Integrated Science

Graduation Requirements

In addition to the requirements listed below, students must satisfy:

1. the University regulations including the process of Academic Performance Evaluation (see the *Academic Regulations of the University* section of this Calendar),
2. the common regulations applying to all B.Sc. programs including those relating to Science Continuation and Breadth requirements (see the *Academic Regulations for the Bachelor of Science Degree*).

General Information

The Integrated Science (ISI) programs offered by the Faculty of Science provide undergraduate students an opportunity to design a program of study that blends a concentration in science with a linked area of specialization in another Faculty. The science concentration can be in any one of the following areas: physical, earth, life, or mathematical (including computer) science in association with specialty areas outside of the Faculty of Science. In this way, the student acquires a depth of understanding of a particular branch of science integrated with knowledge that will aid in the application of that understanding in a professional or employment context.

First-year students must submit their proposed course selection to the IS Director for approval before commencing second year. The progress of all students is monitored by the IS Advisor.

The honours program requires students to complete either a research project or research proposal (INSC 4908 [1.0] or INSC 4907 [1.0])while the general program requires students to complete an independent study (INSC 3909 or INSC 3907).

Academic Performance Evaluation for IS

The Academic Performance Evaluation for students in Integrated Science is based on the Major CGPA and the Overall CGPA. The Major CGPA is calculated over the combined credits in the Science Sequence and the Non-Science Sequence (13.0 credits for Honours, 9.0 credits for General.)

Program Requirements

Integrated Science
B.Sc. Honours (20.0 credits)

Detailed programs in IS are constructed and approved on an individual basis. All IS Honours programs adhere to the following structure:

A. Science Sequence		
(9.0 credits included in the Major CGPA)		
1. 1.0 credit in:		1.0
INSC 4907 [1.0]	Honours Essay and Research Proposal	
INSC 4908 [1.0]	Honours Project	
2. 3.0 credits from the Faculty of Science at the 3000-level or above		3.0
3. 4.0 credits from the Faculty of Science at the 2000-level or above		4.0
4. 1.0 credits from the Faculty of Science at the 2000-level or above (may include up to 1.0 credit 1000-level COMP)		1.0
B. Non-Science Sequence		
(4.0 credits included in the Major CGPA)		
5. 4.0 credits in an area selected from outside the Faculty of Science		4.0
C. Additional Requirements (7.0 credits)		
6. 1.0 credit in:		1.0
MATH 1007 [0.5]	Elementary Calculus I	
MATH 1107 [0.5]	Linear Algebra I	
7. 2.0 credits from:		2.0
BIOL 1103 [0.5] & BIOL 1104 [0.5]	Foundations of Biology I and Foundations of Biology II	
CHEM 1001 [0.5] & CHEM 1002 [0.5]	General Chemistry I and General Chemistry II	
ERTH 1006 [0.5]	Exploring Planet Earth	
ERTH 1009 [0.5]	The Earth System Through Time	
PHYS 1007 [0.5]	Elementary University Physics I	
PHYS 1008 [0.5]	Elementary University Physics II	
GEOG 1010 [0.5]	Global Environmental Systems	
8. 2.0 credits from Science, Mathematics, Arts and Social Sciences, Public Affairs, Computer Science or Engineering		2.0
9. 2.0 credits in free electives.		2.0
Total Credits		20.0

Note: at least 2.0 credits in **Items 1** to **9** above must be chosen from the Faculties of Arts and Social Sciences or Public Affairs.

Technology, Society, Environment Studies (TSES) courses are considered Non-Science credits. These TSES courses may be used to satisfy the 2.0 credits in Items 1 to 9 above which must be chosen from the Faculties of Arts and Social Sciences or Public Affairs.

English as a Second Language (ESLA) courses are accepted in **Items 8 and 9** only.

The following engineering courses may be used to fulfill the Faculty of Science course requirements if they were taken while the student was registered in the Bachelor of Engineering program:

CIVE 2101 [0.5]	Mechanics II
ENVE 2002 [0.5]	Microbiology
ENVE 3004 [0.5]	Contaminant and Pollutant Transport in the Environment
ENVE 4003 [0.5]	Air Pollution and Emissions Control
ELEC 2501 [0.5]	Circuits and Signals
ELEC 2507 [0.5]	Electronics I
ELEC 3909 [0.5]	Electromagnetic Waves
ECOR 1606 [0.5]	Problem Solving and Computers
MAAE 2101 [0.5]	Engineering Dynamics

MAAE 2300 [0.5]	Fluid Mechanics I
MAAE 2400 [0.5]	Thermodynamics & Heat Transfer
SYSC 1005 [0.5]	Introduction to Software Development
SYSC 2001 [0.5]	Computer Systems Foundations
SYSC 2002 [0.5]	Data Structures and Algorithms
SYSC 2003 [0.5]	Introductory Real-Time Systems
SYSC 2004 [0.5]	Object-Oriented Software Development
SYSC 2100 [0.5]	Algorithms and Data Structures
SYSC 3001 [0.5]	Operating Systems & Databases
SYSC 3006 [0.5]	Computer Organization
SYSC 3100 [0.5]	Systems Analysis and Design
SYSC 3200 [0.5]	Industrial Engineering

No more than a total of 2.0 credits may come from Independent Study or Directed Studies courses and Honours Research Project, Essay, Research proposal courses, included, but not limited to:

BIOL 4901 [0.5]	Directed Special Studies
INSC 3907 [0.5]	Topics in Integrated Science
INSC 3909 [0.5]	Independent Study
INSC 4907 [1.0]	Honours Essay and Research Proposal
INSC 4908 [1.0]	Honours Project
TSES 4009 [0.5]	Special Topics

Integrated Science
B.Sc. General (15.0 credits)

Detailed programs in ISI are constructed and approved on an individual basis. All ISI General programs adhere to the following structure.

A. Science Sequence

(6.0 credits included in the Major CGPA)

1. 0.5 credit in:		0.5
INSC 3909 [0.5]	Independent Study	
INSC 3907 [0.5]	Topics in Integrated Science	

2. 1.5 credits from the Faculty of Science at the 3000-level or above	1.5

3. 3.0 credits from the Faculty of Science at the 2000-level or above	3.0

4. 1.0 credit from the Faculty of Science at the 2000-level (may include up to 1.0 credit 1000- level computer science)	1.0

B. Non-Science Sequence

(3.0 credits included in the Major CGPA)

5. 3.0 credits in an area selected from outside the Faculty of Science	3.0

C. Additional Requirements (6.0 credits)

6. 1.0 credit in:		1.0
MATH 1007 [0.5]	Elementary Calculus I	
MATH 1107 [0.5]	Linear Algebra I	

7. 2.0 credits from:		2.0
BIOL 1003 [0.5] & BIOL 1004 [0.5]	Introductory Biology I and Introductory Biology II	
CHEM 1001 [0.5] & CHEM 1002 [0.5]	General Chemistry I and General Chemistry II	
ERTH 1006 [0.5]	Exploring Planet Earth	
ERTH 1009 [0.5]	The Earth System Through Time	
PHYS 1007 [0.5]	Elementary University Physics I	
PHYS 1008 [0.5]	Elementary University Physics II	
GEOG 1010 [0.5]	Global Environmental Systems	

8. 2.0 credits from Science, Mathematics, Arts and Social Sciences, Public Affairs, Computer Science or Engineering	2.0

9. 1.0 credit in free electives.	1.0

Total Credits	15.0

Note: at least 2.0 credits in **Items 1** to **9** above must be chosen from the Faculties of Arts and Social Sciences or Public Affairs.

Technology, Society, Environment Studies (TSES) courses are considered Non-Science credits. These TSES courses may be used to satisfy the 2.0 credits in Items 1 to 9 above which must be chosen from the Faculties of Arts and Social Sciences or Public Affairs.

English as a Second Language (ESLA) courses are accepted in **Items 8 and 9** only.

In IS programs, all Technology, Society, Environment (TSE) Studies courses are considered Non-Science credits.

The following engineering courses may be used to fulfill the Faculty of Science course requirements if they were taken while the student was registered in the Bachelor of Engineering program:

CIVE 2101 [0.5]	Mechanics II
ENVE 2002 [0.5]	Microbiology
ENVE 3004 [0.5]	Contaminant and Pollutant Transport in the Environment
ENVE 4003 [0.5]	Air Pollution and Emissions Control
ELEC 2501 [0.5]	Circuits and Signals
ELEC 2507 [0.5]	Electronics I
ELEC 3909 [0.5]	Electromagnetic Waves
ECOR 1606 [0.5]	Problem Solving and Computers
MAAE 2101 [0.5]	Engineering Dynamics
MAAE 2300 [0.5]	Fluid Mechanics I
MAAE 2400 [0.5]	Thermodynamics & Heat Transfer
SYSC 1005 [0.5]	Introduction to Software Development
SYSC 2001 [0.5]	Computer Systems Foundations
SYSC 2002 [0.5]	Data Structures and Algorithms
SYSC 2003 [0.5]	Introductory Real-Time Systems
SYSC 2004 [0.5]	Object-Oriented Software Development
SYSC 2100 [0.5]	Algorithms and Data Structures
SYSC 3001 [0.5]	Operating Systems & Databases
SYSC 3006 [0.5]	Computer Organization
SYSC 3100 [0.5]	Systems Analysis and Design
SYSC 3200 [0.5]	Industrial Engineering

No more than a total of 1.0 credits may come from Independent Study or Directed Studies courses and Honours Research Project, Essay, Research Proposal courses, including, but not limited to:

BIOL 4901 [0.5]	Directed Special Studies	
INSC 3909 [0.5]	Independent Study	
INSC 4907 [1.0]	Honours Essay and Research Proposal	
INSC 4908 [1.0]	Honours Project	
TSES 4009 [0.5]	Special Topics	

Concentrations

Integrated Science with Concentration in Forensic Science
B.Sc. Honours (6.5 credits)

Only students pursuing an honours undergraduate degree in Integrated Science may be admitted into the Forensic Science Concentration.

Offers a sound basis in fundamental Biology and Chemistry with an emphasis on trace analysis techniques combined with a non-science sequence in Psychology, and Sociology or Law.

Required Courses

1. 1.5 credit in:		1.5
BIOL 2200 [0.5]	Cellular Biochemistry	
BIOL 2104 [0.5]	Introductory Genetics	
BIOL 2303 [0.5]	Microbiology	
2. 1.0 credit in:		1.0
CHEM 2302 [0.5]	Analytical Chemistry	
CHEM 2303 [0.5]	Analytical Chemistry	
3. 1.0 credit from:		1.0
BIOL 3104 [0.5]	Molecular Genetics	
BIOL 3303 [0.5]	Experimental Microbiology	
CHEM 3305 [0.5]	Advanced Analytical Chemistry Laboratory	
4. 1.0 credit in:		1.0
PSYC 2400 [0.5]	Introduction to Forensic Psychology	
PSYC 3402 [0.5]	Criminal Behaviour	
5. 1.0 credit in:		1.0
STAT 2507 [0.5]	Introduction to Statistical Modeling I	
STAT 2509 [0.5]	Introduction to Statistical Modeling II	
6. 1.0 credit from:		1.0
LAWS 2301 [0.5] & LAWS 2302 [0.5]	Criminal Justice System and Criminal Law	
SOCI 2445 [0.5] & SOCI 2450 [0.5]	Sociology of Deviance and Criminology	
Total Credits		6.5

Integrated Science with Concentration in Life and Health Sciences
B.Sc. Honours (6.0 credits)

In preparation for the study of Medicine, Dentistry, Nursing Science, Pharmacy, Veterinary Medicine, comprises a science sequence drawn from the life sciences (Biology, Biochemistry and Chemistry, Psychology) and a non-science sequence from the social sciences.

Required Courses - Honours

1. 2.5 credits in:		2.5
BIOL 2001 [0.5]	Animals: Form and Function	

BIOL 2104 [0.5]	Introductory Genetics	
BIOL 2200 [0.5]	Cellular Biochemistry	
BIOL 3305 [0.5]	Human and Comparative Physiology	
BIOL 3307 [0.5]	Advanced Human Anatomy and Physiology	
2. 1.0 credit in:		1.0
CHEM 2203 [0.5]	Organic Chemistry I	
CHEM 2204 [0.5]	Organic Chemistry II	
3. 1.0 credit in ENGL		1.0
4. 1.5 credits in:		1.5
PSYC 2200 [0.5]	Biological Foundations of Behaviour	
PSYC 2301 [0.5]	Introduction to Health Psychology	
NEUR 3204 [0.5]	Principles of Psychopharmacology: From Drugs to Behaviour	
Total Credits		6.0

Note: For the concentration in Life and Health Sciences, PHYS 1007 [0.5] and PHYS 1008 [0.5] are recommended.

Integrated Science with Concentration in Life and Health Sciences
B.Sc. General (6.0 credits)

In preparation for the study of Medicine, Dentistry, Nursing Science, Pharmacy, Veterinary Medicine, comprises a science sequence drawn from the life sciences (Biology, Biochemistry and Chemistry, Psychology) and a non-science sequence from the social sciences.

Required courses - General

1. 2.5 credits in:		2.5
BIOL 2001 [0.5]	Animals: Form and Function	
BIOL 2104 [0.5]	Introductory Genetics	
BIOL 2201 [0.5]	Cell Biology and Biochemistry	
BIOL 3306 [0.5]	Human Anatomy and Physiology	
BIOL 3307 [0.5]	Advanced Human Anatomy and Physiology	
2. 1.0 credit in:		1.0
CHEM 2203 [0.5]	Organic Chemistry I	
CHEM 2204 [0.5]	Organic Chemistry II	
3. 1.0 credit in ENGL		1.0
4. 1.5 credits in:		1.5
PSYC 2200 [0.5]	Biological Foundations of Behaviour	
PSYC 2301 [0.5]	Introduction to Health Psychology	
NEUR 3204 [0.5]	Principles of Psychopharmacology: From Drugs to Behaviour	
Total Credits		6.0

Note: For the concentration in Life and Health Sciences, PHYS 1007 [0.5] and PHYS 1008 [0.5] are recommended.

Integrated Science with Concentration in Information Science
B.Sc. Honours (6.0 credits)

A science sequence selected from Computer Science and Mathematics and Statistics and Psychology with a non-

science sequence of an appropriate selection of courses in Arts and Social Sciences.

Required Courses

1. 3.0 credits in:		3.0
COMP 1005 [0.5]	Introduction to Computer Science I	
COMP 1006 [0.5]	Introduction to Computer Science II	
COMP 1805 [0.5]	Discrete Structures I	
COMP 2401 [0.5]	Introduction to Systems Programming	
COMP 2402 [0.5]	Abstract Data Types and Algorithms	
COMP 2404 [0.5]	Introduction to Software Engineering	
2. 1.0 credit from:		1.0
COMP 3000 [0.5]	Operating Systems	
COMP 3004 [0.5]	Object-Oriented Software Engineering	
COMP 3005 [0.5]	Database Management Systems	
COMP 3007 [0.5]	Programming Paradigms	
COMP 3804 [0.5]	Design and Analysis of Algorithms I	
3. 2.0 credits in:		2.0
PSYC 1001 [0.5]	Introduction to Psychology I	
PSYC 1002 [0.5]	Introduction to Psychology II	
PSYC 2700 [0.5]	Introduction to Cognitive Psychology	
PSYC 2800 [0.5]	Introduction to Human Factors	
Total Credits		6.0

Integrated Science with Concentration in Information Science
B.Sc. General (6.0 credits)

A science sequence selected from Computer Science and Mathematics and Statistics and Psychology with a non-science sequence of an appropriate selection of courses in Arts and Social Sciences.

Required Courses

1. 3.0 credits in:		3.0
COMP 1005 [0.5]	Introduction to Computer Science I	
COMP 1006 [0.5]	Introduction to Computer Science II	
COMP 1805 [0.5]	Discrete Structures I	
COMP 2401 [0.5]	Introduction to Systems Programming	
COMP 2402 [0.5]	Abstract Data Types and Algorithms	
COMP 2404 [0.5]	Introduction to Software Engineering	
2. 1.0 credit from:		1.0
COMP 3000 [0.5]	Operating Systems	
COMP 3004 [0.5]	Object-Oriented Software Engineering	
COMP 3005 [0.5]	Database Management Systems	
COMP 3007 [0.5]	Programming Paradigms	
COMP 3804 [0.5]	Design and Analysis of Algorithms I	
3. 2.0 credits in:		2.0
PSYC 1001 [0.5]	Introduction to Psychology I	
PSYC 1002 [0.5]	Introduction to Psychology II	
PSYC 2700 [0.5]	Introduction to Cognitive Psychology	
PSYC 2800 [0.5]	Introduction to Human Factors	
Total Credits		6.0

Integrated Science with Concentration in Information Technology
B.Sc. Honours (6.0 credits)

A science sequence selected from Computer Science with a non-science sequence consisting of courses in Technology, Society and Environment Studies leading to opportunities in areas such as software development, user interface design, web applications, communications, advertising and computer-assisted design applications.

Required Courses

1. 3.0 credits in:		3.0
COMP 1005 [0.5]	Introduction to Computer Science I	
COMP 1006 [0.5]	Introduction to Computer Science II	
COMP 1805 [0.5]	Discrete Structures I	
COMP 2401 [0.5]	Introduction to Systems Programming	
COMP 2402 [0.5]	Abstract Data Types and Algorithms	
COMP 2404 [0.5]	Introduction to Software Engineering	
2. 1.0 credit from:		1.0
COMP 3000 [0.5]	Operating Systems	
COMP 3004 [0.5]	Object-Oriented Software Engineering	
COMP 3005 [0.5]	Database Management Systems	
COMP 3007 [0.5]	Programming Paradigms	
COMP 3804 [0.5]	Design and Analysis of Algorithms I	
3. 2.0 credits from:		2.0
TSES 3001 [0.5]	Technology-Society Interactions	
TSES 4001 [0.5]	Technology and Society: Risk	
TSES 4002 [0.5]	Technology and Society: Forecasting	
TSES 4003 [0.5]	Technology and Society: Innovation	
TSES 4005 [0.5]	Information Technology and Society	
TSES 4006 [0.5]	Technology and Society: Work	
TSES 4007 [0.5]	Product Life Cycle Analysis	
TSES 4011 [0.5]	Technology and Society: Development	
TSES 4012 [0.5]	Science and Fiction: Creating Tomorrow	

6. Some Engineering courses may be substituted for some or all TSES courses.

Total Credits		6.0

Integrated Science with Concentration in Information Technology
B.Sc. General (6.0 credits)

A science sequence selected from Computer Science with a non-science sequence consisting of courses in Technology, Society and Environment Studies leading to opportunities in areas such as software development,

user interface design, web applications, communications, advertising and computer-assisted design applications.

Required Courses

1. 3.0 credits in:		3.0
COMP 1005 [0.5]	Introduction to Computer Science I	
COMP 1006 [0.5]	Introduction to Computer Science II	
COMP 1805 [0.5]	Discrete Structures I	
COMP 2401 [0.5]	Introduction to Systems Programming	
COMP 2402 [0.5]	Abstract Data Types and Algorithms	
COMP 2404 [0.5]	Introduction to Software Engineering	
2. 1.0 credit from:		1.0
COMP 3000 [0.5]	Operating Systems	
COMP 3004 [0.5]	Object-Oriented Software Engineering	
COMP 3005 [0.5]	Database Management Systems	
COMP 3007 [0.5]	Programming Paradigms	
COMP 3804 [0.5]	Design and Analysis of Algorithms I	
3. 2.0 credits from:		2.0
TSES 3001 [0.5]	Technology-Society Interactions	
TSES 4001 [0.5]	Technology and Society: Risk	
TSES 4002 [0.5]	Technology and Society: Forecasting	
TSES 4003 [0.5]	Technology and Society: Innovation	
TSES 4005 [0.5]	Information Technology and Society	
TSES 4006 [0.5]	Technology and Society: Work	
TSES 4007 [0.5]	Product Life Cycle Analysis	
TSES 4011 [0.5]	Technology and Society: Development	
TSES 4012 [0.5]	Science and Fiction: Creating Tomorrow	

6. Some Engineering courses may be substituted for some or all TSES courses.

Total Credits	6.0

Integrated Science with Concentration in Science and Ethics
B.Sc. Honours (5.0 credits)

A non-science sequence in Philosophy, focusing on the ethical implications of scientific and technological innovation. The presence of Environment Canada's National Wildlife Research Centre on Carleton's campus allows for exceptional opportunities for directed study in the area of environmental ethics.

Required Courses

1. 1.0 credit in:		1.0
PHIL 1301 [0.5] & PHIL 1550 [0.5]	Mind, World, and Knowledge and Introduction to Ethics and Social Issues	
PHIL 1500 [1.0]	Contemporary Moral, Social and Religious Issues	
2. 1.5 credits in:		1.5
PHIL 2001 [0.5]	Introduction to Logic	
PHIL 2101 [0.5]	History of Ethics	
PHIL 2408 [0.5]	Bioethics	
3. 2.0 credits from:		2.0
PHIL 2003 [0.5]	Critical Thinking	
PHIL 2103 [0.5]	Philosophy of Human Rights	
PHIL 2104 [0.5]	Computer Ethics	
PHIL 2106 [0.5]	Information Ethics	
PHIL 2380 [0.5]	Introduction to Environmental Ethics	
PHIL 2501 [0.5]	Introduction to Philosophy of Mind	
PHIL 2504 [0.5]	Language and Communication	
PHIL 2550 [0.5]	Moral Psychology	
PHIL 2900 [1.0]	Truth and Propaganda	
PHIL 3140 [0.5]	Epistemology	
PHIL 3301 [0.5]	Issues in the Philosophy of Science	
PHIL 3306 [0.5]	Symbolic Logic	
PHIL 3320 [0.5]	Contemporary Ethical Theory	
PHIL 3350 [0.5]	Philosophy, Ethics, and Public Affairs	
PHIL 3380 [0.5]	Environments, Technology and Values	
4. 0.5 credit at the 3000-level or higher.		0.5

Total Credits	5.0

Integrated Science with Concentration in Science and Ethics
B.Sc. General (5.0 credits)

A non-science sequence in Philosophy, focusing on the ethical implications of scientific and technological innovation. The presence of Environment Canada's National Wildlife Research Centre on Carleton's campus allows for exceptional opportunities for directed study in the area of environmental ethics.

Required Courses

1. 1.0 credit in:		1.0
PHIL 1301 [0.5] & PHIL 1550 [0.5]	Mind, World, and Knowledge and Introduction to Ethics and Social Issues	
PHIL 1500 [1.0]	Contemporary Moral, Social and Religious Issues	
2. 1.5 credits in:		1.5
PHIL 2001 [0.5]	Introduction to Logic	
PHIL 2101 [0.5]	History of Ethics	
PHIL 2408 [0.5]	Bioethics	
3. 2.0 credits from:		2.0
PHIL 2003 [0.5]	Critical Thinking	
PHIL 2103 [0.5]	Philosophy of Human Rights	
PHIL 2104 [0.5]	Computer Ethics	
PHIL 2106 [0.5]	Information Ethics	
PHIL 2380 [0.5]	Introduction to Environmental Ethics	
PHIL 2501 [0.5]	Introduction to Philosophy of Mind	
PHIL 2504 [0.5]	Language and Communication	
PHIL 2550 [0.5]	Moral Psychology	
PHIL 2900 [1.0]	Truth and Propaganda	
PHIL 3140 [0.5]	Epistemology	
PHIL 3301 [0.5]	Issues in the Philosophy of Science	
PHIL 3306 [0.5]	Symbolic Logic	
PHIL 3320 [0.5]	Contemporary Ethical Theory	
PHIL 3350 [0.5]	Philosophy, Ethics, and Public Affairs	

PHIL 3380 [0.5]	Environments, Technology and Values	
4. 0.5 credit at the 3000-level or higher.		0.5
Total Credits		5.0

Integrated Science with Concentration in Science and Policy
B.Sc. Honours (5.0 credits)

A science sequence in any one of the science areas of concentration and a non-science sequence of courses in Political Science and Economics in preparation for the public service and/or non- governmental organizations or for administration and regulation of innovation, science and technology.

Required Courses

1. 3.5 credits from:		3.5
PSCI 1100 [0.5]	Introduction to Political Science I: Democracy in Theory and Practice	
PSCI 1200 [0.5]	Introduction to Political Science II: World Politics	
PSCI 2401 [0.5]	Public Affairs Analysis	
PSCI 3401 [0.5]	Canadian Public Administration	
PSCI 3402 [0.5]	Canadian Public Policy	
PSCI 3405 [0.5]	Comparative Public Policy Analysis	
PSCI 3406 [0.5]	Public Affairs and Media Strategies	
PSCI 3407 [0.5]	Public Opinion and Public Policy	
PSCI 3605 [0.5]	Comparative Study of Foreign Policy	
PSCI 3606 [0.5]	Canadian Foreign Policy	
PSCI 3607 [0.5]	North American Security and Defence Policy	
PSCI 3801 [0.5]	Environmental Politics	
PSCI 4400 [0.5]	Socio-Technical Change and Public Policy Design	
PSCI 4402 [0.5]	Gender, State and Public Policy	
PSCI 4403 [0.5]	Reproductive Rights Policy in North America	
PSCI 4407 [0.5]	Public Policy: Content and Creation	
PSCI 4408 [0.5]	Public Affairs Management and Analysis	
2. 1.0 credit in:		1.0
ECON 1000 [1.0]	Introduction to Economics	
3. 0.5 credit in:		0.5
STAT 2507 [0.5]	Introduction to Statistical Modeling I	
Total Credits		5.0

Integrated Science with Concentration in Science and Policy
B.Sc. General (5.0 credits)

A science sequence in any one of the science areas of concentration and a non-science sequence of courses in Political Science and Economics in preparation for the public service and/or non- governmental organizations or for administration and regulation of innovation, science and technology.

Required Courses

1. 3.5 credits from:		3.5
PSCI 1100 [0.5]	Introduction to Political Science I: Democracy in Theory and Practice	

PSCI 1200 [0.5]	Introduction to Political Science II: World Politics	
PSCI 2401 [0.5]	Public Affairs Analysis	
PSCI 3401 [0.5]	Canadian Public Administration	
PSCI 3402 [0.5]	Canadian Public Policy	
PSCI 3405 [0.5]	Comparative Public Policy Analysis	
PSCI 3406 [0.5]	Public Affairs and Media Strategies	
PSCI 3407 [0.5]	Public Opinion and Public Policy	
PSCI 3605 [0.5]	Comparative Study of Foreign Policy	
PSCI 3606 [0.5]	Canadian Foreign Policy	
PSCI 3607 [0.5]	North American Security and Defence Policy	
PSCI 3801 [0.5]	Environmental Politics	
PSCI 4400 [0.5]	Socio-Technical Change and Public Policy Design	
PSCI 4402 [0.5]	Gender, State and Public Policy	
PSCI 4403 [0.5]	Reproductive Rights Policy in North America	
PSCI 4407 [0.5]	Public Policy: Content and Creation	
PSCI 4408 [0.5]	Public Affairs Management and Analysis	
2. 1.0 credit in:		1.0
ECON 1000 [1.0]	Introduction to Economics	
3. 0.5 credit in:		0.5
STAT 2507 [0.5]	Introduction to Statistical Modeling I	
Total Credits		5.0

Integrated Science with Concentration in Science and Technology
B.Sc. Honours (5.0 credits)

A science sequence in one or more areas of concentration and a non-science sequence of credits drawn from courses offered by Technology, Society, Environment Studies and Sociology. Engineering courses may be substituted for some or all TSES credits.

Required Courses

1. 1.5 credits in:		1.5
SOCI 1001 [0.5]	Introduction to Sociology I	
SOCI 1002 [0.5]	Introduction to Sociology II	
SOCI 2035 [0.5]	Technology, Culture and Society	
2. 1.5 credits in:		1.5
TSES 2305 [1.0]	Ancient Science and Technology	
TSES 3001 [0.5]	Technology-Society Interactions	
3. 2.0 credits from:		2.0
TSES 4001 [0.5]	Technology and Society: Risk	
TSES 4002 [0.5]	Technology and Society: Forecasting	
TSES 4005 [0.5]	Information Technology and Society	
TSES 4006 [0.5]	Technology and Society: Work	
TSES 4007 [0.5]	Product Life Cycle Analysis	
TSES 4011 [0.5]	Technology and Society: Development	
TSES 4012 [0.5]	Science and Fiction: Creating Tomorrow	
Total Credits		5.0

Integrated Science with Concentration in Science and Technology
B.Sc. General (5.0 credits)

A science sequence in one or more areas of concentration and a non-science sequence of credits drawn from courses offered by Technology, Society, Environment Studies and Sociology. Engineering courses may be substituted for some or all TSES credits.

Required Courses

1. **1.5 credits in:**		1.5
SOCI 1001 [0.5]	Introduction to Sociology I	
SOCI 1002 [0.5]	Introduction to Sociology II	
SOCI 2035 [0.5]	Technology, Culture and Society	
2. **1.5 credits in:**		1.5
TSES 2305 [1.0]	Ancient Science and Technology	
TSES 3001 [0.5]	Technology-Society Interactions	
3. **2.0 credits from:**		2.0
TSES 4001 [0.5]	Technology and Society: Risk	
TSES 4002 [0.5]	Technology and Society: Forecasting	
TSES 4005 [0.5]	Information Technology and Society	
TSES 4006 [0.5]	Technology and Society: Work	
TSES 4007 [0.5]	Product Life Cycle Analysis	
TSES 4011 [0.5]	Technology and Society: Development	
TSES 4012 [0.5]	Science and Fiction: Creating Tomorrow	
Total Credits		5.0

Integrated Science with Concentration in Science and the Arts
B.Sc. Honours (5.0 credits)

Developed by the student in consultation with an Integrated Science Adviser, offers a breadth of scientific and humanistic knowledge in an individualized but coherent program that instills the literacy, critical, analytical and problem solving skills that can only be acquired through the study of both the sciences and the humanities and social sciences.

Required Courses

1. **1.5 credit in:**		1.5
PHIL 2001 [0.5]	Introduction to Logic	
PHIL 2900 [1.0]	Truth and Propaganda	
2. **1.0 credit in** ENGL		1.0
3. **2.5 credits in** Arts.		2.5
Total Credits		5.0

Integrated Science with Concentration in Science and the Arts
B.Sc. General (5.0 credits)

Developed by the student in consultation with an Integrated Science Adviser, offers a breadth of scientific and humanistic knowledge in an individualized but coherent program that instills the literacy, critical, analytical and problem solving skills that can only be acquired through the study of both the sciences and the humanities and social sciences.

Required Courses

1. **1.5 credit in:**		1.5
PHIL 2001 [0.5]	Introduction to Logic	
PHIL 2900 [1.0]	Truth and Propaganda	
2. **1.0 credit in** ENGL		1.0
3. **2.5 credits in** Arts.		2.5
Total Credits		5.0

Integrated Science with Concentration in Science Education
B.Sc. Honours (8.0 credits)

Preparation for further studies in teaching at the primary or secondary school levels, combines a science sequence in any one of the science areas of concentration with an appropriate non-science sequence.

Note: students should consult the entrance requirements and recommendations of the teachers college that they wish to attend.

Required Courses

1. **1.0 credits in:**		1.0
PSYC 2500 [0.5]	Foundations of Developmental Psychology	
PSYC 2700 [0.5]	Introduction to Cognitive Psychology	
2. **4.0 credits in** the chosen (for teaching) area of science at 2000-level or above		4.0
3. **3.0 credits in** the chosen (for teaching) nonscience or second science		3.0
Total Credits		8.0

In some cases, in consultation with an ISI Adviser, courses may be moved to other categories, or be substituted for by similar courses. Programs such as Psychology and Geography offer courses in both the science and social science categories. The science courses are listed under Science Regulations near the beginning of the calendar.

Integrated Science with Concentration in Science Education
B.Sc. General (8.0 credits)

Preparation for further studies in teaching at the primary or secondary school levels, combines a science sequence in any one of the science areas of concentration with an appropriate non-science sequence.

Note: students should consult the entrance requirements and recommendations of the teachers college that they wish to attend.

Required Courses

1. **1.0 credits in:**		1.0
PSYC 2500 [0.5]	Foundations of Developmental Psychology	
PSYC 2700 [0.5]	Introduction to Cognitive Psychology	
2. **4.0 credits in** the chosen (for teaching) area of science at 2000-level or above		4.0
3. **3.0 credits in** the chosen (for teaching) nonscience or second science		3.0
Total Credits		8.0

In some cases, in consultation with an ISI Adviser, courses may be moved to other categories, or be substituted for by similar courses. Programs such as Psychology and Geography offer courses in both the science and social science categories. The science courses are listed under Science Regulations near the beginning of the calendar.

Integrated Science with Minors

Integrated Science is structured to incorporate any of the 30 or more minors offered by various programs, both in the sciences and in the non-sciences. Regulations for minors are governed by the department/faculty offering the minor, and the University regulations. For example:

Integrated Science with a Minor in Business

A science sequence in any of the science areas is combined with a sequence of business courses from the Sprott School of Business that fulfill the requirements for the Minor in Business, allowing for study of the management of science and technology.

Integrated Science (INSC) Courses

Institute of Integrated Science

Faculty of Science

INSC 3907 [0.5 credit]
Topics in Integrated Science
Assignment(s) reviewing current research topics.
Prerequisite(s): at least 0.5 credit at the 3000-level or higher(may be taken concurrently) and permission of the ISI Director.

INSC 3909 [0.5 credit]
Independent Study
The student, under the supervision of a faculty member, prepares a study in the focus areas of the student's program. Prior to or immediately upon registration, the student must consult with the ISI Director for topic approval and course regulations.
Prerequisite(s): at least 0.5 credit at the 3000-level or higher(may be taken concurrently) and permission of the ISI Director.

INSC 4907 [1.0 credit]
Honours Essay and Research Proposal
A review of current research, and a research proposal, under the supervision of a faculty advisor (note: the research project is not actually carried out). Graded on the literature review, the research proposal, and an oral defense. The student arranges for a faculty advisor.
Precludes additional credit for INSC 4908 [1.0].
Prerequisite(s): fourth-year standing in Honours Integrated Science and permission of the Integrated Science Institute.

INSC 4908 [1.0 credit]
Honours Project
Under the supervision of a faculty adviser, the student carries out a research project in the IS areas of study. Prior to or immediately upon registration, the student must consult with the ISI Director for topic approval and course regulations.
Precludes additional credit for INSC 4907 [1.0]
Prerequisite(s): permission of the ISI Director.

Summer session: some of the courses listed in this Calendar are offered during the summer. Hours and scheduling for summer session courses will differ significantly from those reported in the fall/winter Calendar. To determine the scheduling and hours for summer session classes, consult the class schedule at central.carleton.ca

Not all courses listed are offered in a given year. For an up-to-date statement of course offerings for the current session and to determine the term of offering, consult the class schedule at central.carleton.ca