

Integrated Science

Institute of Integrated Science
Faculty of Science

This section presents the requirements for:

- **Integrated Science – B.Sc. Honours**
- **Integrated Science – B.Sc. General**

Graduation Requirements

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

- the University regulations including the process of Academic Performance Evaluation (see the *Academic Regulations of the University* section of this Calendar),
- 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 (IS) 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 the associated specialty area outside of the Faculty of Science, a pattern of courses is selected that corresponds to one of the Fields of Study listed below. 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 Committee.

An Honours program and a General program are available. Both require a course of independent study (ISCS 4908 [1.0], ISCS 3909) as an important element in the program.

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. Introductory Credits (5.0 credits):

- 1.0 credit in MATH 1007 and MATH 1107;
- 2.0 experimental Science credits chosen from two of Biology, Chemistry, Geology, Physics;
- 2.0 credits chosen from Science, Mathematics, Arts, Social Sciences, Computer Science (except COMP 1001 or COMP 1001) or Engineering;

B. Science Sequence (9.0 credits):

- 5.0 credits selected from the Faculty of Science at the 2000-level or above;
- 3.0 credits from the Faculty of Science at the 3000-level or above;
- 1.0 credit in ISCS 4908 [1.0];

C. Non-Science Sequence (4.0 credits):

- 4.0 credits in an inter-related specialized area selected from outside the Faculty of Science;

D. Additional Requirements

- 2.0 credits in free electives;
- At least 2.0 credits in Items 1 to 8 above must be chosen from the Faculties of Arts and Social Sciences or Public Affairs and Management.

Note: Item 4 above may include up to 1.0 credit 1000-level computer science.

Integrated Science B.Sc. General (15.0 credits)

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

A. Introductory Credits (5.0 credits):

- 1.0 credit in MATH 1007 and MATH 1107;
- 2.0 experimental Science credits chosen from two of Biology, Chemistry, Geology, Physics;
- 2.0 credits chosen from Science, Mathematics, Arts, Social Sciences, Computer Science (except COMP 1000 or COMP 1001) or Engineering;

B. Science Sequence (6.0 credits):

- 4.0 credits selected from the Faculty of Science at the 2000-level or above;
- 1.5 credits from the Faculty of Science at the 3000-level or above;
- 0.5 credit in ISCS 3909;

C. Non-Science Sequence (3.0 credits):

- 3.0 credits in an inter-related specialized area selected from outside the Faculty of Science;

D. Additional Requirements (1.0 credit):

- 1.0 credit in free electives;
- At least 2.0 credits in Items 1 to 8 must also be chosen from the Faculties of Arts and Social Sciences or Public Affairs and Management.

Note: Item 5 above may include up to 1.0 credit 1000-level computer science.

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

Fields of Study

1. Health Science — preparation for Medicine, Dentistry, Nursing Science, Pharmacy, Veterinary Medicine.

A program in Health Science comprises a science sequence drawn from the life sciences (biology, biochemistry and chemistry, psychology) and a non-science sequence from the social sciences (psychology, sociology, and/or business).

2. Science Education — preparation for teaching at the primary or secondary school levels.

A program in Science Education combines a science sequence in any one of the science areas of concentration with an appropriate non-science sequence.

3. Forensic Science — preparation for a career or graduate study in forensic analysis (such as DNA analysis, trace evidence techniques, drug testing and toxicology). A program in Forensic Science has a science sequence that emphasizes analytical laboratory techniques and provides a sound basis in fundamental biology and chemistry. The non-science sequence is drawn from a list of relevant courses in anthropology, sociology (criminology), law and psychology.

4. Science and Business — preparation for a career involving the management of innovation in either the private or public sectors or for post-graduate studies in business administration. A program in Science and Business consists of a science sequence in any one of the science areas of concentration and a non-science sequence developed in consultation with the School of Business of the Faculty of Public Affairs and Management. The non-science sequence meets the requirements for the Minor in Business degree designation.

5. Science and Policy — preparation for a career in the public service and/or non-governmental organizations or for post-graduate studies in the administration and regulation of innovation, science and technology. A program in Science and Policy consists of a science sequence in any one of the science areas of concentration and a non-science sequence of courses in Business, Economics and Political Science (including those courses required by the Faculty of Engineering for the Concentration in Management designation).

6. Science and Communication — preparation for a career in media communications and public relations. A program in Science and Communication combines a science sequence in any one of the science areas of concentration with a non-science sequence developed in consultation with the School of Journalism and Communication of the Faculty of Public Affairs and Management. The non-science sequence meets the requirements for the Minor in Mass Communication degree designation.

7. Science and Ethics — preparation for a career as an analyst and/or publicist in either the private or public sectors or for post-graduate studies in either science or philosophy. A program in Science and Ethics links a science sequence in any one of the science areas of concentration to a non-science sequence of philosophy, ethics and public affairs credits that meets the requirements of the Minor in Philosophy degree designation. Because of the complementary presence of Environment Canada's National Wildlife Research Centre on Carleton's campus, exceptional opportunities exist for directed study in the area of environmental ethics.

8. Science and the Arts — preparation for any career that requires a breadth of scientific and humanistic knowledge, this field offers 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. A program in Science and the Arts consists of a science sequence in one or more areas of concentration and a non-science sequence of arts and social sciences credits developed by the student in consultation with an Integrated Science Studies adviser.

9. Science and Technology — A program in Science and Technology consists of a science sequence in one or more areas of concentration and a non-science sequence of credits drawn from courses offered by the Faculty of Engineering and Design and by Technology, Society, Environment Studies.

10. Information Science — A program in Information Science consists of a science sequence selected from computer science and mathematics & statistics; non-science sequence consisting of an appropriate selection of courses in Arts & Social Sciences (particularly recommended are courses in mass communication, Art & Culture, Psychology, and Sociology) and TSE.

11. Information Technology — The science sequence is selected from computer science and mathematics & statistics; non-science sequence consisting of an appropriate selection of courses in Engineering and TSE. Career opportunities for graduates are in software development, user interface design, web applications, communications, advertising, computer-assisted design applications, etc.