COST*3890	[0.50]	Property Management
COST*4810	[0.50]	Housing Services Systems
POLS*3270	[0.50]	Local Government in Ontario

1.00 elective

Housing and Real Estate Management (Co-op) (HREM:C)

Department of Marketing and Consumer Studies, College of Social and Applied Human Sciences.

A principal aim of the Co-op program is to facilitate the transition of students from academic studies to a professional career in housing and real estate management by enhancing the integration of theory and practice.

The Co-op program consists of two eight month work terms. The Co-op program is normally completed over a 5 year period.

To be eligible to continue in the Co-op Major students must maintain a satisfactory average, must complete all course requirements as scheduled and must obtain a minimum evaluation of "satisfactory" on all required work term reports. Consult the Co-op advisor or Department for additional information.

Major

Semester 1 - Fall

COST*1000	[0.50]	Introduction to Marketing Management
COST*1800	[0.50]	Housing and Community Planning
ECON*1050	[0.50]	Introductory Microeconomics
PSYC*1200	[0.50]	Dynamics of Behaviour

0.50 elective

Semester 2 - Winter

COST*1400	[0.50]	Introduction to Design
ECON*1100	[0.50]	Introductory Macroeconomics
ISS*2500	[0.50]	Management in Organizations
MATH*1000	[0.50]	Introductory Calculus

0.50 elective

Note: Students who are exceptionally strong in mathematics may substitute either MATH*1080 or MATH*1200 for MATH*1000.

Semester 3 - Fall

AGEC*2220	[0.50]	Financial Accounting
COOP*1100	[0.00]	Introduction to Co-operative Education
COST*2810	[0.50]	Social Aspects of Housing
ECON*2310	[0.50]	Intermediate Microeconomics
STAT*2080	[0.50]	Introductory Applied Statistics I

0.50 elective

Semester 4 - Winter

AGEC*2230	[0.50]	Management Accounting
COST*2820	[0.50]	Housing Finance
ECON*2410	[0.50]	Intermediate Macroeconomics
STAT*2090	[0.50]	Introductory Applied Statistics II

0.50 elective

Summer Semester

COOP*1000	[0.00]	Co-op Work Term I
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Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

COST*2020	[0.50]	Information Management
COST*3890	[0.50]	Property Management
COST*4860	[0.50]	Housing Industry Structure and Process
POLS*2250	[0.50]	Public Administration

0.50 elective

Semester 6 - Fall

COST*3030	[0.50]	Research Methods
COST*4840	[0.50]	Housing and Real Estate Law
COST*4850	[0.50]	Housing Policies
POLS*2300	[0.50]	Canadian Government

0.50 elective

Winter Semester

COOP*3000	[0.00]	Co-op Work Term III
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Summer Semester

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 7 - Fall

COST*4820	[0.50]	Real Estate Appraisal
ECON*3500	[0.50]	Urban Economics
ECON*3510	[0.50]	Money, Credit and the Financial System
ECON*3560	[0.50]	Theory of Finance

0.50 elective

Semester 8 - Winter

COST*4810	[0.50]	Housing Services Systems
LARC*2820	[0.50]	Urban and Regional Planning
POLS*3270	[0.50]	Local Government in Ontario

1.00 elective

Human Resources Management (HRM)

Department of Psychology, College of Social and Applied Human Sciences.

The HRM program provides some basic preparation for students contemplating a career as a Human Resources practitioner, and for potential certification by the Human Resources Professionals Association of Ontario (HRPAO). It complements a traditional business core with an emphasis on issues relating to people and the workplace. The program combines conceptual and quantitative elements and promotes the integration of theory with practice. A feature of the program is a required applied research course, where

students conduct group projects in workplace settings under the direction of a faculty member.

Presently the HRM program meets all four academic requirements of the Tier I Compulsory Subjects set out by the Human Resources Professionals Association of Ontario. Our objective is to meet 50% of the Tier II Specialized Subjects.

For this major, 15.00 of the 20.00 credits are specified as core requirements and the remaining 5.00 as electives. A list of suggested electives follows the description of required courses.

Note: Psychology Courses designated with (H) in Section XII--Course Descriptions are Honours level Psychology courses requiring for registration a cumulative average of at least 70% in all course attempts in Psychology or registration in the Human Resources Management major of the Bachelor of Commerce program.

Major

Semester 1

COST*1000	[0.50]	Introduction to Marketing Management
ECON*1050	[0.50]	Introductory Microeconomics
POLS*1400	[0.50]	Public Management and Administration
PSYC*1200	[0.50]	Dynamics of Behaviour

0.50 elective

Semester 2

ECON*1100	[0.50]	Introductory Macroeconomics
PSYC*1100	[0.50]	Principles of Behaviour
PSYC*2010	[0.50]	Quantification in Psychology
PSYC*2310	[0.50]	Introduction to Social Psychology

0.50 elective

Semester 3

AGEC*2220	[0.50]	Financial Accounting
ECON*2200	[0.50]	Industrial Relations
ECON*2310	[0.50]	Intermediate Microeconomics
PSYC*2360	[0.50]	Introductory Research Methods

0.50 elective

Semester 4

AGEC*2230	[0.50]	Management Accounting
COST*2020	[0.50]	Information Management
HTM*2200	[0.50]	Organizational Behaviour I
PHIL*2600	[0.50]	Business and Professional Ethics

0.50 elective

Semester 5

AGEC*3320	[0.50]	Financial Management
COST*3040	[0.50]	Business and Consumer Law
PSYC*3060	[0.50]	Occupational Health Psychology
PSYC*3090	[0.50]	Training and Development

0.50 elective

Semester 6

AGEC*3310	[0.50]	Operations Management
ECON*3560	[0.50]	Theory of Finance
HTM*3000	[0.50]	Human Resources Management
PSYC*3010	[0.50]	Compensation Systems

0.50 elective

Semester 7

ECON*3520	[0.50]	Labour Economics
HTM*4100	[0.50]	Organizational Behaviour II
PSYC*4100	[0.50]	Applied Research in Human Resources Management

1.00 elective

Semester 8

AGEC*4250	[0.50]	Business Policy
HTM*4160	[0.50]	Human Resources Planning
PSYC*4330	[0.50]	Advanced Topics in I/O Psychology (H)

1.00 elective

Electives

The following is a list of courses which may be of interest to students selecting their electives.

AGEC*4370	[0.50]	Marketing Management
COST*2600	[0.50]	Fundamentals of Consumer Behaviour
ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*2740	[0.50]	Economic Statistics
ECON*4800	[0.50]	Theory of Strategic Management
MATH*1000	[0.50]	Introductory Calculus
PSYC*2740	[0.50]	Personality
PSYC*3250	[0.50]	Psychological Measurement
SOAN*2040	[0.50]	Globalization of Work and Organizations
SOC*1100	[0.50]	Sociology

Management Economics in Industry and Finance (MEIF)

Department of Economics, College of Social and Applied Human Sciences.

The Management Economics in Industry and Finance major is designed to offer students an appreciation of business problems in the areas of industrial organization and finance using the analytical orientation of the discipline of Economics and the tools of Business Management, Marketing and Accounting. This major combines the applied thrust of business courses with the analytical rigor of Economics.

The major provides a suitable education for a career in the business world or in the public service. It also constitutes a useful preparation for more advanced studies, including graduate studies in Economics, Business Administration, Law, and Public Policy. The major is administered by the Department of Economics and students are urged to consult the faculty advisor.

In addition to the Management Economics in Industry and Finance core, students will choose their restricted electives from the List of Restricted Electives. In selecting the restricted electives, students have a choice of either following a program of studies that covers a wide spectrum of topics in the areas of Industry and Finance or declaring an Area of Emphasis if they wish to pursue the study of Industry or Finance in more depth. Students that identify an Area of Emphasis will choose their restricted electives from the appropriate list of restricted electives below. Students wishing to have an Area of Emphasis are encouraged to declare their Area of Emphasis by Semester 4, in order to facilitate the availability of restricted electives. A planning guide is available in the department. Students should note that most courses carry prerequisites and that ECON*1050 and ECON*1100 are normally prerequisites for all other courses in Economics.

Students who fail any Economics course twice or who do not achieve a 65% average in Economics courses taken during the first 4 semesters in this major are likely to encounter difficulties in the more advanced courses. They are strongly advised to consult the faculty advisor in Economics to discuss the options available.

For this major, 9.50 credits are specified, 5.50 are restricted electives and 5.00 are free electives.

Major

Semester 1

ECON*1050	[0.50]	Introductory Microeconomics
One of:		
CIS*1200	[0.50]	Introduction to Computing
CIS*1500	[0.50]	Introduction to Programming

One of:

MATH*1000	[0.50]	Introductory Calculus
MATH*1080	[0.50]	Elements of Calculus I
MATH*1200	[0.50]	Calculus I

1.00 electives

Semester 2

AGEC*2220	[0.50]	Financial Accounting
COST*1000	[0.50]	Introduction to Marketing Management
ECON*1100	[0.50]	Introductory Macroeconomics

1.00 electives

Semester 3

AGEC*2230	[0.50]	Management Accounting
ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2720	[0.50]	Business History
One of:		
COST*3040	[0.50]	Business and Consumer Law
ECON*2770	[0.50]	Introductory Mathematical Economics

0.50 elective

Note: One of ECON*2770 and COST*3040 must be taken in Semester 3; the other must be taken in Semester 4.

Semester 4

ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*2740	[0.50]	Economic Statistics
One of:		

COST*3040	[0.50]	Business and Consumer Law
ECON*2770	[0.50]	Introductory Mathematical Economics

1.00 electives or restricted electives

Semester 5

AGEC*3320	[0.50]	Financial Management
ECON*3560	[0.50]	Theory of Finance
ECON*3740	[0.50]	Introduction to Econometrics

1.00 electives or restricted electives

Semester 6

ECON*3600	[0.50]	Macroeconomics in an Open Economy
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2.00 electives or restricted electives

Note: ECON*4710 and ECON*4810 are recommended for students wishing to pursue graduate studies.

Semester 7

HTM*4390 [0.50] Individuals and Groups in Organizations
2.00 electives or restricted electives

Semester 8

ECON*4800 [0.50] Theory of Strategic Management
2.00 electives or restricted electives

The restricted electives for the MEIF major are listed below. By choosing from this list, students will obtain a broad exposure to the areas of Finance and Industry. If, instead, students wish to obtain a greater degree of specialization in either the area of Finance or Industry, they may opt to diverge from the restricted electives given below and instead choose their restricted electives so as to satisfy the Finance Area of Emphasis Restricted Electives or the Industry Area of Emphasis Restricted Electives.

Restricted Electives

4.00 additional credits in economics, of which

- at most 0.50 credits can be at the 2000 level
- at least 0.50 credits must be at the 4000 level

- 1.50 credits are from the following:

ECON*3510 [0.50] Money, Credit and the Financial System
ECON*3520 [0.50] Labour Economics
ECON*3530 [0.50] Industrial Organization
ECON*3660 [0.50] Economics of Equity Markets

1.50 credits from the following:

AGEC*3310 [0.50] Operations Management
AGEC*3330 [0.50] Intermediate Accounting
AGEC*4240 [0.50] Futures and Options Markets
AGEC*4250 [0.50] Business Policy
AGEC*4360 [0.50] Marketing Research
AGEC*4370 [0.50] Marketing Management
AGEC*4410 [0.50] Sales and Sales Management

Finance Area of Emphasis Restricted Electives:

Students must take the following:

ECON*3510 [0.50] Money, Credit and the Financial System
ECON*3660 [0.50] Economics of Equity Markets
ECON*3710 [0.50] Advanced Microeconomics
ECON*3770 [0.50] Mathematical Economics and Game Theory
ECON*4560 [0.50] Advanced Topics in Finance
AGEC*4240 [0.50] Futures and Options Markets

2.00 additional credits in economics, of which

- 0.50 at most credits can be at the 2000 level
- at least 1.00 credits must be at the 4000 level

0.50 credits from the following:

AGEC*3310 [0.50] Operations Management
AGEC*3330 [0.50] Intermediate Accounting
AGEC*4250 [0.50] Business Policy
AGEC*4360 [0.50] Marketing Research
AGEC*4370 [0.50] Marketing Management
AGEC*4410 [0.50] Sales and Sales Management

Industry Area of Emphasis Restricted Electives:

Students must take the following:

AGEC*3310 [0.50] Operations Management
ECON*3530 [0.50] Industrial Organization
ECON*3710 [0.50] Advanced Microeconomics
ECON*3770 [0.50] Mathematical Economics and Game Theory
ECON*4780 [0.50] Topics in Industrial Organization

One of:

ECON*3200 [0.50] Economics of Industrial Relations
ECON*3520 [0.50] Labour Economics
ECON*3580 [0.50] Economics of Regulation

2.00 additional credits in Economics, of which

- at most 0.50 credits can be at the 2000 level
- at least 1.00 credits must be at the 4000 level

0.50 credits from the following:

AGEC*3330 [0.50] Intermediate Accounting
AGEC*4240 [0.50] Futures and Options Markets
AGEC*4250 [0.50] Business Policy
AGEC*4360 [0.50] Marketing Research
AGEC*4370 [0.50] Marketing Management
AGEC*4410 [0.50] Sales and Sales Management

Note: Only one of ECON*4900, ECON*4910 may count as one of the required minimum number of 4000 level economics credits in the B.Comm. program.

Management Economics in Industry and Finance (Co-op) (MEIF:C)

Department of Economics, College of Social and Applied Human Sciences.

A principal aim of the Co-op program in Management Economics in Industry and Finance is to facilitate the transition of students from academic studies to a professional career by enhancing the integration of theory and practice.

The Co-op program consists of two eight month work terms. The first work term begins after the second year and extends from January to August. The Co-op program is normally completed over a 5 year period.

To be eligible to continue in the Co-op major, students must maintain a satisfactory average, must complete all course requirements as scheduled and must obtain a minimum evaluation of "satisfactory" on all required work term reports. Consult the Co-op advisor or Department for additional program information.

Major**Semester 1**

ECON*1050 [0.50] Introductory Microeconomics

One of:

CIS*1200 [0.50] Introduction to Computing
CIS*1500 [0.50] Introduction to Programming

One of:

MATH*1000 [0.50] Introductory Calculus
MATH*1080 [0.50] Elements of Calculus I
MATH*1200 [0.50] Calculus I

1.00 electives

Semester 2 - Winter

AGEC*2220 [0.50] Financial Accounting
COST*1000 [0.50] Introduction to Marketing Management
ECON*1100 [0.50] Introductory Macroeconomics

1.00 electives

Semester 3 - Fall

AGEC*2230 [0.50] Management Accounting
COOP*1100 [0.00] Introduction to Co-operative Education
ECON*2310 [0.50] Intermediate Microeconomics
ECON*2720 [0.50] Business History
ECON*2740 [0.50] Economic Statistics

0.50 elective

Semester 4 - Winter

COST*3040 [0.50] Business and Consumer Law
ECON*2410 [0.50] Intermediate Macroeconomics
ECON*2770 [0.50] Introductory Mathematical Economics
ECON*3560 [0.50] Theory of Finance

0.50 elective

Summer Semester

COOP*1000 [0.00] Co-op Work Term I

Fall Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5 - Winter

ECON*3600 [0.50] Macroeconomics in an Open Economy
ECON*3740 [0.50] Introduction to Econometrics

1.50 electives or restricted electives

Semester 6 - Fall

AGEC*3320 [0.50] Financial Management

2.00 electives or restricted electives

Note: If in Finance or Industry take ECON*3710.

Note: ECON*4710 and ECON*4810 are recommended for students wishing to pursue graduate studies.

Winter Semester

COOP*3000 [0.00] Co-op Work Term III

Summer Semester

COOP*4000 [0.00] Co-op Work Term IV

Semester 7 - Fall

HTM*4390 [0.50] Individuals and Groups in Organizations
2.00 electives or restricted electives

Semester 8 - Winter

ECON*4800 [0.50] Theory of Strategic Management

2.00 electives or restricted electives

Restricted Electives

4.00 additional credits in economics, of which

- at most 0.50 credits can be at the 2000 level
- at least 0.50 credits must be at the 4000 level

- 1.50 credits are from the following:

ECON*3510 [0.50] Money, Credit and the Financial System
ECON*3520 [0.50] Labour Economics
ECON*3530 [0.50] Industrial Organization
ECON*3660 [0.50] Economics of Equity Markets

1.50 credits from the following:

AGEC*3310	[0.50]	Operations Management
AGEC*3330	[0.50]	Intermediate Accounting
AGEC*4240	[0.50]	Futures and Options Markets
AGEC*4250	[0.50]	Business Policy
AGEC*4360	[0.50]	Marketing Research
AGEC*4370	[0.50]	Marketing Management
AGEC*4410	[0.50]	Sales and Sales Management

Finance Area of Emphasis Restricted Electives:

Students must take the following:

AGEC*4240	[0.50]	Futures and Options Markets
ECON*3510	[0.50]	Money, Credit and the Financial System
ECON*3660	[0.50]	Economics of Equity Markets
ECON*3710	[0.50]	Advanced Microeconomics
ECON*3770	[0.50]	Mathematical Economics and Game Theory
ECON*4560	[0.50]	Advanced Topics in Finance

2.00 additional credits in economics, of which

- 0.50 at most credits can be at the 2000 level
- at least 1.00 credits must be at the 4000 level

0.50 credits from the following:

AGEC*3310	[0.50]	Operations Management
AGEC*3330	[0.50]	Intermediate Accounting
AGEC*4250	[0.50]	Business Policy
AGEC*4360	[0.50]	Marketing Research
AGEC*4370	[0.50]	Marketing Management
AGEC*4410	[0.50]	Sales and Sales Management

Industry Area of Emphasis Restricted Electives:

Students must take the following:

AGEC*3310	[0.50]	Operations Management
ECON*3530	[0.50]	Industrial Organization
ECON*3710	[0.50]	Advanced Microeconomics
ECON*3770	[0.50]	Mathematical Economics and Game Theory
ECON*4780	[0.50]	Topics in Industrial Organization

One of:

ECON*3200	[0.50]	Economics of Industrial Relations
ECON*3520	[0.50]	Labour Economics
ECON*3580	[0.50]	Economics of Regulation

2.00 additional credits in Economics, of which

- at most 0.50 credits can be at the 2000 level
- at least 1.00 credits must be at the 4000 level

0.50 credits from the following:

AGEC*3330	[0.50]	Intermediate Accounting
AGEC*4240	[0.50]	Futures and Options Markets
AGEC*4250	[0.50]	Business Policy
AGEC*4360	[0.50]	Marketing Research
AGEC*4370	[0.50]	Marketing Management
AGEC*4410	[0.50]	Sales and Sales Management

Note: Only one of ECON*4900, ECON*4910 may count as one of the required minimum number of 4000 level economics credits in the B.Comm. program.

Marketing Management (MKMN)

Department of Marketing and Consumer Studies, College of Social and Applied Human Sciences.

The Marketing Management major is interdisciplinary and follows a liberal education philosophy.

Courses to be followed are from many disciplines, departments and colleges within the University, and are designed to span 5 component areas of study:

1. Literacy (writing and communication)
2. Numeracy (Mathematics, Statistics and Information Technology)
3. Social Science Foundations
4. Marketing Foundations (buyer/market studies)
5. Marketing Management

The approach taken in this major also places a special emphasis on research techniques for marketing as well as the requirements of marketing as a functional area of management. Students, while following the prescribed courses, may choose their electives in such a manner as to provide a particular applied focus to their marketing studies by a judicious choice from the other courses offered by the Department or the University. The major is administered by the Department of Marketing and Consumer Studies in the College of Social and Applied Human Sciences and students are urged to consult the departmental advisor or B.Comm. program counsellor.

For this major, 16.50 credits (2.00 selected from lists) are required and the remainder are electives.

Major

Semester 1

COST*1000	[0.50]	Introduction to Marketing Management
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1000	[0.50]	Introductory Calculus
PSYC*1200	[0.50]	Dynamics of Behaviour

0.50 from List A or elective

Note: Students who are exceptionally strong in mathematics may consult with their academic advisor to substitute an alternative mathematics course for MATH*1000 (MATH*1080 or MATH*1200).

Semester 2

AGEC*2220	[0.50]	Financial Accounting
ECON*1100	[0.50]	Introductory Macroeconomics
PSYC*2310	[0.50]	Introduction to Social Psychology

0.50 from List A

0.50 elective

Semester 3

AGEC*2230	[0.50]	Management Accounting
COST*2020	[0.50]	Information Management
COST*2600	[0.50]	Fundamentals of Consumer Behaviour
ECON*2310	[0.50]	Intermediate Microeconomics

0.50 from List B

Note: COST*2600 may be taken in Semester 4.

Semester 4

COST*3040	[0.50]	Business and Consumer Law
ECON*2410	[0.50]	Intermediate Macroeconomics
STAT*2060	[0.50]	Statistics for Business Decisions

0.50 from List B

One of:

HTM*2200	[0.50]	Organizational Behaviour I
ISS*2500	[0.50]	Management in Organizations

Semester 5

AGEC*3320	[0.50]	Financial Management
COST*3020	[0.50]	Services & Retail Marketing
COST*3030	[0.50]	Research Methods
COST*3610	[0.50]	Consumer Economics

0.50 from List A and/or up to 0.50 elective (if COST*3100 to be taken in Semester 6)

Note: Students only take one of COST*3610 in Semester 5 OR COST*3100 in Semester 6.

Note: COST*3020, COST*3030, COST*3610 may be taken in Semester 6.

Semester 6

AGEC*3310	[0.50]	Operations Management
COST*3010	[0.50]	Quality Management
COST*3100	[0.50]	Economic Behaviour of Households
COST*3620	[0.50]	Advertising Management

0.50 from List A and/or up to 0.50 elective

Note: Students only take one of COST*3610 in Semester 5 OR COST*3100 in Semester 6.

Note: COST*3100 may be taken in Semester 5 and COST*3620 may be taken in Semester 7.

Semester 7

COST*3600	[0.50]	Consumer Information Processes
COST*4040	[0.50]	Management in Product Development
ECON*3560	[0.50]	Theory of Finance

1.00 elective

Note: COST*3600 may be taken in Semester 6.

Semester 8

AGEC*4250	[0.50]	Business Policy
COST*4050	[0.50]	Consumer, Business and Government Relations
COST*4370	[0.50]	Marketing Strategy
COST*4600	[0.50]	International Marketing

0.50 elective

Note: COST*4370 may be taken in Semester 7.

List A - Restricted Electives (choose 2 from any 1 subgroup)

These courses have been selected to help students broaden their international and cross-cultural perspectives.

French Language Courses

FREN*1100	[0.50]	Basic French: Listening
FREN*1110	[0.50]	Elementary French
FREN*1200	[0.50]	French Language I
FREN*2020	[0.50]	France: Literature and Society
FREN*2030	[0.50]	French Language II
FREN*2060	[0.50]	Quebec: Literature and Society
FREN*3530	[0.50]	Business French

German Language Courses

GERM*1100	[0.50]	Introductory German I
GERM*1110	[0.50]	Introductory German II
GERM*2400	[0.50]	Contemporary Germany
GERM*2490	[0.50]	Intermediate German I

History and Politics Courses

EURO*1050	[0.50]	The Emergence of a United Europe
EURO*2070	[0.50]	European Integration, 1957-1992
HIST*1150	[0.50]	20th-Century Global History
HIST*2510	[0.50]	The Emergence of Modern European Society 1789-1945
HIST*2910	[0.50]	History of Modern Asia
HIST*3090	[0.50]	Nationalism and Internationalism in Europe 1914-1957
POLS*1500	[0.50]	World Politics
POLS*2100	[0.50]	The State in Comparative Perspective
POLS*3080	[0.50]	Politics of Latin America
POLS*3280	[0.50]	Modern Political Ideologies
POLS*3460	[0.50]	Communism and Post-Communism
POLS*3890	[0.50]	Government and Politics of India
POLS*3920	[0.50]	Modern China

Italian Language Courses

ITAL*1060	[0.50]	Introductory Italian I
ITAL*1070	[0.50]	Introductory Italian II
ITAL*2060	[0.50]	Intermediate Italian I
ITAL*2070	[0.50]	Intermediate Italian II

Spanish Language Courses

SPAN*1100	[0.50]	Introductory Spanish
SPAN*1110	[0.50]	Intermediate Spanish
SPAN*2000	[0.50]	Spanish Language I
SPAN*2010	[0.50]	Spanish Language II
SPAN*2040	[0.50]	Spanish Civilization

List B - Restricted Electives (choose 2)

This group of courses encourages students to increase their fundamental background and/or add to business applications.

AGEC*4410	[0.50]	Sales and Sales Management
COST*2100	[0.50]	Personal Financial Management
COST*2300	[0.50]	Technology and the Consumer
HTM*3000	[0.50]	Human Resources Management
POLS*1400	[0.50]	Public Management and Administration
POLS*2250	[0.50]	Public Administration
SOC*1100	[0.50]	Sociology

One of:

PHIL*2100	[0.50]	Critical Thinking
PHIL*2600	[0.50]	Business and Professional Ethics

Marketing Management (Co-op) (MKMN:C)**Department of Marketing and Consumer Studies, College of Social and Applied Human Sciences.**

A principal aim of the Co-op program is to facilitate the transition of students from academic studies to a professional career in Marketing Management by enhancing the integration of theory and practice.

The Co-op program consists of two eight month work terms. The first work term begins after the second year. The second work term commences after the third year of studies. The Co-op program is normally completed over a 5 year period.

To be eligible to continue in the Co-op Major students must maintain a satisfactory average, must complete all course requirements as scheduled and must obtain a minimum evaluation of "satisfactory" on all required work term reports. Consult the Co-op advisor or Department for additional information.

Major**Semester 1 - Fall**

COST*1000	[0.50]	Introduction to Marketing Management
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1000	[0.50]	Introductory Calculus
PSYC*1200	[0.50]	Dynamics of Behaviour

0.50 from List A or elective

Note: Students who are exceptionally strong in mathematics may consult with their academic advisor to substitute an alternative mathematics course for MATH*1000 (MATH*1080 or MATH*1200).

Semester 2 - Winter

AGEC*2220	[0.50]	Financial Accounting
ECON*1100	[0.50]	Introductory Macroeconomics
PSYC*2310	[0.50]	Introduction to Social Psychology
STAT*2060	[0.50]	Statistics for Business Decisions

0.50 from List A or 0.50 elective

Semester 3 - Fall

AGEC*2230	[0.50]	Management Accounting
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COOP*1100	[0.00]	Introduction to Co-operative Education
COST*2020	[0.50]	Information Management
COST*2600	[0.50]	Fundamentals of Consumer Behaviour
ECON*2310	[0.50]	Intermediate Microeconomics

0.50 from List B

Semester 4 - Winter

COST*3030	[0.50]	Research Methods
COST*3040	[0.50]	Business and Consumer Law
ECON*2410	[0.50]	Intermediate Macroeconomics

0.50 from List B

One of:

HTM*2200	[0.50]	Organizational Behaviour I
ISS*2500	[0.50]	Management in Organizations

Summer Semester

COOP*1000	[0.00]	Co-op Work Term I
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Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

AGEC*3310	[0.50]	Operations Management
COST*3010	[0.50]	Quality Management
COST*3020	[0.50]	Services & Retail Marketing
COST*3100	[0.50]	Economic Behaviour of Households
COST*3600	[0.50]	Consumer Information Processes

0.50 elective (if COST*3610 to be taken in Semester 6)

Note: Students only take one of COST*3100 in Semester 5 OR COST*3610 in Semester 6.

Semester 6 - Fall

AGEC*3320	[0.50]	Financial Management
COST*3610	[0.50]	Consumer Economics
COST*3620	[0.50]	Advertising Management

0.50 from List A and/or up to 1.00 elective

Note: Students only take one of COST*3100 in Semester 5 OR COST*3610 in Semester 6.

Winter Semester

COOP*3000	[0.00]	Co-op Work Term III
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Summer Semester

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 7 - Fall

COST*4040	[0.50]	Management in Product Development
COST*4050	[0.50]	Consumer, Business and Government Relations
COST*4370	[0.50]	Marketing Strategy
ECON*3560	[0.50]	Theory of Finance

0.50 from List A and/or electives

Note: COST*4050 may be taken in Semester 8.

Semester 8 - Winter

AGEC*4250	[0.50]	Business Policy
COST*4600	[0.50]	International Marketing

1.00 or 1.50 electives

List A -Restricted Electives (choose 2 from any 1 subgroup)

These courses have been selected to help students broaden their international and cross-cultural perspectives.

French Language Courses

FREN*1100	[0.50]	Basic French: Listening
FREN*1110	[0.50]	Elementary French
FREN*1200	[0.50]	French Language I
FREN*2020	[0.50]	France: Literature and Society
FREN*2030	[0.50]	French Language II
FREN*2060	[0.50]	Quebec: Literature and Society
FREN*3530	[0.50]	Business French

German Language Courses

GERM*1100	[0.50]	Introductory German I
GERM*1110	[0.50]	Introductory German II
GERM*2400	[0.50]	Contemporary Germany
GERM*2490	[0.50]	Intermediate German I

History and Politics Courses

EURO*1050	[0.50]	The Emergence of a United Europe
EURO*2070	[0.50]	European Integration, 1957-1992
HIST*1150	[0.50]	20th-Century Global History
HIST*2510	[0.50]	The Emergence of Modern European Society 1789-1945
HIST*2910	[0.50]	History of Modern Asia
HIST*3090	[0.50]	Nationalism and Internationalism in Europe 1914-1957
POLS*1500	[0.50]	World Politics
POLS*2100	[0.50]	The State in Comparative Perspective
POLS*3080	[0.50]	Politics of Latin America

POLS*3280	[0.50]	Modern Political Ideologies
POLS*3460	[0.50]	Communism and Post-Communism
POLS*3890	[0.50]	Government and Politics of India
POLS*3920	[0.50]	Modern China

Italian Language Courses

ITAL*1060	[0.50]	Introductory Italian I
ITAL*1070	[0.50]	Introductory Italian II
ITAL*2060	[0.50]	Intermediate Italian I
ITAL*2070	[0.50]	Intermediate Italian II

Spanish Language Courses

SPAN*1100	[0.50]	Introductory Spanish
SPAN*1110	[0.50]	Intermediate Spanish
SPAN*2000	[0.50]	Spanish Language I
SPAN*2010	[0.50]	Spanish Language II
SPAN*2040	[0.50]	Spanish Civilization

List B - Restricted Electives (choose 2)

This group of courses encourages students to increase their fundamental background and/or add to business applications.

AGEC*4410	[0.50]	Sales and Sales Management
COST*2100	[0.50]	Personal Financial Management
COST*2300	[0.50]	Technology and the Consumer
HTM*3000	[0.50]	Human Resources Management
POLS*1400	[0.50]	Public Management and Administration
POLS*2250	[0.50]	Public Administration
SOC*1100	[0.50]	Sociology

One of:

PHIL*2100	[0.50]	Critical Thinking
PHIL*2600	[0.50]	Business and Professional Ethics

Public Management (PMGT)**Department of Political Science, College of Social and Applied Human Sciences.**

The Public Management program is designed to lead to an understanding of public sector administration and management from the "inside" - as an integrated enterprise - as well as from the outside - as a series of policy decisions and outcomes. Characterized by a multi-disciplinary approach employing both political and business-oriented analysis, students will confront questions of why politicians and public servants behave the way they do, and how their policy choices and processes can be optimized. Management of public entities features a unique set of challenges that arise from and interact with basic political issues like democracy, accountability, equity, fairness, and justice. At the same time it necessarily faces concerns common to all organizations, such as efficiency, human and capital resource management, morale, planning, and adaptation to change.

The program will appeal to students interested in the public service, public sector businesses or business-government relations. A co-ordinated sequence of courses is capped in the final year by a year long research project and thesis.

For this major, 15.00 of the 20.00 credits are specified as core requirements and the remaining 5.00 as electives. A list of suggested electives follows the description of required courses.

Major**Semester 1**

COST*1000	[0.50]	Introduction to Marketing Management
ECON*1050	[0.50]	Introductory Microeconomics
POLS*1400	[0.50]	Public Management and Administration
PSYC*1200	[0.50]	Dynamics of Behaviour

0.50 elective

Semester 2

ECON*1100	[0.50]	Introductory Macroeconomics
POLS*2250	[0.50]	Public Administration
POLS*2300	[0.50]	Canadian Government

1.00 elective

Semester 3

AGEC*2220	[0.50]	Financial Accounting
ECON*2200	[0.50]	Industrial Relations
ECON*2310	[0.50]	Intermediate Microeconomics
POLS*3250	[0.50]	Public Policy: Challenges and Prospects

0.50 elective

Semester 4

AGEC*2230	[0.50]	Management Accounting
COST*2600	[0.50]	Fundamentals of Consumer Behaviour
POLS*3270	[0.50]	Local Government in Ontario
STAT*2060	[0.50]	Statistics for Business Decisions

0.50 elective

Semester 5

AGEC*3320	[0.50]	Financial Management
COST*3040	[0.50]	Business and Consumer Law

POLS*3110	[0.50]	Politics of Ontario
POLS*3210	[0.50]	The Constitution and Canadian Federalism
0.50 elective		

Semester 6

AGEC*3310	[0.50]	Operations Management
ECON*3610	[0.50]	Public Economics
PHIL*2600	[0.50]	Business and Professional Ethics
POLS*3670	[0.50]	Comparative Public Policy and Administration

0.50 elective

Semester 7

ECON*3560	[0.50]	Theory of Finance
HTM*3000	[0.50]	Human Resources Management
POLS*3470	[0.50]	Business-Government Relations in Canada
POLS*4970	[0.50]	Honours Political Science Research I

0.50 elective

Semester 8

AGEC*4250	[0.50]	Business Policy
POLS*4250	[0.50]	Problems in Public Administration and Public Policy
POLS*4980	[0.50]	Honours Political Science Research II

1.00 elective

Electives

The following is a list of courses which may be of interest to students selecting their electives.

COST*2020	[0.50]	Information Management
ECON*2410	[0.50]	Intermediate Macroeconomics
HTM*4390	[0.50]	Individuals and Groups in Organizations
ISS*2500	[0.50]	Management in Organizations
POLS*3330	[0.50]	Politics and Trade Liberalization in the Americas
POLS*3370	[0.50]	Environmental Policy Formation and Administration
POLS*3440	[0.50]	Corruption, Scandal and Political Ethics
POLS*3790	[0.50]	The Political Economy of International Relations
POLS*3930	[0.50]	Politics of the Agri-Food System
SOAN*2040	[0.50]	Globalization of Work and Organizations

Tourism Management (TMGT)**School of Hospitality and Tourism Management, College of Social and Applied Human Sciences.**

As the world's largest industry, tourism encompasses a wide range of public and private enterprises that require knowledgeable and talented management professionals. The program in Tourism Management builds on a strong base of hospitality management courses (human resources management, accounting, finance, cost controls, hotel operations). In conjunction with these courses the program provides specialized courses dealing with the economic, social, cultural and environmental aspects of the industry as well as the critical functions of tourism marketing, distribution, planning and development. In addition, there are opportunities to develop expertise in eco-tourism and international tourism operations. The study of languages is a core component of this program. Verified work experience in the hospitality and tourism industry is required for students to be eligible to graduate. Group work is a significant part of core credit work.

For this major, 15.50 of the 20.00 credits are specified as core requirements, 2.00 as restricted electives (List A), and the remaining 2.50 as electives.

Major**Semester 1**

ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1220	[0.50]	Human Impact on the Environment
HTM*1000	[0.50]	Introduction to Hospitality and Tourism Management
POLS*1400	[0.50]	Public Management and Administration
PSYC*1200	[0.50]	Dynamics of Behaviour

Semester 2

ECON*1100	[0.50]	Introductory Macroeconomics
HTM*2000	[0.50]	Hospitality and Tourism Purchasing Management
HTM*2010	[0.50]	Hospitality and Tourism Business Communications
HTM*2100	[0.50]	Lodging Operations
HTM*2120	[0.50]	Hospitality and Tourism Marketing I

Semester 3

AGEC*2220	[0.50]	Financial Accounting
COST*2020	[0.50]	Information Management
ECON*2310	[0.50]	Intermediate Microeconomics
HTM*2050	[0.50]	Dimensions of Tourism

0.50 from List A or elective

Semester 4

HTM*2030	[0.50]	Control Systems in the Hospitality and Tourism Industry
HTM*2170	[0.50]	Canadian Tourism Policy, Planning and Development
HTM*2200	[0.50]	Organizational Behaviour I
STAT*2060	[0.50]	Statistics for Business Decisions

0.50 from List A or electives

Semester 5

COST*3040	[0.50]	Business and Consumer Law
HTM*3070	[0.50]	Hospitality and Tourism Management Accounting
HTM*3080	[0.50]	Hospitality and Tourism Marketing II
HTM*3160	[0.50]	Destination Management and Marketing

0.50 from List A or elective

Semester 6

AGEC*3320	[0.50]	Financial Management
AGEC*4360	[0.50]	Marketing Research
HTM*3000	[0.50]	Human Resources Management
HTM*3120	[0.50]	Operations Analysis in the Hospitality and Tourism Industry

0.50 from List A or elective

Semester 7

ECON*3560	[0.50]	Theory of Finance
HTM*4100	[0.50]	Organizational Behaviour II
HTM*4190	[0.50]	Hospitality and Tourism Operations Planning

1.00 from List A or electives

Semester 8

HTM*4170	[0.50]	International Tourism Development and Management
HTM*4200	[0.50]	Policy Issues in Hospitality and Tourism Management

1.50 from List A or electives

List A - Restricted Electives

In addition to the 15.50 required credits, students must also take a minimum of 2.00 restricted elective credits from the following list, throughout the program. Students may choose to explore a variety of subjects or may choose to study an area related to their major in some depth. Restricted electives are listed below and have been grouped into major subject areas which are related to the professional interests of the Tourism Management major. Students may, however, choose restricted electives from any of those listed without regard to the categories. Students may also select up to 2.00 credits in language courses as restricted electives. Students without a second language are strongly recommended to take language courses.

Courses related to eco-tourism:

AGEC*2700	[0.50]	Survey of Natural Resource Economics
AGEC*4290	[0.50]	Land Economics
AGEC*4310	[0.50]	Resource Economics
ECON*2100	[0.50]	Economic Growth and Environmental Quality
GEOG*2210	[0.50]	Environment and Resources
GEOG*3490	[0.50]	Tourism and Environment
PHIL*2070	[0.50]	Philosophy of the Environment
POLS*3370	[0.50]	Environmental Policy Formation and Administration

Courses related to international tourism:

ECON*2650	[0.50]	Introductory Development Economics
ECON*3620	[0.50]	International Trade
ECON*4830	[0.50]	Economic Development
EDRD*3500	[0.50]	Recreation and Tourism Planning
GEOG*3490	[0.50]	Tourism and Environment
HTM*2740	[0.50]	Cultural Aspects of Food
REXT*3060	[0.50]	International Communication

Courses for those interested in developing tourism related real estate:

COST*1800	[0.50]	Housing and Community Planning
COST*2820	[0.50]	Housing Finance
COST*3890	[0.50]	Property Management
COST*4820	[0.50]	Real Estate Appraisal
GEOG*3490	[0.50]	Tourism and Environment
LARC*2820	[0.50]	Urban and Regional Planning

Courses dealing with the social and economic environment of business:

ECON*2410	[0.50]	Intermediate Macroeconomics
PHIL*1010	[0.50]	Introductory Philosophy: Social and Political Issues
PHIL*2600	[0.50]	Business and Professional Ethics

Courses dealing with human behaviour particularly as related to work and work groups:

ANTH*1150	[0.50]	Anthropology
ANTH*2160	[0.50]	Social Anthropology
ECON*2200	[0.50]	Industrial Relations
PSYC*2310	[0.50]	Introduction to Social Psychology
PSYC*3060	[0.50]	Occupational Health Psychology

Courses dealing with marketing and consumer behaviour:

AGEC*4370	[0.50]	Marketing Management
COST*1000	[0.50]	Introduction to Marketing Management
COST*2600	[0.50]	Fundamentals of Consumer Behaviour
COST*3600	[0.50]	Consumer Information Processes
COST*3620	[0.50]	Advertising Management
COST*4050	[0.50]	Consumer, Business and Government Relations

Courses related to Hospitality and Tourism Management:

HTM*2070	[0.50]	Meetings and Convention Management
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HTM*2700	[0.50]	Introductory Foods
HTM*2740	[0.50]	Cultural Aspects of Food
HTM*3030	[0.50]	Beverage Management
HTM*3060	[0.50]	Lodging Management
HTM*3090	[1.00]	Foodservice Operations Management
HTM*3180	[0.50]	Casino Operations Management
HTM*3200	[0.50]	Club Management Operations
HTM*3250	[0.50]	Tourism in Canada
HTM*3780	[0.50]	Economics of Food Usage
HTM*4050	[0.50]	Wine and Oenology
HTM*4090	[0.50]	Hospitality and Tourism Facilities Management and Design
HTM*4110	[0.50]	Restaurant Operations
HTM*4120	[0.50]	Hospitality Business Management
HTM*4130	[0.50]	Current Management Topics
HTM*4140	[0.50]	Current Management Topics
HTM*4150	[0.50]	Current Management Topics
HTM*4500	[0.50]	Special Study in Hospitality and Tourism

Courses related to accounting and administration:

AGEC*2230	[0.50]	Management Accounting
AGEC*3310	[0.50]	Operations Management
AGEC*3330	[0.50]	Intermediate Accounting
AGEC*4250	[0.50]	Business Policy
AGEC*4410	[0.50]	Sales and Sales Management
COST*2100	[0.50]	Personal Financial Management

Other restricted electives:

CHEM*1100	[0.50]	Chemistry Today
CIS*1000	[0.50]	Introduction to Computer Applications
COST*3010	[0.50]	Quality Management
ENGL*1410	[0.50]	Major English Writers
PHIL*2100	[0.50]	Critical Thinking
REXT*3040	[0.50]	Communication Process

Note: Students may also select up to 2.00 credits in language courses as restricted electives. Students without a second language are strongly recommended to take language courses.

Bachelor of Computing (B.Comp.)

Students graduating from this program obtain a solid foundation in the theory and application of all aspects of computing and information science. Core subjects, combined with in-depth study in an area of application, give students the freedom to combine their interests in computing with other areas of study and application.

Guelph's Bachelor of Computing degree combines the necessary theoretical background with an applied focus to learning. Course projects which are based on real-world software development scenarios allow students to get the practical experience valued by today's high-tech employers. The focused study in a second discipline gives students the necessary background to effectively apply their knowledge.

For the degree of Bachelor of Computing the University of Guelph offers a specialized program requiring the equivalent of 8 semesters of successful full-time study (honours program) and a general program requiring the equivalent of 6 semesters of successful full-time study (general program). The honours program is also available as a Co-op degree.

A student may register in any of the 3 semesters (Summer, Fall, Winter). Since not all courses are offered in every semester and prerequisite dependencies must be observed, students are encouraged to consult the program counsellor for the B.Comp. program to plan an initial program of study or when considering modifications to the suggested schedule of studies list (below).

Program Information

B.Comp. Program Regulations

The general program is designed to provide a sound general education in computing.

The honours program is designed to provide depth of study and specialization beyond that available in the general program, while at the same time ensuring a complementary background in an area of application.

1. Requirements for a General Degree

To graduate from a general program a student must:

- earn 15.00 credits. These must include courses that fulfill the distribution requirements of the General Degree (see below). At least 4.00 credits must be at the 3000 level or above. Not more than 6.00 credits at the introductory (1000) level may be counted towards the 15.00 credit requirement.
- no more than 11.00 credits in any one subject or discipline, as indicated by the course prefix code, can be counted towards a general degree.
- successfully complete the following credits:

CIS*1500	[0.50]	Introduction to Programming
CIS*1910	[0.50]	Discrete Structures in Computing I
CIS*2430	[0.50]	Object Oriented Programming
CIS*2500	[0.50]	Intermediate Programming
CIS*2520	[0.50]	Data Structures
CIS*2750	[0.75]	Software Systems Development and Integration
CIS*2910	[0.50]	Discrete Structures in Computing II
CIS*3530	[0.50]	Data Base Systems and Concepts

0.5 additional C.I.S. or STAT credits at the 2000 level or higher
1.0 additional C.I.S. credits at 3000 level or higher
- Earn 2.00 science credits (list of courses available in the Program Counsellor's office) and 2.00 credits in the College of Arts or College of Social and Applied Human Sciences in addition to the courses listed in c.

2. Requirements for an Honours Degree

To graduate from an honours program a student must:

- successfully complete 20.00 credits. These must include the 11.75 credits that fulfill the Computing Core Requirements (below), a minimum of 4.00 credits in an Area of Application (below) and an additional 4.25 credits as free electives. Not more than 6.00 credits from courses at the introductory (1000) level may be counted towards the 20.00 credit requirement.

The program requires 6.00 credits at the 3000 level or above and 2.00 credits at the 4000 level, while the area of application requires an additional 1.00 credits at the 3000 level or above. The Area of Application is a graduation requirement and must be approved by Semester 4 by the faculty advisor.

- complete the following Computing Core Requirements:

CIS*1500	[0.50]	Introduction to Programming
CIS*1910	[0.50]	Discrete Structures in Computing I
CIS*2030	[0.50]	Structure and Application of Microcomputers
CIS*2430	[0.50]	Object Oriented Programming
CIS*2460	[0.50]	Modelling of Computer Systems
CIS*2500	[0.50]	Intermediate Programming
CIS*2520	[0.50]	Data Structures
CIS*2750	[0.75]	Software Systems Development and Integration
CIS*2910	[0.50]	Discrete Structures in Computing II
CIS*3110	[0.50]	Operating Systems
CIS*3490	[0.50]	The Analysis and Design of Computer Algorithms
CIS*3530	[0.50]	Data Base Systems and Concepts

CIS*3750	[0.75]	System Analysis and Design in Applications
CIS*4000	[0.50]	Applications of Computing Seminar
MATH*1200	[0.50]	Calculus I
STAT*2040	[0.50]	Statistics I

1.75 additional C.I.S. credits at the 3000 level or above

1.50 additional C.I.S. credits at the 4000 level or above

- obtain a cumulative average at least 70% in CIS courses. Students who do not satisfy this requirement at graduation may apply for a General Degree.

- earn at least 4.00 credits in an Area of Application with at least 1.00 credits at the 3000 level or above. These credits must be taken from a single department or subject other than Computing and Information Science.

An area of Application normally consists of 4.00 credits (normally 8 courses) of a minor. Minors in the B.A. program and B.Sc. Minors are listed in Section X of the Calendar. A student may complete a minor should they decide to do so.

Students must consult the faculty advisor for approval of their Area of Application in semester 4.

Some courses may have enrolment restrictions placed on them.

Students failing to meet the graduation requirements of the honours program may apply to graduate with a general degree if the requirements for the general degree are met.

3. Continuation of Study

Students are advised to consult the regulations for Continuation of Study which are outlined in detail in Section VIII--Degree Regulations & Procedures of this calendar.

Schedule of Studies

Since many courses are offered in only one semester and course prerequisites place an ordering on courses, the following program of studies is designed so that students can schedule their courses over 8 semesters of study. Students deviating from this schedule must consult with their academic advisor. This schedule assumes a Fall/Winter semester sequence.

Major (Honours Program)

School of Computing and Information Science, College of Physical and Engineering Science.

Semester 1

CIS*1500	[0.50]	Introduction to Programming
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MATH*1200	[0.50]	Calculus I
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1.50 credits in the Area of Application or elective

Semester 2

CIS*1910	[0.50]	Discrete Structures in Computing I
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CIS*2500	[0.50]	Intermediate Programming
----------	--------	--------------------------

1.50 credits in the Area of Application or elective

Semester 3

CIS*2030	[0.50]	Structure and Application of Microcomputers
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CIS*2430	[0.50]	Object Oriented Programming
----------	--------	-----------------------------

CIS*2520	[0.50]	Data Structures
----------	--------	-----------------

CIS*2910	[0.50]	Discrete Structures in Computing II
----------	--------	-------------------------------------

0.50 credits in the Area of Application or elective

Semester 4

CIS*2750	[0.75]	Software Systems Development and Integration
----------	--------	--

CIS*3110	[0.50]	Operating Systems
----------	--------	-------------------

CIS*3490	[0.50]	The Analysis and Design of Computer Algorithms
----------	--------	--

STAT*2040	[0.50]	Statistics I
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0.25 credits in the Area of Application or elective

Semester 5

CIS*2460	[0.50]	Modelling of Computer Systems
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CIS*3530	[0.50]	Data Base Systems and Concepts
----------	--------	--------------------------------

CIS*3750	[0.75]	System Analysis and Design in Applications
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0.75 credits in the Area of Application or elective

Semester 6

Alternative 1 [Recommended]

CIS*3760	[0.75]	Software Engineering
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0.50 C.I.S. elective at the 3000 level or above

1.25 credits in the Area of Application or elective

OR Alternative 2

(1.50 C.I.S. electives at the 3000 level or above

1.00 credits in the Area of Application or elective)

Semester 7

1.00 credits in the Area of Application or elective

0.50 credits in C.I.S. at 3000 level or above

1.00 credits in C.I.S. at the 4000 level

Semester 8

CIS*4000	[0.50]	Applications of Computing Seminar
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1.50 credits in the Area of Application or elective

0.50 credits in C.I.S. at the 4000 level

Schedule of Studies Co-op

Since many courses are offered in only one semester and course prerequisites place an ordering on courses, the following program of studies is designed so that students can schedule their courses over 8 semesters of study. Students deviating from this schedule must consult with their Co-op faculty advisor. This schedule assumes a Fall/Winter semester sequence.

Major Co-op (Honours Program)

School of Computing and Information Science, College of Physical and Engineering Science.

The Honours Bachelor of Computing degree is also available as a Co-operative Education Program. Students may apply for this option at the time of University admission or completion of semester 2. Three co-op work terms are required in Stream A and four are required in Stream B. Please check with CIS. Co-op faculty advisor for semester planning.

The course COOP*1100 must be successfully completed before the student may apply for a placement for the first work term (normally 2 semesters before the first work term).

Other sequences may not be viable for the co-op student. Please check with the CIS Co-op faculty advisor for semester planning. COOP*1000, COOP*2000, COOP*3000, and COOP*4000 represent the first, second, third, and fourth work terms respectively.

Conditions for graduation are the same as the corresponding regular B.Comp. Program. In addition, all work reports and performance evaluations must have a grade of satisfactory or better.

Work/Study Semesters

Stream A Co-Op Schedule of Studies

Semester 1(Fall)

CIS*1500 [0.50] Introduction to Programming
MATH*1200 [0.50] Calculus I

1.50 credits in the Area of Application or elective

Semester 2(Winter)

CIS*1910 [0.50] Discrete Structures in Computing I
CIS*2500 [0.50] Intermediate Programming
COOP*1100 [0.00] Introduction to Co-operative Education

1.50 credits in the Area of Application or elective

Semester 3(Summer)

CIS*2030 [0.50] Structure and Application of Microcomputers
CIS*2430 [0.50] Object Oriented Programming
CIS*2520 [0.50] Data Structures
CIS*2910 [0.50] Discrete Structures in Computing II

0.50 credits in the Area of Application or elective

Fall Semester

COOP*1000 Work Term 1

Semester 4(Winter)

CIS*2750 [0.75] Software Systems Development and Integration
CIS*3110 [0.50] Operating Systems
CIS*3490 [0.50] The Analysis and Design of Computer Algorithms
STAT*2040 [0.50] Statistics I

0.25 credits in the Area of Application or elective

Summer Semester

COOP*2000 Work Term 2

Semester 5(Fall)

CIS*2460 [0.50] Modelling of Computer Systems
CIS*3530 [0.50] Data Base Systems and Concepts
CIS*3750 [0.75] System Analysis and Design in Applications

0.75 credits in the Area of Application or elective

Winter Semester

COOP*3000 Work Term 3

Semester 6(Summer)

Alternative 1 [Recommended]

CIS*3760 [0.75] Software Engineering
0.50 C.I.S. elective at the 3000 level or above

1.25 credits in the Area of Application or elective

OR Alternative 2

(1.50 C.I.S. electives at the 3000 level or above

1.00 credits in the Area of Application or elective)

Semester 7(Fall)

1.00 credits in the Area of Application or elective

0.50 credits in C.I.S. at 3000 level or above

1.00 credits in C.I.S. at the 4000 level

Semester 8(Winter)

CIS*4000 [0.50] Applications of Computing Seminar

1.50 credits in the Area of Application or elective

0.50 credits in C.I.S. at the 4000 level

The recommended schedule of studies for Co-op Stream B is as follows:

Semester 1(Fall)

CIS*1500 [0.50] Introduction to Programming
MATH*1200 [0.50] Calculus I

1.50 credits in the Area of Application or elective

Semester 2(Winter)

CIS*1910 [0.50] Discrete Structures in Computing I
CIS*2500 [0.50] Intermediate Programming
COOP*1100 [0.00] Introduction to Co-operative Education

1.50 credits in the Area of Application or elective

Summer Semester Off

Semester 3(Fall)

CIS*2030 [0.50] Structure and Application of Microcomputers
CIS*2430 [0.50] Object Oriented Programming
CIS*2520 [0.50] Data Structures
CIS*2910 [0.50] Discrete Structures in Computing II

0.50 credits in the Area of Application or elective

Semester 4(Winter)

CIS*2750 [0.75] Software Systems Development and Integration
CIS*3110 [0.50] Operating Systems
CIS*3490 [0.50] The Analysis and Design of Computer Algorithms
STAT*2040 [0.50] Statistics I

0.25 credits in the Area of Application or elective

Summer Semester

COOP*1000 Work Term 1

Semester 5(Fall)

CIS*2460 [0.50] Modelling of Computer Systems
CIS*3530 [0.50] Data Base Systems and Concepts
CIS*3750 [0.75] System Analysis and Design in Applications

0.75 credits in the Area of Application or elective

Note: CIS*3210 should be taken here to enable future courses in distributed computing.

Winter Semester

COOP*2000 Work Term 2

Semester 6(Summer)

Alternative 1 [Recommended]

CIS*3760 [0.75] Software Engineering
0.50 C.I.S. elective at the 3000 level or above

1.25 credits in the Area of Application or elective

OR Alternative 2

(1.50 C.I.S. electives at the 3000 level or above

1.00 credits in the Area of Application or elective)

Fall Semester

COOP*3000 Work Term 3

Semester 7(Winter)

1.00 credits in the Area of Application or elective

0.50 credits in C.I.S. at 3000 level or above

1.00 credits in C.I.S. at the 4000 level

Summer Semester

COOP*4000 Work Term 4

Semester 8(Fall)

CIS*4000 [0.50] Applications of Computing Seminar

1.50 credits in the Area of Application or elective

0.50 credits in C.I.S. at the 4000 level

Bachelor of Landscape Architecture (B.L.A.)

Landscape Architecture is the art and science of designing and conserving land and water for human use and enjoyment. As a profession, Landscape Architecture is concerned with two scales of planning and design.

The first scale is with the development of specific sites for residential, recreational, institutional, commercial and industrial projects. The second scale pertains to the regional landscape where the issues include management plans for forest, park and recreation areas, agricultural lands protection, gravel pit mining and restoration, hazard land studies, and visual resource analysis.

Program Information

Objectives of the Program

In education and practice landscape architecture involves both planning and design. Its unique responsibility is to integrate societal needs with the natural environment in a manner which is non-polluting and results in minimal alteration to natural ecosystems. Frequently the landscape architect must work closely with architects, urban planners and engineers, and where the conservation and creation of natural settings is concerned they must work with scientists in this field. The challenge confronting the professional landscape architect is significant and promises to become even greater in the future.

Persons interested in pursuing a career in Landscape Architecture should possess several basic qualities. It is essential that the prospective student have a keen interest in art and design which may be cultivated to professional competence. They should have a strong interest in nature, a love of plants and a desire to arrange landscapes into beautiful and functional forms. Lastly, they should possess a strong interest in people as the art of landscape architecture is directed toward creating landscapes which fulfill people's requirements for use and enjoyment.

The program in Landscape Architecture prepares the prospective graduate for a wide variety of career opportunities in private practice or in public agencies at the municipal, provincial and national levels. The undergraduate training is a sound basis for graduate study in landscape architecture, urban and regional planning and resource development.

Accreditation

The baccalaureate degree program in Landscape Architecture is recognized by the Canadian Society of Landscape Architects and the American Society of Landscape Architects. The program is fully accredited by the Landscape Architectural Accreditation Board (L.A.A.B.); Canadian Society of Landscape Architects (C.S.L.A.) and American Society of Landscape Architects (A.S.L.A.). Graduates are entitled to apply for registration as a Landscape Architect within the Province of Ontario after completing 3 years of acceptable experience as a Landscape Architectural intern member of the Ontario Association of Landscape Architects and successful completion of an examination in professional practice and ethics.

Admission to the Landscape Architecture Program

Students wishing to enter the program of study leading to the Bachelor of Landscape Architecture degree should consult Section IV--Admission Information.

Degree

The degree granted for the successful completion of the program is the Bachelor of Landscape Architecture (B.L.A.).

Selection of Electives

All electives may be chosen independently although counselling with the departmental advisor is highly recommended. In selecting electives two approaches may be followed: 1) electives may be chosen from a variety of disciplines to achieve breadth of knowledge or, 2) all or most electives may be chosen in a subject area in order to pursue a particular field of interest in depth. Some of these fields might include agricultural and biological sciences, environmental studies, studio arts, geography, philosophy or sociology.

Students wishing to elect a permissible substitute shall do so in consultation with their departmental advisor. A substitute course will normally be in the same academic area as that listed in the Landscape Architecture Program.

The following elective courses in Landscape Architecture are available. Refer to course descriptions for scheduling information.

LARC*3500	[0.50]	Independent Study
LARC*4520	[0.50]	Park and Recreation Administration
LARC*4730	[0.50]	Special Study in Landscape Architecture
LARC*4740	[0.50]	Case Studies

Academic Advising

Students are assigned a departmental advisor and supplied with a copy of the Landscape Architecture Student Handbook. Students are encouraged to consult both for guidance and the selection of electives.

Computers

Expertise in many aspects of computer application is now a fundamental skill for the profession. Recognizing this, the school provides computer facilities in the building. If it is feasible we recommend that students acquire their own computer within the first two years of the program.

Field Trips

Participation in organized visits to site study areas and project sites is obligatory for all students taking certain courses in landscape architecture. To the extent that it is possible, students will be informed of the dates, destinations and cost of field trips prior to registration. Students who have reason to seek exemption from the requirement may apply to the director prior to registration for permission to substitute papers on appropriate topics.

Pre-Professional Experience

It is considered highly advisable that the prospective graduate prepare for later professional practice through summer employment in the landscape industry. Two summers spent in landscape related work followed by 1 summer in a professional office is considered to be a desirable sequence of employment.

Continuation of Study

Students are advised to consult the regulations for continuation of study within the program which are outlined in detail in Section VIII--Undergraduate Degree Regulations & Procedures.

Conditions for Graduation

In order to qualify for graduation from the 8 semester Honours B.L.A. program, the student must successfully complete all of the courses approved for the program (20.00 credits).

Schedule of Studies

Major (Honours Program)

Semester 1

BIOL*1030	[0.50]	Biology I
LARC*1100	[0.75]	Design and Communications Studio
ENGL*1200	[0.50]	Reading the Contemporary World
LARC*1950	[0.50]	History of Cultural Form I
One of:		
PHIL*1010	[0.50]	Introductory Philosophy: Social and Political Issues
PSYC*1100	[0.50]	Principles of Behaviour
SOC*1100	[0.50]	Sociology
ANTH*1150	[0.50]	Anthropology

Semester 2

LARC*2020	[0.75]	Design Studio
PHIL*2070	[0.50]	Philosophy of the Environment
LARC*2420	[0.50]	Materials and Techniques
0.50 Studio Arts elective (2000 level Studio)		
0.50 Social Science elective		

Semester 3

HORT*3260	[0.50]	Woody Plants
LARC*2100	[0.50]	Landscape Analysis
LARC*2330	[0.25]	Planting Design I
LARC*2410	[0.50]	Site Engineering
LARC*3040	[0.75]	Site Planning and Design Studio

Semester 4

LARC*2340	[0.25]	Planting Design II
LARC*2820	[0.50]	Urban and Regional Planning
LARC*3050	[0.75]	Landscape Architecture I
LARC*3430	[0.50]	Landscape Construction I
0.50 elective		

Semester 5

LARC*3060	[0.75]	Landscape Architecture II
ENVS*3320	[0.50]	Principles of Landscape Ecology *
LARC*3440	[0.75]	Landscape Construction II
LARC*4610	[0.50]	Professional Practice
0.50 elective		

* is offered in even-numbered years; to alternate with elective in semester 7

Semester 6

Choose one of the following three options:

Option 1

2.50 electives

Option 2

LARC*4620	[1.00]	Internship in Landscape Architecture
1.50 electives*		

Option 3

Exchange Program (1.00 credits)

1.50 electives*

Semester 7

LARC*3070	[1.00]	Landscape Architecture III
LARC*4101	[0.50]	Design Thesis
1.00 electives		

Semester 8

LARC*4090 [0.50] Seminar

LARC*4102 [1.00] Design Thesis

1.00 electives*

* one or more of these electives may be taken in a Summer semester, if preferred

Bachelor of Science (B.Sc.)

The University of Guelph offers general and honours programs leading to the B.Sc. degree. The general program consists of a minimum of 15.00 credits (usually 30 semester courses) involving normally 6 semesters of study. The requirements for the honours program is a minimum of 20.00 credits (usually 40 semester courses) which may be obtained over 8 semesters of study. Some majors may require more than 20.00 credits.

The Three Semester System

Most of the B.Sc. programs operate on the three semester system. In this system each of the Fall, Winter and Summer semesters is of 12 weeks duration. Two semesters are equivalent to 1 academic year at a university on the traditional system. In the three semester system, students may vary their rate of progress towards graduation. However, since many science courses must be taken in a certain sequence and not all courses are offered each semester, most science students are required to proceed from semester to semester in restricted patterns. Furthermore, the advanced courses of the honours programs are offered only in the regular fall and winter semesters.

Additional information may be obtained from Admissions Services, Office of Registrarial Services. The three-semester system and the pass-by-course method of advancement allow considerable flexibility of program arrangement. In addition, a variety of program contents is available which the student may modify to meet individual requirements.

Transfer from One B.Sc. Program to Another

On entrance to the B.Sc. program, the student may elect to follow an intended area of specialization or to postpone this decision until a later semester. The choice of a particular program of study may be most effectively made at the end of Semester 3 or 4. Judicious selection of courses in each and every semester will allow the easiest transfer between programs without incurring the need for additional semesters of study. The program counsellor of the particular college from which it is anticipated that the majority of science courses will be taken should be consulted for advice.

Program Information

General Program Requirements

The general B.Sc. degree requires the successful completion of 15.00 required credits. Normally 2.50 credits (usually 5 courses) are taken in each semester so that the degree may be completed in 6 semesters. The general science program is designed to give a broad general training in biological science, chemistry, physics and mathematical science. This is achieved by requiring each student to take a minimum of 1.50 credits (usually 3 courses) in each of the above areas. The courses to be taken in semesters 4 to 6 may be selected to allow a broad study of the sciences.

Honours Program Requirements

In order to graduate in the honours program, students must fulfill all program requirements for the program and have achieved a 60%, or higher, cumulative average over all course attempts. Normally 2.50 credits (usually 5 courses) are taken in each semester so that the degree may be completed in generally 8 semesters. The following types of honours programs are offered:

Honours Major Programs

Major in a subject

Major in a subject (with a minor)

Honours Major

These programs permit a student to study science in greater depth than is permitted by the general program. The student is required to take a minimum of 1.00 credit (usually 2 courses) in each of biological science, chemistry, physics and mathematical science. In each of semesters 3 to 8, students select science credits so that the total program provides a broad science training with concentration in an area of physical science or biological science.

A major normally consists of certain prescribed courses (minimum of 8.00 credits) and a number of elective courses to complete the requirements for the degree. The composition of science courses selected must contain a sufficient number (minimum of 6.00 credits) of 3000 and 4000 level courses including a grouping (minimum of 2.00 credits) particularly at the 4000 level. A major program may be studied in conjunction with a minor in an area of science, humanities or social science.

Honours Minor

A minor is a group of courses which provides for exposure to and mastery of the fundamental principles of a subject. A minor consists of a minimum of 5.00 credits (normally 10 courses). It may also require certain other courses from other areas to be taken along with the specified courses of the minor. A minor is taken in conjunction with a major.

Students should seek advice from the program counsellor of either the College of Biological Science or the College of Physical and Engineering Science dependent upon their primary area(s) of interest. Refer to B.Sc. Program Requirements: Regulation 6. Double-Counting of Credits.

B.Sc. Program Requirements

Regulations 1, 2, 3 and 4 apply to all B.Sc. students.

1. Entry Credits

In general, the 4U or OAC credit or its equivalent is required in a subject area to allow entrance to the initial university course. Students who lack this requirement can remedy the deficiency by successful completion of:

BIOL*1020 for students lacking biology

CHEM*1060 for students lacking chemistry

PHYS*1020 for students lacking physics

Not more than one of the above will be allowed for credit toward the B.Sc. degree.

2. Basic Science Core

In each of the first 2 semesters B.Sc. students must take one (1) of the specified courses in each of biology, chemistry, physics and mathematical science, and 1 other course which is normally an Arts or Social Science elective.

3. 1000 Level Credits

No B.Sc. program may include more than 7.00 credits at the 1000 level.

4. 3000 and 4000 Level Credits

There is a requirement for a minimum of 6.00 science credits at the 3000- and 4000-levels with a minimum of 2.00 credits at the 4000 level.

5. Science Credits

A minimum of 16.00 science credits (usually 32 courses) is required for the honours major program. The inclusion of a minor in a non-science area involves the reduction to 14.00 science credits (usually 28 courses) with the approval of the program counsellors. Acceptable science courses in the following programs means "acceptable to the B.Sc. Program Committee". Lists of acceptable courses are available in the offices of the faculty advisors and the program counsellors and on the world wide web at the following address: <http://www.bsc.uoguelph.ca/courseselection.shtml#which>.

6. Double-Counting of Credits

A maximum of 2.00 credits required in a major program may be applied to meet the requirements of a minor program.

7. Continuation of Study

Students are advised to consult the regulations for continuation of study outlined in detail in Section VIII--Undergraduate Degree Regulations & Procedures.

Doctor of Veterinary Medicine

Students in the B.Sc. program who intend to apply for admission to the Doctor of Veterinary Medicine program should register for the Major Biological Science or Major Physical Science program, or the major of their choice. Prospective candidates for the D.V.M. program should consult the admission requirements for the program. Students may obtain assistance in selecting a program that will meet the requirements for the Doctor of Veterinary Program and for continuation in biological or physical science programs by consulting the appropriate Program Counsellor.

General Program (BSCG)

Continuation of Study

Students are advised to consult the regulations for continuation of study within the program which are outlined in detail in Section VIII--Undergraduate Degree Regulations & Procedures.

Conditions for Graduation

In order to qualify for graduation from the general program the student is required to attain a passing grade in a minimum of 15.00 required credits (usually 30 courses) as outlined in the Total Course Requirements for all students in the General Science Program.

Recommended Schedule for Students in Biological Science Areas

Semester 1*

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences
0.50 Arts or Social Science elective		

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
0.50 elective		
One of:		
MATH*2080	[0.50]	Elements of Calculus II
STAT*2040	[0.50]	Statistics I
One of:		
PHYS*1080	[0.50]	Physics for Life Sciences
PHYS*2040	[0.50]	Fundamental Electronics and Sensors

Semester 3

0.50 credit in biological science

0.50 credit in chemistry
 0.50 credit in physics
 0.50 credit in mathematical science
 0.50 elective

Semester 4 to 6

A minimum of 2.50 credits in each semester, including at least 2.00 acceptable science credits per semester. For details consult 'Total Course Requirements'.

*refer to B.Sc. Program Requirements: Regulation 1, Entry Credits and Regulation 3, 1000 Level Credits

Recommended Schedule for Students in Physical Science Areas

Semester 1*

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

0.50 Arts or Social Science elective

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
MATH*1210	[0.50]	Calculus II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism

0.50 elective

Semester 3

0.50 credit in biological science
 0.50 credit in chemistry
 0.50 credit in physics
 0.50 elective

One of:

CIS*1200	[0.50]	Introduction to Computing
STAT*2040	[0.50]	Statistics I
STAT*2100	[0.50]	Introductory Probability and Statistics

Semester 4 to 6

A minimum of 2.50 credits in each semester, including 2.00 acceptable science courses per semester. For details consult 'Total Course Requirements'.

*refer to B.Sc. Program Requirements: Regulation 3, 1000 Level Credits

Total Course Requirements for all Students in the General Science Program

Total of 15.00 credits (usually 30 courses) as follows:

1. The Science core - a minimum of 1.50 credits (usually 3 courses) beyond the 4U or OAC level, in each of biological science, chemistry, mathematical science, physics (Refer to "Regulation 3, 1000 Level Credits") - minimum of 6.00 (usually 12 courses)
2. Additional acceptable science credits* - selected from biological science, chemistry, computing and information science, mathematics, statistics, physics, geology or other science courses - 6.00 credits (usually 12 courses)
3. Arts and social science credits - 2.00 credits (usually 4 courses)
4. Additional acceptable credits (these may include one of BIOL*1020, CHEM*1060, PHYS*1020) - 1.00 credit (usually 2 courses)

*at least 2.00 credits (usually 4 courses) of the additional science courses must be 3000 or 4000 level

Honours Programs (BSCH)

Honours Program Majors

The following honours majors are available:

Biological Sciences:

20.00 credits - Animal Biology
 20.25 credits - Biochemistry
 20.00 credits - Biological Science
 20.00 credits - Bio-Medical Science
 20.00 credits - Human Kinetics
 20.00 credits - Marine and Freshwater Biology
 20.00 credits - Microbiology
 20.00 credits - Molecular Biology & Genetics
 20.00 credits - Nutritional and Nutraceutical Sciences
 20.00 credits - Plant Biology
 20.00 credits - Plant Biotechnology
 20.00 credits - Wild Life Biology
 20.00 credits - Zoology

Physical Sciences:

20.00 credits - Biological Chemistry
 21.25 credits - Biophysics
 21.75 credits - Chemical Physics
 20.25 credits - Chemistry

20.00 credits - Physical Science
 21.25 credits - Physics
 21.25 credits - Theoretical Physics

Environmental Sciences:

20.25 credits - Biomedical Toxicology
 20.00 credits - Earth Surface Science*
 20.00 credits - Ecology*
 20.00 credits - Environmental Biology*
 20.00 credits - Environmental Toxicology
 *also see B.SC.(ENV.)

Computing Science, Mathematics, Statistics

20.00 credits - Computing & Information Science
 20.00 credits - Mathematics
 20.00 credits - Statistics

Additional Disciplines:

20.00 credits - Food Science
 20.00 credits - Psychology

Co-operative Educational Programs:

20.00 credits - Applied Mathematics and Statistics
 20.25 credits - Biochemistry
 20.25 credits - Biomedical Toxicology
 21.25 credits - Biophysics
 21.25 credits - Chemical Physics
 20.25 credits - Chemistry
 20.00 credits - Computing & Information Science
 20.00 credits - Environmental Toxicology
 20.00 credits - Food Science
 20.00 credits - Microbiology
 21.25 credits - Physics

Honours Program Minors

Minors are available in the following science areas with the particular credit requirements being given (additional minors are available from the College of Arts and the College of Social and Applied Human Sciences). A minor may include additional prerequisites - consult with the appropriate faculty advisor.

Biological Sciences:

5.00 credits - Biology
 5.00 credits - Biochemistry
 5.00 credits - Biotechnology
 5.00 credits - Functional Foods and Nutraceuticals
 5.00 credits - Genetics
 5.00 credits - Microbiology
 5.00 credits - Neuroscience
 5.00 credits - Nutritional Sciences
 5.00 credits - Plant Biology
 5.00 credits - Zoology

Physical Sciences:

5.00 credits - Chemistry
 5.00 credits - Physics

Environmental Sciences:

5.00 credits - Ecology
 5.00 credits - Forest Science
 5.00 credits - Geographic Info. Sys. (G.I.S.) and Environmental Analysis
 5.00 credits - Geology

Mathematical Sciences:

5.25 credits - Computing & Information Science
 5.00 credits - Mathematical Science
 5.00 credits - Mathematics
 5.00 credits - Statistics

Additional Disciplines:

5.00 credits - Business Administration
 5.00 credits - Food Science
 5.00 credits - Psychology

Continuation of Study

Students are advised to consult the regulations for continuation of study within the program which are outlined in detail in Section VII--Undergraduate Degree Regulations & Procedures.

Conditions for Graduation

Schedules 1 and 2

In order to qualify for graduation from the honours program, the student must fulfill all program requirements and have achieved 60%, or higher, cumulative average in all course attempts.

Note: A student registered in an honours program who has successfully completed all required courses and the specified total number of credits for the program but does not have a cumulative average of 60%, or higher, may apply to graduate from the general program.

Co-operative Education Program

Admission to the Co-operative Education program may be granted on entry to the University or by application normally before the conclusion of Semester 2. Application forms can be obtained from the appropriate faculty co-op advisor. In-course students will need to complete successfully an interview in the appropriate department. Students must be either a Canadian Citizen or Permanent Resident. A cumulative average of 70% is required in courses taken in Semesters 1 and 2 to permit continuation in the program.

Conditions for Graduation from the B.Sc. Co-operative Education Program

Conditions for graduation are the same as the corresponding regular B.Sc. program. In addition, all work reports and work performance evaluations must have a grade of satisfactory or better.

Animal Biology (ABIO)

Department of Animal and Poultry Science, Ontario Agricultural College.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 elective or restricted elective

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1080	[0.50]	Physics for Life Sciences

0.50 elective or restricted elective

One of:

CIS*1000	[0.50]	Introduction to Computer Applications
CIS*1200	[0.50]	Introduction to Computing
CIS*1500	[0.50]	Introduction to Programming

Semester 3

BIOL*2210	[0.50]	Introductory Cell Biology
BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics
STAT*2040	[0.50]	Statistics I

0.50 elective or restricted elective

Semester 4

ANSC*2340	[0.50]	Structure of Farm Animals
MBG*2020	[0.50]	Introductory Molecular Biology
NUTR*3190	[0.50]	Fundamentals of Nutrition

1.00 elective or restricted elective

Note: A 3000 level Chemistry is recommended for students considering MCAT examinations.

Semester 5

AGR*2350	[0.50]	Animal Production Systems and Industry
ANSC*3080	[0.50]	Agricultural Animal Physiology
ANSC*3120	[0.50]	Introduction to Animal Nutrition

1.00 electives or restricted electives

Semester 6

ANSC*3150	[0.50]	Principles of Farm Animal Care and Welfare
ANSC*4120	[0.50]	Fundamentals of Animal Reproduction
MBG*3060	[0.50]	Quantitative Genetics

1.00 credit from electives or restricted electives

Semester 7

ANSC*4050	[0.50]	Recombinant DNA in Animal Science
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2.00 electives or restricted electives

Note: AGR*2360 is highly recommended as an elective course in semester 7

Semester 8

ANSC*4470	[0.50]	Animal Metabolism
ANSC*4480	[0.50]	Applied Endocrinology

1.50 electives or restricted electives

Restricted Electives

Students must complete 2.00 credits from Arts or Social Science courses.

At least 3.00 credits must be obtained from the following list of courses. Students are encouraged to consult with the Faculty Advisor both for help in tailoring their selection to meet personal and career interests and to avoid problems due to differences in the credit weightings and frequency with which specific courses are offered.

AGR*2360	[0.75]	Challenges and Opportunities in Animal Production
ANSC*2200	[0.50]	Principles of Aquaculture
ANSC*4070	[0.50]	Applied Animal Behaviour
ANSC*4080	[0.50]	Environmental Management and Animal Productivity
ANSC*4130	[0.50]	Reproductive Management and Technology
ANSC*4160	[0.25]	Beef Cattle Nutrition
ANSC*4170	[0.25]	Dairy Cattle Nutrition
ANSC*4180	[0.25]	Poultry Nutrition
ANSC*4190	[0.25]	Swine Nutrition
ANSC*4500	[0.25]	Horse Nutrition
ANSC*4510	[0.25]	Pet Nutrition
ANSC*4610	[0.50]	Critical Analysis in Animal Science
BIOC*3560	[0.50]	Structure and Function in Biochemistry
MBG*3090	[0.50]	Applied Animal Breeding
MBG*4030	[0.50]	Animal Breeding Methods
NUTR*3340	[0.50]	Nutrition of Fish and Crustacea
NUTR*3350	[0.50]	Wildlife Nutrition

Note: At least 16.00 science credits must be completed. A list of acceptable science credits is available from the Faculty Advisor.

Applied Mathematics and Statistics (Co-op) (APMS:C)

Department of Mathematics and Statistics, College of Physical and Engineering Science.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. A total of 20.00 credits is required to complete this program which includes 4.50 credits in Mathematics, 2.50 credits in Statistics, 2.50 credits in Mathematics or Statistics at the 3000 level, and an additional 2.00 credits in Mathematics or Statistics at the 4000 level, 1.00 credit in Computing and Information Science, and 1.00 credit in Arts or Social Sciences courses.

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
CIS*2500	[0.50]	Intermediate Programming
COOP*1100	[0.00]	Introduction to Co-operative Education
MATH*1210	[0.50]	Calculus II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism

Summer Semester

No study semester or work term.

Semester 3 - Fall

MATH*2000	[0.50]	Set Theory
MATH*2160	[0.50]	Linear Algebra I
MATH*2200	[0.50]	Advanced Calculus I
STAT*2040	[0.50]	Statistics I

0.50 Arts or Social Science elective

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Note: Suggested course sequences are available in the departmental brochure. Please consult with the departmental advisor.

Semester 4 - Summer

MATH*2130	[0.50]	Numerical Methods
MATH*2170	[0.50]	Differential Equations I
STAT*2050	[0.50]	Statistics II

0.50 Arts or Social Science elective

0.50 elective

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

1.00 credit in Mathematics or Statistics at the 3000 level or above
1.50 elective

Summer Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 6 - Fall

STAT*3100 [0.50] Introductory Mathematical Statistics I

STAT*3240 [0.50] Applied Regression Analysis

0.50 elective

At least 1.00 credit from:

MATH*3100 [0.50] Differential Equations II

MATH*3200 [0.50] Real Analysis

MATH*3240 [0.50] Operations Research

Semester 7 - Winter

STAT*3110 [0.50] Introductory Mathematical Statistics II

1.50 credits in Mathematics or Statistics at the 3000 level or above

0.50 elective

Summer Semester

COOP*4000 [0.00] Co-op Work Term IV

Semester 8 - Fall

2.00 credits in Mathematics or Statistics at the 4000 level

0.50 elective

Electives must include:

1.00 credit in Arts and Social Science courses

2.50 credits in Mathematics or Statistics at the 3000 level

2.00 credits in Mathematics or Statistics at the 4000 level

Biochemistry (BIOC)**Department of Molecular and Cellular Biology, College of Biological Science.****Major (Honours Program)**

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. The major will require the completion of at least 20.25 credits as indicated below:

Semester 1

BIOL*1030 [0.50] Biology I

CHEM*1040 [0.50] General Chemistry I

MATH*1200 [0.50] Calculus I

PHYS*1000 [0.50] An Introduction to Mechanics

0.50 Arts or Social Science elective

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040 [0.50] Biology II

CHEM*1050 [0.50] General Chemistry II

CIS*1500 [0.50] Introduction to Programming

MATH*1210 [0.50] Calculus II

PHYS*1010 [0.50] Introductory Electricity and Magnetism

Semester 3

CHEM*2060 [0.50] Structure and Bonding

CHEM*2480 [0.50] Analytical Chemistry I

BIOC*2580 [0.50] Introductory Biochemistry

CHEM*2880 [0.50] Physical Chemistry

MBG*2000 [0.50] Introductory Genetics

Semester 4

BIOL*2210 [0.50] Introductory Cell Biology

CHEM*2700 [0.50] Organic Chemistry I

BIOC*3560 [0.50] Structure and Function in Biochemistry

MBG*2020 [0.50] Introductory Molecular Biology

0.50 elective

Semester 5

BIOC*3570 [0.50] Analytical Biochemistry

CHEM*3750 [0.50] Organic Chemistry II

MICR*2030 [0.50] Microbial Growth

STAT*2040 [0.50] Statistics I

0.50 elective

Semester 6

MBG*3350 [0.75] Laboratory Methods in Molecular Biology I

PHYS*2030 [0.50] Biophysics of Excitable Cells

1.50 elective

Semester 7

BIOC*4520 [0.50] Metabolic Processes

MICR*3230 [0.50] Immunology I

1.00 electives

One of:

MBG*3070 [0.50] Bacterial Genetics

MBG*3080 [0.50] Bacterial Genetics

MBG*4080 [0.50] Molecular Genetics

Semester 8

BIOC*4540 [0.50] Enzymology

BIOC*4580 [0.50] Membrane Biochemistry

1.50 electives

Electives

Selection of electives is subject to the following rules:

1. At least 1.00 credits in the program must be in the Arts and Social Sciences.
2. One of BIOC*4570 and MICR*4260 must be taken during the program.
3. One of BIOC*4550, MBG*4350, TOX*4590 must be taken during the program.
4. One of the following courses (0.50 credits) must be taken during the program: BIOC*3100, MICR*4230, PBIO*3110, PBIO*4750.

Minor (Honours Program)

A minor in Biochemistry consists of at least 5.00 course credits. The following courses are required:

BIOC*2580 [0.50] Introductory Biochemistry

CHEM*2700 [0.50] Organic Chemistry I

BIOC*3560 [0.50] Structure and Function in Biochemistry

BIOC*3570 [0.50] Analytical Biochemistry

BIOC*4540 [0.50] Enzymology

One of:

MBG*2020 [0.50] Introductory Molecular Biology

MICR*2030 [0.50] Microbial Growth

In addition, at least 2.00 credits must be chosen from the following courses, with at least 1.00 credits from the first four courses listed:

BIOC*4520 [0.50] Metabolic Processes

BIOC*4570 [0.50] Applied Biochemistry

BIOC*4580 [0.50] Membrane Biochemistry

MBG*3350 [0.75] Laboratory Methods in Molecular Biology I

MICR*3230 [0.50] Immunology I

MICR*4260 [0.50] Microbial Technology

TOX*4590 [0.50] Biochemical Toxicology

Biochemistry (Co-op) (BIOC:C)**Department of Molecular and Cellular Biology, College of Biological Science.**

Two Streams are available. Stream A is different from Stream B in that Stream A has a double work term following academic semester 5. The course content of semesters 1-4 is the same as that listed above for the regular Honours Program Major. Students in the Co-op program must also take COOP*1100 in the second academic semester. The total program requirements, including the selection of electives are also the same.

Students will be expected to undertake their work terms after semester 3 and completion of course CHEM*2480. Since certain courses must be taken in a different semester from usual, consult your Faculty Co-op Advisor for assistance with course selection.

To graduate from the Co-op program a minimum of 4 successfully completed work terms is normally required.

Stream A**Semester 1 - Fall**

BIOL*1030 [0.50] Biology I

CHEM*1040 [0.50] General Chemistry I

MATH*1200 [0.50] Calculus I

PHYS*1000 [0.50] An Introduction to Mechanics

0.50 Arts or Social Science elective

Semester 2 - Winter

BIOL*1040 [0.50] Biology II

CHEM*1050 [0.50] General Chemistry II

CIS*1500 [0.50] Introduction to Programming

COOP*1100 [0.00] Introduction to Co-operative Education

MATH*1210 [0.50] Calculus II

PHYS*1010 [0.50] Introductory Electricity and Magnetism

Summer Semester

No academic semester or work term

Semester 3 - Fall

CHEM*2060 [0.50] Structure and Bonding

CHEM*2480 [0.50] Analytical Chemistry I

BIOC*2580 [0.50] Introductory Biochemistry

CHEM*2880 [0.50] Physical Chemistry

MBG*2000 [0.50] Introductory Genetics

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4 - Summer

BIOL*2210 [0.50] Introductory Cell Biology

CHEM*2700	[0.50]	Organic Chemistry I
BIOC*3570	[0.50]	Analytical Biochemistry
STAT*2040	[0.50]	Statistics I

0.50 elective

Semester 5 - Fall

BIOC*3560	[0.50]	Structure and Function in Biochemistry
CHEM*3750	[0.50]	Organic Chemistry II
MBG*2020	[0.50]	Introductory Molecular Biology
MICR*2030	[0.50]	Microbial Growth

0.50 elective

Winter Semester

COOP*2000	[0.00]	Co-op Work Term II
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Summer Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6 - Fall

MICR*3230	[0.50]	Immunology I
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1.50 elective

One of:

MBG*3070	[0.50]	Bacterial Genetics
MBG*3080	[0.50]	Bacterial Genetics
MBG*4080	[0.50]	Molecular Genetics

Semester 7 - Winter

BIOC*4540	[0.50]	Enzymology
BIOC*4580	[0.50]	Membrane Biochemistry
MBG*3350	[0.75]	Laboratory Methods in Molecular Biology I
PHYS*2030	[0.50]	Biophysics of Excitable Cells

0.50 electives

Summer Semester

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8 - Fall

BIOC*4520	[0.50]	Metabolic Processes
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2.00 electives

Stream B**Semester 1 - Fall**

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

0.50 Arts or Social Science elective

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
CIS*1500	[0.50]	Introduction to Programming
COOP*1100	[0.00]	Introduction to Co-operative Education
MATH*1210	[0.50]	Calculus II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism

Summer Semester

No academic semester or work term

Semester 3 - Fall

CHEM*2060	[0.50]	Structure and Bonding
CHEM*2480	[0.50]	Analytical Chemistry I
BIOC*2580	[0.50]	Introductory Biochemistry
CHEM*2880	[0.50]	Physical Chemistry
MBG*2000	[0.50]	Introductory Genetics

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

BIOL*2210	[0.50]	Introductory Cell Biology
CHEM*2700	[0.50]	Organic Chemistry I
BIOC*3570	[0.50]	Analytical Biochemistry
STAT*2040	[0.50]	Statistics I

0.50 elective

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

BIOC*3560	[0.50]	Structure and Function in Biochemistry
MBG*2020	[0.50]	Introductory Molecular Biology
MICR*2030	[0.50]	Microbial Growth
PHYS*2030	[0.50]	Biophysics of Excitable Cells

0.50 elective

Summer Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6 - Fall

CHEM*3750	[0.50]	Organic Chemistry II
MICR*3230	[0.50]	Immunology I

1.00 elective

One of:

MBG*3070	[0.50]	Bacterial Genetics
MBG*3080	[0.50]	Bacterial Genetics
MBG*4080	[0.50]	Molecular Genetics

Semester 7 - Winter

BIOC*4540	[0.50]	Enzymology
BIOC*4580	[0.50]	Membrane Biochemistry
MBG*3350	[0.75]	Laboratory Methods in Molecular Biology I

1.00 electives

Summer Semester

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8

BIOC*4520	[0.50]	Metabolic Processes
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2.00 electives

Biological Chemistry (BCHM)

Department of Chemistry and Biochemistry, College of Physical and Engineering Science.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. This major will require the completion of 20.00 credits as indicated below:

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

0.50 Arts or Social Science elective

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
MATH*1210	[0.50]	Calculus II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism

0.50 Arts or Social Science elective

Semester 3

CHEM*2060	[0.50]	Structure and Bonding
CHEM*2400	[0.75]	Analytical Chemistry I
BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics

0.50 elective or restricted elective *

Semester 4

CHEM*2070	[0.50]	Structure and Spectroscopy
CHEM*2700	[0.50]	Organic Chemistry I
CHEM*3430	[0.50]	Analytical Chemistry II: Instrumental Analysis
MBG*2020	[0.50]	Introductory Molecular Biology

0.50 elective or restricted elective *

Semester 5

CHEM*2880	[0.50]	Physical Chemistry
BIOC*3570	[0.50]	Analytical Biochemistry
CHEM*3640	[0.50]	Chemistry of the Elements I
CHEM*3750	[0.50]	Organic Chemistry II

0.50 elective or restricted elective *

Semester 6

BIOC*3560	[0.50]	Structure and Function in Biochemistry
CHEM*3650	[0.50]	Chemistry of the Elements II
CHEM*3760	[0.50]	Organic Chemistry III

0.50 elective or restricted elective *

One of: **

CHEM*4630	[0.50]	Bioinorganic Chemistry
CHEM*4720	[0.50]	Organic Reactivity

Semester 7

CHEM*4730	[0.50]	Synthetic Organic Chemistry
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1.00 Chemistry, Biochemistry or Molecular Biology and Genetics courses at the 3000 or 4000 level ***

0.75 elective or restricted elective *

Semester 8

CHEM*4740 [0.50] Topics in Bio-Organic Chemistry
0.50 Chemistry, Biochemistry or Molecular Biology and Genetics course at the 3000 or 4000 level ***

1.00 elective or restricted elective *

One of: **

CHEM*4630 [0.50] Bioinorganic Chemistry

CHEM*4720 [0.50] Organic Reactivity

* restricted electives required include:

BIOL*2210 [0.50] Introductory Cell Biology

One of:

MICR*2020 [0.50] Microbial Interactions and Associations

MICR*2030 [0.50] Microbial Growth

** CHEM*4630 and CHEM*4720 are offered in alternating winter semesters and both courses are required.

*** the allowable Chemistry, Biochemistry and Molecular Biology and Genetics courses at the 3000 and 4000 level are:

CHEM*3440 [0.50] Analytical Chemistry III: Analytical Instrumentation

BIOC*4520 [0.50] Metabolic Processes

BIOC*4540 [0.50] Enzymology

BIOC*4550 [0.50] Biochemistry and Structure of Macromolecules

BIOC*4570 [0.50] Applied Biochemistry

BIOC*4580 [0.50] Membrane Biochemistry

CHEM*4900 [0.75] Chemistry and Biochemistry Research Project I

CHEM*4910 [0.75] Chemistry and Biochemistry Research Project II

MBG*3350 [0.75] Laboratory Methods in Molecular Biology I

MBG*4080 [0.50] Molecular Genetics

TOX*4590 [0.50] Biochemical Toxicology

Biological Science (BIOS)**College of Biological Science.****Major (Honours Program)**

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. This major will require the completion of 20.00 credits as indicated below:

1. First year Core - 4.00 credits

1.00 - Biology BIOL*1030 BIOL*1040

1.00 - Chemistry CHEM*1040 CHEM*1050

1.00 - Physics (PHYS*1070, PHYS*1080) or (PHYS*1000, PHYS*1010)

0.50 - Mathematics MATH*1080 or MATH*1200

0.50 - Mathematical Science CIS*1000, CIS*1200, MATH*1210, MATH*2080,

2. Subject Area Core - 8.00 credits

0.50 - BIOL*2210

0.50 - BIOC*2580

0.50 - MBG*2000

0.50 - STAT*2040

0.50 - from one of BIOL*2060, BIOL*3110, BOT*2050

0.50 - minimum from one of BIOM*3100, BOT*3310, HK*3940, ZOO*3200

5.00 - biological science courses of which 4.00 must be at the 3000 or 4000 level*

3. Science Electives - 4.00 credits

1.00 - biological science courses

3.00 - from science offerings on the list of Approved Courses of which at least 2.00 must be at the 3000 or 4000 level*

4. Arts and Social Science Electives - 2.00 credits

2.00 - arts or social science courses from the list of Approved Courses

5. Free Electives - 2.00 credits

*the program must include at total of 6.00 science credits at the 3000 or 4000 level, 2.00 must be at the 4000 level

Recommended Schedule of Studies**Semester 1**

BIOL*1030 [0.50] Biology I

CHEM*1040 [0.50] General Chemistry I

0.50 Arts or Social Science elective

One of:

MATH*1080 [0.50] Elements of Calculus I

MATH*1200 [0.50] Calculus I

One of:

PHYS*1000 [0.50] An Introduction to Mechanics

PHYS*1070 [0.50] Introductory Physics for Life Sciences

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040 [0.50] Biology II

CHEM*1050 [0.50] General Chemistry II

0.50 Mathematical science from:

CIS*1000 [0.50] Introduction to Computer Applications

CIS*1200 [0.50] Introduction to Computing

MATH*1210 [0.50] Calculus II

MATH*2080 [0.50] Elements of Calculus II

0.50 Arts or Social Science elective

One of:

PHYS*1010 [0.50] Introductory Electricity and Magnetism

PHYS*1080 [0.50] Physics for Life Sciences

Semester 3

MBG*2000 [0.50] Introductory Genetics

0.50 Ecology from:

BIOL*2060 [0.50] Ecology

BIOL*3110 [0.50] Population Ecology

BOT*2050 [0.50] Plant Ecology

1.00 electives

One of:

BIOL*2210 [0.50] Introductory Cell Biology

BIOC*2580 [0.50] Introductory Biochemistry

Semester 4

STAT*2040 [0.50] Statistics I

1.50 electives

One of:

BIOL*2210 [0.50] Introductory Cell Biology

BIOC*2580 [0.50] Introductory Biochemistry

Semester 5

2.00 electives (1.25 electives if HK*3940 is selected)

One course in Physiology from:

BIOM*3100 [0.50] Mammalian Physiology I

BOT*3310 [0.50] Plant Physiology

HK*3940 [1.25] Human Physiology

ZOO*3200 [0.50] Comparative Animal Physiology I

Semester 6 to 8

2.50 in each semester including 2.00 science credits per semester

Note: 6.00 in biological science must be taken in Semesters 6 through 8 of which 4.00 must be at the 3000 or 4000 level. In the total 6.00 of 3000 and 4000 level science courses, 2.00 must be at the 4000 level.

Biology (BIOL)**College of Biological Science.****Minor (Honours Program)**

A minor in Biology shall include the following courses:

BIOL*1030 [0.50] Biology I

BIOL*1040 [0.50] Biology II

BIOL*2060 [0.50] Ecology

BIOL*2210 [0.50] Introductory Cell Biology

MBG*2000 [0.50] Introductory Genetics

and 2.50 of which 1.50 must be at the 3000 or 4000 level, from courses offered by the Human Health and Nutritional Sciences, Integrative Biology and Molecular and Cellular Biology. This minor is intended for students registered in majors in B.Sc. Physical Sciences and the B.A. degree programs.

Bio-Medical Science (BIOM)**Department of Biomedical Sciences and Department of Human Health and Nutritional Sciences.**

This joint program of the Department of Human Health and Nutritional Sciences and the Department of Biomedical Sciences focuses on the maintenance and promotion of human and animal health through the study of function (biochemistry and physiology), structure (anatomy and histology), and the basic medical sciences (epidemiology and pharmacology). It will permit graduates from this B.Sc. program to contribute to society in the area of health maintenance. The program is a good preparation for students intending to develop professional or research careers in the medical and biological sciences. Through the use of electives, students may structure a program emphasizing either nutritional sciences or principles of health and disease prevention. For more information on recommended electives contact the Faculty Advisor of the major.

You may declare the Bio-Medical Science major at entrance from high school or during your first year. Acceptance into this major is confirmed at one entry point per year at the end of the Winter semester. To continue from first year, you must obtain a 70% average in 5.00 credits, including the seven core courses as prescribed by the Schedule of Studies (see below).

Students who are in the process of completing a minimum of 9.00 or 14.00 credits may also apply to the major during the winter semester. Admission is competitive based on academic performance and available spaces. To be considered, students must obtain a minimum 70% average in each of the previous two full-time semesters (or equivalent)

and the signature of the Faculty Advisor. Meeting these minimum requirements does not guarantee admission to the major. Decisions are made at the end of the Winter semester. Students who are lacking in the fundamentals of word processing, spread sheet use and data management should arrange to complete CIS*1000 as early in their program as possible.

This program is designed to partially meet the current requirements for an entry into medical schools in Ontario (a student interested in meeting these requirements should check the present admission requirements for the medical schools); as well as entry into the DVM program of the Ontario Veterinary College.

Live animals and/or animal tissues are used for teaching purposes in some courses in the Bio-Medical Science Major. This must be accepted by students admitted to the program. All animals are protected under the Animals for Research Act of Ontario (1980), the Guidelines for the Care and Use of Experimental Animals (Canadian Council on Animal Care), and the Animal Care Policies of the University of Guelph.

Major (Honours Program)

A minimum of 20.00 credits is required.

Note: Students are required to complete 16.00 credits in science of which a minimum of 2.00 credits must be at the 4000 level.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 elective or restricted elective

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1080	[0.50]	Physics for Life Sciences

1.00 electives or restricted electives

Semester 3 (see admission statement above)

BIOL*2210	[0.50]	Introductory Cell Biology
BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics
STAT*2040	[0.50]	Statistics I

0.50 electives or restricted electives

Semester 4

BIOC*3560	[0.50]	Structure and Function in Biochemistry
MBG*2020	[0.50]	Introductory Molecular Biology
NUTR*3210	[0.50]	Fundamentals of Nutrition

1.00 electives or restricted electives

Semester 5

POPM*3240	[0.50]	Epidemiology
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Electives or restricted electives (to a maximum of 2.75 total credits).

One of:

BIOM*3100	[0.50]	Mammalian Physiology I
HK*3940	[1.25]	Human Physiology

If BIOM*3100 is selected, then BIOM*3110 and BIOM*3120 must be taken in Semester 6.

Semester 6

BIOM*3040	[0.50]	Medical Embryology
BIOM*3090	[0.50]	Principles of Pharmacology and Toxicology

Electives or restricted electives to a maximum of 2.75 total credits.

Note: As part of the electives or restricted electives students must select BIOM*3110 and BIOM*3120 in Semester 6 if BIOM*3100 was selected in Semester 5.

Semester 7

Electives or restricted electives to a maximum of 2.75 total credits.

One of:

MICR*3230	[0.50]	Immunology I
NUTR*4200	[0.50]	Nutrition and Immune Function

One of:

BIOM*3030	[0.75]	Biomedical Histology
ZOO*3000	[0.50]	Comparative Histology

Semester 8

PATH*3610	[0.50]	Principles of Disease
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2.00 electives or restricted electives*

Restricted Electives

- 1 anatomy course from BIOM*3010, HK*3401/2, ZOO*2090 must be completed.
2. A minimum of 1.00 and to a maximum of 2.00 in research experience may be met either by:

- completing both HK*4410 and HK*4420
 - completing HK*4410 and either HK*4230 or BIOM*4500
 - completing both HK*4230 and BIOM*4500
 - completing one of the 1.00 credits in research courses in either the Department of Human Health and Nutritional Sciences (HK*4360 or HK*4371/2) or in the Department of Biomedical Sciences (BIOM*4510 or BIOM*4521/2)
 - equivalent course from another department with the permission of the Faculty Advisor
3. A total of 2.00 credits in Arts and Social Science courses including:
- 0.50 credit in philosophy and ethics from PHIL*2030, PHIL*2070, PHIL*2100, PHIL*2120, PHIL*2180
 - 0.50 credit in either psychology (PSYC*XXXX) or sociology (SOC*XXXX)

Biomedical Toxicology (BTOX)

Interdisciplinary Program, Department of Biomedical Sciences, Ontario Veterinary College.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 elective*

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1080	[0.50]	Physics for Life Sciences
STAT*2040	[0.50]	Statistics I

0.50 elective*

Semester 3

BIOL*2210	[0.50]	Introductory Cell Biology
CHEM*2480	[0.50]	Analytical Chemistry I
BIOC*2580	[0.50]	Introductory Biochemistry
TOX*2000	[0.50]	Principles of Toxicology

0.50 elective*

Semester 4

CHEM*2700	[0.50]	Organic Chemistry I
MBG*2000	[0.50]	Introductory Genetics
NUTR*3210	[0.50]	Fundamentals of Nutrition
STAT*2050	[0.50]	Statistics II

0.50 elective*

Semester 5

BIOM*3030	[0.75]	Biomedical Histology
BIOM*3100	[0.50]	Mammalian Physiology I
MBG*2020	[0.50]	Introductory Molecular Biology
TOX*3300	[0.50]	Analytical Toxicology

0.50 elective*

Semester 6

BIOM*3090	[0.50]	Principles of Pharmacology and Toxicology
BIOM*3110	[0.50]	Mammalian Physiology II
BIOM*3120	[0.25]	Laboratory Exercises in Mammalian Physiology
BIOC*3560	[0.50]	Structure and Function in Biochemistry
PATH*3610	[0.50]	Principles of Disease

0.50 elective*

Semester 7

BIOM*4090	[0.50]	Pharmacology
MBG*3350	[0.75]	Laboratory Methods in Molecular Biology I
NUTR*4510	[0.50]	Toxicology, Nutrition and Food
TOX*4000	[0.50]	Medical Toxicology
TOX*4590	[0.50]	Biochemical Toxicology

Semester 8

STAT*3510	[0.50]	Environmental Risk Assessment
TOX*4100	[0.50]	Toxicological Pathology
TOX*4200	[0.50]	Topics in Toxicology

0.50 elective*

*a minimum of 1.50 must be taken in the College of Arts or the College of Social and Applied Human Sciences

Biomedical Toxicology (Co-op) (BTOX:C)

Interdisciplinary Program, Department of Biomedical Sciences, Ontario Veterinary College.

Major (Honours Program)

A 70% average in courses completed in semesters 1 and 2 is normally required for admission to semester 3 of this program. An optional fourth co-op work term is available.

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 elective*

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
PHYS*1080	[0.50]	Physics for Life Sciences
STAT*2040	[0.50]	Statistics I

0.50 elective*

Semester 3 - Fall

BIOC*2580	[0.50]	Introductory Biochemistry
CHEM*2480	[0.50]	Analytical Chemistry I
MBG*2000	[0.50]	Introductory Genetics
TOX*2000	[0.50]	Principles of Toxicology

0.50 elective

Winter

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

BIOL*2210	[0.50]	Introductory Cell Biology
CHEM*2700	[0.50]	Organic Chemistry I
PATH*3610	[0.50]	Principles of Disease
STAT*2050	[0.50]	Statistics II

0.50 elective

Fall

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

BIOC*3560	[0.50]	Structure and Function in Biochemistry
MBG*2020	[0.50]	Introductory Molecular Biology
NUTR*3210	[0.50]	Fundamentals of Nutrition
STAT*3510	[0.50]	Environmental Risk Assessment

0.50 elective

Summer

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6 - Fall

BIOM*3030	[0.75]	Biomedical Histology
BIOM*3100	[0.50]	Mammalian Physiology I
NUTR*4510	[0.50]	Toxicology, Nutrition and Food
TOX*3300	[0.50]	Analytical Toxicology

0.50 elective

Semester 7 - Winter

BIOM*3090	[0.50]	Principles of Pharmacology and Toxicology
BIOM*3110	[0.50]	Mammalian Physiology II
BIOM*3120	[0.25]	Laboratory Exercises in Mammalian Physiology
TOX*4100	[0.50]	Toxicological Pathology
TOX*4200	[0.50]	Topics in Toxicology

0.50 elective

Semester 8 - Fall

BIOM*4090	[0.50]	Pharmacology
MBG*3350	[0.75]	Laboratory Methods in Molecular Biology I
TOX*4000	[0.50]	Medical Toxicology
TOX*4590	[0.50]	Biochemical Toxicology

0.50 elective

Biophysics (BIOP)

Department of Physics, College of Physical and Engineering Science.

Major (Honours Program)

The program emphasizes the physics of biological systems. It provides an excellent background for careers in the expanding interdisciplinary research laboratories of

Government and Industry. Completion of the program at an appropriate level will qualify a student to pursue post-graduate studies in biophysics and certain areas of physics.

Since some of the required courses are not offered every semester, students entering the Major in Biophysics should plan their program in consultation with the Department of Physics Departmental Advisor.

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. This major requires the completion of 21.25 credits as indicated below:

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming

One of (MATH*1200 recommended):

MATH*1080	[0.50]	Elements of Calculus I
MATH*1200	[0.50]	Calculus I

One of (PHYS*1000 recommended):

PHYS*1000	[0.50]	An Introduction to Mechanics
PHYS*1070	[0.50]	Introductory Physics for Life Sciences
PHYS*1080	[0.50]	Physics for Life Sciences

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II

0.50 Arts or Social Science elective

1 physics course from the following list (PHYS*1010 recommended):

PHYS*1010	[0.50]	Introductory Electricity and Magnetism
PHYS*1080	[0.50]	Physics for Life Sciences
PHYS*1130	[0.50]	Physics with Applications

One of (MATH*1210 recommended):

MATH*1210	[0.50]	Calculus II
MATH*2080	[0.50]	Elements of Calculus II

Semester 3

MATH*2160	[0.50]	Linear Algebra I
MATH*2200	[0.50]	Advanced Calculus I
PHYS*2440	[0.75]	Mechanics I
PHYS*2460	[0.75]	Electricity and Magnetism I

One of:

BIOL*2210	[0.50]	Introductory Cell Biology
MBG*2000	[0.50]	Introductory Genetics

Semester 4

MATH*2170	[0.50]	Differential Equations I
PHYS*2030	[0.50]	Biophysics of Excitable Cells
PHYS*2260	[0.50]	Experimental Basis of Quantum Physics
PHYS*2450	[0.75]	Mechanics II
PHYS*2470	[0.75]	Electricity and Magnetism II

Semester 5

BIOC*2580	[0.50]	Introductory Biochemistry
MATH*3100	[0.50]	Differential Equations II
PHYS*3100	[0.75]	Electronics
PHYS*3230	[0.50]	Quantum Mechanics I
PHYS*3240	[0.50]	Statistical Physics I

Semester 6

BIOC*3560	[0.50]	Structure and Function in Biochemistry
PHYS*3220	[0.50]	Waves and Optics
PHYS*3510	[0.50]	Intermediate Laboratory
PHYS*4040	[0.50]	Quantum Mechanics II
PHYS*4540	[0.50]	Molecular Biophysics

Semester 7

BIOC*4570	[0.50]	Applied Biochemistry
PHYS*4240	[0.50]	Statistical Physics II
PHYS*4560	[0.50]	Biophysical Methods

One of:

PHYS*4120	[0.50]	Atomic and Molecular Physics
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0.50 elective

One of:

PHYS*4500	[0.50]	Advanced Physics Laboratory
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0.50 elective

Note: At least one of PHYS*4120 in semester 7 or PHYS*4150 in semester 8 must be taken.

Semester 8

BIOC*4580	[0.50]	Membrane Biochemistry
PHYS*4510	[0.50]	Advanced Physics Project

0.50 Arts or Social Science elective

0.50 elective

One of:

PHYS*4150 [0.50] Solid State Physics
0.50 elective

Note: At least one of PHYS*4120 in semester 7 or PHYS*4150 in semester 8 must be taken.

Note: PHYS*4510 will be projects in biophysics, some of which may be in biological areas outside the Department of Physics.

Biophysics (Co-op) (BIOP:C)

Department of Physics, College of Physical and Engineering Science.

Major (Honours Program)

Since some of the required courses are not offered every semester, students entering the Major in Biophysics (Co-op) should plan their program in consultation with the Department of Physics Faculty Advisor.

To graduate from the Co-op program a minimum of 4 successfully completed work terms is normally required.

This major requires the completion of 21.25 credits as indicated below:

Semester 1 - Fall

The program for the first semester is the same as the Major in Biophysics (regular) program.

Semester 2 - Winter

BIOL*1040 [0.50] Biology II
CHEM*1050 [0.50] General Chemistry II
COOP*1100 [0.00] Introduction to Co-operative Education
1 physics course from the following list (PHYS*1010 recommended):
PHYS*1010 [0.50] Introductory Electricity and Magnetism
PHYS*1080 [0.50] Physics for Life Sciences
PHYS*1130 [0.50] Physics with Applications

One of:

CIS*2500 [0.50] Intermediate Programming
0.50 Arts or Social Science elective

One of:

MATH*1210 [0.50] Calculus II
MATH*2080 [0.50] Elements of Calculus II

Semester 3 - Fall

MATH*2160 [0.50] Linear Algebra I
MATH*2200 [0.50] Advanced Calculus I
PHYS*2440 [0.75] Mechanics I
PHYS*2460 [0.75] Electricity and Magnetism I

One of:

BIOL*2210 [0.50] Introductory Cell Biology
MBG*2000 [0.50] Introductory Genetics

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4 - Summer

BIOC*2580 [0.50] Introductory Biochemistry
MATH*2170 [0.50] Differential Equations I
PHYS*2260 [0.50] Experimental Basis of Quantum Physics
PHYS*3240 [0.50] Statistical Physics I
0.50 Arts or Social Science elective*

*1.00 must be taken as Arts or Social Science electives in this Major

Fall Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5 - Winter

BIOC*3560 [0.50] Structure and Function in Biochemistry
PHYS*2030 [0.50] Biophysics of Excitable Cells
PHYS*2450 [0.75] Mechanics II
PHYS*2470 [0.75] Electricity and Magnetism II
PHYS*3220 [0.50] Waves and Optics

Summer Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 6 - Fall

MATH*3100 [0.50] Differential Equations II
PHYS*3100 [0.75] Electronics
PHYS*3230 [0.50] Quantum Mechanics I
1.00 elective

Semester 7 - Winter

BIOC*4580 [0.50] Membrane Biochemistry
PHYS*3510 [0.50] Intermediate Laboratory
PHYS*4040 [0.50] Quantum Mechanics II
PHYS*4540 [0.50] Molecular Biophysics
0.50 elective

Summer Semester

COOP*4000 [0.00] Co-op Work Term IV

Semester 8 - Fall

BIOC*4570 [0.50] Applied Biochemistry
PHYS*4120 [0.50] Atomic and Molecular Physics
PHYS*4240 [0.50] Statistical Physics II
PHYS*4560 [0.50] Biophysical Methods

One of:

PHYS*4500 [0.50] Advanced Physics Laboratory
0.50 elective

Biotechnology (BIOT)

Department of Molecular and Cellular Biology, College of Biological Science

Minor (Honours Program)

A minimum of 5.00 credits is required.

BIOC*3560 [0.50] Structure and Function in Biochemistry
MBG*2020 [0.50] Introductory Molecular Biology
MICR*2020 [0.50] Microbial Interactions and Associations
MICR*2030 [0.50] Microbial Growth

One of:

ENGG*2660 [0.50] Biological Engineering Systems I
ENGG*3830 [0.50] Bio-Process Engineering
FOOD*4350 [0.50] Processing Plant Technology

Two of:

COST*1000 [0.50] Introduction to Marketing Management
ECON*1050 [0.50] Introductory Microeconomics
ECON*1100 [0.50] Introductory Macroeconomics
ECON*2100 [0.50] Economic Growth and Environmental Quality
ECON*2310 [0.50] Intermediate Microeconomics
ECON*2410 [0.50] Intermediate Macroeconomics

Three of:

ANSC*2200 [0.50] Principles of Aquaculture
ANSC*4050 [0.50] Recombinant DNA in Animal Science
BIOC*4570 [0.50] Applied Biochemistry
FOOD*3260 [0.50] Industrial Microbiology
MBG*4240 [0.50] Applied Molecular Genetics
MICR*3230 [0.50] Immunology I
MICR*4180 [0.50] Microbial Processes in Environmental Management
MICR*4260 [0.50] Microbial Technology
PBIO*3750 [0.50] Plant Tissue Culture

Business Administration (BADM)

Department of Economics, College of Social and Applied Human Sciences.

Minor (Honours Program)

A minimum of 5.00 credits is required.

AGEC*2220 [0.50] Financial Accounting
AGEC*2230 [0.50] Management Accounting
COST*3040 [0.50] Business and Consumer Law
ECON*1050 [0.50] Introductory Microeconomics
ECON*1100 [0.50] Introductory Macroeconomics
ECON*2310 [0.50] Intermediate Microeconomics
ECON*2410 [0.50] Intermediate Macroeconomics
ECON*3560 [0.50] Theory of Finance

One of:

AGEC*3310 [0.50] Operations Management
HTM*4390 [0.50] Individuals and Groups in Organizations

One of:

AGEC*4370 [0.50] Marketing Management
COST*1000 [0.50] Introduction to Marketing Management

Students wishing to acquire further depth in Business Administration should consider taking electives from the areas of study listed under Management Economics in the B.A. degree.

Chemical Physics (CHPY)

Administered by the Office of the Dean, College of Physical and Engineering Science on behalf of the Department of Chemistry and Biochemistry and the Department of Physics.

Major (Honours Program)

Students may enter this major in Semester I or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. A minimum of 21.75 credits is required.

Semester 1

BIOL*1030 [0.50] Biology I
CHEM*1040 [0.50] General Chemistry I
MATH*1200 [0.50] Calculus I

PHYS*1000 [0.50] An Introduction to Mechanics
 CIS*1500 [0.50] Introduction to Programming
 Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040 [0.50] Biology II
 CHEM*1050 [0.50] General Chemistry II
 MATH*1210 [0.50] Calculus II
 PHYS*1010 [0.50] Introductory Electricity and Magnetism
 0.50 Arts or Social Science elective

Semester 3

CHEM*2060 [0.50] Structure and Bonding
 MATH*2160 [0.50] Linear Algebra I
 MATH*2200 [0.50] Advanced Calculus I
 PHYS*2440 [0.75] Mechanics I
 PHYS*2460 [0.75] Electricity and Magnetism I

Semester 4

CHEM*2070 [0.50] Structure and Spectroscopy
 CHEM*2480 [0.50] Analytical Chemistry I
 MATH*2170 [0.50] Differential Equations I
 PHYS*2450 [0.75] Mechanics II
 PHYS*2470 [0.75] Electricity and Magnetism II

Semester 5

CHEM*2820 [0.50] Thermodynamics and Kinetics
 CHEM*3860 [0.50] Quantum Chemistry
 PHYS*3100 [0.75] Electronics
 PHYS*3230 [0.50] Quantum Mechanics I
 PHYS*3240 [0.50] Statistical Physics I

Semester 6

CHEM*3430 [0.50] Analytical Chemistry II: Instrumental Analysis
 PHYS*3220 [0.50] Waves and Optics
 PHYS*4040 [0.50] Quantum Mechanics II
 0.50 Arts or Social Science elective

One of:

CHEM*3870 [0.50] Symmetry and Spectroscopy
 CHEM*4880 [0.50] Topics in Advanced Physical Chemistry

Semester 7

CHEM*3440 [0.50] Analytical Chemistry III: Analytical Instrumentation
 IPS*4001 [0.75] Chemical Physics Research Project
 MATH*3100 [0.50] Differential Equations II
 PHYS*4120 [0.50] Atomic and Molecular Physics
 PHYS*4240 [0.50] Statistical Physics II

Semester 8

IPS*4002 [0.75] Chemical Physics Research Project
 1.50 elective

One of:

CHEM*3870 [0.50] Symmetry and Spectroscopy
 CHEM*4880 [0.50] Topics in Advanced Physical Chemistry

Chemical Physics (Co-op) (CHPY:C)

Administered by the Office of the Dean, College of Physical and Engineering Science on behalf of the Department of Chemistry and Biochemistry and the Department of Physics.

Major (Honours Program)

A minimum of 21.25 credits is required.

Semester 1 - Fall

The program for the first semester is the same as for the Major in Chemical Physics (regular) program.

Semester 2 - Winter

BIOL*1040 [0.50] Biology II
 CHEM*1050 [0.50] General Chemistry II
 COOP*1100 [0.00] Introduction to Co-operative Education
 MATH*1210 [0.50] Calculus II
 PHYS*1010 [0.50] Introductory Electricity and Magnetism

One of:

CIS*2500 [0.50] Intermediate Programming
 0.50 Arts or Social Science elective

Semester 3 - Fall

CHEM*2060 [0.50] Structure and Bonding
 MATH*2160 [0.50] Linear Algebra I
 MATH*2200 [0.50] Advanced Calculus I
 PHYS*2440 [0.75] Mechanics I

PHYS*2460 [0.75] Electricity and Magnetism I

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4 - Summer

CHEM*2070 [0.50] Structure and Spectroscopy
 CHEM*2480 [0.50] Analytical Chemistry I
 MATH*2170 [0.50] Differential Equations I
 PHYS*3240 [0.50] Statistical Physics I
 0.50 Arts or Social Science elective

Fall Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5 - Winter

CHEM*3430 [0.50] Analytical Chemistry II: Instrumental Analysis
 PHYS*2450 [0.75] Mechanics II
 PHYS*2470 [0.75] Electricity and Magnetism II
 PHYS*3220 [0.50] Waves and Optics

One of:

CHEM*3870 [0.50] Symmetry and Spectroscopy
 0.50 elective

Summer Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 6 - Fall

CHEM*2820 [0.50] Thermodynamics and Kinetics
 CHEM*3440 [0.50] Analytical Chemistry III: Analytical Instrumentation
 CHEM*3860 [0.50] Quantum Chemistry
 PHYS*3230 [0.50] Quantum Mechanics I

One of:

CHEM*3640 [0.50] Chemistry of the Elements I
 0.50 elective

Semester 7 - Winter**

PHYS*4040 [0.50] Quantum Mechanics II

0.50 Arts or Social Science elective

1.00 elective

One of:

CHEM*3870 [0.50] Symmetry and Spectroscopy
 CHEM*4880 [0.50] Topics in Advanced Physical Chemistry

Summer Semester

COOP*4000 [0.00] Co-op Work Term IV

Semester 8 - Fall**

MATH*3100 [0.50] Differential Equations II
 PHYS*3100 [0.75] Electronics
 PHYS*4120 [0.50] Atomic and Molecular Physics
 PHYS*4240 [0.50] Statistical Physics II

0.50 elective

** A minimum of 2.00 credits in science courses at the 4000 level is required for graduation.

Chemistry (CHEM)

Department of Chemistry and Biochemistry, College of Physical and Engineering Science.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. The major will require the completion of 20.25 credits as indicated below:

Semester 1

BIOL*1030 [0.50] Biology I
 CHEM*1040 [0.50] General Chemistry I
 MATH*1200 [0.50] Calculus I
 PHYS*1000 [0.50] An Introduction to Mechanics

0.50 Arts or Social Science elective

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040 [0.50] Biology II
 CHEM*1050 [0.50] General Chemistry II
 MATH*1210 [0.50] Calculus II
 PHYS*1010 [0.50] Introductory Electricity and Magnetism

0.50 elective

Semester 3

CHEM*2060 [0.50] Structure and Bonding
 CHEM*2400 [0.75] Analytical Chemistry I
 BIOC*2580 [0.50] Introductory Biochemistry

0.50 elective*

One of:

MATH*2150	[0.50]	Applied Matrix Algebra
MATH*2160	[0.50]	Linear Algebra I

Semester 4

CHEM*2070	[0.50]	Structure and Spectroscopy
CHEM*2700	[0.50]	Organic Chemistry I
CHEM*3430	[0.50]	Analytical Chemistry II: Instrumental Analysis
MATH*2170	[0.50]	Differential Equations I

0.50 elective*

Semester 5

CHEM*2820	[0.50]	Thermodynamics and Kinetics
CHEM*3640	[0.50]	Chemistry of the Elements I
CHEM*3750	[0.50]	Organic Chemistry II
CHEM*3860	[0.50]	Quantum Chemistry

0.50 elective*

Semester 6

CHEM*3650	[0.50]	Chemistry of the Elements II
CHEM*3760	[0.50]	Organic Chemistry III

1.50 elective* or restricted elective**

Semester 7 and 8

CHEM*3440	[0.50]	Analytical Chemistry III: Analytical Instrumentation
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3.00 Chemistry or Biochemistry**

1.50 electives*

*selection of electives is subject to the following rules:

- at least 1.00 credits in the program must be in the Arts & Social Sciences
- PHYS*2040 or PHYS*2260
- students who lack a background in computer science must select one of their electives from CIS*1200 or CIS*1500 to be taken by the end of their second year
- approval of the chair of the Department of Chemistry and Biochemistry must be obtained for the selection of courses not specifically recommended
- options for an "Area of Focus" or a minor are available. Subject areas include Biochemistry, Computing and Information Science, Earth Sciences, Environmental Sciences, Mathematical Sciences, and Physics. Please consult with your Departmental Advisor for more detail.

**3.00 credits from the 3000/4000 level as follows:

- 1.50 comprising of (CHEM*3870 or CHEM*4880), (CHEM*4620 or CHEM*4630), (CHEM*4720 or CHEM*4730)
- 1.50 chosen from CHEM*3870, CHEM*4010, CHEM*4400, BIOC*4520, BIOC*4540, BIOC*4550, BIOC*4570, BIOC*4580, CHEM*4620, CHEM*4630, CHEM*4720, CHEM*4730, CHEM*4740, CHEM*4880, CHEM*4900, CHEM*4910, TOX*4590

Note:

- Some of these courses may have to be taken in Semester 6.
- Some of these courses are offered only in alternate years, and some have additional prerequisites for which the student must plan ahead, with the assistance of the faculty advisor.

Minor (Honours Program)

A minor in Chemistry consists of at least 5.00 credits from the core course list and 2.50 from Chemistry at the 2000 level or above including 1.00 from the Restricted Electives list that follows:

Core Courses

CHEM*2060	[0.50]	Structure and Bonding
CHEM*2070	[0.50]	Structure and Spectroscopy
CHEM*2700	[0.50]	Organic Chemistry I

One of:

CHEM*2400	[0.75]	Analytical Chemistry I
CHEM*2480	[0.50]	Analytical Chemistry I

One of:

CHEM*2820	[0.50]	Thermodynamics and Kinetics
CHEM*2880	[0.50]	Physical Chemistry

Restricted Electives - 1.00 credits from the following courses:

CHEM*3870	[0.50]	Symmetry and Spectroscopy
CHEM*4010	[0.50]	Chemistry and Industry
CHEM*4400	[0.50]	Advanced Topics in Analytical Chemistry
CHEM*4620	[0.50]	Advanced Topics in Inorganic Chemistry
CHEM*4630	[0.50]	Bioinorganic Chemistry
CHEM*4720	[0.50]	Organic Reactivity
CHEM*4730	[0.50]	Synthetic Organic Chemistry
CHEM*4880	[0.50]	Topics in Advanced Physical Chemistry

Chemistry (Co-op) (CHEM:C)

Department of Chemistry and Biochemistry, College of Physical and Engineering Science.

Major (Honours Program)

The major will require the completion of 20.25 credits as indicated below.

The course content of semesters 1 to 3 is the same as listed in the regular Honours Program Major.

To graduate from the Co-op program a minimum of 4 successfully completed work terms is normally required. These can be taken as four single work terms (Stream A), or as a double work term between two single work terms (Stream B).

Stream A: single work term option**Semester 1 - Fall**

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

0.50 Arts or Social Science elective

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
MATH*1210	[0.50]	Calculus II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism

0.50 elective

Semester 3 - Fall

BIOC*2580	[0.50]	Introductory Biochemistry
CHEM*2060	[0.50]	Structure and Bonding
CHEM*2400	[0.75]	Analytical Chemistry I

0.50 elective*

One of:

MATH*2150	[0.50]	Applied Matrix Algebra
MATH*2160	[0.50]	Linear Algebra I

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

CHEM*2070	[0.50]	Structure and Spectroscopy
CHEM*2700	[0.50]	Organic Chemistry I
CHEM*3430	[0.50]	Analytical Chemistry II: Instrumental Analysis
MATH*2170	[0.50]	Differential Equations I

0.50 elective*

Semester 5 - Fall

CHEM*2820	[0.50]	Thermodynamics and Kinetics
CHEM*3440	[0.50]	Analytical Chemistry III: Analytical Instrumentation
CHEM*3640	[0.50]	Chemistry of the Elements I
CHEM*3860	[0.50]	Quantum Chemistry

0.50 elective*

Winter Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 6 - Summer

CHEM*3750	[0.50]	Organic Chemistry II
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1.50 elective* or restricted elective**

One of:

PHYS*2260	[0.50]	Experimental Basis of Quantum Physics
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0.50 elective*

Fall Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 7 - Winter

CHEM*3650	[0.50]	Chemistry of the Elements II
CHEM*3760	[0.50]	Organic Chemistry III

1.50 elective* or restricted elective**

Summer Semester

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8 - Fall

2.50 elective* or restricted elective**

* selection of electives is subject to the following rules:

- At least 1.00 credits in the program must be in the Arts & Social Sciences.
- PHYS*2040 or PHYS*2260

3. Students who lack a background in computer science must select one of their electives from CIS*1200 or CIS*1500 to be taken by the end of their second year.

** 3.00 credits from the 3000/4000 level as follows:

1. 1.50 comprising of (CHEM*3870 or CHEM*4880), (CHEM*4620 or CHEM*4630), (CHEM*4720 or CHEM*4730)
2. 1.50 chosen from CHEM*3870, CHEM*4010, CHEM*4400, BIOC*4520, BIOC*4540, BIOC*4550, BIOC*4570, BIOC*4580, CHEM*4620, CHEM*4630, CHEM*4720, CHEM*4730, CHEM*4740, CHEM*4880, CHEM*4900, CHEM*4910, TOX*4590

Note:

Some of these courses are offered only in alternate years, and some have additional prerequisites for which the student must plan ahead, with the assistance of the faculty advisor.

Stream B: double work term option

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

0.50 Arts or Social Science elective

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
MATH*1210	[0.50]	Calculus II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism

0.50 elective

Semester 3 - Fall

BIOC*2580	[0.50]	Introductory Biochemistry
CHEM*2060	[0.50]	Structure and Bonding
CHEM*2400	[0.75]	Analytical Chemistry I

0.50 elective*

One of:

MATH*2150	[0.50]	Applied Matrix Algebra
MATH*2160	[0.50]	Linear Algebra I

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

CHEM*2070	[0.50]	Structure and Spectroscopy
CHEM*2700	[0.50]	Organic Chemistry I
CHEM*3430	[0.50]	Analytical Chemistry II: Instrumental Analysis
MATH*2170	[0.50]	Differential Equations I

0.50 elective*

Semester 5 - Fall

CHEM*2820	[0.50]	Thermodynamics and Kinetics
CHEM*3640	[0.50]	Chemistry of the Elements I
CHEM*3750	[0.50]	Organic Chemistry II
CHEM*3860	[0.50]	Quantum Chemistry

0.50 elective*

Semester 6 - Winter

CHEM*3650	[0.50]	Chemistry of the Elements II
CHEM*3760	[0.50]	Organic Chemistry III

1.00 elective* or restricted elective**

One of:

PHYS*2260	[0.50]	Experimental Basis of Quantum Physics
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0.50 elective*

Summer Semester

COOP*2000	[0.00]	Co-op Work Term II
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Fall Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 7 - Winter

2.50 elective* or restricted elective**

Summer Semester

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8 - Fall

CHEM*3440	[0.50]	Analytical Chemistry III: Analytical Instrumentation
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2.00 elective* or restricted elective**

* selection of electives is subject to the following rules:

1. At least 1.00 credits in the program must be in the Arts & Social Sciences.

2. PHYS*2040 or PHYS*2260

3. Students who lack a background in computer science must select one of their electives from CIS*1200 or CIS*1500 to be taken by the end of their second year.

** 3.00 credits from the 3000/4000 level as follows:

1. 1.50 comprising of (CHEM*3870 or CHEM*4880), (CHEM*4620 or CHEM*4630), (CHEM*4720 or CHEM*4730)
2. 1.50 chosen from CHEM*3870, CHEM*4010, CHEM*4400, BIOC*4520, BIOC*4540, BIOC*4550, BIOC*4570, BIOC*4580, CHEM*4620, CHEM*4630, CHEM*4720, CHEM*4730, CHEM*4740, CHEM*4880, CHEM*4900, CHEM*4910, TOX*4590

Note:

Some of these courses are offered only in alternate years, and some have additional prerequisites for which the student must plan ahead, with the assistance of the faculty advisor.

Computing and Information Science (CIS)

Department of Computing and Information Science, College of Physical and Engineering Science.

The B.Sc. Programs in Computing and Information Science (CIS) provide a solid foundation in software design and computer applications, especially in the physical and biological sciences. The Major offers substantial computing experience, as well as an understanding of both fundamental principles and modern applications. The minor provides sufficient software experience to enable significant contribution to many areas of application.

Computing and Information Science Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. The Major requires 12.0 credits in computing, mathematics and statistics, of which 2.5 credits are CIS electives. Other electives must include at least 1.50 in science courses with at least 0.50 at the 3000 level or above. At least 1.00 credit must be in the Arts of Social Sciences, and 0.5 remaining credit in the introductory science sequence (see note in semester 2)

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

CIS*1910	[0.50]	Discrete Structures in Computing I
CIS*2500	[0.50]	Intermediate Programming
MATH*1210	[0.50]	Calculus II

Two of (only one of PHYS*1010 or PHYS*1130 may be selected): *

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism
PHYS*1130	[0.50]	Physics with Applications

*Note: A third course from this list must be taken before graduation.

Semester 3

CIS*2030	[0.50]	Structure and Application of Microcomputers
CIS*2430	[0.50]	Object Oriented Programming
CIS*2520	[0.50]	Data Structures
CIS*2910	[0.50]	Discrete Structures in Computing II
MATH*2150	[0.50]	Applied Matrix Algebra

Semester 4

CIS*2750	[0.75]	Software Systems Development and Integration
CIS*3110	[0.50]	Operating Systems
STAT*2040	[0.50]	Statistics I

0.75 elective

Semester 5

CIS*2460	[0.50]	Modelling of Computer Systems
CIS*3530	[0.50]	Data Base Systems and Concepts
CIS*3750	[0.75]	System Analysis and Design in Applications

0.25 elective

One of:

MATH*3240	[0.50]	Operations Research
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0.50 elective

Note: MATH*2130 in Semester 6 or MATH*3240 in Semester 5 must be taken.

Semester 6

CIS*3490	[0.50]	The Analysis and Design of Computer Algorithms
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1.00 CIS elective at the 3000 level or above (CIS*3200 [0.75]recommended)

0.50 elective

One of:

MATH*2130 [0.50] Numerical Methods

0.50 elective

Note: MATH*2130 in Semester 6 or MATH*3240 in Semester 5 must be taken.

Semester 7

0.50 CIS elective at 3000 level or above

1.00 4000 level CIS credits

1.00 elective

Semester 8

1.00 CIS credits at the 4000 level

1.50 elective

The minor program requires at least 5.25 credits, including:

Minor (Honours Program)

CIS*1500	[0.50]	Introduction to Programming
CIS*1910	[0.50]	Discrete Structures in Computing I
CIS*2430	[0.50]	Object Oriented Programming
CIS*2500	[0.50]	Intermediate Programming
CIS*2520	[0.50]	Data Structures
CIS*2750	[0.75]	Software Systems Development and Integration
CIS*2910	[0.50]	Discrete Structures in Computing II
CIS*3530	[0.50]	Data Base Systems and Concepts

1.00 additional credits from CIS or STAT courses at the 2000 level or above

Computing and Information Science (Co-op) (CIS:C)**Department of Computing and Information Science, College of Physical and Engineering Science.**

The 4 year Honours Program Major in Computing and Information Science is also available as a Co-operative Education Program. Three co-op work terms are required. Recommended work terms are shown below:

COOP*1100 must be completed in the 2nd academic semester (winter of year 1). Students may apply for these options at the time of University admission or completion of semester 2. A five year option with four work terms is also available. Please see the department's co-op faculty advisor for details.

Conditions for graduation are the same as the corresponding regular B.Sc. program. In addition, all work reports must have a grade of satisfactory or better.

Electives must include at least 1.50 at the 3000 level or above. At least 1.00 credit must be in the Arts or Social Sciences, and 0.5 remaining credit in the introductory science sequence (see note in semester 2).

The recommended schedule of studies for Co-Op Stream A (4-year) is as follows:**Semester 1(Fall)**

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2(Winter)

CIS*1910	[0.50]	Discrete Structures in Computing I
CIS*2500	[0.50]	Intermediate Programming
COOP*1100	[0.00]	Introduction to Co-operative Education
MATH*1210	[0.50]	Calculus II

Two of (only one of PHYS*1010 or PHYS*1130 may be selected): *

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism
PHYS*1130	[0.50]	Physics with Applications

*Note: A third course from this list must be taken before graduation.

Semester 3(Summer)

CIS*2030	[0.50]	Structure and Application of Microcomputers
CIS*2430	[0.50]	Object Oriented Programming
CIS*2520	[0.50]	Data Structures
CIS*2910	[0.50]	Discrete Structures in Computing II
MATH*2150	[0.50]	Applied Matrix Algebra

Fall Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4(Winter)

CIS*2750	[0.75]	Software Systems Development and Integration
CIS*3110	[0.50]	Operating Systems
STAT*2040	[0.50]	Statistics I

0.75 elective

Summer Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5(Fall)

CIS*2460	[0.50]	Modelling of Computer Systems
CIS*3530	[0.50]	Data Base Systems and Concepts
CIS*3750	[0.75]	System Analysis and Design in Applications

0.25 elective

One of:

MATH*3240 [0.50] Operations Research

(Note: requires co-requisite of MATH*2200)

0.50 elective

Note: MATH*2130 in Semester 6 or MATH*3240 in Semester 5 must be taken.

Winter Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6(Summer)

CIS*3490	[0.50]	The Analysis and Design of Computer Algorithms
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1.00 CIS elective at the 3000 level or above (CIS*3200 [0.75] recommended)

0.50 elective

One of:

MATH*2130 [0.50] Numerical Methods

0.50 elective

Note: MATH*2130 in Semester 6 or MATH*3240 in Semester 5 must be taken.

Semester 7(Fall)

0.50 CIS elective at 3000 level or above

1.00 elective

1.00 credits in CIS at the 4000 level

Semester 8(Winter)

1.50 elective

1.00 credits in CIS at the 4000 level

The recommended schedule of studies for Co-Op Stream B(5-year) is as follows:**Semester 1(Fall)**

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

Semester 2(Winter)

CIS*1910	[0.50]	Discrete Structures in Computing I
CIS*2500	[0.50]	Intermediate Programming
COOP*1100	[0.00]	Introduction to Co-operative Education
MATH*1210	[0.50]	Calculus II

Two of (only one of PHYS*1010 or PHYS*1130 may be selected): *

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism
PHYS*1130	[0.50]	Physics with Applications

*Note: A third course from this list must be taken before graduation.

Summer Semester Off**Semester 3(Fall)**

CIS*2030	[0.50]	Structure and Application of Microcomputers
CIS*2430	[0.50]	Object Oriented Programming
CIS*2520	[0.50]	Data Structures
CIS*2910	[0.50]	Discrete Structures in Computing II
MATH*2150	[0.50]	Applied Matrix Algebra

Semester 4(Winter)

CIS*2750	[0.75]	Software Systems Development and Integration
CIS*3110	[0.50]	Operating Systems
STAT*2040	[0.50]	Statistics I

Note: STAT*2100 (F) is an acceptable replacement for STAT*2040 .

0.25 elective

Summer Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 5(Fall)

CIS*2460	[0.50]	Modelling of Computer Systems
CIS*3530	[0.50]	Data Base Systems and Concepts
CIS*3750	[0.75]	System Analysis and Design in Applications

0.25 elective

One of:

MATH*3240 [0.50] Operations Research

(Note: requires co-requisite of MATH*2200).

0.50 elective

Note: MATH*2130 in Semester 6 or MATH*3240 in Semester 5 must be taken. CIS*3210 should be taken here to enable subsequent courses in distributed systems.

Winter Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 6(Summer)

CIS*3490 [0.50] The Analysis and Design of Computer Algorithms
1.00 CIS elective at the 3000 level or above (CIS*3200 [0.75] recommended)
0.50 elective

One of:

MATH*2130 [0.50] Numerical Methods
0.50 elective

Note: MATH*2130 in Semester 6 or MATH*3240 in Semester 5 must be taken.

Fall Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 7(Winter)

0.50 CIS elective at 3000 level or above

1.00 elective

1.00 credits in CIS at the 4000 level

Summer Semester

COOP*4000 [0.00] Co-op Work Term IV

Semester 8(Fall)

1.50 elective

1.00 credits in CIS at the 4000 level

Earth Surface Science (ESS)

Department of Geography, College of Social and Applied Human Sciences.

Department of Land Resource Science, Ontario Agricultural College.

This program combines elements of Geomorphology, Geology and Meteorology and focuses on the study of processes and properties of the abiotic component of the environment.

Graduates of the program should meet the knowledge requirements for eligibility to apply for membership as Environmental Geoscientists in the Association of Professional Geoscientists of Ontario (APGO), allowing for use of the designation P. Geo.

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. Students planning to enter the program are advised to consult advisors in either of the two departments. Students needing program approval should contact the B.Sc. Advisors in the Department of Geography.

Major (Honours Program)

Semester 1

BIOL*1030 [0.50] Biology I
CHEM*1040 [0.50] General Chemistry I
GEOG*1300 [0.50] Introduction to the Biophysical Environment
PHYS*1080 [0.50] Physics for Life Sciences

0.50 Mathematics course from:

MATH*1080 [0.50] Elements of Calculus I
MATH*1200 [0.50] Calculus I

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040 [0.50] Biology II
CHEM*1050 [0.50] General Chemistry II
PHYS*1130 [0.50] Physics with Applications
GEOL*1050 [0.50] Geology and the Environment

0.50 Arts or Social Science elective

Semester 3 and 4

GEOG*2000 [0.50] Geomorphology
GEOG*2110 [0.50] Climate and the Biophysical Environment
GEOL*2020 [0.50] Stratigraphy
GEOL*2200 [0.50] Glacial Geology
MET*2030 [0.50] Meteorology and Climatology
SOIL*2010 [0.50] Soil Science

0.50 Arts or Social Science elective

0.50 elective

0.50 Mathematics/Computer Science from:

CIS*1200 [0.50] Introduction to Computing
CIS*1500 [0.50] Introduction to Programming
MATH*1210 [0.50] Calculus II
MATH*2080 [0.50] Elements of Calculus II

One of:

GEOG*2460 [0.50] Analysis in Geography
STAT*2040 [0.50] Statistics I

Semester 5 and 6

GEOG*3000 [0.50] Fluvial Processes
GEOG*3610 [0.50] Environmental Hydrology
GEOL*2110 [0.50] Earth Material Science
GEOL*3190 [0.50] Environmental Water Chemistry

1.50 from List A

1.50 electives

Semester 7 and 8

GEOG*4150 [0.50] Sedimentary Processes

1.50 from List A

3.00 electives

List A

GEOG*3620 [0.50] Desert Environments
GEOG*4250 [0.50] Coastal Processes
GEOG*4690 [1.00] Geography Field Research
GEOL*3060 [0.50] Groundwater
GEOL*3090 [0.50] Applied Structural Geology
GEOL*3250 [0.50] Field Methods in Geosciences
GEOL*4090 [0.50] Sedimentology
GEOL*4130 [0.50] Clay and Humic Chemistry
MET*3050 [0.50] Microclimatology

Other Requirements

1. At least 1.50 credits from List A must be at the 4000 level.
2. At least 2.50 electives must be acceptable science courses.
3. At least 6.00 of all science credits must be 3000 or 4000 level, of which at least 2.00 must be at the 4000 level.

Ecology (ECOL)

Department of Integrative Biology, College of Biological Science.

The program provides a solid foundation in the principles of ecology, and further training in both pure and applied aspects of ecology. After the fourth semester, the student may choose to enter one (1) of three (3) areas of emphasis, or to design a course package that meets his/her own specific ecological interests (General Ecology). The program offers preparation for careers in conservation, resource management, ecological consulting, or nature interpretation; or for graduate training and research in fundamental ecology. This major qualifies students for post-graduate work in the environmental sciences, and provides a sound science background for students wishing to pursue careers in teaching, government service or the private sector.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. A minimum total of 20.00 credits is required to complete the major.

Semester 1

BIOL*1030 [0.50] Biology I
CHEM*1040 [0.50] General Chemistry I
MATH*1080 [0.50] Elements of Calculus I
PHYS*1070 [0.50] Introductory Physics for Life Sciences

0.50 Arts or Social Science elective

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040 [0.50] Biology II
CHEM*1050 [0.50] General Chemistry II
PHYS*1080 [0.50] Physics for Life Sciences

0.50 Arts or Social Science elective

One of:

CIS*1200 [0.50] Introduction to Computing
CIS*1500 [0.50] Introduction to Programming

Semester 3

BIOL*2210 [0.50] Introductory Cell Biology
BIOC*2580 [0.50] Introductory Biochemistry
STAT*2040 [0.50] Statistics I

0.50 elective

One of:

GEOG*1300 [0.50] Introduction to the Biophysical Environment
GEOL*1050 [0.50] Geology and the Environment

Semester 4

BIOL*3110 [0.50] Population Ecology
MBG*2000 [0.50] Introductory Genetics

1.00 elective

One of:

BIOL*2250 [0.50] Biostatistics and the Life Sciences
STAT*2050 [0.50] Statistics II

Semester 5

BIOL*3010	[0.50]	Laboratory and Field Work in Ecology
BIOL*3120	[0.50]	Community Ecology
1.00 elective		
One of:		
BOT*2100	[0.50]	Life Strategies of Plants
ZOO*3200	[0.50]	Comparative Animal Physiology I
One of:		
ZOO*2070	[0.50]	Invertebrate Zoology I
ZOO*2090	[0.50]	Vertebrate Structure and Function

Semester 6

2.00 electives		
One of:		
MBG*3000	[0.50]	Population Genetics
ZOO*3300	[0.50]	Evolution

Semester 7

BIOL*4110	[0.75]	Ecological Methods
1.75 electives		

Semester 8

BIOL*4120	[0.50]	Evolutionary Ecology
2.00 electives		

Areas of Emphasis**General Ecology (GECO)**

A minimum of 3.00 credits from the area-of-emphasis-specific credits, plus 1.50 additional science credits. Of the 4.50 credits, at least 3.50 must be at the 3000 or 4000 level.

Experimental Ecology (EECO)

ZOO*3200	[0.50]	Comparative Animal Physiology I
ZOO*4070	[0.50]	Animal Behaviour
ZOO*4170	[0.50]	Experimental Comparative Animal Physiology

0.75 credit from:

BOT*4820	[0.75]	Research Opportunities in Botany I
ZOO*4410	[0.75]	Field Ecology
ZOO*4500	[0.75]	Research Problems in Zoology I
ZOO*4600	[0.75]	Tropical Ecology
ZOO*4610	[0.75]	Arctic Ecology
ZOO*4700	[0.50]	Field Biology
ZOO*4710	[0.25]	Field Biology
ZOO*4800	[0.50]	Field Biology
ZOO*4810	[0.25]	Field Biology

1.75 additional science credits, at least 1.50 of which are at the 3000 or 4000 level

One of the following not already successfully completed in Semester 6:

MBG*3000	[0.50]	Population Genetics
ZOO*3300	[0.50]	Evolution

Interpretive Ecology (IE)

ENVB*3000	[0.50]	Nature Interpretation
ZOO*4070	[0.50]	Animal Behaviour

0.75 credit from:

ZOO*4410	[0.75]	Field Ecology
ZOO*4600	[0.75]	Tropical Ecology
ZOO*4610	[0.75]	Arctic Ecology
ZOO*4700	[0.50]	Field Biology
ZOO*4710	[0.25]	Field Biology
ZOO*4800	[0.50]	Field Biology
ZOO*4810	[0.25]	Field Biology

At least 0.75 additional science credits at the 3000 or 4000 level

One of:

BIOL*3050	[0.50]	Mycology I
BOT*3710	[0.50]	Classification and Morphology of Seed Plants

One of:

ZOO*4020	[0.50]	Ichthyology
ZOO*4090	[0.50]	Ornithology
ZOO*4280	[0.50]	Mammalogy
ZOO*4430	[0.50]	Herpetology

One of:

BIOL*3450	[0.50]	Introduction to Aquatic Environments
ENVB*3110	[0.50]	Natural History of Insects

Recommended:

CHEM*3360	[0.50]	Environmental Chemistry and Toxicology
ENVB*3040	[0.50]	Natural Chemicals in the Environment
ENVB*4040	[0.50]	Behaviour of Insects
MICR*4140	[0.50]	Soil Microbiology and Biotechnology

Resource Conservation (RC)

AGEC*2700	[0.50]	Survey of Natural Resource Economics
BIOL*3130	[0.50]	Conservation Biology

ECON*1050	[0.50]	Introductory Microeconomics
ZOO*4050	[0.50]	Natural Resources Policy
2.50 additional science credits, at least 1.50 of which are at the 3000 or 4000 level		
Recommended:		
BIOL*4060	[0.50]	Restoration Ecology
BIOL*4150	[0.50]	Wildlife Conservation and Management
ECON*2100	[0.50]	Economic Growth and Environmental Quality
ENVB*2030	[0.50]	Current Issues in Forest Science
ENVB*4780	[0.50]	Forest Ecology
ENVS*3320	[0.50]	Principles of Landscape Ecology

Minor (Honours Program)

A minimum of 5.00 credits is required to completed the minor, which must include:

BIOL*3010	[0.50]	Laboratory and Field Work in Ecology
BIOL*3110	[0.50]	Population Ecology
BIOL*3120	[0.50]	Community Ecology
BIOL*4110	[0.75]	Ecological Methods
BIOL*4120	[0.50]	Evolutionary Ecology

0.75 credit chosen in consultation with the faculty advisor

One of:

MBG*3000	[0.50]	Population Genetics
ZOO*3300	[0.50]	Evolution

One of:

BOT*2100	[0.50]	Life Strategies of Plants
ZOO*2090	[0.50]	Vertebrate Structure and Function

One of:

GEOG*1220	[0.50]	Human Impact on the Environment
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
GEOL*1050	[0.50]	Geology and the Environment

Environmental Biology (ENVB)**Department of Environmental Biology, Ontario Agricultural College.**

The honours B.Sc. program in Environmental Biology combines a study of the functioning of living organisms with study of the physical environment and the interaction between them. Opportunity is presented to concentrate in one of two areas of emphasis on how the understanding of organisms and their environment relates to Plant Protection (pest management) or Environmental Quality.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

One of:

CIS*1200	[0.50]	Introduction to Computing
CIS*1500	[0.50]	Introduction to Programming

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
ENVB*2010	[0.50]	Food Production and the Environment
PHYS*1080	[0.50]	Physics for Life Sciences

0.50 Arts or Social Science elective

Semester 3

BIOL*2060	[0.50]	Ecology
BOT*2100	[0.50]	Life Strategies of Plants
BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics

0.50 elective

Semester 4

ENVB*2040	[0.50]	Biology of Plant Pests
ENVB*2100	[0.50]	Problem-Solving in Environmental Biology
SOIL*2010	[0.50]	Soil Science
STAT*2040	[0.50]	Statistics I

0.50 elective

Areas of Emphasis

Students in Environmental Biology must select one (1) of the two (2) following areas of emphasis by the end of Semester 4.

Environmental Quality (EQ)**Semester 5**

BIOL*3450	[0.50]	Introduction to Aquatic Environments
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ENVB*2030 [0.50] Current Issues in Forest Science
 TOX*2000 [0.50] Principles of Toxicology

1.00 elective or restricted elective

Semester 6

ENVB*3030 [0.50] Pesticides and the Environment
 ENVB*3040 [0.50] Natural Chemicals in the Environment

1.00 electives or restricted electives

One of:

STAT*2050 [0.50] Statistics II
 STAT*2250 [0.50] Biostatistics and the Life Sciences

Semester 7

ENVB*3300 [0.50] Applied Ecology and Environment
 ENVB*4020 [0.50] Water Quality and Environmental Management
 ENVB*4800 [0.50] Topics in Applied Biology
 MICR*4140 [0.50] Soil Microbiology and Biotechnology

0.50 electives or restricted electives

Semester 8

ENVB*4550 [0.50] Ecotoxicological Risk Characterization

2.00 electives or restricted electives

At least 6.00 of the science credits must be 3000 or 4000 level, of which at least 2.00 must be at the 4000 level.

Restricted Electives

A total of 1.50 Arts and Social Science credits are required, 1.00 of which must be from the following:

ECON*2100 [0.50] Economic Growth and Environmental Quality
 PHIL*2070 [0.50] Philosophy of the Environment
 POLS*3370 [0.50] Environmental Policy Formation and Administration
 SOC*2280 [0.50] Society and Environment

1.00 credit from:

MICR*3220 [0.50] Plant Microbiology
 MICR*4180 [0.50] Microbial Processes in Environmental Management
 SOIL*3050 [0.50] Land Utilization
 SOIL*3080 [0.50] Soil and Water Conservation

1.00 credit from:

ENVB*4130 [0.50] Chemical Ecology: Principles & Practice
 ENVB*4220 [0.50] Biology of Aquatic Insects
 ENVB*4290 [0.50] Applied Insect Physiology
 ENVB*4780 [0.50] Forest Ecology
 GEOG*3110 [0.50] Biotic and Natural Resources
 GEOG*4110 [0.50] Environmental Systems Analysis
 PBIO*4530 [0.50] Environmental Pollution Stresses on Plants
 TOX*3360 [0.50] Environmental Chemistry and Toxicology
 ZOO*4350 [0.50] Biology of Polluted Waters

At least 6.00 of the science credits must be 3000 or 4000 level, of which at least 2.00 must be at the 4000 level

Plant Protection (PP)

Semester 5

ENVB*2030 [0.50] Current Issues in Forest Science
 ENVB*3210 [0.50] Plant Pathology
 MET*2030 [0.50] Meteorology and Climatology

1.00 elective or restricted elective

Semester 6

ENVB*3030 [0.50] Pesticides and the Environment
 ENVB*4100 [0.50] Applied Entomology

1.00 elective or restricted elective

One of:

STAT*2050 [0.50] Statistics II
 STAT*2250 [0.50] Biostatistics and the Life Sciences

Semester 7

CROP*4240 [0.50] Weed Science
 ENVB*4290 [0.50] Applied Insect Physiology
 ENVB*4800 [0.50] Topics in Applied Biology

1.00 elective or restricted elective

Semester 8

ENVB*4070 [0.50] Biological and Cultural Control of Plant Diseases
 ENVB*4130 [0.50] Chemical Ecology: Principles & Practice
 ENVB*4240 [0.50] Biological Activity of Pesticides

1.00 electives or restricted electives

At least 6.00 of the science credits must be 3000 and 4000 level, of which at least 2.00 must be at the 4000 level.

Restricted Electives

A total of 1.50 Arts and Social Science credits are required, 1.00 of which must be from the following:

ECON*2100 [0.50] Economic Growth and Environmental Quality
 PHIL*2070 [0.50] Philosophy of the Environment

POLS*3370 [0.50] Environmental Policy Formation and Administration
 SOC*2280 [0.50] Society and Environment

1.00 credit from:

BIOL*3050 [0.50] Mycology I
 BOT*3710 [0.50] Classification and Morphology of Seed Plants
 ENVB*3090 [0.50] Insects in Relation to Wildlife

1.00 credit from:

BIOL*3450 [0.50] Introduction to Aquatic Environments
 ENVB*3040 [0.50] Natural Chemicals in the Environment
 ENVB*4020 [0.50] Water Quality and Environmental Management
 ENVB*4040 [0.50] Behaviour of Insects
 MICR*3220 [0.50] Plant Microbiology
 MICR*4140 [0.50] Soil Microbiology and Biotechnology
 PBIO*4000 [0.50] Molecular and Cellular Aspects of Plant-Microbe Interactions

PBIO*4530 [0.50] Environmental Pollution Stresses on Plants
 PBIO*4600 [0.75] Plant Environment Interaction and Stress Physiology

Environmental Toxicology (ETOX)

Interdisciplinary Program, Department of Environmental Biology, Ontario Agricultural College.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor.

Semester 1

BIOL*1030 [0.50] Biology I
 CHEM*1040 [0.50] General Chemistry I
 MATH*1080 [0.50] Elements of Calculus I
 PHYS*1070 [0.50] Introductory Physics for Life Sciences

0.50 elective*

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040 [0.50] Biology II
 CHEM*1050 [0.50] General Chemistry II
 PHYS*1080 [0.50] Physics for Life Sciences
 STAT*2040 [0.50] Statistics I

0.50 elective*

Semester 3

CHEM*2480 [0.50] Analytical Chemistry I
 BIOC*2580 [0.50] Introductory Biochemistry
 MBG*2000 [0.50] Introductory Genetics
 TOX*2000 [0.50] Principles of Toxicology

0.50 elective*

Semester 4

BIOL*2060 [0.50] Ecology
 CHEM*2700 [0.50] Organic Chemistry I
 MBG*2020 [0.50] Introductory Molecular Biology
 STAT*2050 [0.50] Statistics II

0.50 elective*

Semester 5

BOT*2100 [0.50] Life Strategies of Plants
 BIOC*3560 [0.50] Structure and Function in Biochemistry
 TOX*3300 [0.50] Analytical Toxicology
 ZOO*3200 [0.50] Comparative Animal Physiology I

0.50 elective*

Semester 6

ENVB*3030 [0.50] Pesticides and the Environment
 SOIL*2010 [0.50] Soil Science
 TOX*3360 [0.50] Environmental Chemistry and Toxicology
 ZOO*4170 [0.50] Experimental Comparative Animal Physiology

0.50 elective*

Semester 7

BIOL*3450 [0.50] Introduction to Aquatic Environments
 MBG*3350 [0.75] Laboratory Methods in Molecular Biology I
 MICR*4180 [0.50] Microbial Processes in Environmental Management
 ZOO*4350 [0.50] Biology of Polluted Waters

0.25 elective*

Semester 8

PBIO*4530 [0.50] Environmental Pollution Stresses on Plants
 STAT*3510 [0.50] Environmental Risk Assessment
 TOX*4200 [0.50] Topics in Toxicology
 TOX*4550 [0.50] Ecotoxicological Risk Characterization

0.50 elective*

* a minimum of 1.50 credits must be from the College of Arts and/or the College of Social and Applied Human Sciences

Environmental Toxicology (Co-op) (ETOX:C)

Interdisciplinary Program, Department of Environmental Biology, Ontario Agricultural College.

Major (Honours Program)

A 70% average in the science courses of semesters 1 and 2 is normally required for admission to semester 3 of this program. An optional fourth co-op work term is available.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 elective*

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
PHYS*1080	[0.50]	Physics for Life Sciences
STAT*2040	[0.50]	Statistics I

0.50 elective*

Stream A

Semester 3 - Fall

CHEM*2480	[0.50]	Analytical Chemistry I
BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics
TOX*2000	[0.50]	Principles of Toxicology

0.50 elective

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

CHEM*2700	[0.50]	Organic Chemistry I
SOIL*2010	[0.50]	Soil Science
STAT*2050	[0.50]	Statistics II
TOX*3360	[0.50]	Environmental Chemistry and Toxicology

0.50 elective

Semester 5 - Fall

BIOL*2060	[0.50]	Ecology
BIOL*3450	[0.50]	Introduction to Aquatic Environments
TOX*3300	[0.50]	Analytical Toxicology
ZOO*3200	[0.50]	Comparative Animal Physiology I

0.50 elective

Semester 6 - Winter

BOT*2100	[0.50]	Life Strategies of Plants
BIOC*3560	[0.50]	Structure and Function in Biochemistry
ENVB*3030	[0.50]	Pesticides and the Environment
MBG*2020	[0.50]	Introductory Molecular Biology
ZOO*4170	[0.50]	Experimental Comparative Animal Physiology

Summer Semester

COOP*2000	[0.00]	Co-op Work Term II
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Fall Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 7 - Winter

PBIO*4530	[0.50]	Environmental Pollution Stresses on Plants
STAT*3510	[0.50]	Environmental Risk Assessment
TOX*4200	[0.50]	Topics in Toxicology
TOX*4550	[0.50]	Ecotoxicological Risk Characterization

0.50 elective

Semester 8 - Fall

MBG*3350	[0.75]	Laboratory Methods in Molecular Biology I
MICR*4180	[0.50]	Microbial Processes in Environmental Management
ZOO*4350	[0.50]	Biology of Polluted Waters

1.00 elective

Food Science (FOOD)

Department of Food Science, Ontario Agricultural College.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor.

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 Arts or Social Science elective

Note: CIS*1200, rather than an Arts or Social Science credit is recommended for those needing to improve their computer skills.

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
MATH*2080	[0.50]	Elements of Calculus II
PHYS*1080	[0.50]	Physics for Life Sciences

0.50 Arts or Social Science elective

Semester 3 - Fall

BIOC*2580	[0.50]	Introductory Biochemistry
CHEM*2880	[0.50]	Physical Chemistry
FOOD*2150	[0.50]	Introduction to Nutritional and Food Science
STAT*2040	[0.50]	Statistics I

0.50 elective

Semester 4 - Winter

FOOD*2100	[0.50]	Communication in Food Science I
FOOD*2620	[0.50]	Food Engineering Principles
MICR*2030	[0.50]	Microbial Growth
NUTR*3210	[0.50]	Fundamentals of Nutrition

0.50 elective

Semester 5 - Fall

FOOD*3010	[0.50]	Food Chemistry
FOOD*3160	[0.75]	Food Processing I
FOOD*3230	[0.75]	Food Microbiology

0.50 elective

Semester 6 - Winter

FOOD*3020	[0.50]	Food Chemistry Laboratory
FOOD*3170	[0.50]	Food Processing II
FOOD*3260	[0.50]	Industrial Microbiology

1.00 elective

Semester 7 - Fall

FOOD*4120	[0.75]	Food Analysis
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1.75 electives

Semester 8 - Winter

FOOD*4100	[0.25]	Communication in Food Science II
FOOD*4700	[0.50]	Food Product Development

1.75 electives

Notes:

1. ENGL*1200 is recommended for those students needing to improve their English grammar.
2. FOOD*2150 could be replaced by FOOD*2010 with permission of department advisor.
3. Of the 7.00 elective credits:
At least 2.00 must be Arts or Social Sciences.
At least 2.00 must be from list of Restricted Electives.
At least 1.00 must be from additional science electives.

Restricted Electives:

COST*3010	[0.50]	Quality Management
FOOD*3700	[0.50]	Sensory Evaluation of Foods
FOOD*4010	[0.50]	Food Plant Sanitation and Quality Control
FOOD*4070	[0.50]	Food Packaging
FOOD*4090	[0.50]	Functional Foods and Nutraceuticals
FOOD*4110	[0.50]	Meat and Poultry Processing
FOOD*4140	[0.25]	Communication in Food Science III
FOOD*4220	[0.25]	Topics in Food Science
FOOD*4230	[0.25]	Research in Food Science I
FOOD*4240	[0.25]	Research in Food Science II
FOOD*4340	[0.50]	Cheese and Fermented Dairy Foods
FOOD*4400	[0.50]	Dairy Processing
FOOD*4520	[0.50]	Cereal Technology
POPM*4040	[0.50]	Epidemiology of Food-borne Diseases

Credit Summary (20.00 total credits)

4.00 - 1st year science required

9.00 - Required in semesters 3-8

- 2.00 - Restricted electives
 2.00 - Arts or Social Science electives
 1.00 - Additional Science elective
 2.00 - Free elective

Minor (Honours Program)

The Minor in Food Science consists of 5.00 credits as follows:

BIOC*2580	[0.50]	Introductory Biochemistry
FOOD*3010	[0.50]	Food Chemistry
FOOD*3230	[0.75]	Food Microbiology
MICR*2030	[0.50]	Microbial Growth

One of:

FOOD*2010	[0.50]	Principles of Food Science
FOOD*2150	[0.50]	Introduction to Nutritional and Food Science
NUTR*2150	[0.50]	Introduction to Nutritional and Food Sciences

One of:

FOOD*2410	[0.50]	Introduction to Food Processing
FOOD*3160	[0.75]	Food Processing I

Restricted Electives

Choose from the following list to bring the total to a minimum of 5.00 credits for the Minor:

FOOD*2620	[0.50]	Food Engineering Principles
FOOD*3170	[0.50]	Food Processing II
FOOD*3260	[0.50]	Industrial Microbiology
FOOD*3700	[0.50]	Sensory Evaluation of Foods
FOOD*4010	[0.50]	Food Plant Sanitation and Quality Control
FOOD*4070	[0.50]	Food Packaging
FOOD*4090	[0.50]	Functional Foods and Nutraceuticals
FOOD*4110	[0.50]	Meat and Poultry Processing
FOOD*4120	[0.75]	Food Analysis
FOOD*4340	[0.50]	Cheese and Fermented Dairy Foods
FOOD*4400	[0.50]	Dairy Processing
FOOD*4520	[0.50]	Cereal Technology
FOOD*4700	[0.50]	Food Product Development
NUTR*3210	[0.50]	Fundamentals of Nutrition
POPM*4040	[0.50]	Epidemiology of Food-borne Diseases

Food Science (Co-op) (FOOD:C)

Department of Food Science, Ontario Agricultural College.

Major (Honours Program)**Semester 1 - Fall**

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 Arts or Social Science elective

Note: CIS*1200, rather than an Arts or Social Science credit is recommended for those needing to improve their computer skills.

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
MATH*2080	[0.50]	Elements of Calculus II
PHYS*1080	[0.50]	Physics for Life Sciences

0.50 Arts or Social Science elective

Summer Semester

Off

Semester 3 - Fall

BIOC*2580	[0.50]	Introductory Biochemistry
CHEM*2880	[0.50]	Physical Chemistry
COOP*1100	[0.00]	Introduction to Co-operative Education
FOOD*2150	[0.50]	Introduction to Nutritional and Food Science
STAT*2040	[0.50]	Statistics I

0.50 elective

Semester 4 - Winter

FOOD*2100	[0.50]	Communication in Food Science I
FOOD*2620	[0.50]	Food Engineering Principles
MICR*2030	[0.50]	Microbial Growth
NUTR*3210	[0.50]	Fundamentals of Nutrition

0.50 elective

Summer Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 5 - Fall

FOOD*3010	[0.50]	Food Chemistry
FOOD*3160	[0.75]	Food Processing I
FOOD*3230	[0.75]	Food Microbiology

0.50 elective

Semester 6 - Winter

FOOD*3020	[0.50]	Food Chemistry Laboratory
FOOD*3170	[0.50]	Food Processing II
FOOD*3260	[0.50]	Industrial Microbiology

1.00 elective

Summer Semester

Optional

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Winter Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 7 - Fall

FOOD*4120	[0.75]	Food Analysis
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1.75 elective

Semester 8 - Winter

FOOD*4100	[0.25]	Communication in Food Science II
FOOD*4700	[0.50]	Food Product Development

1.75 elective

Notes:

See Notes and Credit Summary in Food Science Major.

Forest Science (FORS)

Department of Environmental Biology, Ontario Agricultural College.

Minor (Honours Program)

A minor in Forest Science consists of 5.00 credits from the following courses:

BOT*2050	[0.50]	Plant Ecology
ENVB*2030	[0.50]	Current Issues in Forest Science
ENVB*4420	[0.50]	Problems in Environmental Biology
ENVB*4780	[0.50]	Forest Ecology
HORT*3260	[0.50]	Woody Plants

(ENVB*4420 senior thesis topic to be arranged with faculty advisor)

Three of:

ENVB*3090	[0.50]	Insects in Relation to Wildlife
GEOG*3110	[0.50]	Biotic and Natural Resources
HORT*3340	[0.50]	Culture of Plants
HORT*4250	[0.50]	Nursery Production
PBIO*4100	[0.50]	Soil Plant Relationships
PBIO*4530	[0.50]	Environmental Pollution Stresses on Plants

Two of:*

AGEC*2700	[0.50]	Survey of Natural Resource Economics
ENVB*3000	[0.50]	Nature Interpretation
GEOG*3210	[0.50]	Management of the Biophysical Environment
SOIL*3100	[0.50]	Resource Planning Techniques
ZOO*4050	[0.50]	Natural Resources Policy
ZOO*4410	[0.75]	Field Ecology

* Resource Management majors may substitute SOIL*4110 for ZOO*4410

Functional Foods and Nutraceuticals (FFAN)

Department of Human Health and Nutritional Sciences, College of Biological Science.

Department of Food Science, Ontario Agricultural College.

Minor (Honours Program)

A minor in Functional Foods and Nutraceuticals consists of 5.00 credits.

BIOC*2580	[0.50]	Introductory Biochemistry
ECON*2150	[0.50]	Introduction to Business Economics
NUTR*3210	[0.50]	Fundamentals of Nutrition
TOX*2000	[0.50]	Principles of Toxicology

2.00 Restricted Electives*

One of:

FOOD*2010	[0.50]	Principles of Food Science
FOOD*2150	[0.50]	Introduction to Nutritional and Food Science
NUTR*2150	[0.50]	Introduction to Nutritional and Food Sciences

One of:

FOOD*4090	[0.50]	Functional Foods and Nutraceuticals
NUTR*4090	[0.50]	Functional Foods and Nutraceuticals

*restricted electives should be chosen in consultation with the Nutritional and Nutraceutical Sciences faculty advisor. Any 3000 and 4000 level courses from the following subject areas are eligible as restricted electives: Nutrition**, Food Science**, Biomedical Sciences**, Toxicology, Population Medicine, Animal Science, Plant Biology, Human Kinetics**, and Pathology.

**students in these majors must select restricted electives outside of the major

Genetics (GEN)

Department of Molecular and Cellular Biology, College of Biological Science.

Minor (Honours Program)

A minor in Genetics requires 5.00 credits in Molecular Biology and Genetics chosen in consultation with the faculty advisor, and will include:

MBG*2000	[0.50]	Introductory Genetics
MBG*2020	[0.50]	Introductory Molecular Biology
4.00 credits from:		
MBG*3000	[0.50]	Population Genetics
MBG*3050	[0.50]	Human Genetics
MBG*3060	[0.50]	Quantitative Genetics
MBG*3070	[0.50]	Bacterial Genetics
MBG*3080	[0.50]	Bacterial Genetics
MBG*3200	[0.50]	Genetics: Our Uncertain Heritage
MBG*4030	[0.50]	Animal Breeding Methods
MBG*4040	[0.50]	Genetics and Molecular Biology of Development
MBG*4070	[0.50]	Genetics and Molecular Biology of Development
MBG*4080	[0.50]	Molecular Genetics
MBG*4160	[0.50]	Plant Breeding
MBG*4200	[0.50]	Transmission Genetics
MBG*4240	[0.50]	Applied Molecular Genetics
MBG*4270	[0.50]	DNA Replication, Recombination and Repair
MBG*4350	[0.50]	Structural Molecular Biology
MBG*4620	[0.50]	Molecular Cytogenetics

Geographic Information Systems (GIS) and Environmental Analysis

Department of Geography, College of Social and Applied Human Sciences.

Minor (Honours Program)

A minimum of 5.00 credits is required from:

GEOG*1300	[0.50]	Introduction to the Biophysical Environment
GEOG*2420	[0.50]	Aerial-photo Interpretation
GEOG*2480	[0.50]	Mapping and GIS
GEOG*3210	[0.50]	Management of the Biophysical Environment
GEOG*3420	[0.50]	Remote Sensing of the Environment
GEOG*3480	[0.50]	GIS and Spatial Analysis
GEOG*4480	[0.50]	Applied Geographic Information Systems

One of:

GEOG*2000	[0.50]	Geomorphology
GEOG*2110	[0.50]	Climate and the Biophysical Environment

One of:

GEOG*3110	[0.50]	Biotic and Natural Resources
GEOG*3610	[0.50]	Environmental Hydrology
GEOG*3620	[0.50]	Desert Environments

And one of:

GEOG*4110	[0.50]	Environmental Systems Analysis
GEOG*4210	[0.50]	Environmental Resource Analysis

[Note: GEOG*3110 or GEOG*3610 is required as prerequisite for GEOG*4110]

Geology (GEOL)

Department of Land Resource Science, Ontario Agricultural College.

Minor (Honours Program)

A minor will consist of at least 5.00 credits in Geology. The following 7 courses are mandatory:

GEOL*1050	[0.50]	Geology and the Environment
GEOL*2020	[0.50]	Stratigraphy
GEOL*2110	[0.50]	Earth Material Science
GEOL*2150	0.75	Glacial Geology
GEOL*3090	[0.50]	Applied Structural Geology
GEOL*3120	[0.50]	Paleontology
GEOL*4090	[0.50]	Sedimentology

The remaining credits can be chosen from Geology or the Geomorphology offerings in Geography in the calendar and must be 2000 level or above.

Human Kinetics (HK)

Department of Human Health and Nutritional Sciences, College of Biological Science.

Human Kinetics is concerned with understanding capacities for, and limits of, human movement at different ages and with the role of physical activity in human health. Through the use of electives, students may structure a program emphasizing biomechanics and ergonomics, human population biology or nutrition, exercise and metabolism.

If lacking the fundamentals of word processing, spread sheet use and data management, the student should select CIS*1200 as early in the program as possible.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. A minimum of 20.00 credits is required.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 elective or restricted elective

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1080	[0.50]	Physics for Life Sciences

1.00 elective or restricted elective

Semester 3

BIOL*2210	[0.50]	Introductory Cell Biology
BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics

1.00 elective or restricted elective

Semester 4

HK*2270	[0.50]	Principles of Human Biomechanics
MBG*2020	[0.50]	Introductory Molecular Biology
NUTR*3210	[0.50]	Fundamentals of Nutrition
ZOO*2100	[0.50]	Developmental Biology

0.50 elective or restricted elective

Semester 5

HK*3401	[0.75]	Human Anatomy
HK*3600	[0.75]	Applied Human Biology
HK*3940	[1.25]	Human Physiology

Semester 6

BIOC*3560	[0.50]	Structure and Function in Biochemistry
HK*3402	[0.75]	Human Anatomy
STAT*2040	[0.50]	Statistics I

0.50 electives or restricted electives

Semester 7

If desired, electives or restricted electives up to a maximum of 2.75 total credits.

Semester 8

If desired, electives or restricted electives up to a maximum of 2.75 total credits.

Note: Students are required to complete 16.00 credits in acceptable science courses.

Restricted Electives

Students must complete 2.00 credits from Arts or Social Science courses with the recommendation that 0.50 of the 2.00 credits be in philosophy. A minimum of 2.00 credits of restricted electives is required. They are to be selected from HK*3100, HK*4XXX, NUTR*4090, NUTR*4210.

Marine and Freshwater Biology (MFB)

Department of Integrative Biology, College of Biological Science.

The Major in Marine and Freshwater Biology provides a broad ecological perspective on aquatic environments based on the physical as well as the biological sciences. This major prepares students for post-graduate work in the aquatic sciences, and provides a sound science background for students wishing to pursue careers in teaching, government service or the private sector.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. A minimum total of 20.00 credits is required to complete the major.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 Arts or Social Science elective*

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II

PHYS*1080	[0.50]	Physics for Life Sciences
STAT*2040	[0.50]	Statistics I

0.50 Arts or Social Science elective*

Semester 3

ZOO*2070	[0.50]	Invertebrate Zoology I
ZOO*2090	[0.50]	Vertebrate Structure and Function
ZOO*2100	[0.50]	Developmental Biology

1.00 elective**

Semester 4

BIOL*2210	[0.50]	Introductory Cell Biology
BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics
ZOO*2080	[0.50]	Invertebrate Zoology II

0.50 elective**

Semester 5

BIOL*3110	[0.50]	Population Ecology
BIOL*3450	[0.50]	Introduction to Aquatic Environments
ZOO*3200	[0.50]	Comparative Animal Physiology I
ZOO*3300	[0.50]	Evolution

0.50 elective**

Semester 6

BIOL*3120	[0.50]	Community Ecology
ZOO*3210	[0.50]	Comparative Animal Physiology II

1.50 electives**, ***

Semester 7

ZOO*4350	[0.50]	Biology of Polluted Waters
ZOO*4570	[0.50]	Marine Ecological Processes

1.50 elective**

Semester 8

ZOO*4330	[0.50]	Environmental Biology of Fishes
ZOO*4560	[0.50]	Marine and Freshwater Adaptations

1.50 electives**

* CIS*1200 is recommended for those needing to improve their computer skills

** suggested electives list available from the faculty advisors

*** BIOL*2250 is strongly recommended if independent research project courses are anticipated in semesters 7 and/or 8

Electives - must include:

1. A minimum of 1.00 credits from:

BIOL*4110	[0.75]	Ecological Methods
ZOO*4300	[0.75]	Marine Biology and Oceanography
ZOO*4410	[0.75]	Field Ecology
ZOO*4490	[0.75]	Teaching in Zoology
ZOO*4500	[0.75]	Research Problems in Zoology I
ZOO*4510	[0.75]	Research Problems in Zoology II
ZOO*4540	[0.50]	Marine and Freshwater Research
ZOO*4600	[0.75]	Tropical Ecology
ZOO*4610	[0.75]	Arctic Ecology
ZOO*4700	[0.50]	Field Biology
ZOO*4710	[0.25]	Field Biology
ZOO*4800	[0.50]	Field Biology
ZOO*4810	[0.25]	Field Biology

Other field or research courses with approval of faculty advisor.

2. At least 1.00 Arts and/or Social Science elective.

Mathematical Science (MSCI)**Department of Mathematics & Statistics, College of Physical and Engineering Science.****Minor (Honours Program)**

This requires 1.00 calculus credit and 4.00 other credits chosen from mathematics, statistics, and computing and information science. For these 4.00 credits students will choose at least 0.50 from each discipline. At least 1.00 credits must be at the 3000 level or above. This minor cannot be combined with a major in Mathematics, Statistics, or Computing and Information Science.

Mathematics (MATH)**Department of Mathematics and Statistics, College of Physical and Engineering Science.****Major (Honours Program)**

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. A total of 20.00 credits is required to complete the Major which includes at least 10.00 credits in Mathematics & Statistics, 2.00 of which must be at the 4000 level. At least 1.00 credit in Arts and Social Science must be completed.

Semester 1*

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
MATH*1210	[0.50]	Calculus II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism

0.50 elective (CIS*2500 recommended)

Semester 3

MATH*2000	[0.50]	Set Theory
MATH*2160	[0.50]	Linear Algebra I
MATH*2200	[0.50]	Advanced Calculus I
STAT*2040	[0.50]	Statistics I

0.50 Arts or Social Science elective

Semester 4

MATH*2130	[0.50]	Numerical Methods
MATH*2170	[0.50]	Differential Equations I
MATH*2210	[0.50]	Advanced Calculus II

1.00 elective (CIS*2500 recommended if not taken earlier)

Semester 5

MATH*3100	[0.50]	Differential Equations II
MATH*3200	[0.50]	Real Analysis

0.50 elective

One of:

MATH*3130	[0.50]	Algebraic Structures
MATH*3240	[0.50]	Operations Research

One of:**

STAT*3100	[0.50]	Introductory Mathematical Statistics I
STAT*3240	[0.50]	Applied Regression Analysis

Semester 6

MATH*3260	[0.50]	Complex Analysis
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0.50 credit from a 3000 level statistics

0.50 credit from a 3000 or 4000 level mathematics

1.00 elective

Semester 7

0.50 credit from a 4000 level mathematics***

1.50 electives

One of:

MATH*3130	[0.50]	Algebraic Structures
MATH*3240	[0.50]	Operations Research

Semester 8

1.00 credit from a 4000 level mathematics***

1.50 electives

*students may be exempted from CIS*1500 in Semester 1 upon taking a computer science assessment of computing skills. If exempted from CIS*1500, you are advised to take CIS*2500 in the first semester.

**a student selecting STAT*3100 should take STAT*3110 in semester 6

***a mathematics major must include 2.00 or more credits at the 4000 level in mathematics (which may include STAT*4340) and must include at least 6.00 at the 3000 or 4000 level from the program committee approved list of science electives

Minor (Honours Program)

A total of 5.00 credits is required to complete the Minor, which must include:

1.50 credits from 3000 or 4000 level mathematics courses

1.00 credit from:

(MATH*1080 or MATH*1200)

(MATH*1210 or MATH*2080)

2.50 credits from:

MATH*2000	[0.50]	Set Theory
MATH*2130	[0.50]	Numerical Methods
(MATH*2150 or MATH*2160)		
MATH*2170	[0.50]	Differential Equations I
MATH*2200	[0.50]	Advanced Calculus I

Microbiology (MICR)**Department of Molecular and Cellular Biology, College of Biological Science**

Microbiology programs are designed to give students a good understanding of microorganisms, including diversity, ecology, physiology, molecular genetics, current approaches in bacterial genomics/proteomics, and microbial associations with animal hosts and the environments. Such knowledge will provide the basis for further work with microbes in medicine, agricultural industries (including biotechnology, pharmaceuticals, food and beverage) and the environment (surveillance and bioremediation).

Students can take the B.Sc. program with a Major or a Minor in Microbiology, or combine the minor with another major. Students should plan their programs in consultation with the microbiology faculty advisor. As course offerings may change during the program, students are strongly encouraged to review their plans at least once a year with their advisors, and to check the departmental website for program news.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. A total of 20.00 credits is required to complete the major.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 elective

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1080	[0.50]	Physics for Life Sciences

0.50 elective

One mathematics/computer course from:

CIS*1200	[0.50]	Introduction to Computing
CIS*1500	[0.50]	Introduction to Programming
MATH*2080	[0.50]	Elements of Calculus II

Semester 3

BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics
MICR*2020	[0.50]	Microbial Interactions and Associations
STAT*2040	[0.50]	Statistics I

0.50 elective

Semester 4

BIOL*2210	[0.50]	Introductory Cell Biology
MBG*2020	[0.50]	Introductory Molecular Biology
MICR*2030	[0.50]	Microbial Growth

1.00 elective

Semester 5

BIOC*3560	[0.50]	Structure and Function in Biochemistry
MICR*3120	[0.50]	Systematic Bacteriology
MICR*3230	[0.50]	Immunology I

0.50 elective

One of:

MBG*3070	[0.50]	Bacterial Genetics
MBG*3080	[0.50]	Bacterial Genetics

Semester 6

BIOL*3050	[0.50]	Mycology I
MICR*3110	[0.50]	Techniques in Microbiology
MICR*3260	[0.50]	Microbial Adaptation and Development

1.00 elective

Semester 7

MICR*4120	[0.50]	Virology
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2.00 electives or restricted electives which can include MICR*4310.

Semester 8

MICR*4290	[0.50]	Microbial Ecology
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2.00 electives or restricted electives which can include MICR*4320

Restricted Electives

Of the 8.00 elective credits throughout the program, at least 2.00 must be from the Arts and Social Sciences. For the Major program, 1.50 must be selected from the list below and at least 2.50 must be from the list of approved science electives. (See exception for students taking a minor in an Arts or Social Science subject.) Students in the major program should ensure that at least 1.00 of the electives are 4000 level science courses.

BIOL*4050	[0.50]	Mycology II
BIOC*4540	[0.50]	Enzymology
BIOC*4580	[0.50]	Membrane Biochemistry
FOOD*3230	[0.75]	Food Microbiology

FOOD*3260	[0.50]	Industrial Microbiology
MICR*3220	[0.50]	Plant Microbiology
MICR*4010	[0.50]	Pathogenic Bacteriology
MICR*4230	[0.50]	Immunology II
MICR*4240	[0.50]	Topics in Microbiology
MICR*4260	[0.50]	Microbial Technology
MICR*4270	[0.50]	Microbial Design
MICR*4310	[1.00]	Research Project I
MICR*4320	[1.00]	Research Project II
MICR*4430	[0.50]	Medical Virology

One of:

MICR*4140	[0.50]	Soil Microbiology and Biotechnology
MICR*4180	[0.50]	Microbial Processes in Environmental Management

Minor (Honours Program)

The minor in Microbiology consists of the following 5.00 credits:

2.00 credits including all of:

BIOC*2580	[0.50]	Introductory Biochemistry
MICR*2020	[0.50]	Microbial Interactions and Associations
MICR*2030	[0.50]	Microbial Growth
MICR*3110	[0.50]	Techniques in Microbiology

2.00 credits from:

BIOL*3050	[0.50]	Mycology I
FOOD*3230	[0.75]	Food Microbiology
FOOD*3260	[0.50]	Industrial Microbiology
MICR*3120	[0.50]	Systematic Bacteriology
MICR*3220	[0.50]	Plant Microbiology
MICR*3230	[0.50]	Immunology I
MICR*3260	[0.50]	Microbial Adaptation and Development
MICR*4140	[0.50]	Soil Microbiology and Biotechnology
MICR*4180	[0.50]	Microbial Processes in Environmental Management

One of:

MBG*3070	[0.50]	Bacterial Genetics
MBG*3080	[0.50]	Bacterial Genetics

1.00 credits from:

BIOL*4050	[0.50]	Mycology II
MICR*4010	[0.50]	Pathogenic Bacteriology
MICR*4120	[0.50]	Virology
MICR*4230	[0.50]	Immunology II
MICR*4260	[0.50]	Microbial Technology
MICR*4270	[0.50]	Microbial Design
MICR*4290	[0.50]	Microbial Ecology
MICR*4430	[0.50]	Medical Virology

Microbiology (Co-op) (MICR:C)

Department of Molecular and Cellular Biology, College of Biological Science

Major (Honours Program)

Students in the Major in Microbiology program may take the Co-op option. Students do not begin their first work term until they have completed semester 3 and courses BIOL*1030, BIOL*1040 and MICR*2030. Students in the co-op program must also complete COOP*1100 in the second academic semester. At least 3 work terms (COOP*1000, COOP*2000, COOP*3000) are required in the co-op program, and the course requirements are the same as shown for the major program. Some courses must be taken during a different semester than usual, and Co-op students may require an additional semester to meet all the program requirements. Students should plan their programs in consultation with the faculty advisor. Two schedules are printed below and detailed course selections are available from the Co-op advisor.

Semester	Stream A	Stream B
F	1	1
W	2	2
S	Off	Off
F	3	3
W	Work 1	Work 1
S	4	4
F	5	Work 2
W	6	5
S	Work 2	Work 3
F	Work 3	6
W	7	7
S	Work 4	Work 4
F	8	8

Molecular Biology and Genetics (MBG)

Department of Molecular and Cellular Biology, College of Biological Science

The B.Sc. program with a Major in Molecular Biology and Genetics is a broadly based program in genetics including related areas of cell and molecular biology. In consultation with the departmental advisor, students can choose a general program or can focus their courses in areas such as molecular biology, cell biology, developmental biology, genetics, or agricultural genetics. The program qualifies students for postgraduate training in cell or molecular biology and genetics including clinical genetics and genetic counselling, and provides an excellent background for careers in biotechnology, toxicology, agriculture and medical research. Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor.

Major (Honours Program)

A total of 20.00 credits is required to complete the major.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I

0.50 elective or restricted elective

One of:

PHYS*1000	[0.50]	An Introduction to Mechanics
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

One of:

MATH*1080	[0.50]	Elements of Calculus I
MATH*1200	[0.50]	Calculus I

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II

0.50 elective or restricted elective

One of:

CIS*1200	[0.50]	Introduction to Computing
CIS*1500	[0.50]	Introduction to Programming

One of:

PHYS*1010	[0.50]	Introductory Electricity and Magnetism
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 3

BIOL*2210	[0.50]	Introductory Cell Biology
BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics
STAT*2040	[0.50]	Statistics I

0.50 elective or restricted elective

Semester 4

MBG*2020	[0.50]	Introductory Molecular Biology
MICR*2030	[0.50]	Microbial Growth
STAT*2050	[0.50]	Statistics II

1.00 elective or restricted elective

Semester 5

MBG*3350	[0.75]	Laboratory Methods in Molecular Biology I
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1.75 electives or restricted electives

Semester 6

2.50 electives or restricted electives

Semester 7*

MBG*4500	[1.00]	Research Project in Molecular Biology and Genetics I
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1.50 electives or restricted electives

Semester 8*

MBG*4510	[1.00]	Research Project in Molecular Biology and Genetics II
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1.50 electives or restricted electives

*instead of the 2 semester sequence of MBG*4500 / MBG*4510 students may choose to take MBG*4600 and 1.50 subject area electives

Note: Students are reminded that AT LEAST 2.00 credits must be at the 4000 level in order to complete the major.

Restricted Electives

1. Ecology Elective - 0.50 credit

BIOL*2060	[0.50]	Ecology
BIOL*3110	[0.50]	Population Ecology
BOT*2050	[0.50]	Plant Ecology
MICR*4290	[0.50]	Microbial Ecology

2. Arts and Social Science Electives - 2.00 credits

3. Physiology Elective - 0.50 credit

BIOM*3100	[0.50]	Mammalian Physiology I
BOT*3310	[0.50]	Plant Physiology

HK*3940	[1.25]	Human Physiology
ZOO*3200	[0.50]	Comparative Animal Physiology I
4. Subject Area Electives - 3.00 credits (4.50 if MBG*4600 is taken instead of MBG*4500 and MBG*4510)		
MBG*3000	[0.50]	Population Genetics
MBG*3050	[0.50]	Human Genetics
MBG*3060	[0.50]	Quantitative Genetics
MBG*3200	[0.50]	Genetics: Our Uncertain Heritage
MBG*3360	[0.75]	Laboratory Methods in Molecular Biology II
MBG*3600	[0.25]	Introduction to Genomics
MBG*4030	[0.50]	Animal Breeding Methods
MBG*4080	[0.50]	Molecular Genetics
MBG*4160	[0.50]	Plant Breeding
MBG*4200	[0.50]	Transmission Genetics
MBG*4240	[0.50]	Applied Molecular Genetics
MBG*4270	[0.50]	DNA Replication, Recombination and Repair
MBG*4350	[0.50]	Structural Molecular Biology
MBG*4620	[0.50]	Molecular Cytogenetics
One of:		
MBG*3070	[0.50]	Bacterial Genetics
MBG*3080	[0.50]	Bacterial Genetics
One of:		
MBG*4040	[0.50]	Genetics and Molecular Biology of Development
MBG*4070	[0.50]	Genetics and Molecular Biology of Development
5. Science Electives - 0.50 credit		
BIOC*3560	[0.50]	Structure and Function in Biochemistry
MICR*3230	[0.50]	Immunology I
MICR*4120	[0.50]	Virology

Neuroscience (NEUR)

Department of Human Health and Nutritional Sciences, College of Biological Science.

Minor (Honours Program)

A minor in Neuroscience shall include a minimum of 5.00 credits including:

BIOM*3000	[0.50]	Mammalian Neuroanatomy
CIS*1500	[0.50]	Introduction to Programming
PHYS*2030	[0.50]	Biophysics of Excitable Cells
PSYC*2410	[0.50]	Behavioural Neuroscience I
ZOO*2100	[0.50]	Developmental Biology

and at least 0.50 from:

BIOM*3100	[0.50]	Mammalian Physiology I
HK*3940	[1.25]	Human Physiology
ZOO*3200	[0.50]	Comparative Animal Physiology I

and 1.00 from an independent study project in the neurosciences, selected from a combination of:

BIOM*4510	[1.00]	Research in Biomedical Sciences II
BIOM*4521/2	[1.00]	Research in Biomedical Sciences II
HK*4230	[0.50]	Advanced Study in Human Biology and Nutritional Sciences
HK*4360	[1.00]	Research in Human Biology and Nutritional Sciences
HK*4371/2	[1.00]	Research in Human Biology and Nutritional Sciences II
ZOO*4500	[0.75]	Research Problems in Zoology I

and 1.00 from:

BIOM*3090	[0.50]	Principles of Pharmacology and Toxicology
HK*3100	[0.50]	Neuromuscular Physiology
NUTR*3210	[0.50]	Fundamentals of Nutrition
PATH*3610	[0.50]	Principles of Disease
PSYC*2390	[0.50]	Principles of Sensation and Perception
PSYC*3030	[0.50]	Neurochemical Basis of Behaviour
PSYC*3040	[0.50]	Current Issues in Neuropsychology
PSYC*3410	[0.50]	Behavioural Neuroscience II
ZOO*4470	[0.50]	Comparative Endocrinology

Nutritional and Nutraceutical Sciences (NANS)

Department of Human Health and Nutritional Sciences, College of Biological Science.

The Nutritional and Nutraceutical Sciences major is concerned with understanding the contribution of food, beverage and nutritional supplement consumption to growth, development of optimal biological function, maintenance of health, and treatment of disease.

If lacking the fundamentals of word processing, spread sheet use and data management, the student should select CIS*1200 as early in the program as possible.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. A total of 20.00 credits is required, including 2.00 credits from Arts and Social Sciences courses.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 elective or restricted elective

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1080	[0.50]	Physics for Life Sciences

1.00 elective or restricted elective

Semester 3

BIOL*2210	[0.50]	Introductory Cell Biology
BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics

1.00 elective

Semester 4

BIOC*3560	[0.50]	Structure and Function in Biochemistry
MBG*2020	[0.50]	Introductory Molecular Biology
NUTR*3210	[0.50]	Fundamentals of Nutrition
STAT*2040	[0.50]	Statistics I

0.50 elective or restricted elective

Semester 5

HK*3940	[1.25]	Human Physiology
NUTR*3330	[0.50]	Micronutrients, Phytochemicals and Health
NUTR*3390	[0.50]	Applied Nutritional and Nutraceutical Sciences I

0.25 or 0.50 elective or restricted elective

Semester 6

BIOM*3090	[0.50]	Principles of Pharmacology and Toxicology
NUTR*4090	[0.50]	Functional Foods and Nutraceuticals
NUTR*4330	[0.50]	Applied Nutritional and Nutraceutical Sciences II
PATH*3610	[0.50]	Principles of Disease

0.50 electives or restricted electives

Semester 7

NUTR*4210	[0.50]	Nutrition, Exercise and Energy Metabolism
NUTR*4510	[0.50]	Toxicology, Nutrition and Food

1.50 electives or restricted electives

Semester 8

2.50 electives or restricted electives

Restricted Electives

Students must complete 2.00 credits from Arts and Social Sciences courses and 1.00 credits from among the following:

HK*4410	[0.50]	Research Concepts
HK*4420	[0.50]	Research Modules
HK*4460	[0.50]	Regulation of Human Metabolism
NUTR*4200	[0.50]	Nutrition and Immune Function
NUTR*4320	[0.50]	Nutrition and Metabolic Control of Disease
NUTR*4360	[0.50]	Current Issues in Nutrigenomics

Nutritional Sciences (NSCI)

Department of Human Health and Nutritional Sciences, College of Biological Science.

Minor (Honours Program)

A minor in Nutritional Sciences requires 5.00 credits as follows:

BIOC*2580	[0.50]	Introductory Biochemistry
NUTR*2150	[0.50]	Introduction to Nutritional and Food Sciences
NUTR*3210	[0.50]	Fundamentals of Nutrition
NUTR*3330	[0.50]	Micronutrients, Phytochemicals and Health
STAT*2040	[0.50]	Statistics I

At least 0.50 credits from:

BIOM*3100	[0.50]	Mammalian Physiology I
HK*3940	[1.25]	Human Physiology
ZOO*3200	[0.50]	Comparative Animal Physiology I

and 2.00 credits from:

ANSC*4160	[0.25]	Beef Cattle Nutrition
ANSC*4170	[0.25]	Dairy Cattle Nutrition
ANSC*4180	[0.25]	Poultry Nutrition
ANSC*4190	[0.25]	Swine Nutrition
ANSC*4500	[0.25]	Horse Nutrition
ANSC*4510	[0.25]	Pet Nutrition
HK*4230	[0.50]	Advanced Study in Human Biology and Nutritional Sciences

HK*4360	[1.00]	Research in Human Biology and Nutritional Sciences
HK*4371/2	[1.00]	Research in Human Biology and Nutritional Sciences II
NUTR*3340	[0.50]	Nutrition of Fish and Crustacea
NUTR*3350	[0.50]	Wildlife Nutrition
NUTR*3390	[0.50]	Applied Nutritional and Nutraceutical Sciences I
NUTR*4090	[0.50]	Functional Foods and Nutraceuticals
NUTR*4200	[0.50]	Nutrition and Immune Function
NUTR*4210	[0.50]	Nutrition, Exercise and Energy Metabolism
NUTR*4320	[0.50]	Nutrition and Metabolic Control of Disease
NUTR*4360	[0.50]	Current Issues in Nutrigenomics
NUTR*4510	[0.50]	Toxicology, Nutrition and Food

Physical Science (PSCI)

College of Physical and Engineering Science.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. This major will require the completion of 20.00 credits as indicated below:

1. Basic Science Core - 4.00 credits

1.00 - Biology (BIOL*1030, BIOL*1040)

1.00 - Chemistry (CHEM*1040, CHEM*1050)

1.00 - Physics [(PHYS*1000, PHYS*1010) or (PHYS*1070, PHYS*1080) or (PHYS*1080, PHYS*1130)]

1.00 - Mathematical Science [(MATH*1080, MATH*2080) or (MATH*1200, MATH*1210)]

2. Subject Area Core - 8.00 credits

0.50 (STAT*2040 or STAT*2100)

0.50 (CIS*1200 or CIS*1500)

7.00 physical science credits, including at least 4.00 credits at the 3000 or 4000 level of which 2.00 credits must be at the 4000 level.

3. Science Electives - 4.00 credits

4.00 science credits from the List of Approved Science Electives for B.Sc. Students*

4. Arts and Social Science Electives - 2.00

2.00 acceptable Arts or Social Science credits selected from the List of Approved B.Sc. Electives*

5. Free Electives - 2.00 credits

Note: the program must include a total of 6.00 science credits at the 3000 or 4000 level. Of these, at least 2.00 credits must be physical science at the 4000 level.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I

0.50 Arts or Social Science elective

One of:

PHYS*1000	[0.50]	An Introduction to Mechanics
PHYS*1070	[0.50]	Introductory Physics for Life Sciences
PHYS*1080	[0.50]	Physics for Life Sciences

One of:

MATH*1080	[0.50]	Elements of Calculus I
MATH*1200	[0.50]	Calculus I

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II

0.50 Arts or Social Science elective

One of:

PHYS*1010	[0.50]	Introductory Electricity and Magnetism
PHYS*1080	[0.50]	Physics for Life Sciences
PHYS*1130	[0.50]	Physics with Applications

One of:

MATH*1210	[0.50]	Calculus II
MATH*2080	[0.50]	Elements of Calculus II

Semester 3

1.50 science elective from the approved list of acceptable B.Sc. science electives*

0.50 elective

One of:

CIS*1200	[0.50]	Introduction to Computing
CIS*1500	[0.50]	Introduction to Programming

OR

STAT*2040	[0.50]	Statistics I
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Semester 4

1.50 science elective from the approved list of B.Sc. science electives*

0.50 elective

One of:

CIS*1200	[0.50]	Introduction to Computing
CIS*1500	[0.50]	Introduction to Programming (if a statistics course is chosen in Semester 3)

OR

STAT*2040	[0.50]	Statistics I (if a computing course is chosen in Semester 3)
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Semester 5 to 8

Total of 2.50 credits per semester including at least 2.00 science electives.

Sufficient courses at the 3000 or 4000 level must be selected in Semesters 5 through 8 to total 6.00 credits in science at the 3000 or 4000 level with at least 2.00 physical science at the 4000 level.

*approved course lists are available in the Dean's Office, College of Physical and Engineering Science and on the world wide web at http://www.cpes.uoguelph.ca/BSc/approved_electives.htm**Honours Physical Science (With a Minor)**

The requirements and schedules are the same as for Honours Physical Science. Available Minor subjects are listed at the beginning of the B.Sc. Program section under the heading Honours Program Minors.

Physics (PHYS)**Department of Physics, College of Physical and Engineering Science.**

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. Since some of the required courses are not offered every semester, students entering the Major in Honours Physics should plan their program in consultation with the Department of Physics Faculty Advisor.

Major (Honours Program)

This major requires the completion of 21.25 credits. At least 1.00 of these credits must be obtained from the completion of Arts and/or Social Science courses.

Semester 1*

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2*

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
MATH*1210	[0.50]	Calculus II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism

0.50 Arts or Social Science elective

* students who have taken physics courses other than PHYS*1000 in Semester 1 and PHYS*1010 in Semester 2, may proceed to semester 3 with the permission of the Department of Physics

Semester 3

MATH*2160	[0.50]	Linear Algebra I
MATH*2200	[0.50]	Advanced Calculus I
PHYS*2440	[0.75]	Mechanics I
PHYS*2460	[0.75]	Electricity and Magnetism I

One of:

STAT*2040	[0.50]	Statistics I
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0.50 Arts elective

0.50 Social Science elective

Semester 4

MATH*2170	[0.50]	Differential Equations I
PHYS*2260	[0.50]	Experimental Basis of Quantum Physics
PHYS*2450	[0.75]	Mechanics II
PHYS*2470	[0.75]	Electricity and Magnetism II

One of:

STAT*2040	[0.50]	Statistics I
STAT*2120	[0.50]	Probability and Statistics for Engineers

0.50 elective

Semester 5

MATH*3100	[0.50]	Differential Equations II
PHYS*3100	[0.75]	Electronics
PHYS*3230	[0.50]	Quantum Mechanics I
PHYS*3240	[0.50]	Statistical Physics I

One of:

MATH*2000	[0.50]	Set Theory
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0.50 elective

Semester 6

PHYS*3220	[0.50]	Waves and Optics
PHYS*3400	[0.50]	Advanced Mechanics
PHYS*3510	[0.50]	Intermediate Laboratory
PHYS*4040	[0.50]	Quantum Mechanics II

One of:

MATH*3170	[0.50]	Partial Differential Equations and Special Functions
MATH*3260	[0.50]	Complex Analysis

0.50 elective

Semester 7+

PHYS*4180	[0.50]	Advanced Electromagnetic Theory
PHYS*4500	[0.50]	Advanced Physics Laboratory

1.00 elective **

One of:

PHYS*4240	[0.50]	Statistical Physics II
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0.50 elective

Semester 8+

PHYS*4510	[0.50]	Advanced Physics Project
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2.00 electives **

* students going on to graduate school in physics should take PHYS*4120, PHYS*4130, PHYS*4150, PHYS*4240

** For the electives chosen in Sem 7 and 8, at least 1.50 credits must be from lists A and B below. At least 1.00 credit must be from list A. Substitutions of courses in list B by other 3000 or 4000 level courses must be approved by the Physics Faculty Advisor.

List A

PHYS*4120	[0.50]	Atomic and Molecular Physics
PHYS*4130	[0.50]	Subatomic Physics
PHYS*4150	[0.50]	Solid State Physics

List B

GEOL*3060	[0.50]	Groundwater
PHYS*4910	[0.50]	Advanced Topics in Physics I
PHYS*4920	[0.50]	Advanced Topics in Physics II
PHYS*4930	[0.50]	Advanced Topics in Physics III
POLS*3370	[0.50]	Environmental Policy Formation and Administration
REXT*3100	[0.50]	Teaching and Learning in Non-Formal Education
SOIL*3600	[0.50]	Remote Sensing
STAT*3240	[0.50]	Applied Regression Analysis
STAT*3510	[0.50]	Environmental Risk Assessment

Minor (Honours Program)

A minor in Physics requires 5.00 credits in physics courses including at least 1.00 at the 3000 or 4000 level.

The following four courses, with a weight of 0.75 each, are required:

PHYS*2440	[0.75]	Mechanics I
PHYS*2450	[0.75]	Mechanics II
PHYS*2460	[0.75]	Electricity and Magnetism I
PHYS*2470	[0.75]	Electricity and Magnetism II

The following courses are strongly recommended:

PHYS*1000	[0.50]	An Introduction to Mechanics
PHYS*1010	[0.50]	Introductory Electricity and Magnetism

Physics (Co-op) (PHYS:C)**Department of Physics, College of Physical and Engineering Science.**

Since some of the required courses are not offered every semester, students entering the Major in Physics (Co-op) should plan their program in consultation with the Department of Physics Faculty Advisor. To graduate from the Co-op program a minimum of 4 successfully completed work terms (COOP*1000, COOP*2000, COOP*3000, COOP*4000) is normally required.

Major (Honours Program)

This major requires the completion of 21.25 credits.

Semester 1 - Fall

The program for the first semester is the same as the Major in Physics (regular) program.

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
MATH*1210	[0.50]	Calculus II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism

One of:

CIS*2500	[0.50]	Intermediate Programming
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0.50 Arts or Social Science elective*

Semester 3 - Fall

MATH*2160	[0.50]	Linear Algebra I
MATH*2200	[0.50]	Advanced Calculus I

PHYS*2440 [0.75] Mechanics I
 PHYS*2460 [0.75] Electricity and Magnetism I

One of:

MATH*2000 [0.50] Set Theory
 STAT*2040 [0.50] Statistics I

0.50 Arts or Social Science elective*

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4 - Summer

MATH*2170 [0.50] Differential Equations I
 PHYS*2260 [0.50] Experimental Basis of Quantum Physics
 PHYS*3240 [0.50] Statistical Physics I

0.50 elective*

One of:

CIS*2520 [0.50] Data Structures

0.50 elective*

Fall Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5 - Winter

PHYS*2450 [0.75] Mechanics II
 PHYS*2470 [0.75] Electricity and Magnetism II
 PHYS*3220 [0.50] Waves and Optics

0.50 elective

One of:

STAT*2040 [0.50] Statistics I
 STAT*2120 [0.50] Probability and Statistics for Engineers
 MATH*3260 [0.50] Complex Analysis

0.50 elective

Summer Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 6 - Fall +

MATH*3100 [0.50] Differential Equations II
 PHYS*3100 [0.75] Electronics
 PHYS*3230 [0.50] Quantum Mechanics I

1.00 elective **

Semester 7 - Winter +

PHYS*3400 [0.50] Advanced Mechanics
 PHYS*3510 [0.50] Intermediate Laboratory
 PHYS*4040 [0.50] Quantum Mechanics II

0.50 elective**

One of:

MATH*3170 [0.50] Partial Differential Equations and Special Functions
 0.50 elective**

Summer Semester

COOP*4000 [0.00] Co-op Work Term IV

Semester 8 - Fall +

PHYS*4180 [0.50] Advanced Electromagnetic Theory
 PHYS*4240 or 0.50 elective
 PHYS*4500 [0.50] Advanced Physics Laboratory

1.00 elective**

* 1.00 must be taken as Arts or Social Science electives in this Major

+ and ** refer to the notes in the Major in Physics program

Plant Biology (PBIO)

Department of Integrative Biology, College of Biological Science.

Department of Environmental Biology, Ontario Agricultural College.

Department of Plant Agriculture, Ontario Agricultural College.

Major (Honours Program)

Students may enter this major in Semester I or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor.

Semester 1

BIOL*1030 [0.50] Biology I
 CHEM*1040 [0.50] General Chemistry I
 MATH*1080 [0.50] Elements of Calculus I
 PHYS*1070 [0.50] Introductory Physics for Life Sciences

0.50 Arts or Social Science elective *

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040 [0.50] Biology II
 CHEM*1050 [0.50] General Chemistry II
 PHYS*1080 [0.50] Physics for Life Sciences

0.50 Arts or Social Science elective*

One of:

CIS*1200 [0.50] Introduction to Computing
 CIS*1500 [0.50] Introduction to Programming
 MATH*2080 [0.50] Elements of Calculus II

Semester 3

AGR*2470 [0.50] Introduction to Plant Agriculture
 BOT*2100 [0.50] Life Strategies of Plants
 BIOC*2580 [0.50] Introductory Biochemistry
 MBG*2000 [0.50] Introductory Genetics

One of:

BIOL*2060 [0.50] Ecology
 BOT*2050 [0.50] Plant Ecology
 CROP*2110 [0.50] Crop Ecology

Semester 4

BIOL*2210 [0.50] Introductory Cell Biology
 ENVB*2040 [0.50] Biology of Plant Pests
 MBG*2020 [0.50] Introductory Molecular Biology

0.50 Arts or Social Science elective

0.50 elective

Semester 5

STAT*2040 [0.50] Statistics I

0.50 Arts or Social Science elective

1.50 elective **

Semester 6

BOT*3710 [0.50] Classification and Morphology of Seed Plants

2.00 electives **

Semester 7

2.50 electives **

Semester 8

BOT*4380 [0.50] Metabolism in the Whole Life of Plants

2.00 electives **

* it is recommended that 0.50 Arts or Social Science elective be chosen from:

ECON*1100 [0.50] Introductory Macroeconomics
 ENGL*1200 [0.50] Reading the Contemporary World
 GEOG*1220 [0.50] Human Impact on the Environment
 HIST*1250 [0.50] Science and Society Since 1500
 PHIL*1000 [0.50] Introductory Philosophy: Major Texts
 POLS*1400 [0.50] Public Management and Administration
 PSYC*1100 [0.50] Principles of Behaviour

Electives**

The selection of electives is subject to the following rules:

1. A minimum of 1.50 credits must be from the following list of preferred electives:

BOT*3310 [0.50] Plant Physiology
 BOT*3410 [0.50] Plant Anatomy
 PBIO*3110 [0.50] Crop Physiology
 PBIO*3750 [0.50] Plant Tissue Culture
 PBIO*4000 [0.50] Molecular and Cellular Aspects of Plant-Microbe Interactions
 PBIO*4100 [0.50] Soil Plant Relationships
 PBIO*4150 [0.50] Molecular and Cellular Aspects of Plant Development
 PBIO*4530 [0.50] Environmental Pollution Stresses on Plants
 PBIO*4600 [0.75] Plant Environment Interaction and Stress Physiology
 PBIO*4750 [0.50] Genetic Engineering of Plants

2. A minimum of 4.00 credits must be from the following list:

BIOL*3050 [0.50] Mycology I
 BOT*2000 [0.50] Plants, Biology and People
 BOT*4820 [0.75] Research Opportunities in Botany I
 BOT*4830 [0.75] Research Opportunities in Botany II
 CROP*2280 [0.50] Crops in Land Reclamation
 CROP*3300 [0.50] Grain Crops
 CROP*3310 [0.50] Protein and Oilseed Crops
 CROP*3320 [0.50] Pasture and Grazing Management
 CROP*3330 [0.50] Forage Crops: Science and Technology
 CROP*4220 [0.50] Cropping Systems
 CROP*4240 [0.50] Weed Science
 CROP*4260 [0.50] Crop Science Field Trip
 CROP*4340 [0.50] Seminar: Selected Topics in Crop Science
 CROP*4350 [0.50] Crop Science Research Project I
 CROP*4360 [0.50] Crop Science Research Project II
 ENVB*2030 [0.50] Current Issues in Forest Science
 ENVB*3210 [0.50] Plant Pathology
 ENVB*4000 [0.50] Plant Disease Management
 ENVB*4070 [0.50] Biological and Cultural Control of Plant Diseases

ENVB*4420	[0.50]	Problems in Environmental Biology
ENVB*4780	[0.50]	Forest Ecology
HORT*3010	[0.50]	Annual, Perennial and Indoor Plants - Identification and Use
HORT*3220	[0.50]	Turf Management
HORT*3230	[0.50]	Plant Propagation
HORT*3260	[0.50]	Woody Plants
HORT*3280	[0.50]	Greenhouse Production
HORT*3340	[0.50]	Culture of Plants
HORT*3510	[0.50]	Vegetable Production
HORT*4250	[0.50]	Nursery Production
HORT*4300	[0.50]	Postharvest Physiology
HORT*4380	[0.50]	Tropical and Sub-Tropical Horticultural Crops
HORT*4420	[0.50]	Fruit Crops
HORT*4900	[0.50]	Horticultural Science Research I
HORT*4910	[0.50]	Horticultural Science Research II
MBG*3000	[0.50]	Population Genetics
MBG*3100	[0.50]	Plant Genetics
MBG*4160	[0.50]	Plant Breeding
MICR*3220	[0.50]	Plant Microbiology

3. From the total of 8.00 in semester 5-8 at least 5.50 from this list or from the approved science elective course list for B.Sc. students must be at the 3000 and 4000 levels and at least 2.00 must be at the 4000 level.

Minor (Honours Program)

A minor in Plant Biology requires 5.00 credits in the Plant Biology program chosen in consultation with the faculty advisor. The courses will include:

AGR*2451/2	[1.00]	Plant Agriculture
BOT*2100	[0.50]	Life Strategies of Plants
BOT*3710	[0.50]	Classification and Morphology of Seed Plants
ENVB*2040	[0.50]	Biology of Plant Pests

1.00 credits from list of preferred electives:

One of:

BIOL*2060	[0.50]	Ecology
BOT*2050	[0.50]	Plant Ecology
CROP*2110	[0.50]	Crop Ecology

The remaining credits chosen from offerings by the Department of Integrative Biology, Environmental Biology, Plant Agriculture, Crop Science or Horticulture Science.

Plant Biotechnology (PBTC)

Department of Molecular and Cellular Biology, College of Biological Sciences.

Department of Environmental Biology, Ontario Agricultural College.

Department of Plant Agriculture, Ontario Agricultural College.

Major (Honours Program)

Students may enter this major in any semester. A student wishing to declare the major must consult the Faculty Advisor.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 Arts or Social Science elective

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1080	[0.50]	Physics for Life Sciences

0.50 Arts or Social Science elective

One of:

CIS*1200	[0.50]	Introduction to Computing
CIS*1500	[0.50]	Introduction to Programming

Semester 3

BIOL*2210	[0.50]	Introductory Cell Biology
BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics

0.50 elective

One of:

AGR*2470	[0.50]	Introduction to Plant Agriculture
BOT*2000	[0.50]	Plants, Biology and People

Semester 4

BOT*2100	[0.50]	Life Strategies of Plants
MBG*2020	[0.50]	Introductory Molecular Biology
MICR*2030	[0.50]	Microbial Growth

STAT*2040	[0.50]	Statistics I
0.50 elective		
Semester 5		
BOT*3310	[0.50]	Plant Physiology
MBG*3100	[0.50]	Plant Genetics
PBIO*3750	[0.50]	Plant Tissue Culture
1.00 elective		
Semester 6		
MBG*3350	[0.75]	Laboratory Methods in Molecular Biology I
MBG*4300	[0.50]	Plant Molecular Genetics
0.75 elective		
One of:		
PBIO*4150	[0.50]	Molecular and Cellular Aspects of Plant Development
PBIO*4750	[0.50]	Genetic Engineering of Plants
Semester 7		
PBIO*4000	[0.50]	Molecular and Cellular Aspects of Plant-Microbe Interactions
PBIO*4300	[1.00]	Research Opportunities in Plant Biotechnology I
1.00 elective		
Semester 8		
BOT*4380	[0.50]	Metabolism in the Whole Life of Plants
1.50 elective		
One of:		
PBIO*4150	[0.50]	Molecular and Cellular Aspects of Plant Development
PBIO*4750	[0.50]	Genetic Engineering of Plants

Restricted Electives

From a total of 4.25 remaining credits for electives in Semesters 3-8, at least 3.00 credits must be from the following list of Restricted Electives. Students must select 2.00 restricted electives from List A and 1.00 restricted electives from List B.

List A

A minimum of 2.00 credits must be taken from the following list:

BIOL*3300	[0.50]	Applied Bioinformatics
BOT*3410	[0.50]	Plant Anatomy
MBG*3200	[0.50]	Genetics: Our Uncertain Heritage
MBG*3600	[0.25]	Introduction to Genomics
MBG*4350	[0.50]	Structural Molecular Biology
MBG*4620	[0.50]	Molecular Cytogenetics
MICR*3220	[0.50]	Plant Microbiology
MICR*3230	[0.50]	Immunology I
MICR*4120	[0.50]	Virology
MICR*4230	[0.50]	Immunology II
PBIO*3110	[0.50]	Crop Physiology
PBIO*4310	[1.00]	Research Opportunities in Plant Biotechnology II
PBIO*4600	[0.75]	Plant Environment Interaction and Stress Physiology

Note: Students are strongly recommended to take PBIO*4310. Permission of the instructor is required.

List B

A minimum of 1.00 credits must be taken from the following list:

CROP*2110	[0.50]	Crop Ecology
CROP*3300	[0.50]	Grain Crops
CROP*3310	[0.50]	Protein and Oilseed Crops
ENVB*3210	[0.50]	Plant Pathology
HORT*3220	[0.50]	Turf Management
HORT*3230	[0.50]	Plant Propagation
HORT*3280	[0.50]	Greenhouse Production
HORT*3510	[0.50]	Vegetable Production
HORT*4300	[0.50]	Postharvest Physiology
HORT*4420	[0.50]	Fruit Crops
MBG*4160	[0.50]	Plant Breeding

Minor (Honours Program)

A minor in Plant Biotechnology requires 5.00 credits in the Plant Biotechnology Program chosen in consultation with the Faculty Advisor. The course include:

PBIO*3750	[0.50]	Plant Tissue Culture
PBIO*4750	[0.50]	Genetic Engineering of Plants

One of the following 2 groups of courses:

Group A

BOT*2000	[0.50]	Plants, Biology and People
BOT*2100	[0.50]	Life Strategies of Plants

Group B

AGR*2470	[0.50]	Introduction to Plant Agriculture
1.50 credits from Restricted Electives List B (listed under Major above)		
0.50 credits from Restricted Electives List B (listed under Major above)		
1.00 credits from the following courses:		

BOT*3310	[0.50]	Plant Physiology
MBG*3100	[0.50]	Plant Genetics
MBG*4300	[0.50]	Plant Molecular Genetics
PBIO*4000	[0.50]	Molecular and Cellular Aspects of Plant-Microbe Interactions
PBIO*4150	[0.50]	Molecular and Cellular Aspects of Plant Development

Psychology (PSYC)

Department of Psychology, College of Social and Applied Human Sciences.

The B.Sc. Major in Psychology offers an opportunity for students to develop interests within learning, perception, cognition, and physiological psychology from a sound base in physical and biological sciences. Students primarily interested in other areas within psychology should consult the schedule of studies for the Bachelor of Arts program. Psychology courses in the above focuses may also be studied via the B.A. program.

Note on Honours Courses

Courses marked (H) are designed for students in a psychology honours program, the Information Systems and Human Behaviour program, the Developmental Psychology Minor program, the Educational Psychology Minor program, the Organizational Behaviour Minor program, the Social Psychology program, the Cognitive Neuropsychology Minor program, or Human Resources Management major of the Bachelor of Commerce program. Students in other programs wishing to take these courses must obtain the permission of the instructors concerned. Unless otherwise specified, all other courses may be taken by general, honours, and students from other programs, providing the prerequisites are met.

Courses designated with (H) are Honours level courses requiring for registration a cumulative average of at least 70% in all course attempts in Psychology, or registration in either the HRM Major or ISHB Major.

Major (Honours Program)

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

One of: *

PSYC*1100	[0.50]	Principles of Behaviour
PSYC*1200	[0.50]	Dynamics of Behaviour

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1080	[0.50]	Physics for Life Sciences

One of:

CIS*1200	[0.50]	Introduction to Computing
CIS*1500	[0.50]	Introduction to Programming

One of: *

PSYC*1100	[0.50]	Principles of Behaviour
PSYC*1200	[0.50]	Dynamics of Behaviour

Semester 3

One of:

PSYC*2330	[0.50]	Principles of Learning
PSYC*2410	[0.50]	Behavioural Neuroscience I

One of:

PSYC*2390	[0.50]	Principles of Sensation and Perception
PSYC*2650	[0.50]	Cognitive Psychology

One of:

PSYC*2010	[0.50]	Quantification in Psychology
STAT*2040	[0.50]	Statistics I

1.00 elective **

Semester 4

PSYC*2360	[0.50]	Introductory Research Methods
PSYC*3320	[0.50]	Statistical Principles in Psychological Research

0.50 Psychology core (PSYC*2330, PSYC*2390, PSYC*2410, PSYC*2650)

0.50 elective**

One of:

PSYC*2310	[0.50]	Introduction to Social Psychology
PSYC*2450	[0.50]	Introduction to Developmental Psychology
PSYC*2740	[0.50]	Personality

Semester 5

PSYC*3370	[0.50]	Experimental Design and Analysis
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2.00 electives **

Semester 6

PSYC*3250	[0.50]	Psychological Measurement
PSYC*3380	[0.50]	Non-experimental Research Methods

1.50 electives **

Semester 7***

2.50 electives **

Semester 8***

2.50 electives**

* PSYC*1100 should be completed prior to semester 3, PSYC*1200 prior to semester 4

** Electives in semester 3-8 must satisfy the following requirements:

- 1.00 arts and/or non-psychology social science credits
- 4 credits at the 3000 level
- 2 credits at the 4000 level
- 3.5 Psychology B.Sc. elective credits from List A
- 3.5 Non-psychology B.Sc. elective credits (suitable course prefixes are provided in List B)

*** students planning to enter a graduate program in Psychology are advised to complete PSYC*4870 and PSYC*4880 in Semesters 7 and 8, respectively. Note that PSYC*4370 or PSYC*4900 must be completed prior to or concurrently with either PSYC*4870 or PSYC*4880

Note: The selection of electives should take into consideration the prerequisites for preferred advanced courses. With the permission of the Psychology Department PRIOR to course selection, up to 2 non-psychology credits can be used towards the psychology credits if such courses enhance the student's psychology program.

List A Psychology B.Sc. Electives

PSYC*3030	[0.50]	Neurochemical Basis of Behaviour
PSYC*3040	[0.50]	Current Issues in Neuropsychology
PSYC*3100	[0.50]	Evolutionary Psychology
PSYC*3220	[0.50]	Ergonomics: the Scientific Study of People-System Relationships
PSYC*3330	[0.50]	Memory
PSYC*3340	[0.50]	Psycholinguistics
PSYC*3410	[0.50]	Behavioural Neuroscience II
PSYC*3430	[0.50]	Topics in Animal Learning and Cognition
PSYC*3850	[0.50]	Intellectual Disabilities
PSYC*4370	[0.50]	History of Psychology
PSYC*4600	[0.50]	Cognitive Neuroscience
PSYC*4750	[0.50]	Motivation
PSYC*4870	[0.50]	Honours Thesis I
PSYC*4880	[1.00]	Honours Thesis II
PSYC*4900	[0.50]	Psychology Seminar

List B

List of Approved Science Electives Courses for B.Sc. students, excluding psychology:

Courses with the following prefixes are examples of particularly suitable science electives for students in this program: BIOL; BIOM; CIS; ENGG; ENVB; HK; MATH; STAT; ZOO; ENVB.

Minor (Honours Program)

A minor in Psychology requires 5.00 psychology credits as follows:

PSYC*1100	[0.50]	Principles of Behaviour
PSYC*1200	[0.50]	Dynamics of Behaviour
PSYC*2360	[0.50]	Introductory Research Methods

2.00 credits from 2000 level psychology core courses selected as follows:

a. 1.50 credits from:

PSYC*2330	[0.50]	Principles of Learning
PSYC*2390	[0.50]	Principles of Sensation and Perception
PSYC*2410	[0.50]	Behavioural Neuroscience I
PSYC*2650	[0.50]	Cognitive Psychology

b. 0.50 credits from:

PSYC*2310	[0.50]	Introduction to Social Psychology
PSYC*2450	[0.50]	Introduction to Developmental Psychology
PSYC*2740	[0.50]	Personality

1.00 credits from courses in List A

One of:

PSYC*2010	[0.50]	Quantification in Psychology
STAT*2040	[0.50]	Statistics I

Statistics (STAT)

Department of Mathematics and Statistics, College of Physical and Engineering Science.

Students in this program will acquire the ability to use modern statistical methods in a variety of applications, the theoretical understanding necessary to develop statistical methods to meet new needs and a solid preparation for further study. As well, since statistical computing is a fundamental tool for the application and development of modern statistical methods, students will develop skills in computer applications programming using such high-level languages as SAS and S-PLUS.

Students may enter this major in any semester. A student wishing to declare the major must consult the Faculty Advisor. A total of 20.00 credits is required to complete the major. Required 1000 level courses are listed under Semester 1 and Semester 2 of the recommended Schedule of Studies for Major. At least 8.00 credits in Statistics and Mathematics are required at the 2000 level or above, as follows: MATH*2130, MATH*2150, MATH*2160, MATH*2200, STAT*2040, STAT*2050, STAT*3100, STAT*3110, STAT*3210, STAT*3240, STAT*3320. Five other courses (2.50 credits) in Statistics at the 3000 or 4000 level, of which at least four (2.00 credits) must be at the 4000 level. One other course (0.50 credit) in Mathematics or Statistics at the 2000 level or above.

Recommended Schedule of Studies for Major (Honours Program)

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
MATH*1210	[0.50]	Calculus II
PHYS*1010	[0.50]	Introductory Electricity and Magnetism

0.50 Arts or Social Science elective*

Semester 3

MATH*2200	[0.50]	Advanced Calculus I
STAT*2040	[0.50]	Statistics I

One of:

MATH*2150	[0.50]	Applied Matrix Algebra
MATH*2160	[0.50]	Linear Algebra I

0.50 Arts or Social Science elective

0.50 elective**

Semester 4

MATH*2130	[0.50]	Numerical Methods
STAT*2050	[0.50]	Statistics II

1.50 electives**

Semester 5

STAT*3100	[0.50]	Introductory Mathematical Statistics I
STAT*3240	[0.50]	Applied Regression Analysis
STAT*3320	[0.50]	Sampling Theory with Applications

1.00 electives**

Semester 6

STAT*3110	[0.50]	Introductory Mathematical Statistics II
STAT*3210	[0.50]	Experimental Design

1.50 electives**

Semester 7

2.50 electives**

Semester 8

2.50 electives**

*The recommended Arts or Social Science elective can be postponed to a future semester if the student wishes to take STAT*2040 in Semester 2.

** Electives must satisfy the following requirements:

1. Electives must include at least 2.50 credits in Statistics at the 3000 or 4000 level, and an additional 0.50 credit in Statistics or Mathematics at the 2000 level or above.
2. At least 2.00 credits in Statistics must be at the 4000 level.
3. Electives plus core courses must include at least 6.00 credits at the 3000 or 4000 level from the B.Sc. Program Committee approved list of science electives.
4. At least 1.00 credits in Arts or Social Science must be completed.

Minor (Honours Program)

A total of 5.00 credits in Statistics and Mathematics are required, including:

MATH*1200	[0.50]	Calculus I
MATH*1210	[0.50]	Calculus II
STAT*2040	[0.50]	Statistics I
STAT*2050	[0.50]	Statistics II
STAT*3100	[0.50]	Introductory Mathematical Statistics I
STAT*3110	[0.50]	Introductory Mathematical Statistics II
STAT*3240	[0.50]	Applied Regression Analysis

One of:

MATH*2150	[0.50]	Applied Matrix Algebra
MATH*2160	[0.50]	Linear Algebra I

0.50 additional credit in Statistics

0.50 additional credit in Statistics or Mathematics

Theoretical Physics (THPY)

Department of Physics, College of Physical and Engineering Science.

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. Since some of the required courses are not offered every semester, students entering the Major in Theoretical Physics should plan their program in consultation with the Faculty Advisor.

Major (Honours Program)

This major requires the completion of 21.25 credits. At least 1.00 of these credits must be obtained from the completion of Arts and/or Social Science courses.

Semester 1 to 3

The program for the first three semesters is the same as the Major in Physics program.

Semester 4

MATH*2170	[0.50]	Differential Equations I
PHYS*2260	[0.50]	Experimental Basis of Quantum Physics
PHYS*2450	[0.75]	Mechanics II
PHYS*2470	[0.75]	Electricity and Magnetism II

One of:*

MATH*2210	[0.50]	Advanced Calculus II
0.50 elective		

Semester 5

MATH*3100	[0.50]	Differential Equations II
PHYS*3100	[0.75]	Electronics
PHYS*3230	[0.50]	Quantum Mechanics I
PHYS*3240	[0.50]	Statistical Physics I

One of:

MATH*2000	[0.50]	Set Theory
0.50 elective		

Semester 6

MATH*3260	[0.50]	Complex Analysis
PHYS*3220	[0.50]	Waves and Optics
PHYS*3400	[0.50]	Advanced Mechanics
PHYS*3510	[0.50]	Intermediate Laboratory
PHYS*4040	[0.50]	Quantum Mechanics II

Semester 7

PHYS*4120	[0.50]	Atomic and Molecular Physics
PHYS*4180	[0.50]	Advanced Electromagnetic Theory
PHYS*4240	[0.50]	Statistical Physics II

One 3000 or 4000 level mathematics course or 0.50 elective

One of:

PHYS*4500	[0.50]	Advanced Physics Laboratory
0.50 elective		

Semester 8

PHYS*4130	[0.50]	Subatomic Physics
PHYS*4150	[0.50]	Solid State Physics
PHYS*4510	[0.50]	Advanced Physics Project

One 3000 or 4000 level mathematics course

0.50 elective

*those not taking MATH*2210 in Semester 4 must consult the Department of Physics Departmental Advisor

Wild Life Biology (WLB)

Department of Integrative Biology, College of Biological Science.

The Major in Wild Life Biology provides exposure to the ecological principles upon which the scientific management of wild life is based. This major prepares students for post-graduate work in ecology and management of wild life and provides a sound science background for students wishing to pursue careers in teaching, government service or the private sector.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. A minimum total of 20.00 credits is required to complete the major.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 Arts or Social Science elective *

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1080	[0.50]	Physics for Life Sciences
STAT*2040	[0.50]	Statistics I

0.50 Arts or Social Science elective *

Semester 3

BIOC*2580	[0.50]	Introductory Biochemistry
ZOO*2070	[0.50]	Invertebrate Zoology I
ZOO*2090	[0.50]	Vertebrate Structure and Function
ZOO*2100	[0.50]	Developmental Biology

0.50 elective **

Semester 4

BIOL*2210	[0.50]	Introductory Cell Biology
MBG*2000	[0.50]	Introductory Genetics
NUTR*3210	[0.50]	Fundamentals of Nutrition
ZOO*2080	[0.50]	Invertebrate Zoology II

0.50 elective **

Semester 5

BIOL*3010	[0.50]	Laboratory and Field Work in Ecology
BIOL*3110	[0.50]	Population Ecology
BOT*2050	[0.50]	Plant Ecology
ZOO*3200	[0.50]	Comparative Animal Physiology I
ZOO*3300	[0.50]	Evolution

Semester 6

BIOL*3120	[0.50]	Community Ecology
NUTR*3350	[0.50]	Wildlife Nutrition
ZOO*3210	[0.50]	Comparative Animal Physiology II

1.00 elective **, ***

Semester 7 ****

BIOL*4110	[0.75]	Ecological Methods
ZOO*4070	[0.50]	Animal Behaviour

1.25 electives **

Semester 8

BIOL*4150	[0.50]	Wildlife Conservation and Management
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2.00 electives **

* CIS*1200 is recommended for those needing to improve their computer skills

** suggested electives list available from faculty advisors

*** BIOL*2250 is strongly recommended if independent research project courses are anticipated in semester 7 and/or 8

**** a minimum of 0.75 credits from these courses may be taken as an alternative to BIOL*4110 in semester 7:

ZOO*4300	[0.75]	Marine Biology and Oceanography
ZOO*4410	[0.75]	Field Ecology
ZOO*4500	[0.75]	Research Problems in Zoology I
ZOO*4510	[0.75]	Research Problems in Zoology II
ZOO*4600	[0.75]	Tropical Ecology
ZOO*4610	[0.75]	Arctic Ecology
ZOO*4700	[0.50]	Field Biology
ZOO*4710	[0.25]	Field Biology
ZOO*4800	[0.50]	Field Biology
ZOO*4810	[0.25]	Field Biology

Electives must include:

1. A minimum of 1.00 credit from:

ZOO*4090	[0.50]	Ornithology
ZOO*4280	[0.50]	Mammalogy
ZOO*4430	[0.50]	Herpetology

2. At least 1.00 Arts and/or Social Science electives.

Zoology (ZOO)**Department of Integrative Biology, College of Biological Science.**

The Major in Zoology offers a broad education in the life sciences while providing a more specialized understanding of the structure, function and ecology of animals. This major qualifies students for post-graduate work in zoology and other life sciences and provides a sound science background for students wishing to pursue careers in teaching, government service or the private sector.

Major (Honours Program)

Students may enter this major in Semester 1 or any semester thereafter. A student wishing to declare the major must consult the Faculty Advisor. A minimum total of 20.00 credits is required to complete the major.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I

MATH*1080	[0.50]	Elements of Calculus I
PHYS*1070	[0.50]	Introductory Physics for Life Sciences

0.50 Arts or Social Science elective *

Students who are admitted deficient in one OAC/4U course in Biology, Chemistry or Physics must take the equivalent introductory course in first semester. The first-year science core in that subject should be completed by Semester 3.

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
PHYS*1080	[0.50]	Physics for Life Sciences
STAT*2040	[0.50]	Statistics I

0.50 Arts or Social Science elective *

Semester 3

ZOO*2070	[0.50]	Invertebrate Zoology I
ZOO*2090	[0.50]	Vertebrate Structure and Function
ZOO*2100	[0.50]	Developmental Biology

1.00 elective **

Semester 4

BIOL*2210	[0.50]	Introductory Cell Biology
BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics
ZOO*2080	[0.50]	Invertebrate Zoology II

0.50 elective **

Semester 5

BIOL*3110	[0.50]	Population Ecology
ZOO*3200	[0.50]	Comparative Animal Physiology I
ZOO*3300	[0.50]	Evolution

1.00 elective **

Semester 6

BIOL*3120	[0.50]	Community Ecology
ZOO*3210	[0.50]	Comparative Animal Physiology II

1.50 electives **, ***

Semester 7

ZOO*3000	[0.50]	Comparative Histology
ZOO*4070	[0.50]	Animal Behaviour

1.50 electives **

Semester 8

2.50 electives **

* CIS*1200 is recommended for those needing to improve their computer skills

** suggested electives list available from the faculty advisors

*** BIOL*2250 is strongly recommended if independent research project courses are anticipated in semesters 7 and/or 8

Electives must include:

1. A minimum of 0.50 credits from:

ZOO*4170	[0.50]	Experimental Comparative Animal Physiology
ZOO*4300	[0.75]	Marine Biology and Oceanography
ZOO*4410	[0.75]	Field Ecology
ZOO*4500	[0.75]	Research Problems in Zoology I
ZOO*4510	[0.75]	Research Problems in Zoology II
ZOO*4521/2	[1.50]	Research Problems in Zoology III
ZOO*4600	[0.75]	Tropical Ecology
ZOO*4610	[0.75]	Arctic Ecology
ZOO*4700	[0.50]	Field Biology
ZOO*4710	[0.25]	Field Biology
ZOO*4800	[0.50]	Field Biology
ZOO*4810	[0.25]	Field Biology

2. At least 1.00 Arts or Social Science electives.

3. This major must contain at least 6.00 science credits at the 3000 or 4000 level, which must include at least 2.00 at the 4000 level. The restricted elective in point number 1 above counts as part of this 3000 or 4000 level requirement.

Note: The Major in Zoology is a flexible program which allows students in consultation with faculty advisors, to design a program to meet their own needs and interests. For example, students may wish to concentrate in Evolutionary Physiology, Quantitative Zoology, or Systematic Zoology for which lists of electives are available from faculty advisors.

Minor (Honours Program)

Students in programs other than Zoology, Wildlife Biology, Marine and Freshwater Biology and Ecology who have a strong interest in Zoology may choose to take a minor in Zoology. A minor in Zoology requires a minimum of 5.00 credits and will include:

BIOL*1030	[0.50]	Biology I
BIOL*1040	[0.50]	Biology II

4.00 additional credits in Zoology (ZOO*) courses at the 2000 level or higher

Bachelor of Science in Agriculture [B.Sc.(Agr.)]

The B.Sc.(Agr.) degree program is a 4 year honours science program designed to provide a fundamental education in the science of agriculture. The curriculum includes courses in the agricultural sciences, the physical, biological and social sciences, and in the arts.

Program Information

Agricultural scientists must be effective communicators and problem solvers, self-directed in their learning, and have a global perspective on the agrifood systems. A series of 9 or 10 agricultural science (AGR*XXXX) courses throughout the program enables students to further develop their abilities in communications, analysis and problem solving, computer applications and to increase their interpersonal skills. Students will be involved in cooperative group learning activities and will experience courses that are multidisciplinary and integrate the teaching activities of many faculty and departments.

Students will have the option of completing a broad agricultural program (honours agricultural science) or identifying another major in which they take a minimum of 6.00 credits.

The curriculum provides opportunities for students to select courses that will help them prepare for professional careers as entrepreneurs, scientists, marketing specialists, financial managers, technical advisors, or communications specialists. Students will have a comprehensive understanding of the food system when they graduate. They will be able to integrate their knowledge of production agriculture, environmental management, resource allocation and business management as it applies to the food system nationally and globally.

Students will be encouraged to integrate their academic program with a well-planned series of employment activities in the summer months and to develop their leadership and interpersonal skills in on-campus and community activities. There is a strong commitment in the curriculum to the philosophy of "whole person development" and students are encouraged to identify personal goals that they wish to accomplish in each of these areas of their development.

Graduates meet the educational requirements for membership in the Ontario Institute of Agrologists. The Ontario Institute of Agrologists is the professional organization in agriculture in the Province of Ontario. Professional institutes in the various provinces in Canada and the scientific societies in agriculture collectively comprise the Agricultural Institute of Canada. The program received full accreditation from the Agricultural Institute of Canada in April 1999.

Students may graduate with a degree in honours agricultural science. Students who wish to specialize in 1 of the major areas of study may do so by completing the courses identified for each major.

Additional Majors:

Agricultural Economics
Agroecosystem Management
Agronomy
Animal Science
Horticultural Science
Organic Agriculture

Declaration of a Major

All students are considered to be registered in honours agricultural science in the first 3 semesters of the program. Those who wish to select a different major may do so when they are selecting their courses for semester 4 or later. The course requirements are listed for each major in the following section.

Students may, with appropriate approvals, elect to complete Minors associated with other degree programs as listed in the undergraduate calendar.

Study Abroad

The B.Sc.(Agr.) degree program is similar in many respects to programs offered at faculties of agricultural science in other provinces in Canada. Students are strongly encouraged to consider studying for 1 or 2 semesters in other faculties of agricultural science in Canada and in selected countries around the world.

Students interested in studying at another institution program should consult the B.Sc.(Agr.) Program Counsellor to discuss their plans, and refer to the scholarship section for financial support.

For more specific information on these opportunities refer to Section V--International Study in this calendar, or contact the OAC Dean's Office.

Doctor of Veterinary Medicine

Students in the B.Sc.(Agr.) program normally apply for admission to the D.V.M. program after semester 4 or later. Applications must be submitted to the Admissions Services, Office of Registrarial Services. Students should consult the D.V.M. Section of the calendar. Students who do not gain admission to the D.V.M. program are eligible to continue in the B.Sc.(Agr.) program through to graduation.

Students planning to enter the D.V.M. program are advised to include 12U biology, 12U chemistry, and 12U physics in addition to calculus in secondary school.

Continuation of Study

Students are advised to consult the regulations for continuation of study within the program which are outlined in detail in Section VIII--Undergraduate Degree Regulations & Procedures.

Conditions of Graduation

To qualify for the degree Bachelor of Science (Agriculture), the student must successfully complete a minimum of 20.00 credits as set out in the Schedule of Studies listed below. In addition, students must meet the continuation of study requirements at the time of graduation and have a minimum of 60% cumulative average.

Honours Agriculture (AGRS)

Semester 1

AGR*1100	[0.50]	Introduction to the Agrifood System
BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1080	[0.50]	Elements of Calculus I

Semester 2

AGR*1250	[0.50]	Agrifood System Trends and Issues
BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
ENGL*1200	[0.50]	Reading the Contemporary World

0.50 elective

Semester 3

AGR*2320	[0.50]	Soils in Agroecosystems
AGR*2350	[0.50]	Animal Production Systems and Industry
AGR*2400	[0.50]	Economics of the Canadian Food System
AGR*2470	[0.50]	Introduction to Plant Agriculture

0.50 restricted elective

Semester 4

SOIL*2200	[0.50]	Environmental Issues in Agroecosystems
STAT*2040	[0.50]	Statistics I

One of:

CROP*2110	[0.50]	Crop Ecology
HORT*3340	[0.50]	Culture of Plants

One of:

ANSC*2340	[0.50]	Structure of Farm Animals
ANSC*2360	[0.50]	Challenges and Opportunities in Animal Production
ANSC*3150	[0.50]	Principles of Farm Animal Care and Welfare

Note: ANSC*2360 is a Fall offering and ANSC*2340, ANSC*3150 are Winter offerings. 0.50 restricted elective

Semester 5

AGEC*2700	[0.50]	Survey of Natural Resource Economics
FOOD*3070	[0.50]	Introduction to Food Processing

1.50 electives or restricted electives

Semester 6

EDRD*3400	[0.50]	Sustainable Rural Communities
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2.00 electives

Semester 7 & 8

Students must choose either Option A or B in Semester 7 and 8

Option A:

AGR*4500	[0.50]	Agrifood Industry Problem-Solving
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4.50 electives

Option B

AGR*4450	[1.00]	Research Project in Agriculture I
AGR*4460	[1.00]	Research Project in Agriculture II

3.00 electives

Restricted Electives

1. 2 of the following Restricted Electives are required:

BOT*2100	[0.50]	Life Strategies of Plants
BIOC*2580	[0.50]	Introductory Biochemistry
ECON*1100	[0.50]	Introductory Macroeconomics
ECON*2310	[0.50]	Intermediate Microeconomics
GEOL*3130	[0.50]	Agrogeology
MBG*2000	[0.50]	Introductory Genetics
SOIL*2120	[0.50]	Introduction to Environmental Stewardship

2. A minimum of 7.00 credits must be at the 3000 level or higher, of which 5.00 credits must be in agricultural science and of which 3.50 credits must be at the 4000 level. Refer to Program Counsellor for list of agricultural science courses.

3. A humanities or social science course (0.50 credit) at the 2000 level or above from the College of Arts or College of Social and Applied Human Sciences.

Agricultural Economics (AGEC)

Department of Agricultural Economics and Business.

Semester 1

AGR*1100	[0.50]	Introduction to the Agrifood System
BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1080	[0.50]	Elements of Calculus I

Semester 2

AGR*1250	[0.50]	Agrifood System Trends and Issues
BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
ECON*1100	[0.50]	Introductory Macroeconomics
ENGL*1200	[0.50]	Reading the Contemporary World

Semester 3

AGR*2400	[0.50]	Economics of the Canadian Food System
ECON*2310	[0.50]	Intermediate Microeconomics

Two of:

AGR*2320	[0.50]	Soils in Agroecosystems
AGR*2350	[0.50]	Animal Production Systems and Industry
AGR*2470	[0.50]	Introduction to Plant Agriculture

0.50 elective or restricted elective

Semester 4

AGEC*2410	[0.50]	Agrifood Markets and Policy
ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*2740	[0.50]	Economic Statistics
ECON*2770	[0.50]	Introductory Mathematical Economics

0.50 elective or restricted elective

Semester 5

ECON*3740	[0.50]	Introduction to Econometrics
FOOD*3070	[0.50]	Introduction to Food Processing

One of:

AGR*2320	[0.50]	Soils in Agroecosystems
AGR*2350	[0.50]	Animal Production Systems and Industry
AGR*2470	[0.50]	Introduction to Plant Agriculture

1.00 electives or restricted electives

Semester 6

EDRD*3400	[0.50]	Sustainable Rural Communities
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2.00 electives or restricted electives

Semester 7 & 8**Students must choose either Option A or B in Semester 7 and 8****Option A:**

Semester 7

AGEC*3030	[0.50]	The Firm and Markets
AGEC*4500	[0.50]	Decision Science

1.50 electives or restricted electives

Semester 8

AGEC*4000	[0.50]	Agricultural and Food Policy
AGR*4500	[0.50]	Agrifood Industry Problem-Solving

1.50 electives or restricted electives

Option B

Semester 7

AGEC*3030	[0.50]	The Firm and Markets
AGEC*4500	[0.50]	Decision Science
AGR*4450	[1.00]	Research Project in Agriculture I

0.50 elective or restricted elective

Semester 8

AGEC*4000	[0.50]	Agricultural and Food Policy
AGR*4460	[1.00]	Research Project in Agriculture II

1.00 electives or restricted electives

Restricted Electives

- Students are required to take at least 1.50 additional credits at the 3000 or 4000 level in the following subject areas: AGECE, COST, ECON, or in an area otherwise approved by the faculty advisor. At least 1.00 of these additional credits must be at the 4000 level.
- A minimum of 7.00 credits must be at the 3000 level or higher, of which 5.00 credits must be in agricultural science and of which 3.50 credits must be at the 4000 level. Refer to Program Counsellor for list of agricultural science courses.

Agroecosystem Management (AGMN)

Department of Land Resource Science.

Semester 1

AGR*1100	[0.50]	Introduction to the Agrifood System
BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1080	[0.50]	Elements of Calculus I

Semester 2

AGR*1250	[0.50]	Agrifood System Trends and Issues
BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
ENGL*1200	[0.50]	Reading the Contemporary World

0.50 elective

Semester 3

AGR*2320	[0.50]	Soils in Agroecosystems
AGR*2350	[0.50]	Animal Production Systems and Industry
AGR*2400	[0.50]	Economics of the Canadian Food System
AGR*2470	[0.50]	Introduction to Plant Agriculture
SOIL*2120	[0.50]	Introduction to Environmental Stewardship

Semester 4

MET*2020	[0.50]	Agrometeorology
SOIL*2200	[0.50]	Environmental Issues in Agroecosystems
STAT*2040	[0.50]	Statistics I

1.00 electives or restricted electives

Semester 5

FOOD*3070	[0.50]	Introduction to Food Processing
SOIL*3080	[0.50]	Soil and Water Conservation
SOIL*3170	[0.50]	Soil Processes in Landscape

1.00 electives or restricted electives

Semester 6

EDRD*3400	[0.50]	Sustainable Rural Communities
GEOL*3130	[0.50]	Agrogeology
GEOL*3060	[0.50]	Groundwater

One of:

GEOG*2480	[0.50]	Mapping and GIS
SOIL*3600	[0.50]	Remote Sensing

0.50 elective or restricted elective

Semester 7 & 8**Students must choose either Option A or B in Semester 7 and 8****Option A:**

Semester 7

One of:

SOIL*4110	[0.50]	Natural Resources Management Field Camp
SOIL*4210	[0.50]	Earth and Atmospheric Science Field Camp

2.00 electives or restricted electives

Semester 8

AGR*4500	[0.50]	Agrifood Industry Problem-Solving
PBIO*4100	[0.50]	Soil Plant Relationships

1.50 electives or restricted electives

Option B

Semester 7

AGR*4450	[1.00]	Research Project in Agriculture I
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One of:

SOIL*4110	[0.50]	Natural Resources Management Field Camp
SOIL*4210	[0.50]	Earth and Atmospheric Science Field Camp

1.00 electives or restricted electives

Semester 8

AGR*4460	[1.00]	Research Project in Agriculture II
PBIO*4100	[0.50]	Soil Plant Relationships

1.00 electives or restricted electives

Restricted Electives

- A minimum of 2.00 credits from one or more groupings in Land Resource Science from the list below:

Climate & Agroecosystems Management:

GEOG*3020	[0.50]	Global Environmental Change
GEOL*2200	[0.50]	Glacial Geology
MET*2030	[0.50]	Meteorology and Climatology
MET*3050	[0.50]	Microclimatology
MET*4210	[0.50]	Atmospheric Experimentation and Instrumentation
SOIL*4090	[0.50]	Soil Management

Nutrient Management:

GEOL*2200	[0.50]	Glacial Geology
SOIL*3060	[0.50]	Environmental Soil Chemistry
SOIL*3070	[0.50]	Environmental Soil Physics

SOIL*3200	[0.50]	Environmental Soil Biology
SOIL*4090	[0.50]	Soil Management
Organic Agriculture		
CROP*2050	[0.50]	Gateway to Organic Agriculture
CROP*2110	[0.50]	Crop Ecology
GEOL*2200	[0.50]	Glacial Geology
SOIL*3200	[0.50]	Environmental Soil Biology
SOIL*4090	[0.50]	Soil Management
Tropical Agroecosystem Management:		
AGEC*4210	[0.50]	World Agriculture and Economic Development
AGR*2500	[0.50]	Field Trip in International Agriculture
AGR*4000	[0.50]	Seminar in International Agriculture
GEOL*2110	[0.50]	Earth Material Science
HORT*4380	[0.50]	Tropical and Sub-Tropical Horticultural Crops
SOIL*4090	[0.50]	Soil Management

Natural Resource Management:

ENVB*2030	[0.50]	Current Issues in Forest Science
GEOG*3610	[0.50]	Environmental Hydrology
GEOL*2200	[0.50]	Glacial Geology
SOIL*3050	[0.50]	Land Utilization
SOIL*3100	[0.50]	Resource Planning Techniques
ENVB*4780	[0.50]	Forest Ecology

Source Water Protection:

BIOL*3450	[0.50]	Introduction to Aquatic Environments
ENVB*4020	[0.50]	Water Quality and Environmental Management
GEOG*3610	[0.50]	Environmental Hydrology
GEOL*2200	[0.50]	Glacial Geology
GEOL*3190	[0.50]	Environmental Water Chemistry
UNIV*3400	[0.50]	Watershed Planning Practice
ZOO*4350	[0.50]	Biology of Polluted Waters

2. A minimum of 7.00 credits must be at the 3000 level or higher, of which 5.00 credits must be in agricultural science and of which 3.50 credits must be at the 4000 level. Refer to Program Counsellor for list of agricultural science courses.

3. A humanities or social science course (0.50 credit) at the 2000 level or above from the College of Arts or College of Social and Applied Human Sciences.

Note: In this major there are fees charged to cover partial costs of some field trips. Students in need of financial assistance should approach the Chair of the department offering the course.

Agronomy (AGRO)

Departments of Plant Agriculture, Crop Science Division, and Land Resource Science.

Semester 1

AGR*1100	[0.50]	Introduction to the Agrifood System
BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1080	[0.50]	Elements of Calculus I

Semester 2

AGR*1250	[0.50]	Agrifood System Trends and Issues
BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
ENGL*1200	[0.50]	Reading the Contemporary World

0.50 elective

Semester 3

AGR*2320	[0.50]	Soils in Agroecosystems
AGR*2350	[0.50]	Animal Production Systems and Industry
AGR*2400	[0.50]	Economics of the Canadian Food System
AGR*2470	[0.50]	Introduction to Plant Agriculture
BOT*2100	[0.50]	Life Strategies of Plants

Semester 4

BIOC*2580	[0.50]	Introductory Biochemistry
MBG*2000	[0.50]	Introductory Genetics
STAT*2040	[0.50]	Statistics I

1.00 electives or restricted electives

Semester 5

FOOD*3070	[0.50]	Introduction to Food Processing
MBG*3100	[0.50]	Plant Genetics
PBIO*3110	[0.50]	Crop Physiology
SOIL*3080	[0.50]	Soil and Water Conservation

0.50 elective or restricted elective

Semester 6

EDRD*3400	[0.50]	Sustainable Rural Communities
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2.00 electives or restricted electives

Semester 7 & 8

Students must choose either Option A or B in Semester 7 and 8

Option A:

Semester 7

CROP*4240	[0.50]	Weed Science
SOIL*4090	[0.50]	Soil Management

1.50 electives or restricted electives

Semester 8

AGR*4500	[0.50]	Agrifood Industry Problem-Solving
CROP*4220	[0.50]	Cropping Systems

1.50 electives or restricted electives

Option B

Semester 7

AGR*4450	[1.00]	Research Project in Agriculture I
CROP*4240	[0.50]	Weed Science
SOIL*4090	[0.50]	Soil Management

0.50 elective or restricted elective

Semester 8

AGR*4460	[1.00]	Research Project in Agriculture II
CROP*4220	[0.50]	Cropping Systems

1.00 electives or restricted electives

Restricted Electives

1. Select two of the following Agronomy major electives:

CROP*3300	[0.50]	Grain Crops
CROP*3310	[0.50]	Protein and Oilseed Crops
CROP*3340	[0.50]	Managed Grasslands

2. A minimum of 7.00 credits must be at the 3000 level or higher, of which 5.00 credits must be in agricultural science and of which 3.50 credits must be at the 4000 level. Refer to Program Counsellor for list of agricultural science courses.

3. A humanities or social science course (0.50 credit) at the 2000 level or above from the College of Arts or College of Social and Applied Human Sciences.

Highly Recommended courses:

CROP*2110	[0.50]	Crop Ecology
ENVB*3210	[0.50]	Plant Pathology
ENVB*4100	[0.50]	Applied Entomology
MBG*4160	[0.50]	Plant Breeding
PBIO*3750	[0.50]	Plant Tissue Culture
PBIO*4750	[0.50]	Genetic Engineering of Plants

Animal Science (ANSC)

Department of Animal and Poultry Science.

Semester 1

AGR*1100	[0.50]	Introduction to the Agrifood System
BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1080	[0.50]	Elements of Calculus I

Semester 2

AGR*1250	[0.50]	Agrifood System Trends and Issues
BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
ENGL*1200	[0.50]	Reading the Contemporary World

0.50 elective

Semester 3

AGR*2320	[0.50]	Soils in Agroecosystems
AGR*2350	[0.50]	Animal Production Systems and Industry
AGR*2400	[0.50]	Economics of the Canadian Food System
AGR*2470	[0.50]	Introduction to Plant Agriculture
MBG*2000	[0.50]	Introductory Genetics

Semester 4

ANSC*2340	[0.50]	Structure of Farm Animals
BIOC*2580	[0.50]	Introductory Biochemistry
STAT*2040	[0.50]	Statistics I

1.00 electives or restricted electives

Semester 5

ANSC*2360	[0.50]	Challenges and Opportunities in Animal Production
ANSC*3080	[0.50]	Agricultural Animal Physiology
NUTR*3210	[0.50]	Fundamentals of Nutrition
FOOD*3070	[0.50]	Introduction to Food Processing
MBG*3090	[0.50]	Applied Animal Breeding

Semester 6

ANSC*3150	[0.50]	Principles of Farm Animal Care and Welfare
ANSC*4120	[0.50]	Fundamentals of Animal Reproduction

EDRD*3400 [0.50] Sustainable Rural Communities
1.00 electives or restricted electives

Semester 7 & 8

Students must choose either Option A or B in Semester 7 and 8

Option A:

Semester 7
2.50 electives or restricted electives

Semester 8
AGR*4500 [0.50] Agrifood Industry Problem-Solving
2.00 electives or restricted electives

Option B

Semester 7
AGR*4450 [1.00] Research Project in Agriculture I
1.50 electives or restricted electives

Semester 8
AGR*4460 [1.00] Research Project in Agriculture II
1.50 electives or restricted electives

Restricted Electives

1. A minimum of 2.50 credits from one or more of the following areas:

Animal Breeding:

ANSC*4050 [0.50] Recombinant DNA in Animal Science
MBG*3060 [0.50] Quantitative Genetics
MBG*4030 [0.50] Animal Breeding Methods

Animal Nutrition:

ANSC*3120 [0.50] Introduction to Animal Nutrition
ANSC*4160 [0.25] Beef Cattle Nutrition
ANSC*4170 [0.25] Dairy Cattle Nutrition
ANSC*4180 [0.25] Poultry Nutrition
ANSC*4190 [0.25] Swine Nutrition
ANSC*4470 [0.50] Animal Metabolism
ANSC*4500 [0.25] Horse Nutrition
ANSC*4510 [0.25] Pet Nutrition
NUTR*3340 [0.50] Nutrition of Fish and Crustacea
NUTR*3350 [0.50] Wildlife Nutrition

Animal Physiology and Behaviour:

ANSC*4070 [0.50] Applied Animal Behaviour
ANSC*4080 [0.50] Environmental Management and Animal Productivity
ANSC*4130 [0.50] Reproductive Management and Technology
ANSC*4480 [0.50] Applied Endocrinology

Applied Animal Science:

ANSC*2330 [0.50] Horse Management Science
ANSC*4160 [0.25] Beef Cattle Nutrition

2. A minimum of 7.00 credits must be at the 3000 level or higher, of which 5.00 credits must be in agricultural science and of which 3.50 credits must be at the 4000 level. Refer to Program Counsellor for list of agricultural science courses.
3. A humanities or social science course (0.50 credit) at the 2000 level or above from the College of Arts or College of Social and Applied Human Sciences.

Horticultural Science (HORT)

Department of Plant Agriculture, Horticultural Science Division.

Semester 1

AGR*1100 [0.50] Introduction to the Agrifood System
BIOL*1030 [0.50] Biology I
CHEM*1040 [0.50] General Chemistry I
ECON*1050 [0.50] Introductory Microeconomics
MATH*1080 [0.50] Elements of Calculus I

Semester 2

AGR*1250 [0.50] Agrifood System Trends and Issues
BIOL*1040 [0.50] Biology II
CHEM*1050 [0.50] General Chemistry II
ENGL*1200 [0.50] Reading the Contemporary World

0.50 elective

Semester 3

AGR*2320 [0.50] Soils in Agroecosystems
AGR*2400 [0.50] Economics of the Canadian Food System
AGR*2470 [0.50] Introduction to Plant Agriculture
BOT*2100 [0.50] Life Strategies of Plants

0.50 elective or restricted elective

Semester 4

BIOC*2580 [0.50] Introductory Biochemistry
STAT*2040 [0.50] Statistics I

1.50 electives or restricted electives

Semester 5

FOOD*3070 [0.50] Introduction to Food Processing
HORT*3230 [0.50] Plant Propagation
HORT*3510 [0.50] Vegetable Production
PBIO*3110 [0.50] Crop Physiology

0.50 elective or restricted elective

Semester 6

EDRD*3400 [0.50] Sustainable Rural Communities
HORT*3280 [0.50] Greenhouse Production

1.50 electives or restricted electives

Semester 7 & 8

Students must choose either Option A or B in Semester 7 and 8

Option A:

Semester 7
HORT*4420 [0.50] Fruit Crops
SOIL*4090 [0.50] Soil Management

1.50 electives or restricted electives

Semester 8

AGR*4500 [0.50] Agrifood Industry Problem-Solving
HORT*4300 [0.50] Postharvest Physiology

1.50 electives or restricted electives

Option B

Semester 7
AGR*4450 [1.00] Research Project in Agriculture I
HORT*4420 [0.50] Fruit Crops
SOIL*4090 [0.50] Soil Management

0.50 elective or restricted elective

Semester 8

AGR*4460 [1.00] Research Project in Agriculture II
HORT*4300 [0.50] Postharvest Physiology

1.00 electives or restricted electives

Restricted Electives

1. Select two of the following Horticulture major electives:

CROP*4240 [0.50] Weed Science
ENVB*3210 [0.50] Plant Pathology
ENVB*4100 [0.50] Applied Entomology
PBIO*3750 [0.50] Plant Tissue Culture
PBIO*4750 [0.50] Genetic Engineering of Plants

2. A minimum of 7.00 credits must be at the 3000 level or higher, of which 5.00 credits must be in agricultural science and of which 3.50 credits must be at the 4000 level. Refer to Program Counsellor for list of agricultural science courses.
3. A humanities or social science course (0.50 credit) at the 2000 level or above from the College of Arts or College of Social and Applied Human Sciences.

Organic Agriculture(OAGR)

Department of Plant Agriculture and Department of Land Resource Science.

Semester 1

AGR*1100 [0.50] Introduction to the Agrifood System
BIOL*1030 [0.50] Biology I
CHEM*1040 [0.50] General Chemistry I
ECON*1050 [0.50] Introductory Microeconomics
MATH*1080 [0.50] Elements of Calculus I

Semester 2

AGR*1250 [0.50] Agrifood System Trends and Issues
BIOL*1040 [0.50] Biology II
CHEM*1050 [0.50] General Chemistry II
ENGL*1200 [0.50] Reading the Contemporary World

0.50 elective

Semester 3

AGR*2320 [0.50] Soils in Agroecosystems
AGR*2350 [0.50] Animal Production Systems and Industry
AGR*2400 [0.50] Economics of the Canadian Food System
AGR*2470 [0.50] Introduction to Plant Agriculture
CROP*2050 [0.50] Gateway to Organic Agriculture

Semester 4

STAT*2040 [0.50] Statistics I
GEOL*3130 [0.50] Agrogeology

1.50 elective or restricted electives

Semester 5

AGR*3500 [0.50] Experiential Education
BOT*2100 [0.50] Life Strategies of Plants
FOOD*3070 [0.50] Introduction to Food Processing
SOIL*3030 [0.50] Tutorials in Organic Agriculture I

0.50 elective or restricted electives

Semester 6

CROP*3130 [0.50] Tutorials in Organic Agriculture II
EDRD*3400 [0.50] Sustainable Rural Communities

1.50 elective or restricted electives

Semester 7

AGEC*2300 [0.50] Organic Marketing
SOIL*4160 [0.50] Design of Organic Production Systems

1.50 elective or restricted electives

Semester 8

AGR*4500 [0.50] Agrifood Industry Problem-Solving
REXT*4180 [0.50] Social Issues in Organic Agriculture

1.50 elective or restricted electives

Restricted Electives

1. A minimum of 2.00 credits from the list of restricted electives below:

ANSC*2360 [0.50] Challenges and Opportunities in Animal Production
ANSC*3150 [0.50] Principles of Farm Animal Care and Welfare
CROP*2110 [0.50] Crop Ecology
CROP*4240 [0.50] Weed Science
ENVB*2040 [0.50] Biology of Plant Pests
ENVB*3210 [0.50] Plant Pathology
ENVB*3300 [0.50] Applied Ecology and Environment
ENVB*4100 [0.50] Applied Entomology
GEOG*3320 [0.50] Agriculture and Society
HORT*3260 [0.50] Woody Plants
PBIO*4100 [0.50] Soil Plant Relationships
PHIL*2070 [0.50] Philosophy of the Environment
REXT*2000 [0.50] Introduction to Rural Extension
SOAN*4220 [0.50] Canadian Rural Women
SOC*3380 [0.50] Society and Nature
SOC*4210 [0.50] Advanced Topics in Rural Sociology
SOIL*2200 [0.50] Environmental Issues in Agroecosystems
SOIL*3170 [0.50] Soil Processes in Landscape

2. A minimum of 7.00 credits must be at the 3000 level or higher, of which 5.00 credits must be in agricultural science and of which 3.50 credits must be at the 4000 level. Refer to Program Counsellor for list of agricultural science courses.

3. A humanities or social science course (0.50 credit) at the 2000 level or above from the College of Arts or College of Social and Applied Human Sciences.

Note: In this major there are fees charged to cover partial costs of some field trips. Students in need of financial assistance should approach the Chair of the department.**Electives****List A - Preferred Electives in Humanities and Social Science**

0.50 credit at the 2000 level or above from the College of Arts or the College of Social and Applied Human Sciences.

List B - Electives in Agricultural Science and Related Disciplines

A list of faculty advisors for the following elective course groups is available from the Dean's Office, O.A.C.

Agricultural Economics and Business*Department of Agricultural Economics and Business*

Business Management:

AGEC*2220 [0.50] Financial Accounting
AGEC*2230 [0.50] Management Accounting
AGEC*3310 [0.50] Operations Management
AGEC*3320 [0.50] Financial Management
AGEC*4370 [0.50] Marketing Management

Farm Management:

AGEC*2220 [0.50] Financial Accounting
AGEC*2230 [0.50] Management Accounting
AGEC*4220 [0.50] Advanced Farm Management
AGEC*4500 [0.50] Decision Science

Finance:

AGEC*2220 [0.50] Financial Accounting
AGEC*2230 [0.50] Management Accounting
AGEC*3320 [0.50] Financial Management
ECON*3560 [0.50] Theory of Finance

Operations:

AGEC*2220 [0.50] Financial Accounting
AGEC*2230 [0.50] Management Accounting
AGEC*3310 [0.50] Operations Management
AGEC*4500 [0.50] Decision Science

Prices and Policy:

AGEC*3030 [0.50] The Firm and Markets

AGEC*4000 [0.50] Agricultural and Food Policy
ECON*2770 [0.50] Introductory Mathematical Economics
ECON*3740 [0.50] Introduction to Econometrics
Resource and Environmental Economics:
AGEC*2700 [0.50] Survey of Natural Resource Economics
AGEC*4290 [0.50] Land Economics
AGEC*4310 [0.50] Resource Economics
ECON*2410 [0.50] Intermediate Macroeconomics
Sales and Marketing:
AGEC*4240 [0.50] Futures and Options Markets
AGEC*4360 [0.50] Marketing Research
AGEC*4370 [0.50] Marketing Management
AGEC*4410 [0.50] Sales and Sales Management

Agronomy*Department of Plant Agriculture, Crop Science Division, and Department of Land Resource Science*

Crop Management Systems:

CROP*4220 [0.50] Cropping Systems
CROP*4240 [0.50] Weed Science
One of:
CROP*3300 [0.50] Grain Crops
CROP*3310 [0.50] Protein and Oilseed Crops
CROP*3340 [0.50] Managed Grasslands

Crop Physiology:

BOT*4380 [0.50] Metabolism in the Whole Life of Plants
PBIO*3110 [0.50] Crop Physiology
PBIO*4100 [0.50] Soil Plant Relationships
PBIO*4600 [0.75] Plant Environment Interaction and Stress Physiology

Plant Biotechnology:

MBG*4160 [0.50] Plant Breeding
PBIO*3750 [0.50] Plant Tissue Culture

One of:

MBG*3100 [0.50] Plant Genetics
PBIO*4030 [0.50] Plant Cell Biology

Plant Genetic Resources:

MBG*3100 [0.50] Plant Genetics
MBG*4160 [0.50] Plant Breeding

One of:

MBG*4200 [0.50] Transmission Genetics
MBG*4240 [0.50] Applied Molecular Genetics

Soil Management and Fertility:

GEOL*4130 [0.50] Clay and Humic Chemistry
SOIL*3060 [0.50] Environmental Soil Chemistry
SOIL*3200 [0.50] Environmental Soil Biology

One of:

CROP*4260 [0.50] Crop Science Field Trip
SOIL*3600 [0.50] Remote Sensing
SOIL*4090 [0.50] Soil Management
SOIL*4110 [0.50] Natural Resources Management Field Camp

Waste Management/Agriculture:

CHEM*3360 [0.50] Environmental Chemistry and Toxicology
SOIL*3060 [0.50] Environmental Soil Chemistry
SOIL*3200 [0.50] Environmental Soil Biology
SOIL*4090 [0.50] Soil Management

Water Management/Agriculture:

ENGG*2550 [0.50] Water Management
GEOL*3060 [0.50] Groundwater
SOIL*3070 [0.50] Environmental Soil Physics

Animal and Poultry Science*Department of Animal and Poultry Science*

Animal Breeding:

ANSC*4050 [0.50] Recombinant DNA in Animal Science
MBG*3060 [0.50] Quantitative Genetics
MBG*4030 [0.50] Animal Breeding Methods

Animal Nutrition:

ANSC*3120 [0.50] Introduction to Animal Nutrition
ANSC*4160 [0.25] Beef Cattle Nutrition
ANSC*4170 [0.25] Dairy Cattle Nutrition
ANSC*4180 [0.25] Poultry Nutrition
ANSC*4190 [0.25] Swine Nutrition
ANSC*4500 [0.25] Horse Nutrition
ANSC*4510 [0.25] Pet Nutrition
NUTR*3340 [0.50] Nutrition of Fish and Crustacea
NUTR*3350 [0.50] Wildlife Nutrition

Animal Physiology and Behaviour:

ANSC*4070 [0.50] Applied Animal Behaviour

ANSC*4080	[0.50]	Environmental Management and Animal Productivity
ANSC*4120	[0.50]	Fundamentals of Animal Reproduction
ANSC*4130	[0.50]	Reproductive Management and Technology
ANSC*4480	[0.50]	Applied Endocrinology

Environmental Biology*Department of Environmental Biology*

Environmental Stress Physiology:

BOT*4380	[0.50]	Metabolism in the Whole Life of Plants
PBIO*4100	[0.50]	Soil Plant Relationships
PBIO*4530	[0.50]	Environmental Pollution Stresses on Plants
PBIO*4600	[0.75]	Plant Environment Interaction and Stress Physiology

Pest Management:

CROP*4240	[0.50]	Weed Science
ENVB*2040	[0.50]	Biology of Plant Pests
ENVB*3210	[0.50]	Plant Pathology
ENVB*4100	[0.50]	Applied Entomology

Food Science*Department of Food Science*

Food Business:

AGEC*4410	[0.50]	Sales and Sales Management
COST*2600	[0.50]	Fundamentals of Consumer Behaviour
COST*3010	[0.50]	Quality Management
FOOD*4700	[0.50]	Food Product Development

Food Science:

FOOD*4070	[0.50]	Food Packaging
FOOD*4120	[0.75]	Food Analysis
FOOD*4350	[0.50]	Processing Plant Technology

Food Technology:

FOOD*4110	[0.50]	Meat and Poultry Processing
FOOD*4400	[0.50]	Dairy Processing
FOOD*4520	[0.50]	Cereal Technology

Horticultural Science*Department of Plant Agriculture, Horticultural Science Division*

Fruit/Vegetable Horticulture:

HORT*3280	[0.50]	Greenhouse Production
HORT*3510	[0.50]	Vegetable Production
HORT*4300	[0.50]	Postharvest Physiology
HORT*4380	[0.50]	Tropical and Sub-Tropical Horticultural Crops
HORT*4420	[0.50]	Fruit Crops

Ornamental Horticulture:

HORT*3010	[0.50]	Annual, Perennial and Indoor Plants - Identification and Use
HORT*3220	[0.50]	Turf Management
HORT*3260	[0.50]	Woody Plants
HORT*3340	[0.50]	Culture of Plants
HORT*4250	[0.50]	Nursery Production

Urban Horticulture & Environmental Management:

ENVB*2040	[0.50]	Biology of Plant Pests
ENVB*3030	[0.50]	Pesticides and the Environment
HORT*3010	[0.50]	Annual, Perennial and Indoor Plants - Identification and Use
HORT*3340	[0.50]	Culture of Plants
PBIO*4530	[0.50]	Environmental Pollution Stresses on Plants

Interdepartmental/Interdisciplinary

Animal Health:

ANSC*3080	[0.50]	Agricultural Animal Physiology
POPM*3240	[0.50]	Epidemiology
POPM*4230	[0.50]	Animal Health

Aquatic Health:

PATH*4100	[0.50]	Diseases of Aquatic Animals
ZOO*4110	[0.50]	Principles of Fish and Wild Life Management

Biotechnology:

MICR*4260	[0.50]	Microbial Technology
PBIO*3750	[0.50]	Plant Tissue Culture

International Development:

AGEC*4210	[0.50]	World Agriculture and Economic Development
AGR*2500	[0.50]	Field Trip in International Agriculture
AGR*4000	[0.50]	Seminar in International Agriculture
GEOL*3130	[0.50]	Agrogeology
REXT*3060	[0.50]	International Communication
REXT*4020	[0.50]	Rural Extension in Change and Development

Toxicology:

BIOM*3090	[0.50]	Principles of Pharmacology and Toxicology
TOX*2000	[0.50]	Principles of Toxicology
TOX*3300	[0.50]	Analytical Toxicology

Land Resource Science

Agroforestry:

BOT*2050	[0.50]	Plant Ecology
ENVB*2030	[0.50]	Current Issues in Forest Science
ENVB*4780	[0.50]	Forest Ecology
HORT*3260	[0.50]	Woody Plants
SOIL*4090	[0.50]	Soil Management

Atmospheric Science:

GEOG*2110	[0.50]	Climate and the Biophysical Environment
MET*2020	[0.50]	Agrometeorology
MET*2030	[0.50]	Meteorology and Climatology
MET*3050	[0.50]	Microclimatology
MET*4210	[0.50]	Atmospheric Experimentation and Instrumentation
MET*4300	[0.50]	Atmospheric Transport and Chemistry

Computer-Assisted Resource Analysis:

CIS*1500	[0.50]	Introduction to Programming
GEOG*2480	[0.50]	Mapping and GIS
GEOG*4480	[0.50]	Applied Geographic Information Systems
SOIL*3600	[0.50]	Remote Sensing
SOIL*4170	[0.50]	Soil Processes in the Landscape

One of:

ENGG*3340	[0.50]	Geographic Information Systems in Environmental Engineering
GEOG*3480	[0.50]	GIS and Spatial Analysis

Natural Resource Management:

GEOG*3320	[0.50]	Agriculture and Society
SOIL*2120	[0.50]	Introduction to Environmental Stewardship
SOIL*3050	[0.50]	Land Utilization
SOIL*3100	[0.50]	Resource Planning Techniques
SOIL*4110	[0.50]	Natural Resources Management Field Camp

Soil Science:

GEOL*4130	[0.50]	Clay and Humic Chemistry
SOIL*3060	[0.50]	Environmental Soil Chemistry
SOIL*3070	[0.50]	Environmental Soil Physics
SOIL*3200	[0.50]	Environmental Soil Biology
SOIL*4070	[0.50]	Problems in Land Resource Science
SOIL*4090	[0.50]	Soil Management
SOIL*4170	[0.50]	Soil Processes in the Landscape

Terrestrial Ecology:

BOT*2050	[0.50]	Plant Ecology
CROP*2110	[0.50]	Crop Ecology
MICR*4140	[0.50]	Soil Microbiology and Biotechnology
MICR*4290	[0.50]	Microbial Ecology
SOIL*3200	[0.50]	Environmental Soil Biology
SOIL*4090	[0.50]	Soil Management

Rural Extension Studies

Communications:

GEOG*3320	[0.50]	Agriculture and Society
REXT*3040	[0.50]	Communication Process
REXT*3080	[0.50]	Technology in Extension

Human Resource and Community Development:

REXT*2000	[0.50]	Introduction to Rural Extension
REXT*3000	[0.50]	Program Development and Evaluation
REXT*3100	[0.50]	Teaching and Learning in Non-Formal Education
REXT*4100	[0.50]	Leadership Development in Rural Organization

Bachelor of Science in Engineering [B.Sc.(Eng.)]

Program Information

Objectives of the Program

Students in this program obtain a liberal engineering education, which includes a comprehensive core of science, mathematics and engineering science that provides a strong foundation for engineering design and analysis. This enables students to undertake the solution of engineering problems in the areas of systems and computing, biological, environmental and water resources. Core subjects, combined with elective opportunities, provide an understanding of the connection between engineering and science, coupled with the interdisciplinary skills needed to address the problems and challenges faced by engineers in society today.

The curriculum includes a strong emphasis on engineering design. Students engage in engineering design throughout the program, and gain experience in computer aided design and modeling, conceptual design and physical construction. Emphasis is on teamwork and communications skills, as well as working on interdisciplinary projects.

Career opportunities are open in many segments of the economy. Examples are: consulting services to municipalities, utilities and industry; resource agencies in advisory, regulatory, planning and utilization; service industries of construction, power and water supply and public health; manufacturing, design of computer and control systems, hardware and software development; medical devices, pharmaceutical and food industries and industrial ergonomics; academic research and graduate studies within and without the field of engineering.

Many engineers assume management responsibilities after gaining experience in design, development and operations. The balance provided by liberal arts and engineering education allows graduates to enjoy a great deal of career mobility.

Accreditation

The baccalaureate degree programs in all engineering programs are accredited by the Canadian Engineering Accreditation Board of the Canadian Council of Professional Engineers. Graduates from accredited engineering programs have the educational requirements to apply for membership in the Professional Engineers, Ontario (PEO) and other provinces after a number of years of acceptable engineering experience and successful completion of a PEO examination in engineering law and ethics.

Requirements of the Program

Students combine their required courses in mathematics, physical sciences and engineering with additional credits providing the opportunity for specialization in: one of the programs; complementary studies courses; and elective subjects. A minimum of 23.50 credits must be obtained. At least 3.00 credits must be complementary studies, which consist of courses in the social sciences, arts, management, engineering economics and communication. They complement the technical content of the curriculum.

All credits are selected according to the schedule of studies for the program. Restrictions apply to the number of non-core credits which may be at the 1000 level. Further information on approved courses may be obtained from the B.Sc.(Eng.) Program Guide available from the director or program counsellor of the School of Engineering.

Programs

The choice of program is made at the time of application. Change of program requires the approval of the director.

The available programs are:

Biological Engineering - the application of engineering to the control and management of biological processes, environments, and human factors in engineering design.

Engineering Systems and Computing - the application of engineering to the design, operation and management of data sensing, transmission and, processing systems, and of control systems.

Environmental Engineering - the application of engineering to protect and restore the environment, through the prevention and treatment of gaseous, liquid and solid wastes.

Water Resources Engineering - the application of engineering to the control and management of water and soil resources to meet human needs while sustaining the natural environment.

The schedule of studies for each program is provided below but guidance in the selection of appropriate courses is available from the program counsellor of the School of Engineering.

Additional Course Requirements

Students lacking OAC courses are advised to consult the Recommendations and Notes in Section IV--Admission Information-B.Sc.(Eng.).

Continuation of Study

Students are advised to consult the regulations for continuation of study within the program which are outlined in detail in Section VIII, Undergraduate Degree Regulation & Procedures. Students will be ineligible to continue in the B.Sc. (Eng.) program and will not be readmitted to the degree program if the same course is failed three times.

Normally, students in the B.Sc. (Eng.) program will be permitted only one supplemental privilege during their studies. It will usually be granted for 3000 or 4000 level courses only.

Conditions for Graduation

To qualify for the degree the student must complete the courses required for a B.Sc. (Eng.) program, obtaining a minimum of 23.50 credits and must achieve an overall minimum cumulative average of at least 60% and a minimum cumulative average of at least 60% in all ENGG courses.

Co-operative Education

Students studying for the B.SC. (ENG.) degree may participate in a Co-operative Education program following the completion of the first 4 semesters of study. The Co-operative Education program consists of a minimum of 4 semesters of experience in industry with employers who participate in the program. Reports and assignments are graded by a faculty supervisor with assistance from the employer. Evaluations of Co-op semesters are recorded on the student's academic record. The Co-operative Education program provides an excellent opportunity for students to obtain work experience in industry directly related to their field of study. Interested students should consult their program counsellor.

Students wishing to participate in the Co-operative Education program should indicate their intention to do so by applying for admission to the Co-op program on entrance. Following the completion of semester 2, in-course applicants will be considered for admission to the Co-op program.

Successful applicants will:

1. have a minimum cumulative average of 70% in semesters 1 and 2
2. have successfully completed all of the credits required in the schedule of studies for semesters 1 and 2
3. be employable in Canada (i.e. be a Canadian citizen or a permanent resident in Canada)
4. have obtained the approval of their Co-op advisor in the school to participate in the program. The Co-op advisor's approval will signify that the schedule of work semesters in the Co-op program as planned by the student is compatible with the schedule of studies in the program in which the student is enrolled.
5. completion of COOP*1100 is a requirement for entry into the first work term.

Please refer to Co-operative Education Program for Admission requirements into the Co-op Program.

Co-op Work Schedule					
	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5
Fall	1	3	5	6	work
Winter	2	4	work	7	8
Spring		work	work	work	

All candidates must complete a minimum of 4 of the preceding 5 work terms.

Biological Engineering Program Regular and Co-op (BIOE/BIOE:C)

School of Engineering, College of Physical and Engineering Science.

Students interested in problems requiring the application of knowledge from both the biological sciences and engineering will find a challenge as a Biological Engineer. This field of engineering relates to the control of technological processes with the aim of enhancing human, animal and plant life. The program encompasses the technologies of biotechnology, waste management, food engineering, and ergonomics. For example, a Biological Engineer concentrating on biotechnology might design and manage bioreactors to improve their productivity. A career in Biomedical Engineering, which requires graduate work beyond the Bachelor's degree, involves designing instruments and diagnostic techniques to be used in the practice of medicine, developing prosthetic devices, and applying engineering techniques to the study of physiological systems.

Major (Honours Program)

Semester 1 - Regular or Co-op

CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
ENGG*1100	[0.75]	Engineering and Design I
HIST*1250	[0.50]	Science and Society Since 1500
MATH*1200	[0.50]	Calculus I

Semester 2 - Regular or Co-op

CHEM*1050	[0.50]	General Chemistry II
ENGG*1210	[0.50]	Engineering Mechanics I
ENGG*1500	[0.50]	Engineering Analysis
MATH*1210	[0.50]	Calculus II
PHYS*1130	[0.50]	Physics with Applications

Semester 3 - Regular or Co-op

COOP*1100	[0.00]	Introduction to Co-operative Education
ENGG*2100	[0.75]	Engineering and Design II
ENGG*2120	[0.50]	Material Science
ENGG*2160	[0.50]	Engineering Mechanics II

ENGG*2400	[0.50]	Engineering Systems Analysis
MATH*2270	[0.50]	Applied Differential Equations
MICR*1020	[0.50]	Fundamentals of Applied Microbiology

Semester 4 - Regular or Co-op

BIOC*2580	[0.50]	Introductory Biochemistry
ENGG*2230	[0.50]	Fluid Mechanics
ENGG*2450	[0.50]	Network Theory
ENGG*2660	[0.50]	Biological Engineering Systems I
MATH*2130	[0.50]	Numerical Methods
STAT*2120	[0.50]	Probability and Statistics for Engineers

Semester 5 - Regular or Co-op

ENGG*3160	[0.50]	Biological Engineering Systems II
ENGG*3170	[0.50]	Biomaterials
ENGG*3240	[0.50]	Engineering Economics
ENGG*3260	[0.50]	Thermodynamics
ENGG*3450	[0.50]	Electrical Devices

0.50 restricted elective

Semester 6 Regular / Semester 7 Co-op

ENGG*3100	[0.75]	Engineering and Design III
ENGG*3410	[0.50]	Systems and Control Theory
ENGG*3430	[0.50]	Heat and Mass Transfer

1.00 restricted electives

Semester 7 Regular / Semester 6 Co-op

ENGG*4390	[0.75]	Bio-instrumentation Design
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2.75 restricted electives

Semester 8 (Winter) - Regular or Co-op

ENGG*4110	[1.00]	Biological Engineering Design IV
ENGG*4280	[0.75]	Digital Process Control Design

1.00 restricted elective

Restricted Electives (see Program Guide for more information)

- 2.00 credits in Complementary Studies Electives
- 0.75 credit in required Design Elective
- 1.00 credits in Biological Engineering Electives
- 1.00 credits in Life Science Electives
- 0.50 credits in Free electives

Engineering Systems and Computing Program Regular and Co-op (ESC/ESC:C)**School of Engineering, College of Physical and Engineering Science.**

In the last quarter century, the computer has grown so rapidly in importance that engineering, science, business and industry could not function without it. With this growth, a need has evolved for specialists who can incorporate computers and information into complex industrial processes. The Engineering Systems and Computing program has been conceived to satisfy this need. Graduates from this program will have, in addition to the basic engineering skills, the ability to identify application areas where computer technology represents the optimum solution, specify appropriate software for process control, data reduction and/or expert system implementation and integrate the computer into the overall system application.

Major (Honours Program)**Semester 1 - Regular or Co-op**

CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
ENGG*1100	[0.75]	Engineering and Design I
HIST*1250	[0.50]	Science and Society Since 1500
MATH*1200	[0.50]	Calculus I

Semester 2 - Regular or Co-op

CIS*1900	[0.50]	Discrete Structures in Computer Science
CIS*2500	[0.50]	Intermediate Programming
ENGG*1210	[0.50]	Engineering Mechanics I
ENGG*1500	[0.50]	Engineering Analysis
MATH*1210	[0.50]	Calculus II
PHYS*1130	[0.50]	Physics with Applications

Semester 3 - Regular or Co-op

CIS*2430	[0.50]	Object Oriented Programming
COOP*1100	[0.00]	Introduction to Co-operative Education
ENGG*2100	[0.75]	Engineering and Design II
ENGG*2120	[0.50]	Material Science
ENGG*2400	[0.50]	Engineering Systems Analysis
ENGG*2410	[0.50]	Digital Systems Design Using Descriptive Languages
MATH*2270	[0.50]	Applied Differential Equations

Semester 4 - Regular or Co-op

CIS*3110	[0.50]	Operating Systems
ENGG*2230	[0.50]	Fluid Mechanics

ENGG*2450	[0.50]	Network Theory
MATH*2130	[0.50]	Numerical Methods
STAT*2120	[0.50]	Probability and Statistics for Engineers

0.50 restricted elective

Semester 5 - Regular or Co-op

CIS*2520	[0.50]	Data Structures
ENGG*3260	[0.50]	Thermodynamics
ENGG*3390	[0.50]	Signal Processing
ENGG*3450	[0.50]	Electrical Devices
ENGG*3640	[0.50]	Microcomputer Interfacing

0.50 restricted elective

Semester 6 Regular / Semester 7 Co-op

ENGG*3100	[0.75]	Engineering and Design III
ENGG*3410	[0.50]	Systems and Control Theory
ENGG*3430	[0.50]	Heat and Mass Transfer

1.00 or 1.25 restricted elective

Semester 7 Regular / Semester 6 Co-op

ENGG*3240	[0.50]	Engineering Economics
ENGG*4420	[0.75]	Real-time Systems Design
ENGG*4450	[0.50]	Large-Scale Software Architecture Engineering

1.00 or 1.25 restricted electives

Semester 8 - Regular or Co-op

ENGG*4120	[1.00]	Engineering Systems and Computing Design IV
ENGG*4280	[0.75]	Digital Process Control Design

1.00 elective

Restricted Electives (see Program Guide for more information)

2.00 credits in Complementary Studies

1.50 credits in ES&C Engineering Electives

0.75 credits in Engineering Design Electives

Environmental Engineering Program Regular and Co-op (ENVE/ENVE:C)**School of Engineering, College of Physical and Engineering Science.**

In recent years there has been concern about the degradation of the environment. The School of Engineering has responded to this concern by developing an Environmental Engineering program. Graduates will possess design and skills to minimize and prevent the impact of human activities on water, soil and air systems. Graduates will also creatively integrate humanistic and social perspectives in their solutions.

Major (Honours Program)**Semester 1 - Regular or Co-op**

CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
ENGG*1100	[0.75]	Engineering and Design I
HIST*1250	[0.50]	Science and Society Since 1500
MATH*1200	[0.50]	Calculus I

Semester 2 - Regular or Co-op

CHEM*1050	[0.50]	General Chemistry II
ENGG*1210	[0.50]	Engineering Mechanics I
ENGG*1500	[0.50]	Engineering Analysis
MATH*1210	[0.50]	Calculus II
PHYS*1130	[0.50]	Physics with Applications

Semester 3 - Regular or Co-op

COOP*1100	[0.00]	Introduction to Co-operative Education
ENGG*2100	[0.75]	Engineering and Design II
ENGG*2120	[0.50]	Material Science
ENGG*2400	[0.50]	Engineering Systems Analysis
MATH*2270	[0.50]	Applied Differential Equations

0.50 restricted elective

One of:

BIOL*1030	[0.50]	Biology I
MICR*1020	[0.50]	Fundamentals of Applied Microbiology

Semester 4 - Regular or Co-op

ENGG*2230	[0.50]	Fluid Mechanics
ENGG*2450	[0.50]	Network Theory
ENGG*2560	[0.50]	Environmental Engineering Systems
MATH*2130	[0.50]	Numerical Methods
STAT*2120	[0.50]	Probability and Statistics for Engineers

One of:

BIOL*1040	[0.50]	Biology II
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0.50 restricted elective

Note: Students select 0.50 restricted elective in Semester 4 if MICR*1020 was selected in Semester 3.

Semester 5 - Regular or Co-op

ENGG*3180	[0.50]	Air Quality
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ENGG*3240	[0.50]	Engineering Economics
ENGG*3260	[0.50]	Thermodynamics
ENGG*3590	[0.50]	Water Quality
ENGG*3650	[0.50]	Hydrology

0.50 restricted elective

Semester 6 Regular / Semester 7 Co-op

ENGG*3100	[0.75]	Engineering and Design III
ENGG*3410	[0.50]	Systems and Control Theory
ENGG*3430	[0.50]	Heat and Mass Transfer
ENGG*3470	[0.50]	Mass Transfer Operations

1.00 restricted elective

Semester 7 Regular / Semester 6 Co-op

ENGG*3670	[0.50]	Soil Mechanics
ENGG*4330	[0.75]	Air Pollution Control
ENGG*4340	[0.50]	Solid and Hazardous Waste Management
ENGG*4370	[0.75]	Urban Water Systems Design

0.50 restricted elective

Semester 8 - Regular or Co-op

ENGG*4130	[1.00]	Environmental Engineering Design IV
ENGG*4260	[0.75]	Water and Wastewater Treatment Design
GEOL*3060	[0.50]	Groundwater

0.50 restricted elective

Restricted Electives

Environmental engineering students must complete the following restricted electives (see Program Guide for more information). You can take these courses where Restricted Electives are indicated in the schedule of courses. A maximum of three 1000 level electives is allowed. Restricted electives must include:

2.00 credits in Complementary Studies electives

0.50 credit in Free Elective

0.50 credit in Science/Engineering electives

One of:

0.50 credit in Science electives (if MICR*1020 is selected in Semester 3)

BIOL*1040 (if BIOL*1030 is selected in Semester 3)

Note: The following courses should not be used as Free Electives:

CHEM*2820	[0.50]	Thermodynamics and Kinetics
CHEM*2880	[0.50]	Physical Chemistry
GEOG*3620	[0.50]	Desert Environments
GEOL*3190	[0.50]	Environmental Water Chemistry
PHYS*1600	[0.50]	Contemporary Astronomy
SOIL*3070	[0.50]	Environmental Soil Physics
SOIL*3080	[0.50]	Soil and Water Conservation
TOX*3360	[0.50]	Environmental Chemistry and Toxicology

Minor (Honours Program)

Students must be registered in the B.Sc.(Eng.) degree program to apply for a Minor in Environmental Engineering.

The minor can be satisfied by taking the following additional courses:

BIOL*2060	[0.50]	Ecology
BIOC*2580	[0.50]	Introductory Biochemistry
CHEM*3360	[0.50]	Environmental Chemistry and Toxicology
ENGG*3180	[0.50]	Air Quality
ENGG*3590	[0.50]	Water Quality
ENGG*4260	[0.75]	Water and Wastewater Treatment Design
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
MICR*1020	[0.50]	Fundamentals of Applied Microbiology
MICR*4180	[0.50]	Microbial Processes in Environmental Management

One of:

ENGG*2560	[0.50]	Environmental Engineering Systems
ENGG*2660	[0.50]	Biological Engineering Systems I

Students must select an environmental application project for the design course in the student's major program.

Water Resources Engineering Program Regular and Co-op (WRE/WRE:C)**School of Engineering, College of Physical and Engineering Science.**

Water resources engineering focuses on the use and management of land and water resources in rural and urban watersheds. The hydrologic and hydraulic behaviour of watershed flow systems is combined with engineering science and. Water management includes flood prevention, warning and control; drainage; design of natural channels; irrigation; and erosion prevention and control. The supply of water for municipal, industrial and agricultural purposes is considered in the context of resource conservation. Identification of potential point and diffused sources of pollutants is used to develop efficient, environmentally sustainable and economical methods to preserve high-quality water to sustain human life and water-dependent ecosystems.

Major (Honours Program)**Semester 1 - Regular or Co-op**

CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
ENGG*1100	[0.75]	Engineering and Design I
HIST*1250	[0.50]	Science and Society Since 1500
MATH*1200	[0.50]	Calculus I

Semester 2 - Regular or Co-op

CHEM*1050	[0.50]	General Chemistry II
ENGG*1210	[0.50]	Engineering Mechanics I
ENGG*1500	[0.50]	Engineering Analysis
MATH*1210	[0.50]	Calculus II
PHYS*1130	[0.50]	Physics with Applications

Semester 3 - Regular or Co-op

COOP*1100	[0.00]	Introduction to Co-operative Education
ENGG*2100	[0.75]	Engineering and Design II
ENGG*2120	[0.50]	Material Science
ENGG*2400	[0.50]	Engineering Systems Analysis
GEOG*2000	[0.50]	Geomorphology
MATH*2270	[0.50]	Applied Differential Equations
MICR*1020	[0.50]	Fundamentals of Applied Microbiology

Semester 4 - Regular or Co-op

ENGG*2230	[0.50]	Fluid Mechanics
ENGG*2450	[0.50]	Network Theory
ENGG*2550	[0.50]	Water Management
ENGG*2560	[0.50]	Environmental Engineering Systems
MATH*2130	[0.50]	Numerical Methods
STAT*2120	[0.50]	Probability and Statistics for Engineers

Semester 5 - Regular or Co-op

ENGG*3240	[0.50]	Engineering Economics
ENGG*3260	[0.50]	Thermodynamics
ENGG*3590	[0.50]	Water Quality
ENGG*3650	[0.50]	Hydrology
ENGG*3670	[0.50]	Soil Mechanics

0.50 restricted elective

Semester 6 Regular / Semester 7 Co-op

ENGG*3100	[0.75]	Engineering and Design III
ENGG*3430	[0.50]	Heat and Mass Transfer
GEOL*3060	[0.50]	Groundwater

1.50 restricted electives

Semester 7 Regular / Semester 6 Co-op

ENGG*3340	[0.50]	Geographic Information Systems in Environmental Engineering
ENGG*4250	[0.75]	Watershed Systems Design
ENGG*4360	[0.75]	Soil-Water Conservation Systems Design
ENGG*4370	[0.75]	Urban Water Systems Design

0.50 restricted elective

Semester 8 (Winter) Regular or Co-op

ENGG*4150	[1.00]	Water Resources Engineering Design IV
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1.50 restricted electives

Restricted Electives (see Program Guide for more information)

- 1.00 credits in Engineering electives
- 0.50 credits in Environmental electives
- 2.00 credits in Complementary Studies
- 0.50 credits in Water Resources elective

Food Engineering (FENG)**School of Engineering, College of Physical and Engineering Science.****Minor (Honours Program)**

Students must be registered in the B.Sc.(Eng.) degree program to apply for a Minor in Food Engineering.

The minor can be satisfied by taking the following additional courses:

AGEC*2220	[0.50]	Financial Accounting
BIOC*2580	[0.50]	Introductory Biochemistry
ENGG*2660	[0.50]	Biological Engineering Systems I
ENGG*3830	[0.50]	Bio-Process Engineering
FOOD*2150	[0.50]	Introduction to Nutritional and Food Science
MICR*1020	[0.50]	Fundamentals of Applied Microbiology

0.75 Biological Engineering Design Course*

One of:

ENGG*4300	[0.75]	Food Processing Engineering Design
ENGG*4380	[0.75]	Bioreactor Design

Two of:

COST*3010 [0.50] Quality Management
FOOD*4070 [0.50] Food Packaging
FOOD*4110 [0.50] Meat and Poultry Processing

One of:

FOOD*3160 [0.75] Food Processing I
FOOD*4520 [0.50] Cereal Technology

One of:

FOOD*2400 [0.50] Introduction to Food Chemistry
FOOD*3010 [0.50] Food Chemistry
FOOD*3230 [0.75] Food Microbiology
FOOD*3260 [0.50] Industrial Microbiology

**students must select a food application project for the design course in the student's major program*

NOTE: Courses taken for the minors are credited to appropriate elective areas.

Bachelor of Science in Environmental Sciences [B.Sc.(Env.)]

Program Information

Objectives of the Program

The Environmental Sciences program is designed to provide a strong interdisciplinary grounding in specific environmental sciences including the socioeconomic context in which environmental issues are resolved.

There is an emphasis on management and decision-making skills for the application of scientific knowledge to environmental problems, and the evaluation of appropriate environmental policies. A practical problem solving perspective is central to the program, and this is often done in the context of group work.

Substantial emphasis is placed on communication skills, including the development of both good writing ability and oral communication ability. This is emphasized particularly in the Environmental Sciences core courses, starting in first year, and running through to fourth year. Students in the final years of their program will be expected to take part in more intensive communication skill development.

Graduates will seek employment in a range of fields, from government agencies to private industry and research.

Academic Counselling

General information on the degree program is available from the Program Counsellor, Faculty of Environmental Sciences. Advising for each major is available through the assigned faculty advisor responsible for the major. Students are encouraged to seek the advice of the faculty advisors when choosing restricted electives and planning course selections.

Degree

The degree granted for the successful completion of this honours program will be the Bachelor of Science in Environmental Sciences--B.Sc.(Env.).

Continuation of Study

Students are advised to consult the regulations for Continuation of Study in Section VIII--Undergraduate Degree Regulations and Procedures of this Calendar.

Conditions for Graduation

In order to qualify for graduation from the B.Sc.(Env.) program, the student must have completed successfully the stated course requirements for the program.

Environmental Sciences (Co-op)

Office of the Associate Dean, Faculty of Environmental Sciences.

A 5-year Honours Program in Environmental Sciences is offered as a Co-operative Education Program. This option is offered within the B.Sc. (Env.) degree and is available to all majors. The program requirements are the same as those listed for the regular B.Sc. (Env.) program, by the Co-operative Education Program and as outlined in the Continuation of Study policy (Section VIII--Undergraduate Degree Regulations & Procedures).

3 co-op work terms (COOP*1000, COOP*2000, COOP*3000) are required. An optional 4th co-op work term (COOP*4000) is available. COOP*1100 must be completed during the semester preceding COOP*1000 (ie. in semester 2).

Year	Fall	Winter	Spring
1	Academic Term 1	Academic Term 2	Off
2	Academic Term 3	COOP*1000	Academic Term 4
3	COOP*2000	Academic Term 5	COOP*3000
4	Academic Term 6	Academic Term 7	COOP*4000 (Optional)
5	Academic Term 8		

Since some of the program requirements in the degree program (core, major, area of emphasis) are not offered each semester, careful planning and program consultation with the Faculty Co-op Advisor is essential. In particular, students are encouraged to seek advice when choosing for their Summer academic semester.

The Environmental Sciences Program

The degree in Environmental Sciences consists of 20.00 credits, as follows:

1. 5.00 First Year Curriculum
2. 3.00 Environmental Sciences Core
3. 7.00-8.00 Environmental Sciences Major
4. 2.50 minimum Area of Emphasis
5. free electives

Within these courses, students must include at least 6.00 credits at the 3000 or 4000 level, and no program may include more than 7.00 credits at the 1000 level.

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

First Year Curriculum

The first year courses have been selected to provide students with sufficient background and knowledge to enter any one of the Environmental Sciences majors.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1300	[0.50]	Introductory Environmental Chemistry
ENVS*1010	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1310	[0.50]	Introductory Environmental Chemistry II
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

*Co-op students must select COOP*1100 Introduction to Co-operative Education

Environmental Sciences Core

In addition to the common first year curriculum, students are required to take the following core Environmental Sciences courses in the semesters recommended below:

BIOL*2060	[0.50]	Ecology
ENVS*2010	[0.50]	Decision-making and Communication Skills
ENVS*4011/2	[0.50]	Colloquium/Project in Environmental Sciences
PHIL*2070	[0.50]	Philosophy of the Environment

Note: BIOL*2060 is to be taken in Semester 3 or 4, ENVS*2010 is to be taken in Semester 3, the series ENVS*4011, ENVS*4012 is to be taken consecutively during the last complete academic year (F-W) Semester 7/8 or Semester 6/7 (Co-op), and PHIL*2070 is to be taken in Semester 4, 5 or 6 (preference is earlier in program).

One of:

AGEC*2700	[0.50]	Survey of Natural Resource Economics
ECON*2100	[0.50]	Economic Growth and Environmental Quality

Note: Either AGECE*2700 or ECON*2100 is to be taken in Semester 3.

One of:

GEOG*3210	[0.50]	Management of the Biophysical Environment
POLS*3370	[0.50]	Environmental Policy Formation and Administration
ZOO*4050	[0.50]	Natural Resources Policy

Note: One of GEOG*3210 and POLS*3370 are to be taken in Semester 4 or 6 or ZOO*4050 is to be taken in Semester 7 or 8.

Environmental Sciences Majors

Earth and Atmospheric Science

Ecology

Environmental Economics and Policy

Environmental Geography

Environmental Monitoring and Analysis

Environmental Protection

Environmetrics

Natural Resources Management

Requirements for each of these majors are described in the detailed schedules of studies below.

Area of Emphasis Requirements

All students must choose an area of emphasis consisting of a minimum of 2.50 credits in a particular topic area. These are listed after "Schedules of Studies". The sequence of courses normally begins in third year. With the approval of the Program Counsellor, students may develop their own area of emphasis. All areas of emphasis must be approved by the Program Counsellor. Students should note that entry to certain areas of emphasis is restricted by the student's choice of major. Thus program approval should be gained before registering in courses to count towards their area of emphasis.

Earth and Atmospheric Science (EAAS)

Department of Land Resource Science, Ontario Agricultural College.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

In this major there are fees charged to cover partial costs of some field trips. Students in need of financial assistance should approach the Chair of the department offering the course.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1300	[0.50]	Introductory Environmental Chemistry
ENVS*1010	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1310	[0.50]	Introductory Environmental Chemistry II
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

Semester 3

GEOG*1050	[0.50]	Geology and the Environment
MET*2030	[0.50]	Meteorology and Climatology
STAT*2040	[0.50]	Statistics I

1.00 core requirements or electives

Semester 4

SOIL*2010	[0.50]	Soil Science
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2.00 core requirements or electives

Semester 5

GEOG*2110	[0.50]	Earth Material Science
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1.50 core requirements, restricted electives or electives

One of:

MATH*1210	[0.50]	Calculus II
MATH*2080	[0.50]	Elements of Calculus II
STAT*2050	[0.50]	Statistics II

Semester 6

SOIL*3600	[0.50]	Remote Sensing
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1.50 core requirements, restricted electives or electives

One of:

GEOG*3060	[0.50]	Groundwater
SOIL*3070	[0.50]	Environmental Soil Physics

Semester 7

SOIL*4210	[0.50]	Earth and Atmospheric Science Field Camp
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2.00 core requirements, restricted electives or electives

Semester 8

2.50 core requirements, restricted electives or electives

Restricted Electives

Students in the Earth and Atmospheric Science major are required to choose 2.50 credits from the following lists. Students are encouraged to consult with the faculty advisor for assistance.

List A - Environmental Geology

GEOG*2020	[0.50]	Stratigraphy
GEOG*2200	[0.50]	Glacial Geology
GEOG*3100	[0.50]	Non-Renewable Earth Resources
GEOG*3130	[0.50]	Agrogeology
GEOG*4090	[0.50]	Sedimentology
GEOG*4130	[0.50]	Clay and Humic Chemistry

List B - Soil Science

PBIO*4100	[0.50]	Soil Plant Relationships
SOIL*3060	[0.50]	Environmental Soil Chemistry
SOIL*3070	[0.50]	Environmental Soil Physics
SOIL*3080	[0.50]	Soil and Water Conservation
SOIL*3170	[0.50]	Soil Processes in Landscape
SOIL*3200	[0.50]	Environmental Soil Biology
SOIL*4090	[0.50]	Soil Management

List C - Water

ENGG*2550	[0.50]	Water Management
ENGG*3650	[0.50]	Hydrology
GEOG*3610	[0.50]	Environmental Hydrology
GEOG*4150	[0.50]	Sedimentary Processes
GEOG*3190	[0.50]	Environmental Water Chemistry
SOIL*3080	[0.50]	Soil and Water Conservation

List D - Atmosphere

GEOG*2110	[0.50]	Climate and the Biophysical Environment
MET*3050	[0.50]	Microclimatology
MET*4210	[0.50]	Atmospheric Experimentation and Instrumentation
MET*4300	[0.50]	Atmospheric Transport and Chemistry

Earth and Atmospheric Science (EAAS:C)

Department of Land Resource Science, Ontario Agricultural College.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

In this major there are fees charged to cover partial costs of some field trips. Students in need of financial assistance should approach the Chair of the department offering the course.

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1300	[0.50]	Introductory Environmental Chemistry
ENVV*1010	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1310	[0.50]	Introductory Environmental Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

Semester 3 - Fall

GEOG*1050	[0.50]	Geology and the Environment
MET*2030	[0.50]	Meteorology and Climatology
STAT*2040	[0.50]	Statistics I

1.00 core requirements or electives

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

SOIL*2010	[0.50]	Soil Science
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1.50 core requirements, restricted electives or electives

One of:

MATH*1210	[0.50]	Calculus II
MATH*2080	[0.50]	Elements of Calculus II
STAT*2050	[0.50]	Statistics II

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

SOIL*3600	[0.50]	Remote Sensing
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1.50 core requirements, restricted electives or electives

One of:

GEOG*3060	[0.50]	Groundwater
SOIL*3070	[0.50]	Environmental Soil Physics

Summer Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6- Fall

GEOG*2110	[0.50]	Earth Material Science
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2.00 core requirements, restricted electives or electives

Semester 7- Winter

2.50 core requirements, restricted electives or electives

Summer Semester (Optional)

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8

SOIL*4210	[0.50]	Earth and Atmospheric Science Field Camp
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2.00 core requirements, restricted electives or electives

Restricted Electives

Students in the Earth and Atmospheric Science major are required to choose 2.50 credits from the following lists. Students are encouraged to consult with the faculty advisor for assistance.

List A - Environmental Geology

GEOG*2020	[0.50]	Stratigraphy
GEOG*2200	[0.50]	Glacial Geology
GEOG*3100	[0.50]	Non-Renewable Earth Resources
GEOG*3130	[0.50]	Agrogeology
GEOG*4090	[0.50]	Sedimentology
GEOG*4130	[0.50]	Clay and Humic Chemistry

List B - Soil Science

PBIO*4100	[0.50]	Soil Plant Relationships
SOIL*3060	[0.50]	Environmental Soil Chemistry
SOIL*3070	[0.50]	Environmental Soil Physics
SOIL*3080	[0.50]	Soil and Water Conservation
SOIL*3170	[0.50]	Soil Processes in Landscape
SOIL*3200	[0.50]	Environmental Soil Biology
SOIL*4090	[0.50]	Soil Management

List C - Water

ENGG*2550	[0.50]	Water Management
ENGG*3650	[0.50]	Hydrology
GEOG*3610	[0.50]	Environmental Hydrology
GEOG*4150	[0.50]	Sedimentary Processes
GEOG*3190	[0.50]	Environmental Water Chemistry

SOIL*3080 [0.50] Soil and Water Conservation

List D - Atmosphere

GEOG*2110 [0.50] Climate and the Biophysical Environment
 MET*3050 [0.50] Microclimatology
 MET*4210 [0.50] Atmospheric Experimentation and Instrumentation
 MET*4300 [0.50] Atmospheric Transport and Chemistry

Ecology (ECOL)**College of Biological Science.****Major**

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1

BIOL*1030 [0.50] Biology I
 CHEM*1300 [0.50] Introductory Environmental Chemistry
 ENV*1010 [0.50] Introduction to Environmental Sciences
 MATH*1080 [0.50] Elements of Calculus I
 PHYS*1080 [0.50] Physics for Life Sciences

Semester 2

BIOL*1040 [0.50] Biology II
 CHEM*1310 [0.50] Introductory Environmental Chemistry II
 ECON*1050 [0.50] Introductory Microeconomics
 GEOG*1300 [0.50] Introduction to the Biophysical Environment
 PHYS*1130 [0.50] Physics with Applications

Semester 3

BIOL*2210 [0.50] Introductory Cell Biology
 CHEM*2300 [0.50] Chemical Reactivity
 STAT*2040 [0.50] Statistics I

1.00 core requirements or electives

Semester 4

BIOC*2580 [0.50] Introductory Biochemistry
 BIOL*3110 [0.50] Population Ecology
 MBG*2000 [0.50] Introductory Genetics
 STAT*2050 [0.50] Statistics II

One of:

CIS*1200 [0.50] Introduction to Computing
 CIS*1500 [0.50] Introduction to Programming

Semester 5

BIOL*3010 [0.50] Laboratory and Field Work in Ecology
 BIOL*3120 [0.50] Community Ecology

0.50 core requirements or electives

One of:

BOT*3410 [0.50] Plant Anatomy
 ZOO*2070 [0.50] Invertebrate Zoology I
 ZOO*2090 [0.50] Vertebrate Structure and Function

One of:

BOT*2100 [0.50] Life Strategies of Plants
 ZOO*3200 [0.50] Comparative Animal Physiology I

Semester 6

2.00 core requirements or electives

One of:

MBG*3000 [0.50] Population Genetics
 ZOO*3300 [0.50] Evolution

Semester 7

BIOL*4110 [0.75] Ecological Methods

1.75 core requirements or electives

Semester 8

BIOL*4120 [0.50] Evolutionary Ecology

2.00 core requirements or electives

Note: Ecology majors are not required to complete BIOL*2060 as a core course.

Ecology (ECOL:C)**College of Biological Science.****Major**

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1 - Fall

BIOL*1030 [0.50] Biology I
 CHEM*1300 [0.50] Introductory Environmental Chemistry
 ENV*1010 [0.50] Introduction to Environmental Sciences
 MATH*1080 [0.50] Elements of Calculus I

PHYS*1080 [0.50] Physics for Life Sciences

Semester 2 - Winter

BIOL*1040 [0.50] Biology II
 CHEM*1310 [0.50] Introductory Environmental Chemistry II
 COOP*1100 [0.00] Introduction to Co-operative Education
 ECON*1050 [0.50] Introductory Microeconomics
 GEOG*1300 [0.50] Introduction to the Biophysical Environment
 PHYS*1130 [0.50] Physics with Applications

Semester 3 - Fall

BIOL*2210 [0.50] Introductory Cell Biology
 CHEM*2300 [0.50] Chemical Reactivity
 STAT*2040 [0.50] Statistics I

1.00 core requirements or electives

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4-Summer

BIOC*2580 [0.50] Introductory Biochemistry
 MBG*2000 [0.50] Introductory Genetics
 STAT*2050 [0.50] Statistics II

0.50 core requirements or electives

One of:

CIS*1200 [0.50] Introduction to Computing
 CIS*1500 [0.50] Introduction to Programming

Fall Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5- Winter

BIOL*3110 [0.50] Population Ecology

1.00 core requirements or electives

One of:

BOT*3410 [0.50] Plant Anatomy
 ZOO*2070 [0.50] Invertebrate Zoology I
 ZOO*2090 [0.50] Vertebrate Structure and Function

One of:

BOT*2100 [0.50] Life Strategies of Plants
 ZOO*3200 [0.50] Comparative Animal Physiology I

Summer Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 6- Fall

BIOL*3010 [0.50] Laboratory and Field Work in Ecology
 BIOL*3120 [0.50] Community Ecology

1.50 core requirements or electives

One of:

MBG*3000 [0.50] Population Genetics
 ZOO*3300 [0.50] Evolution

Semester 7- Winter

BIOL*4120 [0.50] Evolutionary Ecology

2.00 core requirements or electives

Summer Semester (Optional)

COOP*4000 [0.00] Co-op Work Term IV

Semester 8

BIOL*4110 [0.75] Ecological Methods

1.75 core requirements or electives

Note: Ecology majors are not required to complete BIOL*2060 as a core course.

Environmental Economics and Policy (EEP)**Department of Economics, College of Social and Applied Human Sciences.****Department of Agricultural Economics and Business, Ontario Agricultural College.****Major**

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1

BIOL*1030 [0.50] Biology I
 CHEM*1300 [0.50] Introductory Environmental Chemistry
 ENV*1010 [0.50] Introduction to Environmental Sciences
 MATH*1080 [0.50] Elements of Calculus I
 PHYS*1080 [0.50] Physics for Life Sciences

Semester 2

BIOL*1040 [0.50] Biology II
 CHEM*1310 [0.50] Introductory Environmental Chemistry II
 ECON*1050 [0.50] Introductory Microeconomics
 GEOG*1300 [0.50] Introduction to the Biophysical Environment
 PHYS*1130 [0.50] Physics with Applications

Semester 3

AGEC*2700	[0.50]	Survey of Natural Resource Economics
ECON*1100	[0.50]	Introductory Macroeconomics
ECON*2100	[0.50]	Economic Growth and Environmental Quality

1.00 core requirements, restricted electives or electives

Semester 4

ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2740	[0.50]	Economic Statistics *

1.50 core requirements, restricted electives or electives

Semester 5

AGEC*4290	[0.50]	Land Economics **
ECON*2410	[0.50]	Intermediate Macroeconomics
ECON*2770	[0.50]	Introductory Mathematical Economics

1.00 core requirements, restricted electives or electives

Semester 6

ECON*3740	[0.50]	Introduction to Econometrics
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2.00 core requirements, restricted electives or electives

Semester 7

ECON*3710	[0.50]	Advanced Microeconomics ***
ECON*4930	[0.50]	Environmental Economics ***

1.50 core requirements, restricted electives or electives

Semester 8

AGEC*4310	[0.50]	Resource Economics
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2.00 core requirements, restricted electives or electives

* Students may select between ECON*2740 and STAT*2040

**AGEC*4290 is taught in even-numbered years

*** students must obtain permission from instructor to take ECON*4930 and ECON*3710 at the same time

Restricted Electives

Students in the Environmental Economics and Policy major are required to choose 2.00 credits additional Agricultural Economics and Business (AGEC*XXXX) or Economics (ECON*XXXX). Students are encouraged to seek advice on their choices and are reminded that 6.00 credits of their B.Sc.(Env.) degree must be at the 3000-4000 level.

Environmental Economics and Policy (EEP:C)

Department of Economics, College of Social and Applied Human Sciences.

Department of Agricultural Economics and Business, Ontario Agricultural College.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1300	[0.50]	Introductory Environmental Chemistry
ENVS*1010	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1310	[0.50]	Introductory Environmental Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

Semester 3 - Fall

AGEC*2700	[0.50]	Survey of Natural Resource Economics
ECON*1100	[0.50]	Introductory Macroeconomics
ECON*2100	[0.50]	Economic Growth and Environmental Quality

1.00 core requirements, restricted electives or electives

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2410	[0.50]	Intermediate Macroeconomics
STAT*2040	[0.50]	Statistics I

1.00 core requirements, restricted electives or electives

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

ECON*2770	[0.50]	Introductory Mathematical Economics
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2.00 core requirements, restricted electives or electives

Summer Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6 - Fall

AGEC*4290	[0.50]	Land Economics *
ECON*3710	[0.50]	Advanced Microeconomics

1.50 core requirements, restricted electives or electives

Semester 7 - Winter

AGEC*4310	[0.50]	Resource Economics
ECON*3740	[0.50]	Introduction to Econometrics

2.00 core requirements, restricted electives or electives

Summer Semester (Optional)

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8

ECON*4930	[0.50]	Environmental Economics
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2.00 core requirements, restricted electives or electives

*AGEC*4290 is taught in even-numbered years

Restricted Electives

Students in the Environmental Economics and Policy major are required to choose 2.00 credits additional Agricultural Economics and Business (AGEC*XXXX) or Economics (ECON*XXXX). Students are encouraged to seek advice on their choices and are reminded that 6.00 credits of their B.Sc.(Env.) degree must be at the 3000-4000 level.

Environmental Geography (ENVG)

Department of Geography, College of Social and Applied Human Sciences.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1300	[0.50]	Introductory Environmental Chemistry
ENVS*1010	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1310	[0.50]	Introductory Environmental Chemistry II
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

Semester 3

GEOG*2000	[0.50]	Geomorphology
GEOG*2460	[0.50]	Analysis in Geography

1.50 core requirements or electives

Semester 4

GEOG*2110	[0.50]	Climate and the Biophysical Environment
GEOG*2210	[0.50]	Environment and Resources
GEOG*2480	[0.50]	Mapping and GIS

1.00 core requirements or electives

Semester 5

GEOG*3110	[0.50]	Biotic and Natural Resources
GEOG*3210	[0.50]	Management of the Biophysical Environment *

1.50 core requirements, restricted electives** or electives

Semester 6

GEOG*3480	[0.50]	GIS and Spatial Analysis
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2.00 core requirements, restricted electives** or electives

Semester 7

GEOG*4690	[1.00]	Geography Field Research
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1.50 core requirements, restricted electives** or electives

OR

0.50 credits in Geography at the 3000-4000 level

2.00 core requirements, restricted electives** or electives

Semester 8

GEOG*4880	[0.50]	Contemporary Geographic Thought
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2.00 core requirements, restricted electives** or electives

* Note: Environmental Geography majors are required to complete GEOG*3210 and (POLS*3370 or ZOO*4050).

** students in the Environmental Geography major must take at least 4 additional geography courses at the 3000-4000 level including:

At least 1 of:		
GEOG*3000	[0.50]	Fluvial Processes
GEOG*3610	[0.50]	Environmental Hydrology

GEOG*3620	[0.50]	Desert Environments
At least 2 of:		
GEOG*3020	[0.50]	Global Environmental Change
GEOG*4110	[0.50]	Environmental Systems Analysis
GEOG*4210	[0.50]	Environmental Resource Analysis

Environmental Geography (ENVG:C)

Department of Geography, College of Social and Applied Human Sciences.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1300	[0.50]	Introductory Environmental Chemistry
ENVS*1010	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1310	[0.50]	Introductory Environmental Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

Semester 3- Fall

GEOG*2000	[0.50]	Geomorphology
GEOG*2460	[0.50]	Analysis in Geography

1.50 core requirements or electives

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

GEOG*2110	[0.50]	Climate and the Biophysical Environment
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2.00 core requirements or electives

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

GEOG*2210	[0.50]	Environment and Resources
GEOG*2480	[0.50]	Mapping and GIS

1.50 core requirements, restricted electives** or electives

Summer Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6 - Fall

GEOG*3110	[0.50]	Biotic and Natural Resources
GEOG*3210	[0.50]	Management of the Biophysical Environment *
GEOG*3480	[0.50]	GIS and Spatial Analysis

1.00 core requirements, restricted electives** or electives

Semester 7 - Winter

GEOG*4880	[0.50]	Contemporary Geographic Thought
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2.00 core requirements, restricted electives** or electives

Summer Semester (Optional)

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8 - Fall

GEOG*4690	[1.00]	Geography Field Research
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1.50 core requirements, restricted electives ** or electives.

OR

0.50 credits in Geography at the 3000-4000 level.

2.00 core requirements, restricted electives** or electives.

* Note: Environmental Geography major are required to complete GEOG*3210 and (POL*3370 or ZOO*4050).

** students in the Environmental Geography major must take at least 4 additional geography courses at the 3000-4000 level including:

At least 1 of:		
GEOG*3000	[0.50]	Fluvial Processes
GEOG*3610	[0.50]	Environmental Hydrology
GEOG*3620	[0.50]	Desert Environments
At least 2 of:		
GEOG*3020	[0.50]	Global Environmental Change
GEOG*4110	[0.50]	Environmental Systems Analysis
GEOG*4210	[0.50]	Environmental Resource Analysis

Environmental Monitoring and Analysis (EMA)

College of Physical and Engineering Science.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1300	[0.50]	Introductory Environmental Chemistry
ENVS*1010	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1310	[0.50]	Introductory Environmental Chemistry II
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

Semester 3

CHEM*2300	[0.50]	Chemical Reactivity
MATH*2080	[0.50]	Elements of Calculus II
MET*2030	[0.50]	Meteorology and Climatology

1.00 core requirements or electives

Semester 4

BIOC*2580	[0.50]	Introductory Biochemistry
CHEM*2480	[0.50]	Analytical Chemistry I
PHYS*2040	[0.50]	Fundamental Electronics and Sensors
STAT*2040	[0.50]	Statistics I

One of:

CIS*1200	[0.50]	Introduction to Computing
CIS*1500	[0.50]	Introduction to Programming

Semester 5

PHYS*2550	[0.50]	Radiation and the Environment *
STAT*2050	[0.50]	Statistics II
TOX*2000	[0.50]	Principles of Toxicology

1.00 core requirements or electives

Semester 6

PHYS*3080	[0.50]	Energy
STAT*3510	[0.50]	Environmental Risk Assessment

1.00 core requirement or electives

One of:

MET*4210	[0.50]	Atmospheric Experimentation and Instrumentation
MET*4300	[0.50]	Atmospheric Transport and Chemistry

Semester 7

ENVS*3360	[0.50]	Waste Management and Utilization
TOX*3300	[0.50]	Analytical Toxicology

1.50 core requirement or electives

Semester 8

CHEM*4010	[0.50]	Chemistry and Industry
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2.00 core requirement or electives

* PHYS*2550 is offered in even numbered years.

Environmental Monitoring and Analysis (EMA:C)

College of Physical and Engineering Science.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1300	[0.50]	Introductory Environmental Chemistry
ENVS*1010	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1310	[0.50]	Introductory Environmental Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

Semester 3 - Fall

CHEM*2300	[0.50]	Chemical Reactivity
MATH*2080	[0.50]	Elements of Calculus II
MET*2030	[0.50]	Meteorology and Climatology

1.00 core requirements or electives

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4 - Summer

BIOC*2580 [0.50] Introductory Biochemistry

CHEM*2480 [0.50] Analytical Chemistry I

STAT*2040 [0.50] Statistics I

0.50 core requirements or electives

One of:

CIS*1200 [0.50] Introduction to Computing

CIS*1500 [0.50] Introduction to Programming

Fall Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5 - Winter

PHYS*3080 [0.50] Energy

STAT*2050 [0.50] Statistics II

1.00 core requirements or electives

One of:

MET*4210 [0.50] Atmospheric Experimentation and Instrumentation

MET*4300 [0.50] Atmospheric Transport and Chemistry

Summer Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 6 - Fall

ENVS*3360 [0.50] Waste Management and Utilization

PHYS*2040 [0.50] Fundamental Electronics and Sensors

PHYS*2550 [0.50] Radiation and the Environment *

TOX*2000 [0.50] Principles of Toxicology

0.50 core requirements or electives

Semester 7 - Winter

CHEM*4010 [0.50] Chemistry and Industry

STAT*3510 [0.50] Environmental Risk Assessment

1.50 core requirements or electives

Summer Semester (Optional)

COOP*4000 [0.00] Co-op Work Term IV

Semester 8

TOX*3300 [0.50] Analytical Toxicology

2.00 core requirements or electives

* PHYS*2550 is offered in even numbered years.

Environmental Protection (ENVP)

Department of Environmental Biology, Ontario Agricultural College.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1

BIOL*1030 [0.50] Biology I

CHEM*1300 [0.50] Introductory Environmental Chemistry

ENVS*1010 [0.50] Introduction to Environmental Sciences

MATH*1080 [0.50] Elements of Calculus I

PHYS*1080 [0.50] Physics for Life Sciences

Semester 2

BIOL*1040 [0.50] Biology II

CHEM*1310 [0.50] Introductory Environmental Chemistry II

ECON*1050 [0.50] Introductory Microeconomics

GEOG*1300 [0.50] Introduction to the Biophysical Environment

PHYS*1130 [0.50] Physics with Applications

Semester 3

CHEM*2300 [0.50] Chemical Reactivity

ENVB*2030 [0.50] Current Issues in Forest Science

STAT*2040 [0.50] Statistics I

1.00 core requirements or electives

Semester 4

BIOC*2580 [0.50] Introductory Biochemistry

ENVB*2010 [0.50] Food Production and the Environment

1.00 core requirements or electives

One of:

BOT*2100 [0.50] Life Strategies of Plants

ZOO*3200 [0.50] Comparative Animal Physiology I

Semester 5

BIOC*3560 [0.50] Structure and Function in Biochemistry

BIOL*3450 [0.50] Introduction to Aquatic Environments

MET*2030 [0.50] Meteorology and Climatology

TOX*2000 [0.50] Principles of Toxicology

0.50 core requirements or electives

Semester 6

ENVB*3030 [0.50] Pesticides and the Environment

MBG*2000 [0.50] Introductory Genetics

1.50 core requirements or electives

Semester 7

ENVB*3300 [0.50] Applied Ecology and Environment

MICR*4140 [0.50] Soil Microbiology and Biotechnology

MICR*4180 [0.50] Microbial Processes in Environmental Management

ZOO*4350 [0.50] Biology of Polluted Waters

0.50 core requirements or electives

Semester 8

ENVB*4240 [0.50] Biological Activity of Pesticides

2.00 core requirements or electives

Environmental Protection (ENVP:C)

Department of Environmental Biology, Ontario Agricultural College.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1 - Fall

BIOL*1030 [0.50] Biology I

CHEM*1300 [0.50] Introductory Environmental Chemistry

ENVS*1010 [0.50] Introduction to Environmental Sciences

MATH*1080 [0.50] Elements of Calculus I

PHYS*1080 [0.50] Physics for Life Sciences

Semester 2 - Winter

BIOL*1040 [0.50] Biology II

CHEM*1310 [0.50] Introductory Environmental Chemistry II

COOP*1100 [0.00] Introduction to Co-operative Education

ECON*1050 [0.50] Introductory Microeconomics

GEOG*1300 [0.50] Introduction to the Biophysical Environment

PHYS*1130 [0.50] Physics with Applications

Semester 3 - Fall

CHEM*2300 [0.50] Chemical Reactivity

ENVB*2030 [0.50] Current Issues in Forest Science

STAT*2040 [0.50] Statistics I

1.00 core requirements or electives

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4 - Summer

BIOC*2580 [0.50] Introductory Biochemistry

BIOL*3450 [0.50] Introduction to Aquatic Environments

MBG*2000 [0.50] Introductory Genetics

1.00 core requirements or electives

Fall Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5 - Winter

ENVB*2010 [0.50] Food Production and the Environment

ENVB*3030 [0.50] Pesticides and the Environment

1.00 core requirements or electives

One of:

BOT*2100 [0.50] Life Strategies of Plants

ZOO*3200 [0.50] Comparative Animal Physiology I

Summer Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 6 - Fall

BIOC*3560 [0.50] Structure and Function in Biochemistry

ENVB*3300 [0.50] Applied Ecology and Environment

MET*2030 [0.50] Meteorology and Climatology

TOX*2000 [0.50] Principles of Toxicology

0.50 core requirements or electives

Semester 7 - Winter

ENVB*4240 [0.50] Biological Activity of Pesticides

2.00 core requirements or electives

Summer Semester - (Optional)

COOP*4000 [0.00] Co-op Work Term IV

Semester 8 - Fall

MICR*4140 [0.50] Soil Microbiology and Biotechnology

MICR*4180 [0.50] Microbial Processes in Environmental Management

ZOO*4350 [0.50] Biology of Polluted Waters
1.00 core requirements or electives

Environmetrics (ENVM)

Department of Mathematics and Statistics, College of Physical and Engineering Science.

Department of Computing and Information Science, College of Physical and Engineering Science.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1

BIOL*1030 [0.50] Biology I
CHEM*1300 [0.50] Introductory Environmental Chemistry
ENVS*1010 [0.50] Introduction to Environmental Sciences
MATH*1080 [0.50] Elements of Calculus I
PHYS*1080 [0.50] Physics for Life Sciences

Semester 2

BIOL*1040 [0.50] Biology II
CHEM*1310 [0.50] Introductory Environmental Chemistry II
ECON*1050 [0.50] Introductory Microeconomics
GEOG*1300 [0.50] Introduction to the Biophysical Environment
PHYS*1130 [0.50] Physics with Applications

Semester 3

CIS*1500 [0.50] Introduction to Programming
STAT*2040 [0.50] Statistics I

One of:

MATH*1210 [0.50] Calculus II
MATH*2080 [0.50] Elements of Calculus II

1.00 core requirements, restricted elective or elective

Note: Students in the Environmetrics major must consult the Environmetrics Faculty Advisor for course scheduling in semester 4 through 8.

Semester 4

MATH*2130 [0.50] Numerical Methods
MATH*2170 [0.50] Differential Equations I
STAT*2050 [0.50] Statistics II

0.50 core requirements, restricted electives or electives

One of:

MATH*2150 [0.50] Applied Matrix Algebra
MATH*2160 [0.50] Linear Algebra I

Note: MATH*2160 is preferred for mathematics emphasis.

Semester 5

2.50 core requirements, restricted electives or electives

Semester 6

MATH*3510 [0.50] Biomathematics
STAT*3510 [0.50] Environmental Risk Assessment

1.50 core requirements, restricted electives or electives

Semester 7

2.50 core requirements, restricted electives or electives

Semester 8

2.50 core requirements, restricted electives or electives

Restricted Electives

Students in the Environmetrics major are required to choose 3.50 credits of restricted electives. A minimum of 2.50 credits must be at the 3000/4000 level and of these a minimum of 1.00 must be at the 4000 level.

List

MATH*2200 [0.50] Advanced Calculus I
MATH*2210 [0.50] Advanced Calculus II
MATH*3100 [0.50] Differential Equations II
MATH*3170 [0.50] Partial Differential Equations and Special Functions
MATH*3240 [0.50] Operations Research
MATH*4430 [0.50] Advanced Numerical Methods
MATH*4070 [0.50] Case Studies in Modeling
MATH*4510 [0.50] Environmental Transport and Dynamics
STAT*3100 [0.50] Introductory Mathematical Statistics I
STAT*3110 [0.50] Introductory Mathematical Statistics II
STAT*3240 [0.50] Applied Regression Analysis
STAT*3320 [0.50] Sampling Theory with Applications
STAT*4350 [0.50] Applied Multivariate Statistical Methods
STAT*4510 [0.50] Advanced Risk Analysis
STAT*4340 [0.50] Statistical Inference
STAT*4360 [0.50] Applied Time Series Analysis

CIS*1900 [0.50] Discrete Structures in Computer Science
CIS*2430 [0.50] Object Oriented Programming
CIS*2460 [0.50] Modelling of Computer Systems
CIS*2500 [0.50] Intermediate Programming
CIS*2520 [0.50] Data Structures
CIS*2750 [0.75] Software Systems Development and Integration
CIS*3460 [0.50] System Simulation
CIS*3490 [0.50] The Analysis and Design of Computer Algorithms
CIS*3530 [0.50] Data Base Systems and Concepts

Environmetrics (ENVM:C)

Department of Mathematics and Statistics, College of Physical and Engineering Science.

Department of Computing and Information Science, College of Physical and Engineering Science.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

Semester 1 - Fall

BIOL*1030 [0.50] Biology I
CHEM*1300 [0.50] Introductory Environmental Chemistry
ENVS*1010 [0.50] Introduction to Environmental Sciences
MATH*1080 [0.50] Elements of Calculus I
PHYS*1080 [0.50] Physics for Life Sciences

Semester 2 - Winter

BIOL*1040 [0.50] Biology II
CHEM*1310 [0.50] Introductory Environmental Chemistry II
COOP*1100 [0.00] Introduction to Co-operative Education
ECON*1050 [0.50] Introductory Microeconomics
GEOG*1300 [0.50] Introduction to the Biophysical Environment
PHYS*1130 [0.50] Physics with Applications

Semester 3 - Fall

CIS*1500 [0.50] Introduction to Programming
STAT*2040 [0.50] Statistics I

One of:

MATH*1210 [0.50] Calculus II
MATH*2080 [0.50] Elements of Calculus II

1.00 core requirements, restricted elective or elective

Note: Students in the Environmetrics major must consult the Environmetrics Faculty Advisor for course scheduling in semester 4 through 8.

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4 - Summer

MATH*2130 [0.50] Numerical Methods
MATH*2170 [0.50] Differential Equations I
STAT*2050 [0.50] Statistics II

1.00 core requirements, restricted electives or electives

Fall Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5 - Winter

STAT*3510 [0.50] Environmental Risk Assessment

1.50 core requirements, restricted electives or electives

One of:

MATH*2150 [0.50] Applied Matrix Algebra
MATH*2160 [0.50] Linear Algebra I

Note: MATH*2160 is preferred for mathematics emphasis

Summer Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 6 - Fall

2.50 core requirements, restricted electives or electives

Semester 7 - Winter

MATH*3510 [0.50] Biomathematics

2.00 core requirements, restricted electives or electives

Summer Semester (Optional)

COOP*4000 [0.00] Co-op Work Term IV

Semester 8

2.50 core requirements, restricted electives or electives

Restricted Electives

Students in the Environmetrics major are required to choose 3.50 credits of restricted electives. A minimum of 2.50 credits must be at the 3000/4000 level and of these a minimum of 1.00 must be at the 4000 level.

List

MATH*2200	[0.50]	Advanced Calculus I
MATH*2210	[0.50]	Advanced Calculus II
MATH*3100	[0.50]	Differential Equations II
MATH*3170	[0.50]	Partial Differential Equations and Special Functions
MATH*3240	[0.50]	Operations Research
MATH*4430	[0.50]	Advanced Numerical Methods
MATH*4070	[0.50]	Case Studies in Modeling
MATH*4510	[0.50]	Environmental Transport and Dynamics
STAT*3100	[0.50]	Introductory Mathematical Statistics I
STAT*3110	[0.50]	Introductory Mathematical Statistics II
STAT*3240	[0.50]	Applied Regression Analysis
STAT*3320	[0.50]	Sampling Theory with Applications
STAT*4350	[0.50]	Applied Multivariate Statistical Methods
STAT*4510	[0.50]	Advanced Risk Analysis
STAT*4340	[0.50]	Statistical Inference
STAT*4360	[0.50]	Applied Time Series Analysis
CIS*1900	[0.50]	Discrete Structures in Computer Science
CIS*2430	[0.50]	Object Oriented Programming
CIS*2460	[0.50]	Modelling of Computer Systems
CIS*2500	[0.50]	Intermediate Programming
CIS*2520	[0.50]	Data Structures
CIS*2750	[0.75]	Software Systems Development and Integration
CIS*3460	[0.50]	System Simulation
CIS*3490	[0.50]	The Analysis and Design of Computer Algorithms
CIS*3530	[0.50]	Data Base Systems and Concepts

Natural Resources Management (NRM)

Department of Land Resource Science, Ontario Agricultural College.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

In this major there are fees charged to cover partial costs of some field trips. Students in need of financial assistance should approach the Chair of the department offering the course.

Semester 1

BIOL*1030	[0.50]	Biology I
CHEM*1300	[0.50]	Introductory Environmental Chemistry
ENVS*1010	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2

BIOL*1040	[0.50]	Biology II
CHEM*1310	[0.50]	Introductory Environmental Chemistry II
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

Semester 3

MET*2030	[0.50]	Meteorology and Climatology
SOIL*2120	[0.50]	Introduction to Environmental Stewardship
STAT*2040	[0.50]	Statistics I

1.00 core requirements, restricted electives or electives

Semester 4

SOIL*2010	[0.50]	Soil Science
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2.00 core requirements, restricted electives or electives

Semester 5

ENVB*2030	[0.50]	Current Issues in Forest Science
SOIL*3050	[0.50]	Land Utilization
SOIL*3080	[0.50]	Soil and Water Conservation

1.00 core requirements, restricted electives or electives

Semester 6

SOIL*3100	[0.50]	Resource Planning Techniques
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1.50 core requirements, restricted electives or electives

One of:

ENGG*2550	[0.50]	Water Management
GEOG*3610	[0.50]	Environmental Hydrology
GEOL*3060	[0.50]	Groundwater

Semester 7

SOIL*4110	[0.50]	Natural Resources Management Field Camp
ZOO*4110	[0.50]	Principles of Fish and Wild Life Management

1.50 core requirements, restricted electives or electives

Semester 8

2.50 core requirements, restricted electives or electives

Restricted Electives

Students in the Natural Resources Management major are required to choose 1.50 restricted elective credits from the following list:

CROP*2280	[0.50]	Crops in Land Reclamation
ENVB*3000	[0.50]	Nature Interpretation
ENVB*4780	[0.50]	Forest Ecology
ENVS*3320	[0.50]	Principles of Landscape Ecology
ENVS*4220	[0.50]	Environmental Impact Assessment
GEOG*2420	[0.50]	Aerial-photo Interpretation
GEOG*3210	[0.50]	Management of the Biophysical Environment
GEOG*3480	[0.50]	GIS and Spatial Analysis
GEOL*3130	[0.50]	Agrogeology
LARC*4520	[0.50]	Park and Recreation Administration
MET*3050	[0.50]	Microclimatology
SOIL*3060	[0.50]	Environmental Soil Chemistry
SOIL*3070	[0.50]	Environmental Soil Physics
SOIL*3170	[0.50]	Soil Processes in Landscape
SOIL*3200	[0.50]	Environmental Soil Biology
SOIL*3600	[0.50]	Remote Sensing

Natural Resources Management (NRM:C)

Department of Land Resource Science, Ontario Agricultural College.

Major

Please note that not all courses in the "One of:" options are available each semester (F, W, S). Students are encouraged to seek advice from the appropriate advisor when selecting and scheduling courses.

In this major there are fees charged to cover partial costs of some field trips. Students in need of financial assistance should approach the Chair of the department offering the course.

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1300	[0.50]	Introductory Environmental Chemistry
ENVS*1010	[0.50]	Introduction to Environmental Sciences
MATH*1080	[0.50]	Elements of Calculus I
PHYS*1080	[0.50]	Physics for Life Sciences

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1310	[0.50]	Introductory Environmental Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
ECON*1050	[0.50]	Introductory Microeconomics
GEOG*1300	[0.50]	Introduction to the Biophysical Environment
PHYS*1130	[0.50]	Physics with Applications

Semester 3 - Fall

ENVB*2030	[0.50]	Current Issues in Forest Science
MET*2030	[0.50]	Meteorology and Climatology
SOIL*2120	[0.50]	Introduction to Environmental Stewardship

1.00 core requirements, restricted electives or electives

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

SOIL*2010	[0.50]	Soil Science
STAT*2040	[0.50]	Statistics I

1.50 core requirements, restricted electives or electives

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

2.00 core requirements, restricted electives or electives

One of:

ENGG*2550	[0.50]	Water Management
GEOG*3610	[0.50]	Environmental Hydrology
GEOL*3060	[0.50]	Groundwater

Summer Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 6 - Fall

SOIL*3050	[0.50]	Land Utilization
SOIL*3080	[0.50]	Soil and Water Conservation

1.50 core requirements, restricted electives or electives

Semester 7 - Winter

2.50 core requirements, restricted electives or electives

Summer Semester (Optional)

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8 - Fall

SOIL*4110	[0.50]	Natural Resources Management Field Camp
ZOO*4110	[0.50]	Principles of Fish and Wild Life Management

1.50 core requirements, restricted electives or electives

Restricted Electives

Students in the Natural Resources Management major are required to choose 1.50 restricted elective credits from the following list:

CROP*2280	[0.50]	Crops in Land Reclamation
ENVB*3000	[0.50]	Nature Interpretation
ENVB*4780	[0.50]	Forest Ecology
ENVS*3320	[0.50]	Principles of Landscape Ecology
ENVS*4220	[0.50]	Environmental Impact Assessment
GEOG*2420	[0.50]	Aerial-photo Interpretation
GEOG*3210	[0.50]	Management of the Biophysical Environment
GEOG*3480	[0.50]	GIS and Spatial Analysis
GEOL*3130	[0.50]	Agrogeology
LARC*4520	[0.50]	Park and Recreation Administration
MET*3050	[0.50]	Microclimatology
SOIL*3060	[0.50]	Environmental Soil Chemistry
SOIL*3070	[0.50]	Environmental Soil Physics
SOIL*3170	[0.50]	Soil Processes in Landscape
SOIL*3200	[0.50]	Environmental Soil Biology
SOIL*3600	[0.50]	Remote Sensing

Areas of Emphasis

All students must choose an area of emphasis consisting of a minimum of 2.50 credits in a particular topic area. The sequence of courses normally begins in third year. With the approval of the program counsellor, students may develop their own area of emphasis. All areas of emphasis must be approved by the program counsellor. Students should note that entry to certain areas of emphasis is restricted by the student's choice of major. Thus program approval should be gained before registering in courses to count towards their area of emphasis.

Atmospheric Resources (AR)

MET*2030	[0.50]	Meteorology and Climatology
Four of:		
GEOG*2110	[0.50]	Climate and the Biophysical Environment
MET*2020	[0.50]	Agrometeorology
MET*3050	[0.50]	Microclimatology
MET*4210	[0.50]	Atmospheric Experimentation and Instrumentation
MET*4300	[0.50]	Atmospheric Transport and Chemistry

Biotic Systems (BS)

BIOL*3110	[0.50]	Population Ecology
BIOL*3120	[0.50]	Community Ecology
Three of:		
BIOL*3010	[0.50]	Laboratory and Field Work in Ecology
BIOL*3130	[0.50]	Conservation Biology
BIOL*3450	[0.50]	Introduction to Aquatic Environments
BOT*2050	[0.50]	Plant Ecology
ENVB*4780	[0.50]	Forest Ecology
MBG*2000	[0.50]	Introductory Genetics
MICR*4140	[0.50]	Soil Microbiology and Biotechnology
ZOO*4350	[0.50]	Biology of Polluted Waters

Crop Ecology (CE)

ENVB*2010	[0.50]	Food Production and the Environment
Four of:		
CROP*2110	[0.50]	Crop Ecology
CROP*2280	[0.50]	Crops in Land Reclamation
CROP*4220	[0.50]	Cropping Systems
CROP*4240	[0.50]	Weed Science
CROP*4340	[0.50]	Seminar: Selected Topics in Crop Science
ENVB*2040	[0.50]	Biology of Plant Pests
ENVB*3030	[0.50]	Pesticides and the Environment
GEOG*3320	[0.50]	Agriculture and Society
SOIL*2010	[0.50]	Soil Science

Development and Stewardship (DS)

SOIL*2120	[0.50]	Introduction to Environmental Stewardship and 4 courses from List A or List B:
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List A

AGEC*4210	[0.50]	World Agriculture and Economic Development
IDEV*2010	[0.50]	International Development Studies
REXT*4020	[0.50]	Rural Extension in Change and Development

List B

GEOG*4390	[0.50]	Seminar in Rural Geography
LARC*2820	[0.50]	Urban and Regional Planning
SOIL*3050	[0.50]	Land Utilization

Environmental Administration (EA)

GEOG*3210	[0.50]	Management of the Biophysical Environment
HAF*4390	[0.50]	Individuals and Groups in Organizations
Three of:		
COST*2020	[0.50]	Information Management
HAF*3000	[0.50]	Human Resources Management
LARC*2820	[0.50]	Urban and Regional Planning
POLS*2250	[0.50]	Public Administration
POLS*3250	[0.50]	Public Policy: Challenges and Prospects
REXT*3040	[0.50]	Communication Process

Environmental Degradation (ED)

Three of:		
ENGG*2550	[0.50]	Water Management
ENVS*3360	[0.50]	Waste Management and Utilization
MICR*4180	[0.50]	Microbial Processes in Environmental Management
SOIL*3200	[0.50]	Environmental Soil Biology
TOX*2000	[0.50]	Principles of Toxicology
ZOO*4350	[0.50]	Biology of Polluted Waters

Two of:

BIOL*3010	[0.50]	Laboratory and Field Work in Ecology
CROP*2280	[0.50]	Crops in Land Reclamation
GEOG*3110	[0.50]	Biotic and Natural Resources
SOIL*3050	[0.50]	Land Utilization
SOIL*3080	[0.50]	Soil and Water Conservation

Environmental Economics and Policy (EEP)

ECON*1100	[0.50]	Introductory Macroeconomics
One of:		
AGEC*2700	[0.50]	Survey of Natural Resource Economics
ECON*2100	[0.50]	Economic Growth and Environmental Quality
Note: Whichever course of AGECE*2100 or AGECE*2700 is not taken for the Environmental Sciences core is required for this area of emphasis.		

Three of:

AGEC*4290	[0.50]	Land Economics
AGEC*4310	[0.50]	Resource Economics
ECON*2310	[0.50]	Intermediate Microeconomics
ECON*2650	[0.50]	Introductory Development Economics
ECON*3580	[0.50]	Economics of Regulation
ECON*4930	[0.50]	Environmental Economics

Note: Additional prerequisites are needed for ECON*4930.

Environmental Impact Assessment (EIA)

ENVS*4220	[0.50]	Environmental Impact Assessment
STAT*3510	[0.50]	Environmental Risk Assessment
One of:		
ENGG*3340	[0.50]	Geographic Information Systems in Environmental Engineering
GEOG*3480	[0.50]	GIS and Spatial Analysis

Two of:

BIOL*3450	[0.50]	Introduction to Aquatic Environments
GEOG*4110	[0.50]	Environmental Systems Analysis
GEOL*3190	[0.50]	Environmental Water Chemistry
PBIO*4530	[0.50]	Environmental Pollution Stresses on Plants
PHYS*3080	[0.50]	Energy
TOX*2000	[0.50]	Principles of Toxicology
ZOO*4350	[0.50]	Biology of Polluted Waters

Note: Additional prerequisites are needed for GEOG*3480 and STAT*3510.

Environmental Management in the U.S. (EMUS)

This Area of Emphasis is undertaken at Bowling Green State University, Ohio. Students are strongly encouraged to undertake an internship (for University of Guelph credit) at a location/agency in the U.S. to be approved jointly by Bowling Green State University (Center for Environmental Programs) and the University of Guelph (Associate Dean's Office, Faculty of Environmental Sciences). The internship is undertaken upon the completion of the courses at Bowling Green State University.

At least 2 of the following BGSU courses:

ENVS301 - Environmental Problems (3 cr.)
ENVS401 - Environmental Strategies (2 cr.)
ENVS402 - Environmental Impact Statements (3 cr.)

At least 2 of the following BGSU courses:

POLS302 - American Domestic Public Policy (3 cr.)
POLS303 - Introduction to Public Administration (3 cr.)
POLS331 - State and Local Government (3 cr.)
POLS336 - Environmental Policy and Politics (3 cr.)

Students must complete at least 15 BGSU credits. Upon completion of the U.S. internship, students will receive credit for ENVS*3100.

Land Resources (LR)

GEOG*2000	[0.50]	Geomorphology
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GEOL*1050	[0.50]	Geology and the Environment
SOIL*2010	[0.50]	Soil Science
Two of:		
GEOL*2200	[0.50]	Glacial Geology
GEOL*3130	[0.50]	Agrogeology
MET*2030	[0.50]	Meteorology and Climatology
SOIL*3080	[0.50]	Soil and Water Conservation
SOIL*3170	[0.50]	Soil Processes in Landscape

Landscape Ecology (LE)

ENVS*3320	[0.50]	Principles of Landscape Ecology
Four of:		
BIOL*3010	[0.50]	Laboratory and Field Work in Ecology
BIOL*4150	[0.50]	Wildlife Conservation and Management
ENVB*2030	[0.50]	Current Issues in Forest Science
ENVB*4780	[0.50]	Forest Ecology
GEOG*2000	[0.50]	Geomorphology
GEOG*2110	[0.50]	Climate and the Biophysical Environment
GEOG*4110	[0.50]	Environmental Systems Analysis
LARC*2100	[0.50]	Landscape Analysis
SOIL*2010	[0.50]	Soil Science
SOIL*3080	[0.50]	Soil and Water Conservation
ZOO*4110	[0.50]	Principles of Fish and Wild Life Management

Mathematical Modelling and Risk Assessment (MMRA)

MATH*2150	[0.50]	Applied Matrix Algebra
MATH*2170	[0.50]	Differential Equations I
MATH*3510	[0.50]	Biomathematics
STAT*2050	[0.50]	Statistics II
STAT*3510	[0.50]	Environmental Risk Assessment

One of:

MATH*2080	[0.50]	Elements of Calculus II
STAT*2040	[0.50]	Statistics I

If any of the above are included in the student's major, then one of the following must be taken:

CIS*2650	[0.50]	Programming II
MATH*2130	[0.50]	Numerical Methods
STAT*3240	[0.50]	Applied Regression Analysis

Water Resources (WR)

GEOL*3060	[0.50]	Groundwater
One of:		
ENGG*3650	[0.50]	Hydrology
GEOG*3610	[0.50]	Environmental Hydrology
Three of:		
BIOL*3450	[0.50]	Introduction to Aquatic Environments
ENGG*2550	[0.50]	Water Management
GEOG*3000	[0.50]	Fluvial Processes
GEOL*3190	[0.50]	Environmental Water Chemistry
SOIL*3070	[0.50]	Environmental Soil Physics

Bachelor of Science in Technology [B.Sc.(Tech.)]

The B.Sc.(Tech.) program was designed for students who do not intend to pursue post-graduate studies and are strongly focused on securing industrial employment that makes use of the knowledge acquired in their bachelors degree. This program provides students with the knowledge and skills deemed to be essential by employers and exemplifies the positive benefits of cooperation between colleges and universities. The program combines rigorous theory with practical applications.

For the B.Sc.(Tech.) degree the University offers an honours program requiring the equivalent of 8 semesters of successful full-time study. Two of the semesters will be located at Seneca College in Toronto. The program requires the completion of four co-op work-terms. Students are encouraged to study full-time and to follow the schedule of studies listed below. In the B.Sc.(Tech.) program, 2.50 credits per semester is the normal load for a regular full-time student.

Program Information

Students are required to follow the pattern of study for one of the two majors offered (Applied Pharmaceutical Chemistry or Physics and Technology) and complete all of the required courses specified in the Schedule of Studies.

Courses taught by Seneca College are noted in the schedule of studies. The course descriptions are in this calendar however detailed course profiles can be accessed through the Seneca College home page.

Entry Credits

In general, the 4U or OAC credit or its equivalent is required in a subject area to allow entrance to the initial university course. Students who lack this requirement can remedy the deficiency by successful completion of:

- BIOL*1020 for students lacking biology
- CHEM*1060 for students lacking chemistry
- PHYS*1020 for students lacking in physics

Not more than one of the above will be allowed for credit toward the B.Sc.(Tech.) degree.

Continuation of Study

Students are advised to consult the University's regulations for continuation of study which are outlined in detail in Section VIII--Undergraduate Degree Regulations & Procedures. In addition to the University regulations, students will also be required to achieve a 70% cumulative average by the end of semester 2 due to the required co-op component within this program. Students will be evaluated after semester 2 and those students who have a cumulative average less than 70% but meet the Guelph continuation of study requirements will be withdrawn from the B.Sc.(Tech.) program. Under these circumstances, students in the Applied Pharmaceutical Chemistry major will be automatically moved to B.Sc. Biological Chemistry and those students in the Physics and Technology major will be automatically moved to the B.Sc. Physics major. Students should contact their Program Counsellor regarding co-op appeal procedures.

Note: Students who voluntarily withdraw from co-op will be moved to the B.Sc. majors specified above.

Honours Minors

Students may wish to add a minor to their major. A minor is a group of courses which provides for exposure to and mastery of the fundamental principles of a subject. A minor consists of a minimum of 5.00 credits. It may also require certain specified courses. Given the intended technical training of this degree, students have very little flexibility in terms of electives. As such, students wishing to add a minor would be required to enrol in additional semesters of study. Students wishing to take a minor should consult with their program counsellor.

Conditions for Graduation

In order to qualify for graduation from the B.Sc.(Tech.) program, the student must have successfully completed all of the courses approved for the program, achieved a 60%, or higher, cumulative average and received a minimum grade of satisfactory for the co-op work reports and work performance evaluations.

Applied Pharmaceutical Chemistry (APPC:C)

Department of Chemistry, College of Physical and Engineering Science

Major (Honours Program)

This major will require the completion of 20.25 credits as indicated below:

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics
XSEN*2010	[0.50]	Effective Business and Technical Writing

Semester 2 - Winter

BIOL*1040	[0.50]	Biology II
CHEM*1050	[0.50]	General Chemistry II
COOP*1100	[0.00]	Introduction to Co-operative Education
MATH*1210	[0.50]	Calculus II

PHYS*1010	[0.50]	Introductory Electricity and Magnetism
0.50 credit from an Arts/Social Science elective		

Semester 3 - Fall

CHEM*2060	[0.50]	Structure and Bonding
CHEM*2400	[0.75]	Analytical Chemistry I
CHEM*2880	[0.50]	Physical Chemistry
CIS*1200	[0.50]	Introduction to Computing
STAT*2040	[0.50]	Statistics I

Winter Semester

COOP*1000	[0.00]	Co-op Work Term I
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Semester 4 - Summer

BIOC*2580	[0.50]	Introductory Biochemistry
CHEM*2070	[0.50]	Structure and Spectroscopy
CHEM*2700	[0.50]	Organic Chemistry I
MICR*2030	[0.50]	Microbial Growth

0.50 elective

Fall Semester

COOP*2000	[0.00]	Co-op Work Term II
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Semester 5 - Winter

XSEN*2020	[0.50]	Management Studies: Business and Human Relations
XSEN*3020	[0.50]	Pharmaceutical Analysis
XSEN*3030	[0.50]	Pharmacology and Applied Toxicology
XSEN*3040	[0.50]	Occupational Health and Chemistry
XSEN*4050	[0.50]	Biopharmaceuticals

Note: All courses in Semester 5 are taught at Seneca College in Toronto.

Semester 6 - Summer

BIOC*3570	[0.50]	Analytical Biochemistry
CHEM*3360	[0.50]	Environmental Chemistry and Toxicology
CHEM*3430	[0.50]	Analytical Chemistry II: Instrumental Analysis
CHEM*3750	[0.50]	Organic Chemistry II

0.50 elective

Fall Semester

COOP*3000	[0.00]	Co-op Work Term III
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Semester 7 - Winter

XSEN*3060	[0.50]	Pharmaceutical Analysis - Advanced
XSEN*4010	[0.50]	Pharmaceutical Calculations
XSEN*4020	[0.50]	Pharmaceutical Organic Chemistry
XSEN*4030	[0.50]	Pharmaceutical Product Formulations
XSEN*4040	[0.50]	Pharmaceutical Manufacturing

Note: All courses in Semester 7 are taught at Seneca College in Toronto.

Summer Semester

COOP*4000	[0.00]	Co-op Work Term IV
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Semester 8 - Fall

CHEM*3440	[0.50]	Analytical Chemistry III: Analytical Instrumentation
CHEM*4730	[0.50]	Synthetic Organic Chemistry

One of:

BIOC*4520	[0.50]	Metabolic Processes
BIOC*4550	[0.50]	Biochemistry and Structure of Macromolecules
BIOC*4570	[0.50]	Applied Biochemistry
CHEM*3640	[0.50]	Chemistry of the Elements I

One of:

BIOM*3100	[0.50]	Mammalian Physiology I
HK*3940	[1.25]	Human Physiology
MBG*2000	[0.50]	Introductory Genetics
PATH*3610	[0.50]	Principles of Disease

0.50 elective

Physics and Technology (PHTC:C)

Department of Physics, College of Physical and Engineering Science.

Major (Honours Program)

Two streams are available. Stream A is different from Stream B in that Stream B offers a double work term following academic semester 6. This major will require the completion of 21.00 credits as indicated below:

Stream A

Semester 1 - Fall

BIOL*1030	[0.50]	Biology I
CHEM*1040	[0.50]	General Chemistry I
CIS*1500	[0.50]	Introduction to Programming
MATH*1200	[0.50]	Calculus I
PHYS*1000	[0.50]	An Introduction to Mechanics

Semester 2 - Winter

CIS*2500	[0.50]	Intermediate Programming
COOP*1100	[0.00]	Introduction to Co-operative Education

MATH*1210 [0.50] Calculus II
 PHYS*1010 [0.50] Introductory Electricity and Magnetism
 PHYS*2040 [0.50] Fundamental Electronics and Sensors

One of:
 CIS*1910 [0.50] Discrete Structures in Computing I *
 0.50 elective
 * CIS*1910 is a prerequisite for many upper level C.I.S. courses

Semester 3 - Fall

MATH*2160 [0.50] Linear Algebra I
 MATH*2200 [0.50] Advanced Calculus I
 PHYS*2440 [0.75] Mechanics I
 PHYS*2460 [0.75] Electricity and Magnetism I

One of:
 CIS*2030 [0.50] Structure and Application of Microcomputers
 CIS*2910 [0.50] Discrete Structures in Computing II
 0.50 elective

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4 - Summer

MATH*2170 [0.50] Differential Equations I
 PHYS*2260 [0.50] Experimental Basis of Quantum Physics
 PHYS*3240 [0.50] Statistical Physics I
 STAT*2040 [0.50] Statistics I

One of:
 CIS*2030 [0.50] Structure and Application of Microcomputers
 CIS*2100 [0.50] Scientific Computing and Applications Development
 CIS*2520 [0.50] Data Structures
 CIS*3120 [0.50] Digital Systems

Fall Semester

COOP*2000 [0.00] Co-op Work Term II

Semester 5 - Winter

XSEN*3100 [0.50] Analog and Digital Communications
 XSEN*3120 [0.50] Microprocessors I
 XSEN*3130 [0.50] Object Oriented Programming Using C++
 XSEN*3140 [0.50] Operating Systems
 XSEN*4130 [0.50] Networking Essentials

Note: All courses in Semester 5 are taught at Seneca College in Toronto.

Summer Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 6 - Fall

XSEN*4100 [0.50] Event Driven Programming and Visual Basic
 XSEN*4110 [0.50] Data Acquisition and Control
 XSEN*4120 [0.50] Data Communications I
 XSEN*4140 [0.50] Technical and Personal Communications

One of:
 XSEN*4150 [0.50] Microprocessors II
 XSEN*4160 [0.50] Computer Peripheral Systems

Semester 7 - Winter

PHYS*2450 [0.75] Mechanics II
 PHYS*2470 [0.75] Electricity and Magnetism II
 PHYS*3220 [0.50] Waves and Optics

One of:
 CIS*3120 [0.50] Digital Systems
 0.50 elective
 0.50 elective

Summer Semester

COOP*4000 [0.00] Co-op Work Term IV

Semester 8 - Fall

MATH*3100 [0.50] Differential Equations II
 PHYS*3230 [0.50] Quantum Mechanics I
 PHYS*4240 [0.50] Statistical Physics II
 PHYS*4500 [0.50] Advanced Physics Laboratory

0.50 elective
Note: At least 0.50 in electives must be taken from courses in the Arts or Social Sciences.

Stream B**Semester 1 - Fall**

BIOL*1030 [0.50] Biology I
 CHEM*1040 [0.50] General Chemistry I
 CIS*1500 [0.50] Introduction to Programming
 MATH*1200 [0.50] Calculus I
 PHYS*1000 [0.50] An Introduction to Mechanics

Semester 2 - Winter

CIS*2500 [0.50] Intermediate Programming
 COOP*1100 [0.00] Introduction to Co-operative Education
 MATH*1210 [0.50] Calculus II

PHYS*1010 [0.50] Introductory Electricity and Magnetism
 PHYS*2040 [0.50] Fundamental Electronics and Sensors

One of:
 CIS*1910 [0.50] Discrete Structures in Computing I *
 0.50 elective
 *CIS*1910 is a prerequisite for many upper level C.I.S. courses

Semester 3 - Fall

MATH*2160 [0.50] Linear Algebra I
 MATH*2200 [0.50] Advanced Calculus I
 PHYS*2440 [0.75] Mechanics I
 PHYS*2460 [0.75] Electricity and Magnetism I

One of:
 CIS*2030 [0.50] Structure and Application of Microcomputers
 CIS*2910 [0.50] Discrete Structures in Computing II
 0.50 elective

Winter Semester

COOP*1000 [0.00] Co-op Work Term I

Semester 4 - Summer

MATH*2170 [0.50] Differential Equations I
 PHYS*2260 [0.50] Experimental Basis of Quantum Physics
 PHYS*3240 [0.50] Statistical Physics I
 STAT*2040 [0.50] Statistics I

One of:
 CIS*2030 [0.50] Structure and Application of Microcomputers
 CIS*2100 [0.50] Scientific Computing and Applications Development
 CIS*2520 [0.50] Data Structures
 CIS*3120 [0.50] Digital Systems

Semester 5 - Fall

XSEN*3100 [0.50] Analog and Digital Communications
 XSEN*3120 [0.50] Microprocessors I
 XSEN*3130 [0.50] Object Oriented Programming Using C++
 XSEN*3140 [0.50] Operating Systems
 XSEN*4130 [0.50] Networking Essentials

Note: All courses in Semester 5 are taught at Seneca College in Toronto.

Semester 6 - Winter

XSEN*4100 [0.50] Event Driven Programming and Visual Basic
 XSEN*4110 [0.50] Data Acquisition and Control
 XSEN*4120 [0.50] Data Communications I
 XSEN*4140 [0.50] Technical and Personal Communications

One of:
 XSEN*4150 [0.50] Microprocessors II
 XSEN*4160 [0.50] Computer Peripheral Systems

Note: All courses in Semester 6 are taught at Seneca College in Toronto.

Summer Semester

COOP*2000 [0.00] Co-op Work Term II

Fall Semester

COOP*3000 [0.00] Co-op Work Term III

Semester 7 - Winter

PHYS*2450 [0.75] Mechanics II
 PHYS*2470 [0.75] Electricity and Magnetism II
 PHYS*3220 [0.50] Waves and Optics

One of:
 CIS*3120 [0.50] Digital Systems
 0.50 elective
 0.50 elective

Summer Semester

COOP*4000 [0.00] Co-op Work Term IV

Semester 8 - Fall

MATH*3100 [0.50] Differential Equations II
 PHYS*3230 [0.50] Quantum Mechanics I
 PHYS*4240 [0.50] Statistical Physics II
 PHYS*4500 [0.50] Advanced Physics Laboratory

0.50 elective
Note: At least 0.50 in electives must be taken from courses in the Arts or Social Sciences.

Doctor of Veterinary Medicine (D.V.M.)

Program Information

The University of Guelph offers the degree program Doctor of Veterinary Medicine (D.V.M.) at the Ontario Veterinary College. The program is offered during the Fall and Winter semesters only and normally requires 8 semesters to complete. The college is accredited by the Canadian Veterinary Medical Association, the American Veterinary Medical Association, and the Royal College of Veterinary Surgeons of Britain. The D.V.M. degree from Guelph is respected by veterinarians throughout the world.

Students entering the D.V.M. Program prior to Fall 2000 should refer to the undergraduate calendar for their year of program entry for appropriate course listings.

Objectives of the Program

1. The graduates should have the knowledge and skills appropriate to their career orientations and sufficient to allow the pursuit of a variety of careers in veterinary medicine, including graduate studies. They should be able to pass the examinations of all Canadian licensing bodies and must possess a fundamental core of academic veterinary science knowledge and of technical competence.
2. The graduates must be able to solve animal health problems and must have knowledge of the management of domestic animals and the functioning of the various animal industries.
3. The graduates must be able to communicate effectively, whether writing scientific papers, or conversing with clients. The ability to relate to people is an acquired skill that must be encouraged during the program of study.
4. Through a commitment to continuing education, the graduates must accept the professional responsibility to stay abreast of new developments and to pursue solutions to new problems.
5. The graduates must have a genuine concern for the welfare of all animals. The graduates should be aware of their responsibilities to the profession in terms of ethical and professional conduct and have an understanding of the moral questions facing veterinarians.
6. The graduates must have had the opportunity during their university tenure to develop a range of non-veterinary interests sufficient to equip them to take a responsible role in society.

Regulations for Licence to Practise

Graduates are eligible to practise in Canada, but the degree in veterinary medicine does not in itself confer the right to practise. For information on matters relative to licence to practise in the various provinces of Canada, students should communicate with the Canadian Veterinary Medical Association, 339 Booth Street, Ottawa, Ontario, Canada K1R 7K1, who will refer them to the appropriate provincial veterinary association.

Admission to the Veterinary Medicine Program

Complete details on admission requirements and procedures are listed in Section IV--Admission Information.

Academic Counselling

The Office of the Assistant Dean for Student Affairs provides academic counselling and referral to other appropriate resources for all D.V.M. students. In particular, students who are requesting a Supplemental Privilege are required to meet with the Assistant Dean so that the student can be informed of appropriate resources (such as Learning and Writing Services and the Counselling and Student Resource Centre) and use them to deal with his or her academic difficulties.

Students on probation are required to meet regularly with the Assistant Dean so that the student's academic progress is monitored and resource information and assistance is provided to the student. As an aid to improving their academic efficiency all students whose program average (PA) is between 60% and 70% will be sent a letter from the Assistant Dean outlining resources available to them.

Conditions for Continuation of Study

For supplemental and deferred privileges, all students in the D.V.M. Program are subject to Deferred Privilege Procedures and Supplemental Privilege Procedures outlined in Chapter VIII--Undergraduate Degree Regulations and Procedures.

This Continuation of Study Policy applies to students entering the D.V.M. Program in Fall 2000 and subsequent semesters. For continuation of study, a student must satisfy the conditions as presented below. In order to graduate, students must fulfill the course requirements for the program and have achieved at least a 60% program average. The Academic Review Sub-Committee will assess all cases where a student's academic progress does not meet the Continuation of Study requirements and will interpret the academic regulations. The requirements will be applied with due consideration to the credit weights of the course, the role of the course in the Phase and the degree of integration of the course with concurrently required courses, and in light of the student's particular circumstances (see VIII--Undergraduate Degree Regulations and Procedures).

Students entering the D.V.M. Program prior to Fall 2000 should consult the Undergraduate Program for the year in which they entered the Program.

Full-time Study

The D.V.M. program is offered as a full-time program and normally requires four phases (over the equivalent of eight academic semesters at the University of Guelph) to complete. In exceptional extenuating circumstances, the Academic Review Sub-Committee may allow a student to take courses on a part-time basis. In these instances, the Academic Review Sub-Committee has the discretion to select the courses that the student will register in on a part-time basis. Students permitted to take courses on a part-time basis are cautioned that there is an enrolment limitation for the program and that access to certain courses or resumption of the program on a full-time basis will be conditional on the availability of space.

Failed Courses

1. Continuation of study from one phase of the D.V.M. Program to the next is dependent on the successful completion of all courses, or approved equivalents, in the published schedule of studies for the D.V.M. Program.
2. A student who fails one course in a phase may be required to repeat all courses in the entire phase. A list denoting the consequences of failure of any particular course in the D.V.M. Program. This information is also available as part of individual course outlines.
3. A student who is required to repeat a course and/or phase will be required to withdraw from the D.V.M. program. A student who is required to withdraw can register in the non-degree D.V.M. program. Non-degree D.V.M. Program status is normally granted for a maximum period of one year. Students must advise the Assistant Dean(s) of the College, in writing by 31 May, of their intention to register the following fall semester in the non-degree program to repeat the failed course and/or phase. Students must normally repeat a failed course and/or phase in the academic year immediately following that in which the failure occurred.
4. A student who successfully completes a repeated course and/or phase in the academic year immediately following that in which the failure occurred may re-apply to the D.V.M. program through Admission Services. Applications for readmission must be received by 31 May of the year in which they wish to be considered for readmission. Readmission is not automatic and will be conditional upon availability of space. Students considering readmission should consult the Assistant Dean(s) of the College regarding procedures and criteria for readmission to the D.V.M. program. A student who is readmitted to the D.V.M. program will be subject to the academic rules and regulations in effect for the readmission year.
5. A student will be allowed to fail a particular course only once. Any student who fails the same course twice will be ineligible for readmission to the D.V.M. Program.

Supplemental Privileges

1. In the circumstances of a failed course, the Academic Review Sub-Committee may, if appropriate and under special circumstances only, allow a student the opportunity to gain credit standing in a failed course by granting a supplemental privilege (see Failed Courses and Supplemental Privilege in Section VIII). Students must request a supplemental privilege by submitting the request to the Academic Review Sub-Committee, and the fee for the privilege, within 7 days of the release of grades for the phase in which the failure occurred. The Academic Review Sub-Committee, upon receiving a request from a student, and after consulting with the instructor and reviewing the student's course performance, will determine whether a supplemental privilege should be granted.
2. Students will be permitted supplemental privileges in a maximum of two courses over the entire D.V.M. Program. A supplemental privilege will not be granted for a second failure in a course. Any student granted a supplemental privilege must meet with the Assistant Dean for Student Affairs who will inform the student of appropriate resources to be used to deal with his/her academic difficulties.

Conditions for Graduation

In order to qualify for graduation from the 8 semester Honours D.V.M. program, the student must have completed successfully the courses approved for the program. Students will not be allowed to graduate while on probation.

Withdrawal from the Program

Students who have voluntarily withdrawn from the D.V.M. program and who wish to return must give notice to the Assistant Dean for Student Affairs, O.V.C., of their intention to return by May 1 if they wish to return in September or January of the upcoming academic year. Students contemplating a withdrawal from the program are cautioned that there is an enrolment limitation for the program and that re-entry will be conditional on the availability of space. The Program Committee reserves the right to select the quota from among the qualified applicants.

Protective Clothing

All D.V.M. students will require 3 laboratory coats and 3 pairs of coveralls. Students in semesters 5 and 6 must also have 3 surgical suits. Semesters 7 and 8 students will require an additional 1 of each of the 3 types of protective clothing. Labels with each student's name must be affixed to all items of clothing. All soiled clothing must be laundered through the Veterinary Teaching Hospital's "dirty-in/clean-out" plan. Students must wear steel-capped shoes or boots in the large animal clinic and rubber boots in pathology laboratories. A pair of white shoes and a pair of obstetrical boots must be available in

semesters 7 and 8. The Veterinary Teaching Hospital will not provide extra protective clothing; however, short white jackets will be provided by the Veterinary Teaching Hospital for semesters 7 and 8 students during the small animal medicine rotation.

Estimate of Expenses

Attention is drawn to Section VI--Schedule of Fees for information on tuition, University student organizations and rabies immunization required for all students in the program. In addition, while the college supplies most laboratory equipment, students may wish to purchase instruments for personal use. Texts, protective clothing, and a minimum of supplies for personal use may cost approximately \$500 per semester.

Health and Safety

Students must follow the health and safety policies required for the various courses in the veterinary program. Pregnant students and others with increased medical risks should consult Health Services concerning potential health risks which may occur during the normal course of their studies.

Immunization against rabies is a requirement for admission and continuation in the D.V.M. Program. Annual rabies titres and booster immunizations (if necessary) are mandatory for all Program participants. Prospective students and in-course students should contact Student Health Services (519-824-4120 extension 52131) for further information and guidance about the rabies surveillance program. Faculty and staff members should contact Occupational Health Services, extension 52133, for information about medical surveillance programs provided in accordance with University Safety Policy 851.13.03.

Schedule 4 (D.V.M. Continuation of Study)

Continuation of Study is assessed on the student's D.V.M. Program Average (not the University Cumulative Average) and according to the policy on failures as stated above.

In Phase 2 and beyond, eligibility to continue is also assessed at the end of each phase using the Phase Average (PHA). Courses that are given a grade of Pass or Fail do not impact either the PA or PHA Average because they are not attached to any numerical grade.

Students on Probation at the end of Phase 1 or 2 must clear this probationary status by achieving the required PA average by the end of Phase 2 or 3 respectively. If a student does not achieve the required standing by the end of the probationary period he or she will normally be required to withdraw from the program.

Students finishing Phase 3 on probationary status will not be permitted to proceed to the Externship or into Phase 4. The Academic Review Sub-Committee will establish the appropriate remediation requirements that must be fulfilled in order for the student to obtain the standing of Eligible to Continue. These may include repeating a component of a course, one or more entire courses, an entire Phase, or one or more clinical rotations. The required averages are as follows:

For Course Attempts in Phase 1

Program Average (PA)	Status of Student
PA < 50%	Required to Withdraw
PA ≥ 50% and PA <60%	Probationary Status
PA ≥ 60%	Eligible to Continue

For Course Attempts in Phase 2 and Beyond

If Eligible to Continue:

Program Average (PA) and Phase Average (PHA)	Status of Student
PHA < 50%	Required to Withdraw
PA or PHA ≥ 50% but PA <60%	Probationary Status
PA and PHA ≥ 60%	Eligible to Continue

If on Probation:

Program Average (PA)	Status of Student
PA < 60%	Required to Withdraw
PA ≥ 60%	Eligible to Continue

Schedule of Studies

Phase 1

VETM*3000	[0.50]	Veterinary Biochemistry
VETM*3070	[2.00]	Veterinary Anatomy
VETM*3080	[1.50]	Veterinary Physiology
VETM*3120	[0.75]	Veterinary Histology
VETM*3210	[0.50]	Art of Veterinary Medicine I
VETM*3390	[0.50]	Veterinary Medical Genetics
VETM*3400	[0.75]	Health Management I
VETM*3430	[0.25]	Clinical Medicine I

Phase 2

VETM*3220	[0.50]	Art of Veterinary Medicine II
VETM*3410	[0.75]	Health Management II

VETM*3440	[0.50]	Clinical Medicine II
VETM*3450	[2.75]	Principles of Disease in Veterinary Medicine
VETM*3460	[0.75]	Theriogenology
VETM*3470	[0.75]	Anaesthesiology
VETM*3480	[0.50]	Phase 2: Special Topics
VETM*3510	[0.25]	Principles of Surgery

Phase 3

VETM*4220	[0.50]	Art of Veterinary Medicine III
VETM*4450	[0.50]	Equine Medicine and Surgery
VETM*4460	[1.00]	Food Animal Medicine and Surgery
VETM*4470	[1.00]	Medicine and Surgery of Dog and Cat
VETM*4480	[0.75]	Comparative Medicine
VETM*4490	[1.00]	Systems Pathology
VETM*4520	[2.00]	Surgical Exercises
VETM*4530	[0.50]	Advanced Health Management Modules
VETM*4870	[0.25]	Clinical Medicine III

Phase 4

Students entering into the Phase 4 of the DVM Program will select an area of emphasis from either: Small Animal Stream, Mixed Stream, Equine Stream or the Food Animal Stream.

Small Animal Stream:

VETM*4610	[3.25]	Small Animal Clinics - Small Animal Stream
VETM*4620	[1.00]	Health Management - Small Animal Stream
VETM*4880	[3.25]	Electives in Veterinary Medicine I
VETM*4900	[2.50]	Veterinary Externship

Mixed Stream:

VETM*4660	[2.00]	Small Animal Clinics - Mixed Stream
VETM*4670	[1.50]	Large Animal Clinics - Mixed Stream
VETM*4680	[2.00]	Health Management - Mixed Stream
VETM*4890	[2.00]	Electives in Veterinary Medicine II
VETM*4900	[2.50]	Veterinary Externship

Equine Stream:

VETM*4920	[1.50]	Small Animal Clinics - Equine Stream
VETM*4930	[2.50]	Large Animal Clinics - Equine Stream
VETM*4940	[1.50]	Health Management - Equine Stream
VETM*4890	[2.00]	Electives in Veterinary Medicine II
VETM*4900	[2.50]	Veterinary Externship

Food Animal Stream:

VETM*4710	[1.00]	Large Animal Clinics - Food Animal Stream
VETM*4720	[3.25]	Health Management - Food Animal Stream
VETM*4880	[3.25]	Electives in Veterinary Medicine I
VETM*4900	[2.50]	Veterinary Externship

Co-operative Education Programs

Co-operative Education formally integrates the student's academic study with work experience in co-operating employer organizations. Academic programs are scheduled to allow the student to alternate periods of study with periods of work in appropriate fields of business, industry, government, social services or the professions. Students are engaged in productive work in jobs developed and/or approved by the institution as suitable learning situations. Progress on the job is monitored by the institution and is supervised and evaluated by both the employer and the institution. Co-operative Education is intended to provide students with the practical knowledge of their discipline and to assist them in making more precise career decisions as a result of the frequent and extensive exposure to the work environment.

Through an introductory co-op class, continuing contact with supervisors and fellow workers, work performance evaluations, and on the job visits, Co-op students become increasingly aware of their strengths and weaknesses. Practical communication skills are enhanced through the medium of work reports which are intended to accentuate awareness of real life situations and responsibilities. Also, a greater degree of financial independence may be realized, and a wider variety of permanent employment opportunities may be possible. Co-operative Education Services is primarily responsible for administering the work semester aspects of Co-operative Education programs. This involves marketing the concept of Co-operative Education to potential employers, identifying appropriate jobs, and organizing the on campus employer interview system. Co-op Co-ordinators contact students on the job site, and along with the On-Campus Co-ordinator provide a wide range of counselling and career development services.

Admission Information

Enrolment in the Co-operative Education programs will be limited, and the number of students admitted is generally dependent on the projected employment market. Admission is directly into semester 1. However, in-course transfers are considered, space permitting. Interested students should contact Co-operative Education Services prior to the application deadline dates as printed in Section III--Schedule of Dates. There is no admission into co-op programs from academic semesters 3 and beyond.

Eligibility

In order to apply to the Co-op Education program, applicants must have at least a 70% average. For high school students, it is required for the appropriate subjects in the final year; for in-course students in their first year, it is required of their overall average, and their major; and for transfer students, they must meet normal admission requirements, as well as complete one academic semester at Guelph in which they achieve the minimum recommended average, normally prior to participating in the Co-op process. Applicants must be a Canadian citizen or permanent resident/landed immigrant. Applicants holding U.S. citizenship should contact the Co-op Education Services.

Continuation of Study

In addition to the conditions for continuation of study listed for the appropriate degree programs, Co-op students admitted directly from high school and in-course must maintain at least a 70% overall average in first year to continue in the co-op program. Consideration may be given in some programs to other factors (e.g. interview results). In addition, all students must satisfactorily complete COOP*1100 before the first work term. See the schedule of studies for the programs of study offered under Co-operative Education.

Co-op students must normally be registered as full time. Co-op students are also required to meet other conditions, (e.g. satisfactory work term reports and work performance evaluations) in order to continue in the Co-op program. Complete conditions for continuation of study for a co-op program are outlined in the Policy for Student Involvement in Co-operative Education. The complete policy can be viewed on the world wide web at www.coop.uoguelph.ca.

Release of Academic Information

By registering in a Co-operative Education program, students agree that academic transcripts form part of the application package made available to potential employers; and that academic transcripts may also be made available to the appropriate work semester employers. Employment information, the work performance evaluation, and the work term report evaluation will appear on the academic transcripts.

Procedures for Work Semester Reports

Following each work term the co-op student must submit a work term report to the department Co-op Faculty Advisor (or the department chair) by the deadline reported in the schedule of dates. This report will be assessed by the Faculty Advisor and the evaluation submitted to the Office of Registrarial Services through Co-operative Education Services. The academic department will keep the report in the student's file and the Faculty Advisor is encouraged to discuss the report with the student following evaluation. The report may then be returned to the student or kept in the student's file. Except as outlined in the following paragraph, failure to submit a work term report by the deadline will result in an "unsatisfactory" evaluation on the student's record and a requirement to withdraw from the co-op program.

If the work term report cannot be submitted by the deadline for reasons beyond the control of the student, a "Request for Academic Consideration" form should be completed giving the reasons and providing evidence where appropriate (see also Section

VIII--Undergraduate Degree Regulations & Procedures). If the Academic Review Committee finds in favour of the request, a deferred date for the submission of the work term report will be negotiated. Normally, this deferment would be completed as soon as possible as students with missing work term reports may not compete for further work terms.

Conditions for Graduation

Conditions for graduation from a Co-operative Education program are similar to the corresponding regular degree program. In addition, all required work semesters must be satisfactorily completed, all work reports must have a grade of satisfactory or better, no work performance may be evaluated as unacceptable, and no more than one work performance may be evaluated as "marginal".

Co-op Fees

Students in Co-op are required to pay a co-op fee each semester (see Section VI--Schedule of Fees). Students who enter Co-op in-course will have an altered payment schedule to be discussed upon admission. There is no application fee.

Schedule of Studies

Students entering the Co-op program are advised to review carefully the academic semester/work semester sequence as set out in the schedule of studies for the degree programs and specialization offered under Co-operative Education. Normally students must follow the sequence as scheduled. If, under exceptional circumstances, the schedule cannot be followed, the student must obtain written approval of an alternative work and academic semester sequence from the Co-op Coordinator and Co-op Faculty Advisor. In unusual circumstances the Director of Co-op Education Services may be involved in the approval process.

University of Guelph-Humber

For University of Guelph-Humber programs please refer to <http://www.guelphhumber.ca>.

Associate Diploma Programs

For Associate Diploma Programs please refer to the Associate Diploma Program Calendar, available on the world wide web at http://www.uoguelph.ca/diploma_calendar/.