



This publication outlines only the programs created or revised after the *Undergraduate Programs Calendar* was printed in March 2003. For more information on program requirements and regulations, as well as other programs offered, please refer to the Calendar.

The University reserves the right to make changes without prior notice to the information contained in this publication, including the revision or cancellation of particular courses or programs.

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1 Agricultural and Environmental Sciences

1.1 Agricultural Economics Major – Natural Resource Economics Option

Core Required and Complementary Courses: 51 credits.
Option Required and Complementary Courses: 32 credits.
Electives: to meet the minimum 90-credit requirement for the degree.

	CREDITS
Option Required Courses:	12
AEMA 306 Mathematical Methods in Ecology	3
NRSC 333 Physical and Biological Aspects of Pollution	3
NRSC 437 Assessing Environmental Impact	3
WILD 205 Principles of Ecology	3
Option Complementary Courses:	9
9 credits chosen from the following list:	9
AGEC 344 (3) Entrepreneurial Leadership	
AGRI 210 (3) Agro-Ecological History	
ECON 405 (3) Natural Resource Economics	
ENVR 203 (3) Knowledge, Ethics and Environment	
NRSC 201 (3) Introductory Meteorology	
NUTR 361 (3) Environmental Toxicology	
WILD 415 (3) Conservation Law	
WILD 421 (3) Wildlife Conservation	

1.2 Agricultural Sciences Major – Ecological Agriculture Option

Required Courses: 61 credits.
Complementary Courses: 16 - 19 credits.
Electives: selected in consultation with Academic Adviser, to meet the minimum 90-credit requirement for the degree.

	CREDITS
Required Courses:	61
All of the required courses (52 credits) specified for the Agricultural Sciences Major – General Option, with the addition of:	
AGRI 340 Principles of Ecological Agriculture	3
AGRI 341 Ecological Agriculture Systems	3
WILD 205 Principles of Ecology	3
Complementary Courses:	16 to 19
at least one of:	
ANSC 323 (4) Mammalian Physiology	
PLNT 353 (4) Plant Structure and Function	
at least one production course in Agricultural Science:	
AGEC 331 (3) Farm Business Management	
ANSC 450 (3) Dairy Cattle Production	
ANSC 452 (3) Beef Cattle and Sheep Production	
ANSC 454 (3) Swine Production	
ANSC 456 (3) Poultry Production	
PLNT 331 (3) Field Crops	
at least 3 credits must be chosen from three of the four blocks below:	
AGRI 201D1 (3) Agri-Environment Internship and AGRI 201D2 (3) Agri-Environment Internship	
AGRI 435 (3) Soil and Water Quality Management	
SOIL 335 (3) Soil Ecology and Management	
SOIL 490 (3) Plan global de fertilisation intégrée	
SOIL 521 (3) Soil Microbiology and Biochemistry	
MICR 331 (3) Microbial Ecology	
PLNT 434 (3) Weed Biology and Control	
PLNT 460 (3) Plant Ecology	

AGEC 333	(3)	Resource Economics
ENVR 201	(3)	Society and Environment
ENVR 400	(3)	Environmental Thought

1.3 Agricultural Sciences Internship Major – Ecological Agriculture Option

Required Courses: 73 credits.
Complementary Courses: 13 credits.
Electives: selected in consultation with Academic Adviser, to meet the minimum 102-credit requirement for the degree.

	CREDITS
Required Courses:	73
All of the required courses (61 credits) specified for the Agricultural Sciences Major – Ecological Agriculture Option, with the addition of:	
AGRI 201D1 Agri-Environment Internship	3
AGRI 201D2 Agri-Environment Internship	3
AGRI 301D1 Agrology Internship	3
AGRI 301D2 Agrology Internship	3
Complementary Courses:	13
at least one of:	
ANSC 323 (4) Mammalian Physiology	
PLNT 353 (4) Plant Structure and Function	
at least one production course in Agricultural Science:	
AGEC 331 (3) Farm Business Management	
ANSC 450 (3) Dairy Cattle Production	
ANSC 452 (3) Beef Cattle and Sheep Production	
ANSC 454 (3) Swine Production	
ANSC 456 (3) Poultry Production	
PLNT 331 (3) Field Crops	
at least 3 credits must be chosen from two of the three blocks below:	
AGRI 435 (3) Soil and Water Quality Management	
SOIL 335 (3) Soil Ecology and Management	
SOIL 490 (3) Plan global de fertilisation intégrée	
SOIL 521 (3) Soil Microbiology and Biochemistry	
MICR 331 (3) Microbial Ecology	
PLNT 434 (3) Weed Biology and Control	
PLNT 460 (3) Plant Ecology	
AGEC 333 (3) Resource Economics	
ENVR 201 (3) Society and Environment	
ENVR 400 (3) Environmental Thought	

1.4 Agricultural Sciences Major – Soil Science Option

Required Courses: 52 credits.
Complementary Courses: 25 credits.
Electives: selected in consultation with Academic Adviser, to meet the minimum 90-credit requirement for the degree.

	CREDITS
Required Courses:	52
All of the required courses (52 credits) specified for the Agricultural Sciences Major – General Option.	
Complementary Courses:	25
at least one of:	
ANSC 323 (4) Mammalian Physiology	
PLNT 353 (4) Plant Structure and Function	
SOIL 326 (3) Soil Genesis and Classification	
at least one production course in Agricultural Science:	
AGEC 331 (3) Farm Business Management	
ANSC 450 (3) Dairy Cattle Production	
ANSC 452 (3) Beef Cattle and Sheep Production	
ANSC 454 (3) Swine Production	
ANSC 456 (3) Poultry Production	

PLNT 331 (3) Field Crops

a minimum of 18 credits chosen from the following:

AGRI 435	(3)	Soil and Water Quality Management
ABEN 217	(3)	Hydrology and Drainage
SOIL 200	(3)	Introduction to Earth Science
SOIL 326	(3)	Soil Genesis and Classification
SOIL 331	(3)	Soil Physics
SOIL 335	(3)	Soil Ecology and Management
SOIL 410	(3)	Soil Chemistry
SOIL 521	(3)	Soil Microbiology and Biochemistry

1.5 Agricultural Sciences Internship Major – Soil Science Option

Required Courses: 64 credits.
Complementary Courses: 25 credits.
Electives: selected in consultation with Academic Adviser, to meet the minimum 102-credit requirement for the degree.

	CREDITS
Required Courses:	64
All of the required courses (52 credits) specified for the Agricultural Sciences Major – Soil Science, with the addition of:	
AGRI 201D1 Agri-Environment Internship	3
AGRI 201D2 Agri-Environment Internship	3
AGRI 301D1 Agrology Internship	3
AGRI 301D2 Agrology Internship	3
Complementary Courses:	25
As described for the Agricultural Sciences Major – Soil Science Option.	

1.6 Animal Biology Major

Required Courses: 34 credits
Complementary Courses: 24 credits, minimum
Electives: selected in consultation with Academic Adviser, to meet the minimum 90-credit requirement for the degree.

	CREDITS
Required Courses:	34
AEBI 202 Cellular Biology	3
AEMA 310 Statistical Methods 1	3
ANSC 234 Biochemistry 2	3
ANSC 250 Principles of Animal Science	3
ANSC 251 Comparative Anatomy	3
ANSC 323 Mammalian Physiology	4
ANSC 330 Fundamentals of Nutrition	3
ANSC 495D1 Seminar	1
ANSC 495D2 Seminar	1
CELL 204 Genetics	4
FDSC 211 Biochemistry 1	3
MICR 230 Microbial World	3
Complementary Courses:	min. 24
A minimum of 24 credits selected from the following list in consultation with the Academic Adviser:	
ANSC 312 (3) Animal Health and Disease	
ANSC 324 (3) Animal Reproduction	
ANSC 400 (3) Eukaryotic Cells and Viruses	
ANSC 424 (3) Metabolic Endocrinology	
ANSC 433 (3) Animal Nutrition	
ANSC 460 (3) Biology of Lactation	
MICR 341 (3) Mechanisms of Pathogenicity	
NRSC 550 (3) Veterinary and Medical Entomology	
PARA 438 (3) Immunology	
WILD 307 (3) Natural History of Vertebrates	
WILD 311 (3) Ethology	
WILD 410 (3) Wildlife Ecology	
WILD 424 (3) Parasitology	
or WILD 350 (3) Mammalogy	

The student may replace up to 12 credits of the complementary courses listed above by choosing, with the student adviser's approval, any course offerings (300 level or higher) in Anatomy and Cell Biology, Biochemistry, Biology, Microbiology and Immunology, Neurology and Neurosurgery, Pharmacology and Therapeutics, Physiology, and Psychology. Any prerequisites for these courses must be taken as electives.

1.7 Applied Zoology Major

Required Courses: 27 credits.
Complementary Courses: 36 credits.
Electives: to meet the minimum requirement of 90 credits; chosen in consultation with the Academic Adviser.

	CREDITS
Required Courses:	27
AEBI 202 Cellular Biology	3
AEMA 310 Statistical Methods 1	3
CELL 204 Genetics	4
FDSC 211 Biochemistry 1	3
NRSC 491 Scientific Communication 1	1
NRSC 492 Scientific Communication 2	1
PLNT 201 Comparative Plant Biology	3
WILD 200 Comparative Zoology	3
WILD 205 Principles of Ecology	3
WILD 212 Evolution and Systematics	3
Complementary Courses:	36
36 credits in any combination from List A, B and/or C	
List A (Animal Diversity)	
BIOL 327 ¹ (3) Herpetology	
BIOL 351 ¹ (3) The Biology of Invertebrates	
MICR 230 (3) Microbial World	
WILD 307 (3) Natural History of Vertebrates	
WILD 350 (3) Mammalogy	
WILD 420 (3) Ornithology	
WILD 424 (3) Parasitology	
List B (Entomology)	
ENTO 330 (3) Insect Biology	
ENTO 336 (3) Economic Entomology	
ENTO 352 (3) Control of Insect Pests	
ENTO 425 (3) Insect Ecology	
ENTO 440 (3) Systematic Entomology	
ENTO 515 (3) Parasitoid Behavioural Ecology	
ENTO 520 (3) Insect Physiology	
ENTO 535 (3) Aquatic Entomology	
ENTO 550 (3) Veterinary and Medical Entomology	
List C (Interactions and Applications)	
BIOL 331 ¹ (3) Ecology/Behaviour Field Course	
BIOL 465 ¹ (3) Conservation Biology	
NRSC 315 (3) Science of Inland Waters	
NRSC 497 (2) Research Project 1	
NRSC 498 (3) Research Project 2	
PLNT 358 (3) Flowering Plant Diversity	
SOIL 335 (3) Soil Ecology and Management	
WILD 311 (3) Ethology	
WILD 313 (3) Phylogeny and Zoogeography	
WILD 401 (3) Fisheries and Wildlife Management	
WILD 410 (3) Wildlife Ecology	

¹ Downtown Campus

The following Zoology courses from the Downtown Campus may be substituted for those in the above list of Macdonald Campus Complementary Courses with the prior permission of the Academic Adviser and the Macdonald Committee on Academic Standing. When selecting electives, students are encouraged to consult with their Academic Adviser.

Department of Biology (Downtown Campus) Courses:

BIOL 307	(3)	Behavioural Ecology/Sociobiology
BIOL 334	(3)	Applied Tropical Ecology
BIOL 335	(3)	Marine Mammals
BIOL 336	(3)	Marine Aquaculture
BIOL 337	(3)	Ecology and Behaviour of Fishes
BIOL 352	(3)	Vertebrate Evolution
BIOL 437	(3)	Advanced Invertebrate Zoology
BIOL 442	(3)	Marine Biology

1.8 Barbados Field Study Semester

The Barbados Field Study Semester (BFSS) provides one term of integrated field study for students with an interest in global issues related to natural resource use as affected by socio-economic, management, urban and physical constraints. Offered at the Bellairs Research Institute in Barbados, this program challenges students to be more effective environmental decision makers, policy makers, urban planners, managers, and auditors. There is a growing need for professionals with such skills at all levels of government, within NGOs, and in the private sector. The overall goal of the BFSS is to equip future leaders to address the complexity of issues associated with the formulation and implementation of organizational strategies compatible with the societal goal of sustainable use and development of our natural resources, with a focus on water.

The BFSS is intended for senior undergraduate students from across the University and students in the School of Urban Planning. Students must apply to participate in the program and selection will be based on the student's academic standing and demonstrated interests and involvement in international issues related to natural resource use.

The semester is not a degree program, but credits can be counted toward other McGill degrees with the permission of program advisors.

BARBADOS FIELD STUDY SEMESTER – offered Fall Term

Required Courses (6 credits)

AGRI 413	(3)	Globalization: Issues of Change
URBP 507	(3)	Planning and Infrastructure

Complementary Courses (9 credits)

one of the following cross-listed courses:

AGRI 452	(3)	Water Resources in Barbados
CIVE 452	(3)	Water Resources in Barbados

and one of the following cross-listed project courses:

AGRI 519	(6)	Sustainable Development Plans
CIVE 519	(6)	Sustainable Development Plans
URBP 519	(6)	Sustainable Development Plans

Enrolment is limited to 25 students. In addition to the regular McGill fees, students will be required to pay the additional costs associated with delivering the courses in the field. These costs include airfare, accommodation and most food, as well as other field costs. Although airfares and currency fluctuations will determine the amount of this charge, fees for 2003 are expected to be in the neighbourhood of \$7,000 Canadian.

The BFSS is offered in the Fall term only. Interested students must submit a letter of intent, CV and a copy of their transcript to the Department of Bioresource Engineering by March 15. Further details are available on the Web at www.mcgill.ca/mse/field_study/barbados.

1.9 Botanical Science Major

Required Courses: 42 credits.

Complementary Courses: 18 credits, selected from an approved list in consultation with the Academic Adviser; taken in either the Ecology or the Molecular Option.

Electives: to meet the minimum requirement of 90 credits for the degree.

Note: courses marked with an asterisk (*) are offered on the Downtown Campus.

Required Courses:

AEBI 202	Cellular Biology	3
AEMA 310	Statistical Methods 1	3
CELL 204	Genetics	4
FDSC 211	Biochemistry 1	3
PLNT 201	Comparative Plant Biology	3
PLNT 220	Introduction to Vascular Plants	1
PLNT 221	Introduction to Fungi	1
PLNT 353	Plant Structure and Function	4
PLNT 358	Flowering Plant Diversity	3
PLNT 458	Flowering Plant Systematics	3
PLNT 460	Plant Ecology	3
PLNT 489	Project Planning and Proposal	1
PLNT 490	Research Project	2
PLNT 495	Seminar 1	1
PLNT 496	Seminar 2	1
WILD 200	Comparative Zoology	3
WILD 205	Principles of Ecology	3

Complementary Courses

Either the Ecology Option or the Molecular Option

Ecology Option:

at least 12 credits must be chosen from the following:

AEMA 306	(3)	Mathematical Methods in Ecology
AGRI 340	(3)	Principles of Ecological Agriculture
*BIOL 324	(3)	Ecological Genetics
*BIOL 331	(3)	Ecology/Behaviour Field Course
*BIOL 334	(3)	Applied Tropical Ecology
*BIOL 465	(3)	Conservation Biology
*BIOL 483	(3)	Stat. Approaches in Ecology and Evolution
*GEOG 350	(3)	Ecological Biogeography
MICR 331	(3)	Microbial Ecology
NRSC 315	(3)	Science of Inland Waters
NRSC 437	(3)	Assessing Environmental Impact
WILD 415	(2)	Conservation Law
WOOD 410	(3)	The Forest Ecosystem
WOOD 420	(3)	Environmental Issues: Forestry

the remaining credits, if any, to be chosen from the Molecular Option or the General Complementary Course lists.

Molecular Option:

at least 12 credits must be chosen from the following:

AEBI 306	(3)	Biological Instrumentation
ANSC 400	(3)	Eukaryotic Cells and Viruses
*BIOL 301	(4)	Laboratory in Molecular and Cellular Biology
*BIOL 303	(3)	Developmental Biology
*BIOL 333	(3)	Plant Biotechnology
BTEC 501	(3)	Bioinformatics
CELL 500	(3)	Techniques Plant Molecular Genetics
CELL 501	(3)	Plant Molecular Biology and Genetics
FDSC 212	(2)	Biochemistry Laboratory
MICR 200	(3)	Laboratory Methods in Microbiology
MICR 230	(3)	Microbial World
MICR 338	(3)	Bacterial Molecular Genetics
PLNT 525	(3)	Advanced Micropropagation
PLNT 535	(3)	Plant Breeding

the remaining credits, if any, to be chosen from the Ecology Option or the General Complementary Course lists.

General Complementary Courses:

*BIOL 555	(3)	Functional Ecology of Trees
NUTR 512	(3)	Herbs, Foods and Phytochemicals
PLNT 215	(1)	Orientation in Plant Science
PLNT 304	(3)	Biology of Fungi
PLNT 305	(3)	Plant Pathology
PLNT 310	(3)	Plant Propagation
PLNT 434	(3)	Weed Biology and Control
PLNT 450	(2)	Special Topics: Plant Science

CREDITS
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18

18

18

PLNT 451 (3) Special Topics: Plant Science 2
 SOIL 210 (3) Principles of Soil Science

1.10 Ecological Agriculture, Certificate in

Required Courses: 9 credits.

Complementary Courses: 21 credits.

	CREDITS
Required Courses:	9
AGRI 210 Agro-Ecological History	3
AGRI 340 Principles of Ecological Agriculture	3
AGRI 341 Ecological Agriculture Systems	3
Complementary Courses:	21
21 credits chosen from the following, in consultation with the Academic Adviser for Ecological Agriculture with at least 3 credits chosen from:	3-9
SOIL 335 (3) Soil Ecology and Management	
SOIL 490 (3) Plan global de fertilisation intégrée	
SOIL 521 (3) Soil Microbiology and Biochemistry	
and the remaining credits to be chosen from:	12-18
AGEC 333 (3) Resource Economics	
AGRI 435 (3) Soil and Water Quality Management	
AGRI 491D1 (1.5) Co-op Experience	
AGRI 491D2 (1.5) Co-op Experience	
ENTO 352 (3) Control of Insect Pests	
MICR 331 (3) Microbial Ecology	
NUTR 512 (3) Herbs, Foods and Phytochemicals	
PLNT 300 (3) Cropping Systems	
PLNT 361 (3) Pest Management and the Environment	
PLNT 434 (3) Weed Biology and Control	
PLNT 460 (3) Plant Ecology	
RELG 270 (3) Religious Ethics and the Environment	
WILD 205 (3) Principles of Ecology	
WILD 311 (3) Ethology	
WILD 375 (3) Issues: Environmental Sciences	
WOOD 410 (3) The Forest Ecosystem	

1.11 Ecological Agriculture, Minor in

Required Courses: 9 credits.

Complementary Courses: 15 credits.

	CREDITS
Required Courses:	9
AGRI 210 Agro-Ecological History	3
AGRI 340 Principles of Ecological Agriculture	3
AGRI 341 Ecological Agriculture Systems	3
Complementary Courses:	15
15 credits chosen from the following, in consultation with the Academic Adviser for Ecological Agriculture with at least 3 credits chosen from:	3-9
SOIL 335 (3) Soil Ecology and Management	
SOIL 490 (3) Plan global de fertilisation intégrée	
SOIL 521 (3) Soil Microbiology and Biochemistry	
and the remaining credits to be chosen from:	6-12
AGEC 333 (3) Resource Economics	
AGRI 435 (3) Soil and Water Quality Management	
AGRI 491D1 (1.5) Co-op Experience	
AGRI 491D2 (1.5) Co-op Experience	
ENTO 352 (3) Control of Insect Pests	
MICR 331 (3) Microbial Ecology	
NUTR 512 (3) Herbs, Foods and Phytochemicals	
PLNT 300 (3) Cropping Systems	
PLNT 361 (3) Pest Management and the Environment	
PLNT 434 (3) Weed Biology and Control	
PLNT 460 (3) Plant Ecology	
RELG 270 (3) Religious Ethics and the Environment	
WILD 205 (3) Principles of Ecology	

WILD 311 (3) Ethology
 WILD 375 (3) Issues: Environmental Sciences
 WOOD 410 (3) The Forest Ecosystem

1.12 Environmental Biology Major

Required Courses: 27 credits.

Complementary Courses: 30 credits.

Electives: To meet the minimum requirements of 90 credits for the degree.

	CREDITS
Required Courses:	27
AEBI 202 Cellular Biology	3
AEMA 310 Statistical Methods 1	3
CELL 204 Genetics	4
FDSC 211 Biochemistry 1	3
NRSC 491 Scientific Communication 1	1
NRSC 492 Scientific Communication 2	1
PLNT 201 Comparative Plant Biology	3
WILD 200 Comparative Zoology	3
WILD 205 Principles of Ecology	3
WILD 375 Issues: Environmental Sciences	3

Complementary Courses: 30

a minimum of 30 credits selected from the following list in consultation with the Academic Adviser

AEMA 306 (3) Mathematical Methods in Ecology	
MICR 230 (3) Microbial World	
MICR 331 (3) Microbial Ecology	
NRSC 201 (3) Introductory Meteorology	
NRSC 315 (3) Science of Inland Waters	
NRSC 333 (3) Physical and Biological Aspects of Pollution	
NRSC 437 (3) Assessing Environmental Impact	
NRSC 497 (2) Project 1	
NRSC 498 (3) Project 2	
NUTR 420 (3) Toxicology and Health Risks	
PLNT 358 (3) Flowering Plant Diversity	
PLNT 460 (3) Plant Ecology	
SOIL 200 (3) Introduction to Earth Science	
SOIL 210 (3) Principles of Soil Science	
SOIL 335 (3) Soil Ecology and Management	
WILD 307 (3) Natural History of Vertebrates	
WILD 311 (3) Ethology	
WILD 313 (3) Phylogeny and Zoogeography	
WILD 401 (4) Fisheries and Wildlife Management	
WILD 410 (3) Wildlife Ecology	
WILD 475 (3) Desert Ecology	
WOOD 410 (3) The Forest Ecosystem	
WOOD 420 (3) Environmental Issues: Forestry	

With the permission of the Academic Adviser and the Committee on Academic Standing, ecological or environmental courses offered on the Downtown Campus may be substituted for those appearing in the above list of Complementary Courses.

1.13 Microbiology Major

Required Courses: 60 credits.

Electives: to meet the minimum requirement of 90 credits for the degree; chosen in consultation with the Academic Adviser.

	CREDITS
Required Courses:	60
AEBI 202 Cellular Biology	3
AEMA 310 Statistical Methods 1	3
ANSC 400 Eukaryotic Cells and Viruses	3
CELL 204 Genetics	4
FDSC 211 Biochemistry 1	3
FDSC 212 Biochemistry Laboratory	2
MICR 200 Laboratory Methods in Microbiology	3
MICR 230 Microbial World	3

MICR 331	Microbial Ecology	3
MICR 337	Frontiers in Microbiology	1
MICR 338	Bacterial Molecular Genetics	3
MICR 341	Mechanisms of Pathogenicity	3
MICR 442	Food Microbiology and Sanitation	3
MICR 492	Research Project 1	2
MICR 493	Research Project 2	3
MICR 495	Seminar 1	1
MICR 496	Seminar 2	2
PARA 438	Immunology	3
PLNT 201	Comparative Plant Biology	3
WILD 200	Comparative Zoology	3
WILD 205	Principles of Ecology	3
WILD 424	Parasitology	3

1.14 Resource Conservation Major

Required Courses: 26 credits
Complementary Courses: 33 credits.
Electives: to meet the minimum 90-credit requirement for the degree.

	CREDITS
Required Courses:	26
AGEC 200 Principles of Microeconomics	3
AGEC 333 Resource Economics	3
FDSC 211 Biochemistry 1	3
NRSC 315 Science of Inland Waters	3
NRSC 437 Assessing Environmental Impact	3
NRSC 491 Scientific Communication 1	1
NRSC 492 Scientific Communication 2	1
SOIL 200 Introduction to Earth Science	3
SOIL 210 Principles of Soil Science	3
WILD 205 Principles of Ecology	3
Complementary Courses:	min. 33
AEMA 310 (3) Statistical Methods 1	3
or MATH 203 ¹ (3) Principles of Statistics 1	
PLNT 201 (3) Comparative Plant Biology	3
or PLNT 211 (3) Principles of Plant Science	
At least two of the following:	6
ABEN 214 (3) Surveying	
ABEN 217 (3) Hydrology and Drainage	
or GEOG 322 ¹ (3) Environmental Hydrology	
ABEN 416 (3) Engineering for Land Development	
NRSC 201 (3) Introductory Meteorology	
NRSC 333 (3) Physical and Biological Aspects of Pollution	
At least three of the following:	9 or 10
AEMA 306 (3) Mathematical Methods in Ecology	
BIOL 465 ¹ (3) Conservation Biology	
MICR 331 (3) Microbial Ecology	
PLNT 358 (3) Flowering Plant Diversity	
SOIL 335 (3) Soil Ecology and Management	
WILD 401 (4) Fisheries and Wildlife Management	
WOOD 410 (3) The Forest Ecosystem	
At least three of the following:	9
AGRI 435 (3) Soil and Water Quality Management	
SOIL 315 (3) Soil Fertility and Fertilizer Use	
SOIL 326 (3) Soil Genesis and Classification	
SOIL 331 (3) Soil Physics	
SOIL 410 (3) Soil Chemistry	
SOIL 521 (3) Soil Microbiology and Biochemistry	
At least one of the following:	3
GEOG 201 ¹ (3) Introductory Geo-Information Science	
ABEN 330 (3) GIS for Biosystems Engineering	
WILD 310 (3) Air Photo and Imagery Interpretation	

¹ Downtown Campus

Note: Other courses on the Downtown Campus may be equivalent to some required courses; consult the Academic Adviser. Course substitutions must be approved by the Committee on Academic Standing.

1.15 Wildlife Biology Major

Required Courses: 37 credits.
Complementary Courses: 27 credits.
Electives: to meet the requirement of 90 credits for the degree.

	CREDITS
Required Courses:	37
AEMA 310 Statistical Methods 1	3
CELL 204 Genetics	4
FDSC 211 Biochemistry 1	3
NRSC 491 Scientific Communication 1	1
NRSC 492 Scientific Communication 2	1
PLNT 201 Comparative Plant Biology	3
PLNT 358 Flowering Plant Diversity	3
WILD 200 Comparative Zoology	3
WILD 205 Principles of Ecology	3
WILD 212 Evolution and Systematics	3
WILD 307 Natural History of Vertebrates	3
WILD 401 Fisheries and Wildlife Management	4
WILD 410 Wildlife Ecology	3
Complementary Courses:	27
9 credits from List A (Organismal Biology)	
BIOL 327 (3) Herpetology	
WILD 311 (3) Ethology	
WILD 350 (3) Mammalogy	
WILD 420 (3) Ornithology	
WILD 424 (3) Parasitology	
18 credits from List B (Integration and Applications)	
AEMA 306 (3) Mathematical Methods in Ecology	
AGEC 333 (3) Resource Economics	
ANSC 323 (4) Mammalian Physiology	
BIOL 465 (3) Conservation Biology	
NRSC 315 (3) Science of Inland Waters	
NRSC 437 (3) Assessing Environmental Impact	
NRSC 497 (2) Research Project 1	
NRSC 498 (3) Research Project 2	
NUTR 420 (3) Toxicology and Health Risks	
PLNT 460 (3) Plant Ecology	
WILD 313 (3) Phylogeny and Zoogeography	
WILD 382 (3) Fish and Wildlife Propagation	
WILD 415 (2) Conservation Law	
WILD 421 (3) Wildlife Conservation	
WILD 475 (3) Desert Ecology	
WOOD 410 (3) The Forest Ecosystem	
WOOD 441 (3) Integrated Forest Management	

2 Arts

2.1 Computer Science

2.1.1 Computer Science, Minor Concentration

This Minor Concentration may be taken in conjunction with any program in the Faculty of Arts with the approval of the Adviser of the student's main program and the School of Computer Science.

Minor Concentration in Computer Science

(Non-expandable) (18 credits)

Required Courses (12 credits)

COMP 202	(3)	Introduction to Computing 1
COMP 203	(3)	Introduction to Computing 2
COMP 206	(3)	Introduction to Software Systems
COMP 302	(3)	Programming Languages and Paradigms

Complementary Courses (6 credits)

selected from:

COMP 273	(3)	Introduction to Computer Systems
COMP 310	(3)	Computer Systems and Organization
COMP 335	(3)	Software Engineering Methods
COMP 350	(3)	Numerical Computing
or MATH 317	(3)	Numerical Analysis
COMP 360	(3)	Algorithm Design Techniques
COMP 420	(3)	Files and Databases
COMP 421	(3)	Database Systems
COMP 424	(3)	Topics: Artificial Intelligence 1
COMP 426	(3)	Automated Reasoning
COMP 433	(3)	Personal Software Engineering
COMP 435	(3)	Basics of Computer Networks
COMP 505	(3)	Advanced Computer Architecture
COMP 506	(3)	Advanced Analysis of Algorithms
COMP 507	(3)	Computational Geometry
COMP 520	(4)	Compiler Design
COMP 524	(3)	Theoretical Foundations of Programming Languages
COMP 534	(3)	Team Software Engineering
COMP 535	(3)	Computer Networks 1
COMP 537	(3)	Internet Programming
COMP 538	(3)	Person-Machine Communication
COMP 540	(3)	Matrix Computations
COMP 547	(3)	Cryptography and Data Security
COMP 557	(3)	Computer Graphics
COMP 560	(3)	Graph Algorithms and Applications
COMP 566	(3)	Discrete Optimization 1
COMP 573	(3)	Microcomputers
COMP 575	(3)	Fundamentals of Distributed Algorithms

or courses outside of the School approved by the adviser.

2.1.2 Computer Systems, Minor Concentration

This Minor Concentration may be taken only by students registered in the Major Concentration in Foundations of Computing. Taken together, these constitute a program very close to the Major in Computer Science offered by the Faculty of Science.

Minor Concentration in Computer Systems

(Combinable) (18 credits)

Required Courses (9 credits)

COMP 206	(3)	Introduction to Software Systems
COMP 273	(3)	Introduction to Computer Systems
COMP 310	(3)	Computer Systems and Organization

Complementary Courses (9 credits)

selected from:

COMP 335	(3)	Software Engineering Methods
COMP 420	(3)	Files and Databases
COMP 421	(3)	Database Systems
COMP 424	(3)	Topics: Artificial Intelligence 1
COMP 433	(3)	Personal Software Engineering
COMP 435	(3)	Basics of Computer Networks
COMP 505	(3)	Advanced Computer Architecture

COMP 506	(3)	Advanced Analysis of Algorithms
COMP 507	(3)	Computational Geometry
COMP 520	(4)	Compiler Design
COMP 524	(3)	Theoretical Foundations of Programming Languages
COMP 531	(3)	Theory of Computation
COMP 534	(3)	Team Software Engineering
COMP 535	(3)	Computer Networks 1
COMP 537	(3)	Internet Programming
COMP 547	(3)	Cryptography and Data Security
COMP 557	(3)	Computer Graphics
COMP 573	(3)	Microcomputers
COMP 575	(3)	Fundamentals of Distributed Algorithms

2.2 Education for Arts Students Minor Concentration

Program Director — Professor Jon Bradley
 Department of Integrated Studies in Education
 Faculty of Education, 3700 McTavish Street
 e-mail: jon.bradley@mcgill.ca
 Website: www.mcgill.ca/edu-integrated/

This Minor Concentration allows Arts students to develop and explore an interest in education. It will give students a solid footing in the basics of pedagogy and may provide a starting point towards a B.Ed. degree.

Completion of the Minor Concentration **does not** qualify a student for certification to teach in the province of Quebec. Students interested in a teaching career should consult the Faculty of Education, "Faculty Programs" on page 139 of the Undergraduate Programs Calendar.

MINOR CONCENTRATION IN EDUCATION FOR ARTS STUDENTS (18 credits)

Required Courses (12 credits)

EDEC 402	(3)	Media, Technology and Education
EDEM 405	(3)	Policy Issues in Quebec Education
EDPE 300	(3)	Educational Psychology
EDPI 309	(3)	Exceptional Students

Complementary Courses (6 credits)

3 credits, one of:

EDER 398	(3)	Philosophy of Catholic Education
EDER 400	(3)	Philosophical Foundations of Education

3 credits, one of:

EDEC 410	(3)	Multi-Cultured/Multi-Racial Class
EDEE 441	(3)	First Nations and Inuit Education
EDER 464	(3)	Intercultural Education

2.3 German Studies

2.3.1 German Studies, Honours

HONOURS PROGRAM IN GERMAN STUDIES (60 credits)

Required Courses (42 credits)

GERM 200	(6)	German Language, Intensive Beginners'
GERM 300	(6)	German Language Intensive Intermediate
GERM 325	(6)	German Language - Intensive Advanced
GERM 352	(3)	German Literature - 19th Century 3
GERM 360	(3)	German Literature 1890 to 1918
GERM 363	(3)	German Postwar Literature
GERM 450	(3)	Classical Period in German Literature
GERM 451	(3)	German Romanticism
GERM 511	(3)	Middle High German Literature
GERM 575	(6)	Honours Thesis

With permission of the adviser, students with advanced standing in German language will replace language courses for more advanced courses in language, culture or literature.

Complementary Courses (18 credits)

12 credits selected from:

- GERM 331 (3) Germany after Reunification
- GERM 353 (3) 19th Century Literary Topics
- GERM 361 (3) German Literature 1918 to 1945
- GERM 362 (3) 20th Century Literature Topics
- GERM 365 (3) Media Studies in German
- GERM 380 (3) 18th Century German Literature
- GERM 400 (3) Interdisciplinary Seminar: Contemporary German Studies

Note: In the event that there are not enough courses offered in German, substitution with courses from the list below is allowed only with permission of the adviser.

6 credits selected from:

- GERM 259 (3) Individual and Society in German Literature 1
- GERM 260 (3) Individual and Society in German Literature 2
- GERM 336 (3) German Grammar Review
- GERM 354 *3) Literary Approach to Song
- GERM 355 (3) Nietzsche and Wagner
- GERM 358 (3) Franz Kafka
- GERM 359 (3) Bertolt Brecht
- GERM 364 (3) German Culture: Gender and Society
- GERM 367 (3) Topics in German Thought
- GERM 371 (3) Cultural Change and Evolution of German
- GERM 382 (3) Faust in European Literature
- GERM 397 (3) Individual Reading Course
- GERM 398 (3) Individual Reading Course
- GERM 561 (3) German Literature: Baroque

or other suitable courses in the Department or in other related disciplines and departments with the approval of adviser.

2.4 International Development Studies

2.4.1 IDS, Minor Concentration

MINOR CONCENTRATION IN INTERNATIONAL DEVELOPMENT STUDIES (18 credits) (Expandable)

Required Courses (6 credits)

- ECON 208 (3) Microeconomic Analysis and Applications
- ECON 313 (3) Economic Development 1

Complementary Courses (12 credits)

a minimum of 3 credits selected from the IDS Complementary Course list Group A. Only one course from each discipline can be counted.

the remaining credits to be selected from the IDS Complementary Course list Group B, with the addition of ECON 314 Economic Development 2 to the category "Development Policies and Practices".

At least 9 of the 18 credits must be at the 300 level or above.

2.4.2 IDS, Major Concentration

MAJOR CONCENTRATION IN INTERNATIONAL DEVELOPMENT STUDIES (36 credits)

Required Courses (12 credits)

- ECON 208 (3) Microeconomic Analysis and Applications
- ECON 313 (3) Economic Development 1
- ECON 314 (3) Economic Development 2
- INTD 497 (3) Research Seminar on International Development

Complementary Courses (24 credits)

a minimum of 3 credits selected from the IDS Complementary Course list Group A. Only one course from each discipline can be counted.

the remaining credits to be selected from the IDS Complementary Course list Group B, at least 12 credits must be taken from one of the three categories.

At least 18 of the 36 credits must be at the 300 level or above.

2.4.3 IDS, Honours

HONOURS PROGRAM IN INTERNATIONAL DEVELOPMENT STUDIES (57 credits)

Honours students must maintain a program GPA of 3.00 and an overall CGPA of 3.00.

Required Courses (12 credits)

- ECON 208 (3) Microeconomic Analysis and Applications
- ECON 313 (3) Economic Development 1
- ECON 314 (3) Economic Development 2
- INTD 497 (3) Research Seminar on International Development

Complementary Courses (45 credits)

No more than 21 credits can be taken in any one discipline.

Thesis or research project, 3 to 6 credits, one of:

- INTD 491 (3) Research Project
- INTD 492 (6) Honours Thesis

6 credits selected from the IDS Complementary Course list Group A. Only one course from each discipline can be counted.

24 to 36 credits to be selected from the IDS Complementary Course list Group B; at least 12 credits must be taken from one of the three categories.

Group C – 0 to 9 credits of Introductory and/or Intermediate Language Training.

Students are strongly encouraged to master a language appropriate to an area of the developing world in which they have a particular interest.

Among the languages that are included in this option are Arabic, Chinese, French, Korean, Portuguese, Spanish, and Urdu. Other language options can be approved by the Honours Adviser.

Students who already have appropriate language capability, or who have distinct interests not likely to necessitate such training, may substitute an additional 9 credits from the Group B Complementary Courses.

At least 30 of the 57 credits must be at the 300 level or above; nine credits of these must be at the 400 level or above.

2.4.4 IDS, Joint Honours

JOINT HONOURS PROGRAM – INTERNATIONAL DEVELOPMENT STUDIES COMPONENT (36 credits)

Joint Honours students must maintain a program GPA of 3.00 and an overall CGPA of 3.00.

Joint Honours students should consult an adviser in each department to discuss their course selection and their interdisciplinary research project (if applicable).

Required Courses (12 credits)

- ECON 208 (3) Microeconomic Analysis and Applications
- ECON 313 (3) Economic Development 1
- ECON 314 (3) Economic Development 2
- INTD 497 (3) Research Seminar on International Development

Complementary Courses (24 credits)

No more than 15 credits can be taken in any one discipline.

Thesis or research project, 3 to 6 credits

Students may either do a 6-credit thesis in IDS, or divide the thesis between INTD 491 and the other department.

one of:

- INTD 491 (3) Research Project
- INTD 492 (6) Honours Thesis

a minimum of 6 credits selected from the IDS Complementary Course list Group A. Only one course from each discipline can be counted.

12 to 15 credits to be selected from the IDS Complementary Course list Group B; at least 12 credits must be taken from one of the three categories.

At least 24 of the 36 credits must be at the 300 level or above; six of these must be at the 400 level.

2.4.5 IDS, Complementary Course Lists**IDS Complementary Course Lists for Minor Concentration, Major Concentration, Honours, Joint Honours****GROUP A**

- ANTH 202 (3) Comparative Cultures
- ANTH 212 (3) Anthropology of Development
- GEOG 210 (3) Global Places and Peoples
- GEOG 216 (3) Geography of the World Economy
- POLI 227 (3) Developing Areas/Introduction
- SOCI 254 (3) Development and Underdevelopment

GROUP B*Development Theory and World View*

- ANTH 341 (3) Women in Cross-Cultural Perspective
 - ANTH 342 (3) Gender, Inequality and the State
 - ANTH 349 (3) Transformation of Third World Societies
 - ANTH 439 (3) Theories of Development
 - RELG 252 (3) Hinduism and Buddhism
 - RELG 253 (3) Religions of East Asia
 - RELG 371 (3) Ethics of Violence/Non-Violence
- Up to 6 credits of Group A courses (not previously counted) may be used in this category.

Regions

- ANTH 321 (3) People and Cultures of Africa
- ANTH 322 (3) Social Change in Modern Africa
- ANTH 326 (3) Peoples of Central and South America
- ANTH 328 (3) Peoples and Cultures of South-East Asia
- ANTH 329 (3) Modern Chinese Society and Change
- ECON 411 (3) Economic Development: A World Area
- ENGL 321 (3) Caribbean Fiction
- FREN 313 (3) Francophonie 3
- HIST 197 (3) FYS: Race in Latin America
- HIST 200 (3) Introduction to African History
- HIST 201 (3) Modern African History
- HIST 208 (3) Introduction to East Asian History
- HIST 218 (3) Modern East Asian History
- HIST 309 (3) History of Latin America to 1825
- HIST 338 (3) China in Revolution 2: 1921-1997
- HIST 360 (3) Latin America since 1825
- HIST 374 (3) West Africa since 1800
- HIST 381 (3) Colonial Africa: Health/Disease
- HIST 382 (3) History of South Africa
- HIST 419 (3) Central America
- ISLA 411 (3) History of the Middle East, 1918-1945
- POLI 319 (3) Politics of Latin America
- POLI 322 (3) Political Change in South Asia
- POLI 323 (3) Developing Areas/China and Japan
- POLI 324 (3) Developing Areas/Africa
- POLI 340 (3) Developing Areas/Middle East
- POLI 341 (3) Foreign Policy: The Middle East
- POLI 349 (3) Foreign Policy: Asia

- SOCI 366 (3) Social Change in the Caribbean

Development Policies and Practices

- AGEC 430* (3) Agriculture, Food and Resource Policy
- AGEC 442* (3) Economics of International Agricultural Development
- AGRI 411* (3) International Agriculture
- ANTH 227 (3) Medical Anthropology
- ANTH 324 (3) Economic Anthropology
- ANTH 418 (3) Environment and Development
- ANTH 445 (3) Property and Land Tenure
- ECON 209 (3) Macroeconomic Analysis and Applications
- ECON 412 (3) Topics in Economic Development 1
- ECON 416 (3) Topics in Economic Development 2
- GEOG 404 (3) Environmental Management 2 (Panama Program only)
- GEOG 407 (3) Issues in Geography
- GEOG 408 (3) Geography of Development
- GEOG 410 (3) Geography of Underdevelopment: Current Problems
- GEOG 498 (3) Humans in Tropical Environments (Panama Program only)
- GEOG 510 (3) Humid Tropical Environments
- INTD 490 (3) Development Field Research
- MGCR 382 (3) International Business
- MIME 524 (3) Mineral Resources Economics
- NUTR 501* (3) Nutrition in Developing Countries
- ORGB 380 (3) Cross Cultural Management
- POLI 300D1 (3) Developing Areas/Revolution
- POLI 300D2 (3) Developing Areas/Revolution
- POLI 423 (3) Politics of Ethno-Nationalism
- POLI 445 (3) IPE: North-South Relations
- POLI 450 (3) Peacebuilding
- POLI 473 (3) Democracy and the Market
- POLI 522 (3) Seminar: Developing Areas
- SOCI 222 (3) Urban Sociology
- SOCI 234 (3) Population and Society
- SOCI 335 (3) Sociology of State Repression
- SOCI 418 (3) Human Rights and Humanitarianism
- SOCI 520 (3) Migration and Immigrant Groups
- SOCI 550 (3) Developing Societies
- SOCI 590 (3) Conflict and State Breakdown
- SWRK 400 (3) Policy and Practice for Refugees
- SWRK 532 (3) International Social Work

* These courses are normally offered only at Macdonald Campus.

2.5 Italian Studies**2.5.1 Course Lists for Departmental programs.**

The following Course Lists are referred to in:
 Minor Concentration in Italian Studies,
 Minor Concentration in Italian Civilization,
 Major Concentration in Italian Studies,
 Major Concentration in Italian Language and Literature,
 Honours in Italian Studies,
 Joint Honours in Italian Studies

ITALIAN STUDIES COURSE GROUPS*Group A – Basic Language Courses:*

- ITAL 205D1 (3) Italian for Beginners
- ITAL 205D2 (3) Italian for Beginners
- ITAL 206 (6) Beginners' Italian Intensive
- ITAL 210D1 (3) Elementary Italian
(may not be taken by students who have taken ITAL 205D1/ITAL 205D2 or ITAL 206)
- ITAL 210D2 (3) Elementary Italian
(may not be taken by students who have taken ITAL 205D1/ITAL 205D2 or ITAL 206)

ITAL 215D1 (3) Intermediate Italian
(may not be taken by students who have taken
ITAL 210D1/ITAL 210D2)

ITAL 215D2 (3) Intermediate Italian
(may not be taken by students who have taken
ITAL 210D1/ITAL 210D2)

ITAL 216 (6) Intermediate Italian Intensive

Group B – Courses taught in Italian:

ITAL 300* (3) Italian Literary Composition

ITAL 306* (6) Advanced Reading and Composition

* only one of ITAL 300 or ITAL 306 can count towards all
programs

ITAL 307 (3) Topics in Italian Culture

ITAL 308 (3) Business Italian 1

ITAL 311 (3) Twentieth Century Texts

ITAL 320 (3) Manzoni: Novel and Nationhood

ITAL 325 (3) Masterpieces of Italian Literature 1

ITAL 326 (3) Masterpieces of Italian Literature 2

ITAL 330 (3) Commedia dell'Arte

ITAL 331 (3) Drama from Goldoni to Pirandello

ITAL 341 (3) The Art of Essay Writing

ITAL 356 (3) Medieval Discourses on Love

ITAL 360 (3) Contemporary Italian Prose

ITAL 368 (3) Literature of the Renaissance

ITAL 370 (3) Italian Poetry and Music

ITAL 376 (3) Medieval Romance in Italy

ITAL 380 (3) Verga: The Illusion of Reality

ITAL 383 (3) Women's Writing since 1880

ITAL 410 (3) Modern Italian Literature

ITAL 411 (3) Pirandello

ITAL 415 (3) Italian Poetry 20th Century

ITAL 420 (3) Leopardi and Italian Romanticism

ITAL 435 (3) Ariosto's "Orlando Furioso"

ITAL 436 (3) Tasso's "Gerusalemme Liberata"

ITAL 461 (3) Dante: "The Divine Comedy"

ITAL 530 (3) 17th - 18th Century Culture

ITAL 542 (3) History of Italian Language

ITAL 551 (3) Boccaccio and the Italian Novella

ITAL 562 (3) Petrarch and Petrarchism

ITAL 563 (3) 13th-16th Century Literature

ITAL 590 (3) Italian Literary Criticism

Group C – Courses taught in English:

ITAL 199 (3) FYS: Italy's Literature in Context

ITAL 355 (3) Dante and The Middle Ages

ITAL 361 (3) Italian Prose after 1945

ITAL 363 (3) Gender, Literature and Society

ITAL 365 (3) The Italian Renaissance

ITAL 375 (3) Cinema and Society in Modern Italy

ITAL 385 (3) Italian Futurist Movement

ITAL 395 (3) Interdisciplinary Seminar

ITAL 412 (3) Pirandello and European Theatre

ITAL 416 (3) The Twentieth Century

ITAL 464 (3) Machiavelli

ITAL 477 (3) Italian Cinema and Video

Group D – Courses offered in other departments:

ANTH 337 (3) Mediterranean Society and Culture

ARTH 223 (3) Early Renaissance Art in Italy

ARTH 324 (3) High Renaissance Art in Italy

ARTH 325 (3) Venetian High Renaissance Painting

ARTH 332 (3) Italian Renaissance Architecture

CLAS 208 (3) Roman Literature and Society

CLAS 307 (3) Roman Comedy

CLAS 404 (3) Classical Tradition

ENGL 447 (3) Crosscurrents/English Literature and European
Literature 1

HIST 345 (3) History of Italian Renaissance

HIST 380 (3) Western Europe: The Middle Ages

HIST 398 (3) Topics in Italian History

HIST 401 (3) Topics: Medieval Culture and Society

MUHL 387 (3) Opera from Mozart to Puccini

POLI 414 (3) Society and Politics in Italy

SOCI 485 (3) Society, Economy and Polity in Italy

2.6 Linguistics

2.6.1 Applied Linguistics, Minor Concentration

MINOR CONCENTRATION IN APPLIED LINGUISTICS (Expandable) (18 credits)

Required Course (3 credits)

LING 201 (3) Introduction to Linguistics

Complementary Courses (15 credits)

6 credits to be selected from:

LING 230 (3) Phonetics

LING 301 (3) Structure of English

LING 331 (3) Phonology 1

LING 370 (3) Introduction to Semantics

LING 371 (3) Syntax 1

LING 440 (3) Morphology

9 credits, 3 credits of which must be at the 400/500 level,
to be selected from:

LING 200 (3) Introduction to the Study of Language

LING 320 (3) Sociolinguistics 1

LING 350 (3) Linguistic Aspects of Bilingualism

LING 355 (3) Language Acquisition 1

LING 390 (3) Neuroscience of Language

LING 419 (3) Linguistic Theory 1

LING 425 (3) Historical Linguistics

LING 450 (3) Linguistic Theory and Processing

LING 451 (3) Acquisition of Phonology

LING 455 (3) Second Language Syntax

LING 520 (3) Sociolinguistics 2

LING 521 (3) Dialectology

LING 555 (3) Language Acquisition 2

LING 590 (3) Introduction to Neurolinguistics

2.6.2 Linguistics, Major Concentration

MAJOR CONCENTRATION IN LINGUISTICS (36 credits)

Required Courses (21 credits)

LING 201 (3) Introduction to Linguistics

LING 230 (3) Phonetics

LING 331 (3) Phonology 1

LING 370 (3) Introduction to Semantics

LING 371 (3) Syntax 1

LING 440 (3) Morphology

PHIL 210 (3) Introduction to Deductive Logic 1

Complementary Courses (15 credits)

9 credits in Linguistics at the 400/500-level

6 credits in Linguistics (normally at the 200/300-level)

2.6.3 Linguistics, Honours

HONOURS PROGRAM IN LINGUISTICS (60 credits)

Required Courses (27 credits)

LING 201 (3) Introduction to Linguistics

LING 230 (3) Phonetics

LING 331 (3) Phonology 1

LING 370 (3) Introduction to Semantics

LING 371 (3) Syntax 1

LING 440 (3) Morphology

LING 480D1 (3) Honours Thesis

LING 480D2 (3) Honours Thesis

PHIL 210 (3) Introduction to Deductive Logic 1

Complementary Courses (33 credits)

21 credits in Linguistics:

15 credits at the 400/500 level, 3 of which must be selected from:

- LING 425 (3) Historical Linguistics
- LING 450 (3) Linguistic Theory and Processing
- LING 451 (3) Acquisition of Phonology
- LING 455 (3) Second Language Syntax
- LING 520 (3) Sociolinguistics 2
- LING 521 (3) Dialectology
- LING 525 (3) Topics in Historical Linguistics
- LING 555 (3) Language Acquisition 2
- LING 590 (3) Introduction to Neurolinguistics

6 credits others, usually at the 200/300 level.

12 credits in related fields to be selected from the following list:

Computer Science

- COMP 202 (3) Introduction to Computing 1
- COMP 203 (3) Introduction to Computing 2

French Language and Literature

- FREN 231 (3) Linguistique française
- FREN 336 (3) La langue française
- FREN 434 (3) Sociolinguistique du français

Language

Any course in language (other than the student's native language) - literature courses are not acceptable.

Mathematics

- MATH 240 (3) Discrete Structures 1
- MATH 328 (3) Computability and Mathematical Linguistics

Philosophy

Any course in logic or philosophy of science.

- PHIL 304 (3) Chomsky
- PHIL 306 (3) Philosophy of Mind
- PHIL 415 (3) Philosophy of Language
- PHIL 515 (3) Seminar: Philosophy of Language

Psychology

- PSYC 311 (3) Human Cognition and the Brain
- PSYC 316 (3) Psychology of Deafness
- PSYC 340 (3) Psychology of Language
- PSYC 341 (3) The Psychology of Bilingualism
- PSYC 343 (3) Language Learning in Children
- PSYC 530 (3) Applied Topics in Deafness
- PSYC 532 (3) Cognitive Science
- PSYC 561 (3) Methods: Developmental Psycholinguistics

Statistics

Any course in statistics (from any department).

2.6.4 Linguistics, Joint Honours**JOINT HONOURS PROGRAM – LINGUISTICS COMPONENT**

(36 credits)

Required Courses (24 credits)

- LING 201 (3) Introduction to Linguistics
- LING 230 (3) Phonetics
- LING 331 (3) Phonology 1
- LING 370 (3) Introduction to Semantics
- LING 371 (3) Syntax 1
- LING 440 (3) Morphology
- LING 481D1 (1.5) Joint Honours Thesis
- LING 481D2 (1.5) Joint Honours Thesis
- PHIL 210 (3) Introduction to Deductive Logic 1

Complementary Courses (12 credits)

9 credits in Linguistics courses at the 400/500 level.

3 credits in Linguistics courses (normally at the 200/300 level).

2.6.5 Theoretical Linguistics, Minor Concentration**MINOR CONCENTRATION IN THEORETICAL LINGUISTICS**

(Expandable) (18 credits)

Required Courses (9 credits)

- LING 201 (3) Introduction to Linguistics
- LING 230 (3) Phonetics
- LING 371 (3) Syntax 1

Complementary Courses (9 credits)

3 credits to be selected from:

- LING 331 (3) Phonology 1
- LING 370 (3) Introduction to Semantics
- LING 440 (3) Morphology

6 credits in other Linguistics courses, 3 credits of which must be above the 200-level (3 credits may be PHIL 210).

2.7 Religious Studies**2.7.1 Religious Studies, Honours****HONOURS PROGRAM IN RELIGIOUS STUDIES** (60 credits)**Required Courses** (9 credits)

- RELG 204 (3) Judaism, Christianity and Islam
- RELG 456 (3) Theories of Religion
- RELG 555 (3) Honours Seminar

Complementary Courses (51 credits)

3 credits, one of:

- RELG 252 (3) Hinduism and Buddhism
- RELG 253 (3) Religions of East Asia

6 credits of scriptural languages (Biblical Greek, Biblical Hebrew, Sanskrit, or Tibetan), related to the specialization Option and chosen in consultation with the adviser.

9 credits, religion and culture, chosen from:

- RELG 256 (3) Women in Judaism and Islam
- RELG 270 (3) Religious Ethics and the Environment
- RELG 271 (3) Sexual Ethics
- RELG 338 (3) Women and the Christian Tradition
- RELG 339 (3) Hindu and Buddhist Images of Feminine.
- RELG 340 (3) Religion and the Sciences
- RELG 341 (3) Introduction: Philosophy of Religion
- RELG 345 (3) Religion and the Arts
- RELG 361 (3) Religious Behaviour
- RELG 370 (3) Human Condition
- RELG 371 (3) Ethics of Violence/Non-Violence
- RELG 375 (3) Religion and Society
- RELG 376 (3) Religious Ethics
- RELG 377 (3) Religious Controversies

12 credits chosen from a list of approved courses in other departments in consultation with the adviser. At least 6 credits must be from the specialization option which was *not* selected.

21 credits chosen from either specialization, Option 1 or Option 2, at least 3 of these credits must be a 500-level research seminar.

Option 1: Western Religions

- JWST 510 (3) Jewish Bible Interpretation 1
- RELG 201 (3) Religions/Ancient Near East
- RELG 202 (3) Religion of Ancient Israel
- RELG 203 (3) Bible and Western Culture
- RELG 204 (3) Judaism, Christianity and Islam
- RELG 210 (3) Jesus of Nazareth
- RELG 300 (3) Post-Biblical Jewish Tradition
- RELG 301 (3) Jewish Thought 200 B.C.E. - 200 C.E.
- RELG 306 (3) Rabbinic Judaism
- RELG 308 (3) Ancient Bible Translations
- RELG 311 (3) New Testament Studies 1
- RELG 312 (3) New Testament Studies 2
- RELG 322 (3) The Church in History 1
- RELG 323 (3) The Church in History 2

RELG 326	(3)	Ancient Christian Church AD54- AD604
RELG 334	(3)	The Christian Faith
RELG 336	(3)	Contemporary Theological Issues
RELG 381	(3)	Advanced New Testament Greek
RELG 399	(3)	Christian Spirituality
RELG 423	(3)	Reformation Thought
RELG 438	(3)	Topics in Jewish Theology
RELG 482	(3)	Exegesis of Greek New Testament
RELG 491	(3)	Hebrew Texts
RELG 492	(3)	Hebrew Texts
RELG 532	(3)	History of Christian Thought 1
RELG 533	(3)	History of Christian Thought 2

Option 2: Asian Religions:

RELG 337	(3)	Themes in Buddhist Studies
RELG 339	(3)	Hindu and Buddhist Images of Feminine
RELG 342	(3)	Theravada Buddhist Literature
RELG 344	(3)	Maháyána Buddhism
RELG 348	(3)	Classical Hinduism
RELG 350	(3)	Bhakti Hinduism
RELG 352	(3)	Japanese Religions
RELG 354	(3)	Chinese Religions
RELG 442	(3)	Pure Land Buddhism
RELG 451	(3)	Zen: Maxims and Methods
RELG 452	(3)	East Asian Buddhism
RELG 454	(3)	Modern Hindu Thought
RELG 546	(3)	Indian Philosophy
RELG 548	(3)	Indian Buddhist Philosophy
RELG 549	(3)	East Asian Buddhist Philosophy
RELG 552	(3)	Advaita Vedanta
RELG 553	(3)	Religions of South India 1
RELG 554	(3)	Religions of South India 2
RELG 556	(3)	Issues in Buddhist Studies
EAST 354	(3)	Taoist and Buddhist Apocalypses

2.7.2 Scriptural Languages, Minor Concentration (Stream II, Indo-Tibetan Languages)**MINOR CONCENTRATION IN SCRIPTURAL LANGUAGES**

(18 credits) (Non-expandable)

Students will chose from one of two streams:

Stream I: Biblical Languages

Stream II: Sanskrit.

Minor Concentration in Scriptural Languages Stream II: Indo-Tibetan Languages

Sanskrit is the language of classical Indian civilization and is recommended for students interested in gaining access to religious texts, philosophical works, academic treatises on all subjects and poetry written in classical and medieval India.

Classical Tibetan is one of the main scriptural languages of Buddhism. Many texts originally composed in Sanskrit are only extant in their Tibetan translations, and a vast body of philosophical, devotional, poetic and academic works composed in Classical Tibetan are only accessible to one who has a firm grasp of the language.

Complementary Courses (18 credits)

chosen from among the following:

Sanskrit

RELG 257D1	(3)	Introductory Sanskrit
RELG 257D2	(3)	Introductory Sanskrit
RELG 357D1	(3)	Sanskrit 2
RELG 357D2	(3)	Sanskrit 2
RELG 457D1	(3)	Advanced Sanskrit
RELG 457D2	(3)	Advanced Sanskrit

Tibetan:

RELG 264	(3)	Introductory Tibetan 1
RELG 265	(3)	Introductory Tibetan 2
RELG 364	(3)	Intermediate Tibetan 1
RELG 365	(3)	Intermediate Tibetan 2

RELG 464	(3)	Advanced Tibetan 1
RELG 465	(3)	Advanced Tibetan 2

2.7.3 Scriptures and Interpretations, Major Concentration**MAJOR CONCENTRATION IN SCRIPTURES AND INTERPRETATIONS** (36 credits)**Required Courses** (6 credits)

RELG 307	(3)	Scriptural Interpretation
RELG 456	(3)	Theories of Religion

Complementary Courses (30 credits)

30 credits, a minimum of 18 credits from one area of specialization and a minimum of 6 credits from a second area. No more than 12 credits of complementary courses may be taken at the 200-level.

(a) Jewish Scriptures and the History of Their Interpretation

JWST 310	(3)	Believers, Heretics and Critics
JWST 324	(3)	Biblical Interpretation - Antiquity
JWST 327	(3)	A Book of the Bible
JWST 328	(3)	A Book of the Bible
JWST 329	(3)	A Book of the Bible
JWST 330	(3)	A Book of the Bible
JWST 331	(3)	Bible Interpretation/Medieval Ashkenaz
JWST 332	(3)	Bible Interpretation/Sefardic Tradition
JWST 510	(3)	Jewish Biblical Interpretation 1
JWST 511	(3)	Jewish Biblical Interpretation 2
RELG 202	(3)	Religion of Ancient Israel
RELG 203	(3)	Bible and Western Culture
RELG 300	(3)	Post-Biblical Jewish Tradition
RELG 302	(3)	Old Testament Studies 1
RELG 303	(3)	Literature of Ancient Israel 2
RELG 306	(3)	Rabbinic Judaism
RELG 308	(3)	Ancient Bible Translations
RELG 390D1	(3)	Elementary Biblical Hebrew
RELG 390D2	(3)	Elementary Biblical Hebrew
RELG 407	(3)	The Writings
RELG 408	(3)	The Prophets
RELG 491	(3)	Hebrew Texts
RELG 492	(3)	Hebrew Texts

(b) Christian Scriptures and the History of Their Interpretation

RELG 203	(3)	Bible and Western Culture
RELG 210	(3)	Jesus of Nazareth
RELG 280	(6)	Elementary New Testament Greek
RELG 302	(3)	Old Testament Studies 1
RELG 303	(3)	Literature of Ancient Israel 2
RELG 308	(3)	Ancient Bible Translations
RELG 311	(3)	New Testament Studies 1
RELG 312	(3)	New Testament Studies 2
RELG 381	(3)	Advanced New Testament Greek
RELG 411	(3)	New Testament Exegesis
RELG 482	(3)	Exegesis of Greek New Testament

(c) Hindu and Buddhist Scriptures and the Histories of Their Interpretations

RELG 252	(3)	Hinduism and Buddhism
RELG 253	(3)	Religions of East Asia
RELG 254	(3)	Introduction to Sikhism
RELG 257D1	(3)	Introductory Sanskrit
RELG 257D2	(3)	Introductory Sanskrit
RELG 264	(3)	Introductory Tibetan 1
RELG 265	(3)	Introductory Tibetan 2
RELG 337	(3)	Themes in Buddhist Studies
RELG 342	(3)	Theravada Buddhist Literature
RELG 344	(3)	Maháyána Buddhism
RELG 348	(3)	Classical Hinduism
RELG 350	(3)	Bhakti Hinduism
RELG 352	(3)	Japanese Religions
RELG 354	(3)	Chinese Religions

RELG 357D1	(3)	Sanskrit 2
RELG 357D2	(3)	Sanskrit 2
RELG 364	(3)	Intermediate Tibetan 1
RELG 365	(3)	Intermediate Tibetan 2
RELG 442	(3)	Pure Land Buddhism
RELG 443	(3)	Japanese Esoteric Buddhism
RELG 451	(3)	Zen: Maxims and Methods
RELG 452	(3)	East Asian Buddhism
RELG 454	(3)	Modern Hindu Thought
RELG 457D1	(3)	Advanced Sanskrit
RELG 457D2	(3)	Advanced Sanskrit
RELG 464	(3)	Advanced Tibetan 1
RELG 465	(3)	Advanced Tibetan 2
RELG 546	(3)	Indian Philosophy
RELG 548	(3)	Indian Buddhist Philosophy
RELG 552	(3)	Advaita Vedanta
RELG 553	(3)	Religions of South India 1
RELG 554	(3)	Religions of South India 2

2.7.4 World Religions, Minor Concentration

MINOR CONCENTRATION IN WORLD RELIGIONS (18 credits)
(Expandable to Major Concentration in World Religions)

Complementary Courses (18 credits*)

12 credits in Religious Traditions, chosen from the following:

Judaism and Christianity:

RELG 201	(3)	Religions/Ancient Near East
RELG 202	(3)	Religion of Ancient Israel
RELG 203	(3)	Bible and Western Culture
RELG 204	(3)	Judaism, Christianity and Islam
RELG 210	(3)	Jesus of Nazareth
RELG 302	(3)	Old Testament Studies 1
RELG 303	(3)	Literature of Ancient Israel 2
RELG 306	(3)	Rabbinic Judaism
RELG 311	(3)	New Testament Studies 1
RELG 312	(3)	New Testament Studies 2
RELG 320	(3)	History of Christian Thought 1
RELG 322	(3)	The Church in History 1
RELG 323	(3)	The Church in History 2
RELG 324	(3)	Armenian Apostolic Tradition
RELG 325	(3)	Varieties Religious Experience in Christianity
RELG 326	(3)	Ancient Christian Church AD54 - AD604
RELG 327	(3)	History of Christian Thought 2
RELG 330	(3)	Reformed Theology
RELG 336	(3)	Contemporary Theological Issues
RELG 338	(3)	Women and the Christian Tradition
RELG 399	(3)	Christian Spirituality
RELG 420	(3)	Canadian Church History
RELG 423	(3)	Reformation Thought
RELG 470	(3)	Theological Ethics

Hinduism and Buddhism:

RELG 252	(3)	Hinduism and Buddhism
RELG 253	(3)	Religions of East Asia
RELG 337	(3)	Themes in Buddhist Studies
RELG 339	(3)	Hindu and Buddhist Images of Feminine
RELG 342	(3)	Theravada Buddhist Literature
RELG 344	(3)	Mahāyāna Buddhism
RELG 348	(3)	Classical Hinduism
RELG 350	(3)	Bhakti Hinduism
RELG 352	(3)	Japanese Religions
RELG 354	(3)	Chinese Religions
RELG 442	(3)	Pure Land Buddhism
RELG 451	(3)	Zen: Maxims and Methods
RELG 452	(3)	East Asian Buddhism
RELG 454	(3)	Modern Hindu Thought
RELG 546	(3)	Indian Philosophy
RELG 548	(3)	Indian Buddhist Metaphysics
RELG 549	(3)	East Asian Buddhist Philosophy
RELG 552	(3)	Advaita Vedanta

RELG 553	(3)	Religions of South India 1
RELG 554	(3)	Religions of South India 2
RELG 556	(3)	Issues in Buddhist Studies
RELG 557	(3)	Asian Ethical Systems

6 credits in Comparative Studies, chosen from the following:

RELG 207	(3)	The Study of World Religions 1
RELG 256	(3)	Women in Judaism and Islam
RELG 270	(3)	Religious Ethics and the Environment
RELG 271	(3)	Sexual Ethics
RELG 307	(3)	Scriptural Interpretation
RELG 315	(3)	Special Topics in Religion
RELG 316	(3)	New Religious Movements
RELG 341	(3)	Introduction: Philosophy of Religion
RELG 345	(3)	Religion and the Arts
RELG 361	(3)	Religious Behaviour
RELG 370	(3)	Human Condition
RELG 371	(3)	Ethics of Violence/Non-Violence
RELG 376	(3)	Religious Ethics
RELG 555	(3)	Honours Seminar
RELG 571	(3)	Religion and Medicine

* No more than 12 credits of the Minor may be taken at the 200 level.

2.7.5 World Religions, Major Concentration

MAJOR CONCENTRATION IN WORLD RELIGIONS
(36 credits)

Required Course (3 credits)

RELG 456	(3)	Theories of Religion
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Complementary Courses (33 credits)

33 credits, no more than 12 of which be taken at the 200-level.

24 credits in World Religions chosen from the following, according to the student's area of interest:

Judaism and Christianity

RELG 201	(3)	Religions/Ancient Near East
RELG 202	(3)	Religion of Ancient Israel
RELG 203	(3)	Bible and Western Culture
RELG 204	(3)	Judaism, Christianity and Islam
RELG 210	(3)	Jesus of Nazareth
RELG 302	(3)	Old Testament Studies 1
RELG 303	(3)	Literature of Ancient Israel 2
RELG 306	(3)	Rabbinic Judaism
RELG 311	(3)	New Testament Studies 1
RELG 312	(3)	New Testament Studies 2
RELG 320	(3)	History of Christian Thought 1
RELG 322	(3)	The Church in History 1
RELG 323	(3)	The Church in History 2
RELG 324	(3)	Armenian Apostolic Tradition
RELG 325	(3)	Varieties Religious Experience in Christianity
RELG 326	(3)	Ancient Christian Church AD54 - AD604
RELG 327	(3)	History of Christian Thought 2
RELG 336	(3)	Contemporary Theological Issues
RELG 338	(3)	Women and the Christian Tradition
RELG 399	(3)	Christian Spirituality
RELG 420	(3)	Canadian Church History
RELG 423	(3)	Reformation Thought
RELG 470	(3)	Theological Ethics

Hinduism and Buddhism

RELG 252	(3)	Hinduism and Buddhism
RELG 253	(3)	Religions of East Asia
RELG 337	(3)	Themes in Buddhist Studies
RELG 339	(3)	Hindu and Buddhist Images of Feminine
RELG 342	(3)	Theravada Buddhist Literature
RELG 344	(3)	Mahāyāna Buddhism
RELG 348	(3)	Classical Hinduism
RELG 350	(3)	Bhakti Hinduism
RELG 352	(3)	Japanese Religions
RELG 354	(3)	Chinese Religions

RELG 442	(3)	Pure Land Buddhism
RELG 451	(3)	Zen: Maxims and Methods
RELG 452	(3)	East Asian Buddhism
RELG 454	(3)	Modern Hindu Thought
RELG 546	(3)	Indian Philosophy
RELG 548	(3)	Indian Buddhist Philosophy
RELG 549	(3)	East Asian Buddhist Philosophy
RELG 552	(3)	Advaita Vedanta
RELG 553	(3)	Religions of South India 1
RELG 554	(3)	Religions of South India 2
RELG 556	(3)	Issues in Buddhist Studies
RELG 557	(3)	Asian Ethical Systems

9 credits in Comparative Studies, chosen from the following according to the student's area of interest:

RELG 207	(3)	The Study of World Religions 1
RELG 256	(3)	Women in Judaism and Islam
RELG 270	(3)	Religious Ethics and the Environment
RELG 271	(3)	Sexual Ethics
RELG 307	(3)	Scriptural Interpretation
RELG 315	(3)	Special Topics in Religion
RELG 316	(3)	New Religious Movements
RELG 341	(3)	Introduction: Philosophy of Religion
RELG 345	(3)	Religion and the Arts
RELG 361	(3)	Religious Behaviour
RELG 370	(3)	Human Condition
RELG 371	(3)	Ethics of Violence/Non-Violence
RELG 376	(3)	Religious Ethics
RELG 571	(3)	Religion and Medicine
RELG 555	(3)	Honours Seminar

3 Education

3.1 Bachelor of Education Kindergarten and Elementary Program

The four-year program begins with the foundation courses in the first term and has a higher concentration of academic courses in the first two years. The professional courses and practicum have a heavier weight in the final two years. The practicum consists of school-based experiences and a series of professional seminars that provide an opportunity for students to reflect on that experience in a systematic way and with the guidance of a tutor.

ACADEMIC COMPONENT		CREDITS
		42
This component provides background in the subject areas of the elementary school curriculum. During their four years of study, students will take:		
Required Courses		12
EDEC 203	Communication in Education	3
EDEE 230	Elementary School Mathematics	3
EDEE 270	Elementary School Science	3
EDEE 280	Geography, History and Citizenship Education	3
Complementary Courses		30
a) one of:		3
EDER 209	Search for Authenticity	
EDER 309	The Religious Quest	
EDER 394	Philosophy of God	
EDER 395	Moral Values and Human Action	
EDER 473	Living with Insight	
EDER 494	Ethics in Practice	
b) 18 credits from one of these areas:		18
English, Mathematics, Natural Sciences, Social Sciences, The Arts, Physical Education, Moral and Religious Education, French		
9 credits, 3 credits from each of any three areas not chosen in b) above.		9

PROFESSIONAL COMPONENT 72

This component includes the practicum, theoretical aspects of pedagogy, the pedagogical support for the practicum and foundation courses, divided as follows:

PRACTICUM		24
Required Courses		
Field Experiences		
EDFE 200	First Year Field Experience	2
EDFE 253	Second Field Experience (K/Elem)	4
EDFE 303	Third Field Experience (K/Elem)	7
EDFE 406	Fourth Field Experience (K/Elem)	7
PROFESSIONAL SEMINARS		
EDEC 201	First Year Professional Seminar	1
EDEC 405	Fourth Year Professional Seminar (K/Elem)	3

FOUNDATIONS 15

Required Courses		
EDEM 405	Policy Issues in Quebec Education	3
EDPI 309	Exceptional Students	3
EDPI 341	Instruction in Inclusive Schools	3
EDPE 300	Educational Psychology	3

Complementary Courses 3

one of:

EDER 398	Philosophy of Catholic Education	
EDER 400	Philosophical Foundations of Education	

PEDAGOGY 22

Required Courses		
EDEE 223	Language Arts Part 1	3
EDEE 250	The Kindergarten Classroom	2
EDEE 275	Science Teaching	2
EDEE 282	Teaching Social Sciences	2
EDEE 332	Teaching Mathematics 1	3
EDEE 350	Integrating the Curriculum	2

Complementary Courses 2

one of:

EDER 360	MRE in the K/Elem. Curriculum	
EDER 375	Catholic Religious Education (K/Elem)	

6 additional credits of methodology courses chosen from Plastic Arts, Drama, Music, Physical Education, L2 teaching, at least one course must be from Plastic Arts, Drama, Music

PEDAGOGICAL SUPPORT 11

Required Courses		
EDEE 352	Classroom Practices	2
EDEE 355	Classroom-based Evaluation	3

Complementary Courses 3

EDEC 402 Media, Technology and Education or, for students with a background in computers or other media applications in education, one of the following 3-credit courses may substitute for the above:

EDPT 341	Instructional Programming 1	
EDPT 420	Media Literacy for Education	

one 3-credit course in Multicultural Education from the following list:

EDER 464	Intercultural Education	
EDEE 441	First Nations and Inuit Education	
EDEC 410	Multi-cultured/Multi-racial Class	

ELECTIVE COURSES 6

TOTAL CREDITS 120

3.1.1 Jewish Studies Option

This option, Jewish Studies, is offered within the Bachelor of Education in Kindergarten and Elementary Education.

Students who wish to follow this option should contact:
 Professor Eric Caplan
 Department of Integrated Studies in Education
 Faculty of Education
 Telephone: (514) 398-6544
 e-mail: eric.caplan@mcgill.ca

ACADEMIC COMPONENT	CREDITS	Required Courses	
	42	EDEE 223 Language Arts Part 1	3
This component provides background in the subject areas of the elementary school curriculum. During their four years of study, students will take:		EDEE 250 The Kindergarten Classroom	2
Required Courses	12	EDEE 275 Science Teaching	2
EDEC 203 Communication in Education	3	EDEE 282 Teaching Social Sciences	2
EDEE 230 Elementary School Mathematics	3	EDEE 332 Teaching Mathematics 1	3
EDEE 270 Elementary School Science	3	EDEE 350 Integrating the Curriculum	2
JWST 211 Jewish Studies 1: Biblical Period	3	EDER 252 Understanding and Teaching Jewish Life	3
Complementary Courses	30	EDER 401 Teaching Biblical Literature - Jewish School 1	3
12 credits in Jewish Studies chosen from:	12	EDER 407 Teaching the Jewish Liturgy	3
JWST 345 Introduction to Rabbinic Literature or RELG 306 Rabbinic Judaism		EDER 421 Teaching the Holocaust	3
JWST 314 Denominations in North American Judaism		Complementary Courses	5
or SOCI 327 Jews in North America		one of:	2
JWST 206 Introduction to Yiddish Literature		EDER 375 Catholic Religious Education (K/Elem)	
or JWST 325 Israeli Literature in Translation		EDER 360 MRE in the K/Elem. Curriculum	
JWST 365 Modern Jewish Ideologies		one of:	3
or JWST 366 History of Zionism		EDEA 332 Art Curriculum and Instruction - Elementary	
POLI 347 Arab-Israel Conflict, Crisis, Peace		EDEA 342 Curriculum and Instruction in Drama Education	
or POLI 437 Politics in Israel		EDEA 345 Music Curriculum and Instruction for Generalists	
HIST 207 Jewish History: 400 BCE to 1000		PEDAGOGICAL SUPPORT	11
or JWST 216 Jewish Studies 2: 400 BCE-1000		Required Courses	
HIST 219 Jewish History: 1000-2000		EDEE 352 Classroom Practices	2
or JWST 217 Jewish Studies 3: 1000 to 2000		EDEE 355 Classroom-based Evaluation	3
JWST 367 Studies in Hebrew Language and Literature		Complementary Courses	
JWST 368 Studies in Hebrew Language and Literature		EDEC 402 Media, Technology and Education	3
JWST 369 Studies in Hebrew Language and Literature		or, for students with a background in computers or other media applications in education, one of the following 3-credit courses may substitute for the above:	
JWST 370 Studies in Hebrew Language and Literature		EDPT 341 Instructional Programming 1	
6 credits in Jewish Studies chosen from:	6	EDPT 420 Media Literacy for Education	
JWST 327 A Book of the Bible		one 3-credit course in Multicultural Education from the following list:	3
JWST 328 A Book of the Bible		EDER 464 Intercultural Education	
JWST 329 A Book of the Bible		EDEE 441 First Nations and Inuit Education	
JWST 330 A Book of the Bible		EDEC 410 Multi-cultured/Multi-racial Class	
JWST 331 Bible Interpretation/Medieval Ashkenaz		ELECTIVE COURSES	3
or JWST 332 Bible Interpretation/Sefardic Tradition		TOTAL CREDITS	126
or JWST 510 Jewish Bible Interpretation 1			
12 credits, 3 credits from each of any four other subject areas: English, Mathematics, Natural Sciences, Social Sciences, The Arts, Physical Education, Moral and Religious Education, French.	12		
PROFESSIONAL COMPONENT	81	4 Engineering	
This component includes the practicum, theoretical aspects of pedagogy, the pedagogical support for the practicum and foundation courses, divided as follows:		4.1 Electrical and Computer Engineering	
PRACTICUM	24	4.1.1 B.Eng. Degree in Computer Engineering	
Required Courses		REQUIRED COURSES	COURSE CREDIT
Field Experiences		Non-Departmental Courses	
EDFE 200 First Year Field Experience	2	MATH 260 Intermediate Calculus	3
EDFE 253 Second Field Experience (K/Elem)	4	MATH 261 Differential Equations	3
EDFE 303 Third Field Experience (K/Elem)	7	or MATH 325 Ordinary Differential Equations (3)	
EDFE 406 Fourth Field Experience (K/Elem)	7	MATH 265 Advanced Calculus	3
PROFESSIONAL SEMINARS		or MATH 248* Advanced Calculus 1 (3)	
EDEC 201 First Year Professional Seminar	1	MATH 270 Applied Linear Algebra	3
EDEC 405 Fourth Year Professional Seminar (K/Elem)	3	or MATH 247* Linear Algebra (3)	
FOUNDATIONS	15	MATH 363 Discrete Mathematics	3
Required Courses		MATH 381 Complex Variables and Transforms	3
EDEM 405 Policy Issues in Quebec Education	3	CIVE 281 Analytical Mechanics	3
EDER 320 Visions and Realities of Jewish Education	3	or PHYS 251 Classical Mechanics 1 (3)	
EDPI 309 Exceptional Students	3	MIME 221 Engineering Professional Practice	2
EDPI 341 Instruction in Inclusive Schools	3	MIME 310 Engineering Economy	3
EDPE 300 Educational Psychology	3	COMP 202 Introduction to Computing 1	3
PEDAGOGY	31	COMP 250 Introduction to Computer Science	3

COMP 302	Programming Languages and Paradigms	3	
EDEC 206	Communication in Engineering	3	38
* CGPA of 3.30 is required to register for MATH 247 and MATH 248.			
Departmental Courses			
ECSE 200	Fundamentals of Electrical Engineering	3	
ECSE 210	Circuit Analysis	3	
ECSE 221	Introduction to Computer Engineering	3	
ECSE 291	Electrical Measurements Laboratory	2	
ECSE 303	Signals and Systems 1	3	
ECSE 304	Signals and Systems 2	3	
ECSE 305	Probability and Random Sig. 1	3	
ECSE 321	Introduction to Software Engineering	3	
ECSE 322	Computer Engineering	3	
ECSE 323	Digital System Design	5	
ECSE 330	Introduction to Electronics	3	
ECSE 334	Introduction to Microelectronics	5	
ECSE 353	Electromagnetic Fields and Waves	3	
ECSE 425	Computer Organization and Architecture	3	
ECSE 427	Operating Systems	3	
ECSE 494	Electrical Engineering Design Project	3	51
COMPLEMENTARY COURSES			
Technical Complementaries			
Three courses (9 credits) selected from:			
ECSE 404	Control Systems		9
ECSE 411	Communications Systems 1		
ECSE 412	Discrete Time Signal Processing		
ECSE 414	Introduction to Telecommunication Networks		
or COMP 535	Computer Networks 1		
ECSE 424	Human-Computer Interaction		
ECSE 426	Microprocessor Systems		
ECSE 428	Software Engineering Practice		
ECSE 431	Introduction to VSLI CAD		
ECSE 530	Logic Synthesis		
ECSE 526	Artificial Intelligence		
ECSE 531	Real Time Systems		
ECSE 532	Computer Graphics		
ECSE 548	Introduction to VLSI Systems		
COMP 420	Files and Databases		
COMP 431	Algorithms and Engineers		
COMP 575	Fundamentals of Distributed Algorithms		
Laboratory Complementaries			
Two of the following nine 400-level laboratory courses:			
ECSE 426	Microprocessor Systems		4
ECSE 431	Introduction to VSLI CAD		
ECSE 435	Mixed-Signal Test Techniques		
ECSE 486	Power Laboratory		
ECSE 487	Computer Architecture Laboratory		
ECSE 489	Telecommunication Network Lab		
ECSE 490	Digital Signal Processing Laboratory		
ECSE 491	Communication Systems Laboratory		
ECSE 493	Control and Robotics Laboratory		
General Complementaries			
Two courses (6 credits), selected from an approved list: one course on the impact of technology on society and one in the humanities and social sciences, administrative studies and law. See section 3.4 "Complementary Studies", under the Faculty of Engineering in the Undergraduate Programs Calendar, for further information.			
TOTAL CREDITS			108

4.1.2 Bachelor of Software Engineering (B.S.E.)

CURRICULUM FOR THE BACHELOR OF SOFTWARE ENGINEERING (B.S.E.)

		COURSE CREDIT
REQUIRED COURSES		
COMP 202	Introduction to Computing 1	3
COMP 206	Introduction to Software Systems	3
COMP 250	Introduction to Computer Science	3
COMP 251	Data Structures and Algorithms	3
COMP 302	Programming Languages and Paradigms	3
COMP 330	Theoretical Aspects: Computer Science	3
COMP 360	Algorithm Design Techniques	3
COMP 361	Systems Development Project	3
COMP 420	Files and Databases	3
ECSE 221	Introduction to Computer Engineering	3
ECSE 321	Introduction to Software Engineering	3
ECSE 322	Computer Engineering	3
ECSE 427	Operating Systems	3
ECSE 428	Software Engineering Practice	3
ECSE 429	Software Validation	3
ECSE 495	Software Engineering Design Project	3
MATH 260	Intermediate Calculus	3
MATH 261	Differential Equations	3
MATH 265	Advanced Calculus	3
MATH 270	Applied Linear Algebra	3
MATH 363	Discrete Mathematics	3
MATH 381	Complex Variables and Transforms	3 66
Engineering Breadth Required Courses		
ECSE 200	Fundamentals of Electrical Engineering	3
ECSE 210	Circuit Analysis	3
ECSE 291	Electrical Measurements Laboratory	2
ECSE 303	Signals and Systems 1	3
ECSE 305	Probability and Random Sig. 1	3
ECSE 330	Introduction to Electronics	3
EDEC 206	Communication in Engineering	3
MIME 310	Engineering Economy	3
MIME 221	Engineering Professional Practice	2 25
Technical Complementaries		
Students must take 11-12 credits of technical complementaries from the following list, of which at least 6 credits must be taken from list A and the remainder from list B.		
Group A Technical Complementaries		
COMP 350	Numerical Computing	
COMP 409	Concurrent Programming	
COMP 424	Topics: Artificial Intelligence 1	
COMP 433	Personal Software Engineering	
COMP 524	Theoretical Foundations of Programming Languages	
COMP 575	Fundamentals of Distributed Algorithms	
Group B Technical Complementaries		
ECSE 304	Signals and Systems 2	
ECSE 323	Digital Systems Design	
ECSE 404	Control Systems	
ECSE 411	Communications Systems 1	
ECSE 412	Discrete Time Signal Processing	
ECSE 413	Communications Systems 2	
ECSE 414	Introduction to Telecommunication Networks	
or COMP 535	Computer Networks 1	
ECSE 421	Embedded Systems	
ECSE 422	Fault Tolerant Computing	
ECSE 420	Parallel Computing	
ECSE 424	Human-Computer Interaction	
ECSE 425	Computer Organization and Architecture	
ECSE 426	Microprocessor Systems	

or COMP 573	Microcomputers
ECSE 504	Computer Control
ECSE 522	Asynchronous Circuits and Systems
ECSE 526	Artificial Intelligence
ECSE 529	Image Processing and Communication
ECSE 530	Logic Synthesis
ECSE 531	Real Time Systems
ECSE 532	Computer Graphics
or COMP 557	Computer Graphics
COMP 410	Mobile Computing
COMP 412	Software for E-commerce
COMP 505	Advanced Computer Architecture
COMP 520	Compiler Design
COMP 566	Discrete Optimization 1

General Complementaries**6**

Two courses (6 credits), selected from an approved list: one course on the impact of technology on society and one in the humanities and social sciences, administrative studies and law. See section 3.4 "Complementary Studies", under the Faculty of Engineering in the Undergraduate Programs Calendar, for further information.

TOTAL CREDITS **108/109****4.2 Mechanical Engineering****4.2.1 B.Eng. Degree in Mechanical Engineering (Regular)**

REQUIRED COURSES	COURSE CREDIT	
Non-Departmental Subjects		
CIVE 207	Solid Mechanics	4
COMP 208	Computers in Engineering	3
ECSE 461	Electric Machinery	3
EDEC 206	Communication in Engineering	3
MATH 260	Intermediate Calculus	3
MATH 261	Differential Equations	3
MATH 265	Advanced Calculus	3
MATH 266	Linear Algebra and Boundary Value Problems	4
MIME 221	Engineering Professional Practice	2
MIME 260	Materials Science and Engineering	3
MIME 310	Engineering Economy	3
Departmental Courses		
MECH 201	Introduction to Mechanical Engineering	2
MECH 210	Mechanics 1	2
MECH 220	Mechanics 2	4
MECH 240	Thermodynamics 1	3
MECH 260	Machine Tool Laboratory	2
MECH 262	Statistics and Measurement Laboratory	3
MECH 291	Graphics	3
MECH 292	Design 1	3
MECH 309	Numerical Methods in Mechanical Engineering	3
MECH 314	Dynamics of Mechanisms	3
MECH 315	Mechanics 3	4
MECH 321	Mechanics of Deformable Solids	3
MECH 331	Fluid Mechanics 1	3
MECH 341	Thermodynamics 2	3
MECH 346	Heat Transfer	3
MECH 362	Mechanical Laboratory 1	2
MECH 383	Applied Electronics and Instrumentation	3
MECH 393	Design 2	3
MECH 412	Dynamics of Systems	3
MECH 430	Fluid Mechanics 2	3
MECH 463D1	Mechanical Engineering Project	3
MECH 463D2	Mechanical Engineering Project	3
		64

COMPLEMENTARY COURSES**15**

2 courses (6 credits) at the 300 level or higher to be selected from Mechanical Engineering. For students who entered in September 2000 or later, one of these two courses must be chosen from the following list:

MECH 343	Energy Conversion
MECH 413	Control Systems
MECH 432	Aircraft Structures
MECH 471	Industrial Engineering
MECH 472	Case Studies in Project Mgmt Design 3
MECH 495	Design 3
MECH 496	Design 4
MECH 497	Value Engineering
MECH 524	Computer Integrated Manufacturing
MECH 526	Manufacturing and the Environment
MECH 528	Product Design
MECH 532	Aircraft Performance, Stability and Control
MECH 541	Kinematic Synthesis
MECH 543	Design with Composite Materials
MECH 554	Microprocessors for Mechanical Systems
MECH 557	Mechatronic Design
MECH 565	Fluid Flow and Heat Transfer Equipment
MECH 572	Introduction to Robotics
MECH 573	Mechanics of Robotic Systems
MECH 577	Optimum Design

1 course (3 credits) at the 300-level or higher from the Faculty of Engineering or an approved course in the Faculty of Science, including Mathematics.

Two courses (6 credits), selected from an approved list: one course on the impact of technology on society and one in the humanities and social sciences, administrative studies and law. See section 3.4 "Complementary Studies", under the Faculty of Engineering in the Undergraduate Programs Calendar, for further information.

TOTAL CREDITS **113****4.2.2 B.Eng. Degree in Mechanical Engineering (Honours)**

REQUIRED COURSES	COURSE CREDIT	
Non-Departmental Subjects		
CIVE 207	Solid Mechanics	4
EDEC 206	Communication in Engineering	3
COMP 208	Computers in Engineering	3
MATH 260	Intermediate Calculus	3
MATH 261	Differential Equations	3
MATH 265	Advanced Calculus	3
MATH 266	Linear Algebra and Boundary Value Problems	4
MIME 221	Engineering Professional Practice	2
MIME 310	Engineering Economy	3
Departmental Courses		
MECH 201	Introduction to Mechanical Engineering	2
MECH 210	Mechanics 1	2
MECH 220	Mechanics 2	4
MECH 240	Thermodynamics 1	3
MECH 260	Machine Tool Laboratory	2
MECH 262	Statistics and Measurement Laboratory	3
MECH 291	Graphics	3
MECH 292	Design 1	3
MECH 309	Numerical Methods in Mechanical Engineering	3
MECH 321	Mechanics of Deformable Solids	3
MECH 331	Fluid Mechanics 1	3
MECH 341	Thermodynamics 2	3
MECH 346	Heat Transfer	3
		28

MECH 362	Mechanical Laboratory 1	2	
MECH 383	Applied Electronics and Instrumentation	3	
MECH 403D1	Thesis (Honours)	3	
MECH 403D2	Thesis (Honours)	3	
MECH 404	Honours Thesis 2	3	
MECH 419	Advanced Mechanics of Systems	3	
MECH 430	Fluid Mechanics 2	3	
MECH 452	Mathematical Methods in Engineering 1	3	
MECH 494	Honours Design Project	3	63

COMPLEMENTARY COURSES

2 of the following three courses (6 credits):

MECH 545	Advanced Stress Analysis	
MECH 562	Advanced Fluid Mechanics	
MECH 578	Advanced Thermodynamics	

2 courses (6 credits) at the 300 level or higher to be selected from Mechanical Engineering. For students who entered in September 2000 or later, one of these two courses must be chosen from the following list:

MECH 343	Energy Conversion	
MECH 413	Control Systems	
MECH 432	Aircraft Structures	
MECH 471	Industrial Engineering	
MECH 472	Case Studies in Project Mgmt	
MECH 495	Design 3	
MECH 496	Design 4	
MECH 497	Value Engineering	
MECH 524	Computer Integrated Manufacturing	
MECH 526	Manufacturing and the Environment	
MECH 528	Product Design	
MECH 532	Aircraft Performance, Stability and Control	
MECH 541	Kinematic Synthesis	
MECH 543	Design with Composite Materials	
MECH 554	Microprocessors for Mechanical Systems	
MECH 557	Mechatronic Design	
MECH 565	Fluid Flow and Heat Transfer Equipment	
MECH 572	Introduction to Robotics	
MECH 573	Mechanics of Robotic Systems	
MECH 577	Optimum Design	

1 course (3 credits) at the 300 level or higher from the Faculty of Engineering or an approved course in the Faculty of Science, including Mathematics.

Two courses (6 credits), selected from an approved list: one course on the impact of technology on society and one in the humanities and social sciences, administrative studies and law. See section 3.4 "Complementary Studies", under the Faculty of Engineering in the Undergraduate Programs Calendar, for further information.

TOTAL CREDITS **112**

4.2.3 Aeronautical Engineering Concentration (for B.Eng. in Mechanical Engineering, Regular and Honours)

Required Courses (6 credits):

MECH 532	(3) Aircraft Performance, Stability and Control
MECH 533	(3) Subsonic Aerodynamics

Complementary Courses (9 credits)

at least one of the following two courses:

MECH 432	(3) Aircraft Structures
MECH 434	(3) Turbomachinery

the remaining two courses may be chosen from the above or from the following courses:

MECH 531	(3) Aeroelasticity
MECH 537	(3) High-Speed Aerodynamics
MECH 538	(3) Unsteady Aerodynamics
MECH 539	(3) Computational Aerodynamics
MECH 565	(3) Fluid Flow and Heat Transfer Equipment

All courses must be passed at a level C or better.

Students should also discuss the matter with their advisor and complete a special form indicating their intention to take this Concentration.

4.3 Mining, Metals and Materials Engineering

4.3.1 B.Eng. Degree in Materials Engineering – Co-op Program

Change of program name from B.Eng. Degree in Materials Engineering – Co-op Program; program requirements remain the same.

4.4 Environmental Engineering Minor

The Environmental Engineering Minor is offered for students of Engineering and the Department of Bioresource Engineering (formerly Agricultural and Biosystems Engineering) wishing to pursue studies in this area.

The Minor program consists of 21 credits in courses. Up to a maximum of 12 credits of coursework in the student's B.Eng. program may double-count with the Minor.

In the case of Agricultural and Biosystems, Chemical, and Civil Engineering students, courses taken towards the Humanities and Impact course requirements for the Major cannot double-count as Minor program courses.

To complete the Minor in Environmental Engineering, students must obtain a grade of C or better in all approved courses in the Minor; and satisfy the requirements of the Minor and of their departmental program.

The Environmental Engineering Minor Program is administered by the Department of Civil Engineering and Applied Mechanics. Further information may be obtained from Professor S. Ghoshal, Room 475C, Macdonald Engineering Building.

Note: Not all courses listed are offered every year. Students should consult with the department concerned about the courses which are offered in a given year.

Complementary Courses (21 credits)

Introductory course (3 credits minimum) – one of:

CHEE 230	(3) Environmental Aspects of Technology
CIVE 225	(4) Environmental Engineering

plus a minimum of 18 credits, either:

- 15 credits* (minimum) Engineering courses and
- 3 credits (minimum) Non-Engineering courses, from the course lists below:

* A minimum of 6 credits must be from outside the student's principal departmental program. A maximum of 6 credits of research project courses may be counted towards this category provided the project has sufficient environmental engineering content (project proposal requires approval of project supervisor and Coordinator of the Minor).

OR

15 credits specified for the [Barbados Field Study Semester](#), see [page 4](#) (under the Faculty of Agricultural and Environmental Sciences), and

3 credits chosen from the Engineering Course list below, excluding CHEE 496.

Engineering Course List (Environmental Engineering Minor)

Agricultural Engineering (Macdonald Campus)

ABEN 217	(3) Hydrology and Drainage (not open to students who have passed CIVE 323)
ABEN 322	(3) Food Production/Processing Waste Management
ABEN 330	(3) GIS for Biosystems Engineering

ABEN 416	(3)	Engineering for Land Development	WILD 415	(3)	Conservation Law
ABEN 518	(3)	Pollution Control for Agriculture	WILD 437	(3)	Assessing Environmental Impact (not open to students who have passed CHEE 430)
<i>Chemical Engineering</i>					
CHEE 351	(3)	Separation Processes	WOOD 420	(3)	Environmental Issues: Forestry
CHEE 370	(3)	Elements of Biotechnology	ZOOL 315	(3)	Science of Inland Waters
CHEE 430	(3)	Technology Impact Assessment (not open to students who have passed WILD 437)	<i>Anthropology</i>		
CHEE 452	(3)	Particulate Systems (offered in alternate years)	ANTH 206	(3)	Environment and Culture
CHEE 471	(3)	Industrial Water Pollution Control (not open to students who have passed CIVE 430)	<i>Atmospheric and Oceanic Sciences</i>		
CHEE 472	(3)	Industrial Air Pollution Control	ATOC 210	(3)	Introduction to Atmospheric Science (not open to students who have passed GEOG 321)
CHEE 496	(3)	Environmental Research Project	ATOC 220	(3)	Introduction to Oceanic Sciences
CHEE 591	(3)	Environmental Bioremediation	<i>Biology</i>		
<i>Civil Engineering and Applied Mechanics</i>					
CIVE 225	(4)	Environmental Engineering (not part of the Minor for Civil Engineering Students)	BIOL 205	(3)	Biology of Organisms
CIVE 323	(3)	Hydrology and Water Resources (not open to students who have passed ABEN 217)	BIOL 208	(3)	Introduction to Ecology
CIVE 421	(3)	Municipal Systems	BIOL 432	(3)	Limnology
CIVE 430	(3)	Water Treatment and Pollution Control (not open to students who have passed CHEE 471)	BIOL 470	(3)	Lake Management
CIVE 451	(3)	Geoenvironmental Engineering	<i>Chemistry</i>		
CIVE 526	(3)	Solid Waste Management	CHEM 307	(3)	Analytical Chemistry of Pollutants
CIVE 550	(3)	Water Resources Management	<i>Earth and Planetary Sciences</i>		
CIVE 553	(3)	Stream Pollution and Control	EPSC 243	(3)	Environmental Geology (not open to students who have passed or who will take EPSC 221)
CIVE 555	(3)	Environmental Data Analysis	EPSC 549	(3)	Groundwater Hydrology
CIVE 572	(3)	Advanced Hydraulics	<i>Economics</i>		
CIVE 574	(3)	Fluid Mechanics of Water Pollution	ECON 225	(3)	Economics of the Environment
CIVE 577	(3)	River Engineering	ECON 326	(3)	Ecological Economics
CIVE 585	(3)	Groundwater Hydrology	ECON 347	(3)	Economics of Climate Change
<i>Mechanical Engineering</i>					
MECH 343	(3)	Energy Conversion	<i>Geography</i>		
MECH 434	(3)	Turbomachinery	GEOG 200	(3)	Geographical Perspectives: World Environmental Problems
MECH 447	(3)	Combustion	GEOG 201	(3)	Introductory Geo-Information Science
MECH 525	(3)	Intro. to Nuclear Engineering	GEOG 203	(3)	Environmental Systems
MECH 526	(3)	Manufacturing and the Environment	GEOG 205	(3)	Global Change: Past, Present and Future
MECH 534	(3)	Air Pollution Engineering	GEOG 302	(3)	Environmental Management 1
<i>Mining, Metals and Materials Engineering</i>					
MIME 412	(3)	Corrosion and Degradation	GEOG 308	(3)	Principles of Remote Sensing
MIME 451	(3)	Environmental Controls: Met'l Plants	GEOG 321	(3)	Climatic Environments (not open to students who have passed ATOC 210)
MIME 555	(3)	Thermal Remediation of Wastes	GEOG 404	(3)	Environmental Management 2
MPMC 327	(3)	Hydrogéologie appliquée	<i>Law</i>		
MPMC 328	(3)	Environnement et gestion des rejets miniers	CMPL 580	(3)	Environment and the Law
MPMC 422	(3)	Ventilation minière et hygiène du travail	<i>Microbiology and Immunology</i>		
<i>Urban Planning</i>					
URBP 506	(3)	Environmental Policy and Planning	MIMM 211	(3)	Introductory Microbiology
Non-Engineering Course List (Environmental Engineering Minor)					
<i>Agricultural Sciences (Macdonald Campus)</i>					
AEBI 200	(3)	Biology of Organisms	<i>Religious Studies (Macdonald Campus)</i>		
AEBI 201	(3)	Biology of Organisms 2	RELG 270	(3)	Religious Ethics and the Environment
AEBI 205	(3)	Principles of Ecology	<i>Sociology</i>		
AEPH 510	(3)	Agricultural Micrometeorology	SOCI 328	(3)	Environmental Sociology
ENTO 380	(3)	Food Systems and the Environment			
MICR 230	(3)	Microbial World (not open to students who have passed CHEE 370)			
MICR 331	(3)	Microbial Ecology (not open to students who have passed CHEE 370)			
MICR 341	(3)	Mechanisms of Pathogenicity			
SOIL 210	(3)	Principles of Soil Science (not part of the Minor for Agricultural Engineering Students)			
SOIL 331	(3)	Soil Physics			
WILD 333	(3)	Physical and Biological Aspects of Pollution			
WILD 375	(3)	Issues: Environmental Sciences			

5 Management

5.1 Strategic Management Concentration

There are two options offered in the Strategic Management Concentration: Global Strategy and Social Context.

The Global Strategy option is intended for students who want to learn strategic management and analysis in the context of globalization. Globalization is no longer the concern of a few large enterprises and financial institutions; it has consequences that affect all kinds of business and the environment in which they operate – economic, social, political and ecological. Global Strategy allows students to assess the various opportunities and threats inherent in globalization, and requires them to explore the consequences and implications of business decisions for society and the environment. It also enables them to think through the requirements of doing business in different economic and political systems. Finally, it offers them the opportunity to understand and analyze industry structures and the kinds of business opportunities they either create or destroy.

The Social Context option is intended for students who want to learn strategic management and analysis with special attention to the not-for-profit, or civil sector, or who want to focus on broader or more complex social issues within the for-profit section. The civil sector – made up of voluntary and non-governmental organizations and foundations – is the sector that has been the fastest growing employer for the past decade. Students who focus on this stream will be challenged to place a high priority on environmental issues, as well as issues of sustainability, corporate social responsibility, and social impact. They will also investigate the social tools and mechanisms necessary to employ cross-sectoral collaboration to achieve desired social outcomes.

GLOBAL STRATEGY OPTION

Complementary Courses (15 credits)

at least three courses from:

- MGPO 383 (3) International Business Policy
- MGPO 445 (3) Industry Analysis & Competitive Strategy
- MGPO 460 (3) Managing Innovation
- MGPO 469 (3) Managing Globalization
- MGPO 470 (3) Strategy and Organization

the remaining credits to be chosen from:

- BUSA 391 (3) International Business Law
- ECON 219 (3) Current Economic Problems: Topics
- ECON 305 (3) Industrial Organization
- MGPO 434 (3) Topics in Policy
- MGPO 440 (3) Strategies for Sustainability
- MGPO 450 (3) Ethics in Management
- MGPO 468 (3) Managing Organizational Politics
- MGPO 562 (3) Seminar in Organizational Strategy
- MGPO 567 (3) Business in Society

SOCIAL CONTEXT OPTION

Required Courses (9 credits)

- MGPO 440 (3) Strategies for Sustainability
- MGPO 450 (3) Ethics in Management
- MGPO 468 (3) Managing Organizational Politics

Complementary Courses (6 credits)

two courses chosen from:

- BUSA 391 (3) International Business Law
- MGPO 383 (3) International Business Policy
- MGPO 434 (3) Topics in Policy
- MGPO 445 (3) Industry Analysis & Competitive Strategy
- MGPO 460 (3) Managing Innovation
- MGPO 469 (3) Managing Globalization
- MGPO 470 (3) Strategy and Organization
- MGPO 562 (3) Seminar in Organizational Strategy
- MGPO 567 (3) Business in Society

5.2 Psychology for Management Students, Major

Required Courses (12 credits)

- PSYC 213 (3) Cognition
- PSYC 215 (3) Social Psychology
- PSYC 301 (3) Learning
- PSYC 333 (3) Personality and Social Psychology

Complementary Courses (18 credits)

12 credits chosen from:

- PSYC 211 (3) Introductory Behavioural Neuroscience
- PSYC 212 (3) Perception
- PSYC 310 (3) Human Intelligence
- PSYC 331 (3) Inter-Group Relations
- PSYC 332 (3) Introduction to Personality
- PSYC 335 (3) Formal Models: Psychological Processes
- PSYC 336 (3) Measurement of Psychological Processes
- PSYC 340 (3) Psychology of Language
- PSYC 341 (3) The Psychology of Bilingualism
- PSYC 351 (3) Research Methods in Social Psychology
- PSYC 352 (3) Laboratory in Cognitive Psychology
- PSYC 403 (3) Modern Psychology in Historical Perspective
- PSYC 406 (3) Psychological Tests and Measurement
- PSYC 408 (3) Principles of Cognitive Behaviour Therapy
- PSYC 429 (3) Health Psychology
- PSYC 451 (3) Human Factors Research and Techniques
- PSYC 471 (3) Human Motivation
- PSYC 473 (3) Social Cognition and the Self
- PSYC 474 (3) Interpersonal Relationships
- PSYC 510 (3) Statistical Analysis of Tests
- PSYC 534 (3) Community Psychology
- PSYC 535 (3) Advanced Topics in Social Psychology

and 6 credits taken in one of the following two options:

Organizational Psychology Option

two of:

- ORGB 321 (3) Leadership
- ORGB 380 (3) Cross Cultural Management.
- ORGB 420 (3) Managing Organizational Teams
- ORGB 421 (3) Managing Organizational Change
- ORGB 434 (3) Advanced Topics in Organizational Behaviour
- ORGB 435 (3) Women as Global Leaders and Managers
- INDR 294 (3) Introduction to Labour-Management Relations

Consumer Psychology Option

two of:

- MRKT 451 (3) Marketing Research
- MRKT 452 (3) Consumer Behaviour
- MRKT 557 (3) Marketing Research 2

6 Science

6.1 Chemistry

6.1.1 Major and Honours Programs, Required Course List

- CHEM 212* (4) Introductory Organic Chemistry 1
- CHEM 213 (3) Introductory Physical Chemistry
- CHEM 222* (4) Introductory Organic Chemistry 2
- CHEM 273 (1) Chemical Kinetics
- CHEM 277D1 (1.5) Analytical Chemistry
- CHEM 277D2 (1.5) Analytical Chemistry
- CHEM 281 (3) Inorganic Chemistry 1
- CHEM 302 (3) Introductory Organic Chemistry 3
- CHEM 345 (3) Molecular Properties and Structure 1
- CHEM 355 (3) Molecular Properties and Structure 2
- CHEM 363 (2) Physical Chemistry Laboratory 1
- CHEM 365 (2) Statistical Thermodynamics

CHEM 367	(3)	Instrumental Analysis 1
CHEM 377	(3)	Instrumental Analysis 2
CHEM 381	(3)	Inorganic Chemistry 2
CHEM 392	(3)	Integrated Inorganic/Organic Laboratory
CHEM 393	(2)	Physical Chemistry Laboratory 2
MATH 133*	(3)	Vectors, Matrices and Geometry
MATH 222*	(3)	Calculus 3
MATH 315	(3)	Ordinary Differential Equations
PHYS 242	(2)	Electricity and Magnetism

* asterisks denote courses with CEGEP equivalents

6.1.2 Bio-Organic Option, Chemistry Major

MAJOR WITH BIO-ORGANIC OPTION (66 credits)

Required Courses (63 credits)

54 credits, all courses specified above for the Chemistry Major, except PHYS 242

plus the following 9 credits:

BIOL 200	(3)	Molecular Biology
BIOL 201	(3)	Cell Biology and Metabolism
CHEM 502	(3)	Advanced Bio-Organic Chemistry

Complementary Course (3 credits)

one of:

BIOL 202	(3)	Basic Genetics
BIOL 301	(3)	Cell and Molecular Laboratory
MIMM 211	(3)	Introductory Microbiology
PHGY 201	(3)	Human Physiology: Control Systems
PHGY 202	(3)	Human Physiology: Body Functions
PHGY 209	(3)	Mammalian Physiology 1
PHGY 210	(3)	Mammalian Physiology 2

Attainment of the Major degree requires a CGPA of 2.00.

6.1.3 Bio-Organic Option, Chemistry Honours

HONOURS WITH BIO-ORGANIC OPTION (78 credits)

Required Courses (60 credits)

54 credits, all courses specified above for Chemistry Honours, except PHYS 242

plus the following 6 credits:

BIOL 200	(3)	Molecular Biology
BIOL 201	(3)	Cell Biology and Metabolism

Complementary Courses (18 credits)

6 credits of research*:

CHEM 470	(6)	Research Project
or CHEM 480	(3)	Research Project
and CHEM 490(3)		Research Project

6 credits, two of:

BIOL 202	(3)	Basic Genetics
BIOL 301	(3)	Cell and Molecular Laboratory
CHEM 502	(3)	CHEM 490
MIMM 211	(3)	Introductory Microbiology
MIMM 314	(3)	Immunology
MIMM 323	(3)	Microbial Physiology
PHGY 201	(3)	Human Physiology: Control Systems
PHGY 202	(3)	Human Physiology: Body Functions
PHGY 209	(3)	Mammalian Physiology 1
PHGY 210	(3)	Mammalian Physiology 2

and 6 credits of additional Chemistry courses at the 400 level or higher.

* Students may take up to 12 Research Project credits but **only** 6 of these may be used to fulfill the program requirement.

Attainment of the Honours degree requires a CGPA of at least 3.00.

6.1.4 Environmental Chemistry Option, Chemistry Major

MAJOR IN CHEMISTRY: ENVIRONMENTAL CHEMISTRY OPTION (65 credits)

Required Courses (62 credits)

56 credits, all courses specified above for the Chemistry Major,

plus the following 6 credits:

CHEM 219	(3)	Introduction to Atmospheric Chemistry
CHEM 307	(3)	Analytical Chemistry of Pollutants

Complementary Course (3 credits)

one of:

CHEM 419	(3)	Advances in Chemistry of Atmosphere
CHEM 462	(3)	Green Chemistry
CHEM 567	(3)	Chemometrics: Data Analysis
CHEM 575	(3)	Chemical Kinetics

Attainment of the Major degree requires a CGPA of 2.00.

6.1.5 Environmental Chemistry Option, Chemistry Honours

HONOURS IN CHEMISTRY: ENVIRONMENTAL CHEMISTRY OPTION (77 credits)

Required Courses (62 credits)

56 credits, all courses specified above for Honours Chemistry,

plus the following 6 credits

CHEM 219	(3)	Introduction to Atmospheric Chemistry
CHEM 307	(3)	Analytical Chemistry of Pollutants

Complementary Courses (15 credits)

6 credits of research*:

CHEM 470	(6)	Research Project
or CHEM 480	(3)	Research Project
and CHEM 490(3)		Research Project

3 credits, one of:

CHEM 419	(3)	Advances in Chemistry of Atmosphere
CHEM 462	(3)	Green Chemistry
CHEM 567	(3)	Chemometrics: Data Analysis
CHEM 575	(3)	Chemical Kinetics

6 credits, two of

ATOC 220	(3)	Introduction to Oceanic Sciences
CHEM 352	(3)	Structural Organic Chemistry
CHEM 597	(3)	Analytical Spectroscopy
EPSC 542	(3)	Chemical Oceanography

* Students may take up to 12 Research Project credits but **only** 6 of these may be used to fulfill the program requirement.

Attainment of the Honours degree requires a CGPA of at least 3.00.

6.1.6 Materials Option, Chemistry Major

MAJOR WITH MATERIALS OPTION (65 credits)

Required Courses (62 credits)

56 credits, all courses specified above for the Chemistry Major,

plus the following 6 credits:

CHEM 344	(3)	Advanced Materials
CHEM 455	(3)	Introductory Polymer Chemistry

Complementary Course (3 credits)

one of:

CHEM 531	(3)	Chemistry of Inorganic Materials
CHEM 534	(3)	Nanoscience and Nanotechnology
CHEM 543	(3)	Chemistry of Pulp and Paper
CHEM 571	(3)	Polymer Synthesis
CHEM 585	(3)	Colloid Chemistry

Attainment of the Major degree requires a CGPA of 2.00.

6.1.7 Materials Option, Chemistry Honours

HONOURS WITH MATERIALS OPTION (77 credits)

Required Courses (62 credits)

56 credits, all courses specified above for Honours Chemistry plus the following 6 credits:

CHEM 344 (3) Advanced Materials
CHEM 455 (3) Introductory Polymer Chemistry

Complementary Courses (15 credits)

6 credits of research*:

CHEM 470 (6) Research Project
or CHEM 480 (3) Research Project
and CHEM 490(3) Research Project

6 credits, two of:

CHEM 531 (3) Chemistry of Inorganic Materials
CHEM 534 (3) Nanoscience and Nanotechnology
CHEM 543 (3) Chemistry of Pulp and Paper
CHEM 571 (3) Polymer Synthesis
CHEM 585 (3) Colloid Chemistry

3 credits, one of:

CHEE 481 (3) Polymer Engineering
MIME 260 (3) Materials Science and Engineering
MRKT 360 (3) Marketing of Technology

* Students may take up to 12 Research Project credits but **only** 6 of these may be used to fulfill the program requirement.

Attainment of the Honours degree requires a CGPA of at least 3.00.

6.2 Cognitive Science

MINOR PROGRAM IN COGNITIVE SCIENCE (27 credits)

Required Course (3 credits)

PSYC 532 (3) Cognitive Science

Complementary Courses (24 credits)

from outside of the student's home department, selected from the courses listed below.

Computer Science

COMP 424 (3) Topics: Artificial Intelligence 1
COMP 426 (3) Automated Reasoning
COMP 558 (3) Fundamentals of Computer Vision

Educational Psychology

EDPE 555 (3) Applied Cognitive Science

Linguistics

LING 331 (3) Phonology 1
LING 355 (3) Language Acquisition 1
LING 370 (3) Introduction to Semantics
LING 371 (3) Syntax 1
LING 419 (3) Linguistic Theory 1
LING 440 (3) Morphology
LING 531 (3) Phonology 2
LING 555 (3) Language Acquisition 2
LING 571 (3) Syntax 2
LING 590 (3) Introduction to Neurolinguistics

Mathematics

MATH 318 (3) Mathematical Logic
MATH 328 (3) Computability and Mathematical Linguistics

Philosophy

PHIL 210 (3) Introduction to Deductive Logic 1
PHIL 304 (3) Chomsky
PHIL 306 (3) Philosophy of Mind
PHIL 310 (3) Intermediate Logic
PHIL 410 (3) Topics in Advanced Logic 1
PHIL 415 (3) Philosophy of Language
PHIL 419 (3) Epistemology
PHIL 506 (3) Seminar: Philosophy of Mind
PHIL 507 (3) Seminar: Cognitive Science

Psychology

PSYC 211 (3) Introductory Behavioural Neuroscience
PSYC 212 (3) Perception
PSYC 213 (3) Cognition
PSYC 301 (3) Learning
PSYC 308 (3) Behavioural Neuroscience 1
PSYC 311 (3) Human Cognition and the Brain
PSYC 353 (3) Laboratory in Human Perception
PSYC 410 (3) Special Topics in Neuropsychology
PSYC 413 (3) Cognitive Development
PSYC 470 (3) Memory and Brain

6.3 Computer Science

6.3.1 Computational Molecular Biology, Minor

Note: Because a minimum of 18 new credits must be completed in a Minor in the Faculty of Science (see Section 3.5.3 of the Faculty of Science section of the *Undergraduate Programs Calendar*), students in Computer Science or Joint Computer Science programs cannot take the Minor Program in Computational Molecular Biology.

6.3.2 Computer Science, Minor

MINOR PROGRAM IN COMPUTER SCIENCE (24 credits)

Required Courses (12 credits)

COMP 202 (3) Introduction to Computing 1
COMP 203 (3) Introduction to Computing 2
COMP 206 (3) Introduction to Software Systems
COMP 302 (3) Programming Languages and Paradigms

Complementary Courses (12 credits)

selected from:

COMP 251 (3) Data Structures and Algorithms
COMP 273 (3) Introduction to Computer Systems
COMP 303 (4) Programming Techniques
COMP 304 (3) Object-oriented Design
COMP 310 (3) Computer Systems and Organization
COMP 330 (3) Theoretical Aspects: Computer Science
COMP 335 (3) Software Engineering Methods
COMP 350 (3) Numerical Computing
or MATH 317 (3) Numerical Analysis
COMP 360 (3) Algorithm Design Techniques
COMP 409 (3) Concurrent Programming
COMP 410 (3) Mobile Computing
COMP 412 (3) Software for E-commerce
COMP 420 (3) Files and Databases
COMP 421 (3) Database Systems
COMP 423 (3) Data Compression
COMP 424 (3) Topics: Artificial Intelligence 1
COMP 426 (3) Automated Reasoning
COMP 433 (3) Personal Software Engineering
COMP 435 (3) Basics of Computer Networks
COMP 490 (3) Intro to Probabilistic Analysis Algorithms
COMP 505 (3) Advanced Computer Architecture
COMP 506 (3) Advanced Analysis of Algorithms
COMP 507 (3) Computational Geometry
COMP 520 (4) Compiler Design
COMP 522 (4) Modelling and Simulation
COMP 524 (3) Theoretical Foundations of Programming Languages
COMP 526 (3) Probabilistic Reasoning and AI
COMP 533 (3) Object-Oriented Software Development
COMP 534 (3) Team Software Engineering
COMP 535 (3) Computer Networks 1
COMP 537 (3) Internet Programming
COMP 538 (3) Person-Machine Communication
COMP 540 (3) Matrix Computations
COMP 557 (3) Computer Graphics

COMP 558 (3) Fund. of Computer Vision
 COMP 560 (3) Graph Algorithms and Applications
 COMP 562 (3) Computational Biology Methods
 COMP 566 (3) Discrete Optimization 1
 COMP 567 (3) Discrete Optimization 2
 COMP 573 (3) Microcomputers
 COMP 575 (3) Fundamentals of Distributed Algorithms
 COMP 577 (3) Distributed Database Systems
 or from courses outside of the School approved by the adviser, to a maximum of 6 credits.

6.3.3 Computer Science, Major

MAJOR PROGRAM IN COMPUTER SCIENCE (60 credits)

Freshman Program students interested in Computer Science should try to take COMP 202 if possible, but it is not required for entry to the Major. A student entering with insufficient programming background may take COMP 202 but it will not count for program credit.

Required Courses (42 credits)

COMP 250 (3) Introduction to Computer Science
 COMP 251 (3) Data Structures and Algorithms
 COMP 206 (3) Introduction to Software Systems
 COMP 273 (3) Introduction to Computer Systems
 COMP 302 (3) Programming Languages and Paradigms
 COMP 310 (3) Computer Systems and Organization
 COMP 330 (3) Theoretical Aspects: Computer Science
 COMP 350 (3) Numerical Computing
 COMP 360 (3) Algorithm Design Techniques
 MATH 222 (3) Calculus 3
 MATH 223 (3) Linear Algebra
 MATH 240 (3) Discrete Structures 1
 MATH 323 (3) Probability Theory
 MATH 340 (3) Abstract Algebra and Computing

Complementary Courses (18 credits)

15 credits from:

COMP 303 (4) Programming Techniques
 COMP 304 (3) Object-oriented Design
 COMP 335 (3) Software Engineering Methods
 COMP 361 (3) Systems Development Project
 COMP 409 (3) Concurrent Programming
 COMP 410 (3) Mobile Computing
 COMP 412 (3) Software for E-commerce
 COMP 420 (3) Files and Databases
 COMP 421 (3) Database Systems
 COMP 423 (3) Data Compression
 COMP 424 (3) Topics: Artificial Intelligence 1
 COMP 426 (3) Automated Reasoning
 COMP 433 (3) Personal Software Engineering
 COMP 435 (3) Basics of Computer Networks
 COMP 490 (3) Intro to Probabilistic Analysis Algorithms
 COMP 505 (3) Advanced Computer Architecture
 COMP 506 (3) Advanced Analysis of Algorithms
 COMP 507 (3) Computational Geometry
 COMP 520 (4) Compiler Design
 COMP 522 (4) Modelling and Simulation
 COMP 524 (3) Theoretical Foundations of Programming Languages
 COMP 525 (3) Formal Verification
 COMP 526 (3) Probabilistic Reasoning and AI
 COMP 531 (3) Theory of Computation
 COMP 533 (3) Object-Oriented Software Development
 COMP 534 (3) Team Software Engineering
 COMP 535 (3) Computer Networks 1
 COMP 537 (3) Internet Programming
 COMP 538 (3) Person-Machine Communication
 COMP 540 (3) Matrix Computations
 COMP 547 (3) Cryptography and Data Security
 COMP 557 (3) Computer Graphics

COMP 558 (3) Fundamentals of Computer Vision
 COMP 560 (3) Graph Algorithms and Applications
 COMP 562 (3) Computational Biology Methods
 COMP 566 (3) Discrete Optimization 1
 COMP 567 (3) Discrete Optimization 2
 COMP 573 (3) Microcomputers
 COMP 575 (3) Fundamentals of Distributed Algorithms
 COMP 577 (3) Distributed Database Systems
 ECSE 323 (3) Digital System Design
 ECSE 426 (3) Microprocessor Systems
 ECSE 531 (3) Real Time Systems
 ECSE 548 (3) Introduction to VLSI Systems

3 credits from Mathematics selected from:

MATH 242 (3) Analysis 1
 MATH 243 (3) Real Analysis
 MATH 255 (3) Analysis 2
 or any 300-level or above Mathematics course
 (excluding MATH 338, MATH 323, MATH 340)

6.3.4 Computer Science, Honours

HONOURS PROGRAM IN COMPUTER SCIENCE (72 credits)

Honours students must maintain a CGPA of 3.00 and must have at least this average upon graduation as well.

Required Courses (45 credits)

COMP 206 (3) Introduction to Software Systems
 COMP 250 (3) Introduction to Computer Science
 COMP 252 (3) Algorithms and Data Structures
 COMP 273 (3) Introduction to Computer Systems
 COMP 302 (3) Programming Languages and Paradigms
 COMP 310 (3) Computer Systems and Organization
 COMP 330 (3) Theoretical Aspects: Computer Science
 COMP 350 (3) Numerical Computing
 COMP 362 (3) Honours Algorithm Design
 COMP 400 (3) Technical Project and Report
 MATH 222 (3) Calculus 3
 MATH 223 (3) Linear Algebra
 MATH 240 (3) Discrete Structures 1
 MATH 323 (3) Probability Theory
 MATH 340 (3) Abstract Algebra and Computing

Complementary Courses (27 credits)

24 credits from Major Program in Computer Science complementary courses in Computer Science, 12 credits of which must be taken at the 500 level.

3 credits above the 300 level from Major Program in Computer Science complementary courses in Mathematics, which must be taken at the 300 level or above.

6.3.5 Software Engineering, Major

MAJOR PROGRAM IN SOFTWARE ENGINEERING (69 credits)

Required Courses (60 credits)

COMP 202 (3) Introduction to Computing 1
 COMP 206 (3) Introduction to Software Systems
 COMP 250 (3) Introduction to Computer Science
 COMP 251 (3) Data Structures and Algorithms
 COMP 273 (3) Introduction to Computer Systems
 COMP 302 (3) Programming Languages and Paradigms
 COMP 304 (3) Object-oriented Design
 COMP 330 (3) Theoretical Aspects: Computer Science
 COMP 360 (3) Algorithm Design Techniques
 COMP 361 (3) Systems Development Project
 ECSE 321 (3) Introduction to Software Engineering
 ECSE 427 (3) Operating Systems
 ECSE 428 (3) Software Engineering Practice
 ECSE 429 (3) Software Validation
 ECSE 495 (3) Software Engineering Design Project
 MATH 223 (3) Linear Algebra
 MATH 240 (3) Discrete Structures 1

- MATH 260 (3) Intermediate Calculus
 MATH 323 (3) Probability Theory
 MATH 324 (3) Statistics

Complementary Courses (9 credits)

selected from the following:

- COMP 303 (4) Programming Techniques
 COMP 335 (3) Software Engineering Methods
 COMP 350 (3) Numerical Computing
 COMP 409 (3) Concurrent Programming
 COMP 410 (3) Mobile Computing
 COMP 412 (3) Software for E-commerce
 COMP 420 (3) Files and Databases
 COMP 421 (3) Database Systems
 COMP 424 (3) Topics: Artificial Intelligence 1
 COMP 433 (3) Personal Software Engineering
 COMP 435 (3) Basics of Computer Networks
 COMP 505 (3) Advanced Computer Architecture
 COMP 520 (4) Compiler Design
 COMP 522 (4) Modelling and Simulation
 COMP 525 (3) Formal Verification
 COMP 526 (3) Probabilistic Reasoning and AI
 COMP 533 (3) Object-Oriented Software Development
 COMP 535 (3) Computer Networks 1
 COMP 537 (3) Internet Programming
 COMP 547 (3) Cryptography and Data Security
 COMP 558 (3) Fundamentals of Computer Vision
 COMP 560 (3) Graph Algorithms and Applications
 COMP 566 (3) Discrete Optimization 1
 COMP 575 (3) Fundamentals of Distributed Algorithms
 COMP 577 (3) Distributed Database Systems
 ECSE 200 (3) Fundamentals of Electrical Engineering
 ECSE 210 (3) Circuit Analysis
 ECSE 291 (2) Electrical Measurement Laboratory
 ECSE 303 (3) Signals and Systems 1
 ECSE 304 (3) Signals and Systems 2
 ECSE 322 (3) Computer Engineering
 ECSE 323 (5) Digital Systems Design
 ECSE 404 (3) Control Systems
 ECSE 411 (3) Communications Systems
 ECSE 420 (3) Parallel Computing
 ECSE 421 (3) Embedded Systems
 ECSE 422 (3) Fault Tolerant Computing
 ECSE 424 (3) Human-Computer Interaction
 ECSE 425 (3) Computer Organization and Architecture
 ECSE 426 (3) Microprocessor Systems
 or COMP 573 (3) Microcomputers
 ECSE 504 (3) Computer Control
 ECSE 522 (3) Asynchronous Circuits and Systems
 ECSE 526 (3) Artificial Intelligence
 ECSE 529 (3) Image Processing and Communication
 ECSE 530 (3) Logic Synthesis
 ECSE 531 (3) Real Time Systems
 ECSE 532 (3) Computer Graphics
 or COMP 557 (3) Computer Graphics
 MATH 261 (3) Differential Equations
 MATH 381 (3) Complex Variables and Transforms

6.4 Earth and Planetary Sciences**6.4.1 Earth and Planetary Sciences, Minor****MINOR PROGRAM IN EARTH AND PLANETARY SCIENCES**
(18 credits)**Required Courses** (7 credits)

- EPSC 210 (3) Introductory Mineralogy
 EPSC 212 (4) Introductory Petrology

Complementary Courses (11 credits)

- EPSC 201 (3) Understanding Planet Earth
 or EPSC 233 (3) Earth and Life History

8 credits selected from:

- EPSC 203 (3) Structural Geology 1
 EPSC 231 (2) Field School 1
 EPSC 243 (3) Environmental Geology
 EPSC 334 (3) Invertebrate Paleontology
 EPSC 350 (3) Tectonics
 EPSC 451 (3) Hydrothermal Mineral Deposits
 EPSC 452 (3) Mineral Deposits 2
 EPSC 542 (3) Chemical Oceanography
 EPSC 561 (3) Ore-forming Processes 1
 EPSC 562 (3) Ore-forming Processes 2
 BIOL 352 (3) Vertebrate Evolution

Other Earth and Planetary Sciences courses may be substituted with permission.

6.4.2 Earth and Planetary Sciences, Major**MAJOR PROGRAM IN EARTH AND PLANETARY SCIENCES**
(66 credits)**U1 Required Courses** (27 credits)

- EPSC 203 (3) Structural Geology 1
 EPSC 210 (3) Introductory Mineralogy
 EPSC 212 (4) Introductory Petrology
 EPSC 220 (3) Principles of Geochemistry
 EPSC 231 (2) Field School 1
 EPSC 233 (3) Earth and Life History
 EPSC 312 (3) Spectroscopy of Minerals
 MATH 222 (3) Calculus 3
 approved (3) statistics course

Note: Students who have not had the following course or its equivalent in CEGEP or the Freshman Program may be required to take MATH 133 Vectors, Matrices and Geometry.

U2 and/or U3 Required Courses (24 credits)

- EPSC 320 (3) Elementary Earth Physics
 EPSC 334 (3) Invertebrate Paleontology
 EPSC 350 (3) Tectonics
 EPSC 423 (3) Igneous Petrology
 EPSC 445 (3) Metamorphic Petrology
 EPSC 452 (3) Mineral Deposits 2
 EPSC 455 (3) Sedimentary Geology
 EPSC 519 (3) Isotope Geology

Complementary Courses (15 credits)

3 credits, one of:

- EPSC 331 (3) Field School 2
 EPSC 341 (3) Field School 3

plus 12 credits (4 courses) chosen from the following:

- EPSC 330 (3) Earthquakes and Earth Structure
 EPSC 425 (3) Sediments to Sequences
 EPSC 435 (3) Geophysical Applications
 EPSC 451 (3) Hydrothermal Mineral Deposits
 EPSC 501 (3) Crystal Chemistry
 EPSC 530 (3) Volcanology
 EPSC 542 (3) Chemical Oceanography
 EPSC 547 (3) High Temperature Geochemistry
 EPSC 548 (3) Processes of Igneous Petrology
 EPSC 549 (3) Hydrogeology
 EPSC 550 (3) Selected Topics 1
 EPSC 551 (3) Selected Topics 2
 EPSC 552 (3) Selected Topics 3
 EPSC 561 (3) Ore-forming Processes 1
 EPSC 562 (3) Ore-forming Processes 2
 EPSC 570 (3) Cosmochemistry
 EPSC 580 (3) Aqueous Geochemistry
 EPSC 590 (3) Applied Geochemistry Seminar

Note: Courses at the 300 or higher level in other departments in the Faculties of Science and Engineering may also be used as complementary credits, with the permission of the Director of Undergraduate Studies.

6.4.3 Earth Sciences, Honours

HONOURS PROGRAM IN EARTH SCIENCES (75 credits)
(CGPA \geq 3.20)

U1 Required Courses (27 credits)

EPSC 203	(3)	Structural Geology 1
EPSC 210	(3)	Introductory Mineralogy
EPSC 212	(4)	Introductory Petrology
EPSC 220	(3)	Principles of Geochemistry
EPSC 231	(2)	Field School 1
EPSC 233	(3)	Earth and Life History
EPSC 312	(3)	Spectroscopy of Minerals
MATH 222	(3)	Calculus 3
approved	(3)	statistics course

Note: Students who have not had the following course or its equivalent in CEGEP or the Freshman Program may be required to take MATH 133 Vectors, Matrices and Geometry.

U2 and/or U3 Required Courses (33 credits)

EPSC 320	(3)	Elementary Earth Physics
EPSC 350	(3)	Tectonics
EPSC 423	(3)	Igneous Petrology
EPSC 445	(3)	Metamorphic Petrology
EPSC 452	(3)	Mineral Deposits 2
EPSC 455	(3)	Sedimentary Geology
EPSC 480D1	(3)	Honours Research Project
EPSC 480D2	(3)	Honours Research Project
EPSC 519	(3)	Isotope Geology
MATH 314	(3)	Advanced Calculus
MATH 315	(3)	Ordinary Differential Equations

Complementary Courses (15 credits)

3 credits, one of:

EPSC 331	(3)	Field School 2
EPSC 341	(3)	Field School 3

plus 12 credits (4 courses) chosen from the following:

EPSC 330	(3)	Earthquakes and Earth Structure
EPSC 334	(3)	Invertebrate Paleontology
EPSC 425	(3)	Sediments to Sequences
EPSC 435	(3)	Geophysical Applications
EPSC 451	(3)	Hydrothermal Mineral Deposits
EPSC 501	(3)	Crystal Chemistry
EPSC 530	(3)	Volcanology
EPSC 542	(3)	Chemical Oceanography
EPSC 547	(3)	High Temperature Geochemistry
EPSC 548	(3)	Processes of Igneous Petrology
EPSC 549	(3)	Hydrogeology
EPSC 550	(3)	Selected Topics 1
EPSC 551	(3)	Selected Topics 2
EPSC 552	(3)	Selected Topics 3
EPSC 561	(3)	Ore-forming Processes 1
EPSC 562	(3)	Ore-forming Processes 2
EPSC 570	(3)	Cosmochemistry
EPSC 580	(3)	Aqueous Geochemistry
EPSC 590	(3)	Applied Geochemistry Seminar

Note: Courses at the 300 or higher level in other departments in the Faculties of Science and Engineering may also be used as complementary credits, with the permission of the Director of Undergraduate Studies.

6.4.4 Geochemistry, Minor

MINOR PROGRAM IN GEOCHEMISTRY (25 credits)

Required Courses (10 credits)

EPSC 201	(3)	Understanding Planet Earth
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EPSC 210 (3) Introductory Mineralogy

EPSC 212 (4) Introductory Petrology

Complementary Courses (15 credits)

15 credits selected from:

EPSC 220	(3)	Principles of Geochemistry
EPSC 243	(3)	Environmental Geology
EPSC 501	(3)	Crystal Chemistry
EPSC 519	(3)	Isotope Geology
EPSC 542	(3)	Chemical Oceanography
EPSC 545	(3)	Low-Temperature Geochemistry
EPSC 561	(3)	Ore-forming Processes 1
EPSC 562	(3)	Ore-forming Processes 2

6.4.5 Planetary Sciences, Honours

HONOURS PROGRAM IN PLANETARY SCIENCES (81 credits)
CGPA \geq 3.20

U1 Required Courses (27 credits)

EPSC 203	(3)	Structural Geology
EPSC 210	(3)	Introductory Mineralogy
EPSC 212	(4)	Introductory Petrology
EPSC 220	(3)	Principles of Geochemistry
EPSC 231	(2)	Field School 1
EPSC 233	(3)	Earth and Life History
EPSC 312	(3)	Spectroscopy of Minerals
MATH 222	(3)	Calculus 3
MATH 223	(3)	Linear Algebra

Note: Students who have not had the following course or its equivalent in CEGEP or the Freshman Program may be required to take MATH 133 Vectors, Matrices and Geometry.

U2 and/or U3 Required Courses (42 credits)

EPSC 320	(3)	Elementary Earth Physics
EPSC 330	(3)	Earthquakes and Earth Structure
EPSC 350	(3)	Tectonics
EPSC 423	(3)	Igneous Petrology
EPSC 480D1	(3)	Honours Research Project
EPSC 480D2	(3)	Honours Research Project
EPSC 510	(3)	Geodynamics and Geomagnetism
EPSC 519	(3)	Isotope Geology
EPSC 570	(3)	Cosmochemistry
MATH 314	(3)	Advanced Calculus
MATH 315	(3)	Ordinary Differential Equations
MATH 317	(3)	Numerical Analysis
MATH 319	(3)	Partial Differential Equations
PHYS 340	(3)	Electricity and Magnetism

Complementary Courses (12 credits)

3 credits, one of:

PHYS 251	(3)	Classical Mechanics 1
PHYS 230	(3)	Dynamics of Simple Systems

plus 9 credits (3 courses) chosen from the following:

EPSC 334	(3)	Invertebrate Paleontology
EPSC 425	(3)	Sediments to Sequences
EPSC 435	(3)	Geophysical Applications
EPSC 451	(3)	Hydrothermal Mineral Deposits
EPSC 501	(3)	Crystal Chemistry
EPSC 530	(3)	Volcanology
EPSC 542	(3)	Chemical Oceanography
EPSC 547	(3)	High Temperature Geochemistry
EPSC 548	(3)	Processes of Igneous Petrology
EPSC 549	(3)	Hydrogeology
EPSC 550	(3)	Selected Topics 1
EPSC 551	(3)	Selected Topics 2
EPSC 552	(3)	Selected Topics 3
EPSC 561	(3)	Ore-forming Processes 1
EPSC 562	(3)	Ore-forming Processes 2
EPSC 570	(3)	Cosmochemistry
EPSC 580	(3)	Aqueous Geochemistry
EPSC 590	(3)	Applied Geochemistry Seminar

Note: Courses at the 300 or higher level in other departments in the Faculties of Science and Engineering may also be used as complementary credits, with the permission of the Director of Undergraduate Studies.

6.5 Physics

6.5.1 Electrical Engineering, Minor Program

MINOR PROGRAM IN ELECTRICAL ENGINEERING

(23 or 25 credits)

[Program registration done by Student Affairs Office]

The Minor program does not carry professional recognition. Only students who satisfy the requirements of the Major in Physics are eligible for this Minor. Students registered for this option cannot count PHYS 241 towards the requirements of the Major in Physics, and should replace this course by another Physics or Mathematics course. Students who select ECSE 334 in the Minor cannot count PHYS 328 towards the requirements of the Major in Physics, and should replace this course by another Physics or Mathematics course.

Required Courses (17 or 19 credits)

ECSE 200 (3) Fundamentals of Electrical Engineering
ECSE 210 (3) Circuit Analysis
ECSE 219 (2) Electrical Measurements Laboratory
ECSE 303 (3) Signals and Systems 1
ECSE 305 (3) Probability and Random Sigs. 1
or ECSE 334(5) Introduction to Microelectronics
ECSE 330 (3) Introduction to Electronics

Complementary Courses (6 credits)