

science



# UNDERGRADUATE HANDBOOK

## Department of Biology



<https://biology.yorku.ca>

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**Note: Any Information in this supplementary calendar is for informational purposes only. It is the students' responsibility to confirm program, faculty, degree and University requirements with the official 2017-2018 undergraduate calendar available from the York University Registrar's Office.**

## WELCOME—A MESSAGE FROM THE CHAIR

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Biology, the science of life is concerned with the structure and function of organisms, their evolution and ecology. The Department of Biology offers undergraduate instruction in all the major fields of biology, with particular strength in cell and molecular biology, physiology, ecology and evolutionary biology. While each specialized program in the Department of Biology centers on a prescribed core of courses, students have the opportunity to take a broad variety of elective courses so as to acquire an understanding of the multifaceted nature of biology today.

The Biology faculty includes accomplished and internationally renowned research scientists who are dedicated to helping students acquire critical learning, analytical and scientific skills. These skills provide students with a better understanding of the beauty and complexity of the natural world and facilitate engagement in informed discussions of scientific questions. Our goal is to provide students with an excellent well-rounded education in life sciences that can lead to fulfilling careers in industry, academia and government. We strive to inspire and engage our students through lectures, laboratory courses, field courses, seminars and independent study programs. An important component of the undergraduate program in Biology for Honours students is the opportunity to do an Honours Thesis based on laboratory and/or field investigations under the supervision of a faculty member.

This handbook provides information that will help you choose the right undergraduate program and courses to achieve your goals in Biology. Please pay special attention to the program requirements and course prerequisites for the various programs in Biology, including the Specialized Honours Program, the Honours Major Program and the Honours Major/Minor Program. This handbook should be used in combination with the Biology website, which can be found at <http://science.yorku.ca/biology/undergraduate-program/programs/> and the Undergraduate Calendar, which can be found on the Registrar's website <http://calendars.registrar.yorku.ca/>

For general questions and advice about your courses, please refer to the information in this handbook. For additional questions you may email [biology@yorku.ca](mailto:biology@yorku.ca). The Biology Undergraduate Office and the Biology First Year office are located in the Life Sciences Building, Room 102.

I encourage you to explore the wide range of possibilities offered by Biology and I offer my best wishes for success.

Robert Tsushima, PhD  
Associate Professor and Chair  
Department of Biology

## BIOLOGY INFORMATION AND RESOURCES

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### CONTACT US

#### **Biology Undergraduate Office**

**Undergraduate Program Director: Professor Paula Wilson**

**Undergraduate Program Assistant: Vanessa Broughton (416) 736-5311**

**First Year Program Assistant: Nalini Doodnauth**

**102 Life Sciences Building**

**York University**

**4700 Keele Street**

**Toronto, ON M3J 1P3**

**Undergraduate Office: (416) 736-5311**

**First Year Office: (416) 736-5745**

**Email: [biology@yorku.ca](mailto:biology@yorku.ca)**

### BIOLOGY UNDERGRADUATE WEBSITE

Please visit [www.science.yorku.ca/biology](http://www.science.yorku.ca/biology) for news, events, and information on programs, scholarships, awards, course enrolments, and advising.

## AN OVERVIEW OF UNDERGRADUATE PROGRAMS IN BIOLOGY

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The Department of Biology offers a broad range of programs to suit the diverse interests and needs of its students. For all programs, the first year is multi-disciplinary, comprising introductory courses in fundamental science that prepare students for more advanced study in Biology. The second-year core curriculum in Biology provides a firm grounding in major organizational levels of Biology (molecules, cells, organisms, populations, communities, and ecosystems), while a broad offering of senior courses permits students to pursue more specific areas of interest. Immediately below, we highlight the major differences, with more detailed descriptions of specific programs below that. For students with incoming averages of 85% or above, there is also the opportunity to complete your first year within the [Integrated Sciences Program](#).

The **Bachelor program** is a three-year general degree in Biology.

All **Honours BSc programs** are four year programs:

The **Specialized Honours BSc Biology** is a more focused program, requiring more courses in Biology, as well as completion of an Honours Research Thesis. Through careful course choice you can design your program of study according to your interests and career plans, or you can follow a more structured program by choosing the Biotechnology Stream or Biomedical Science Stream (see Honours Major above).

*The **Biomedical Science Stream*** provides a comprehensive curriculum to prepare you for a career in biomedical research, medicine and other health-related professions. Courses focus on biomedically-relevant areas of cell and molecular biology and physiology: immunology, neurobiology, molecular genetics, cancer biology, animal physiology, proteomics, etc.

*The **Biotechnology Stream*** focuses on the innovative use of living organisms to create new products that improve human health, food and the environment. This stream includes courses in molecular and cell biology, genetics, chemistry and biochemistry as well as ethics.

The **Honours Major BSc Biology** is flexible both in its second year core and senior course options. Students can choose courses from many different areas in biology, focus study in a particular field such as physiology, cell and molecular biology or ecology, or follow the Biomedical Science Stream. There is substantive elective room for taking courses in other areas of Science.

The **Honours Double Major and Major/Minor BSc Biology** combine two disciplines of study. Students have the option of combining a major in Biology with a second science major or with a minor in almost any other discipline from the Faculties of Science, Health, LA&PS, Fine Arts, Environmental Studies.

The **International BSc (iBSc) Biology** degrees combine an honors program in Biology with an international component, language study, and at least one term abroad on international exchange.

The **Honours Specialized degree in Biochemistry**, focuses on the chemistry of life, considering biology at the molecular and sub-molecular level. This program is shared with the department of Chemistry.

The **Environmental Biology program** offers Bachelor and Honours degrees focussed on the biology of environmental issues, integrating ecological theory and practice to predict, quantify, and address the impact of stressors such as habitat loss, pollutants, climate change, resource harvesting and invasive species on living systems.

## ADVISING AND GENERAL INFORMATION

### ACADEMIC ADVISING

There are many resources to help you better understand your degree requirements, and track your degree progress, including academic advising and mandatory group advising in your second term of first year. **However, it is your responsibility to ensure that you track your progress such that you successfully complete your degree.** Check out information posted on our website – it's highly likely that your question will be answered!

If you have questions, who you see depends on the nature of your question:

| <b>Science Academic Services (SAS)<br/>352 Lumbers</b>  | <b>Biology Undergraduate Office<br/>102 LSB</b>   |
|---|---|
| <p>SAS provides general advising to all science students. You should visit SAS for any general advising questions, including:</p> <ul style="list-style-type: none"><li>• Degree checklists &amp; degree audits (especially one year ahead of your expected graduation date!)</li><li>• Understanding academic decisions (e.g., Academic Warning, Fail to Gain Standing)</li><li>• Requirements for programs and program changes</li><li>• General degree requirements (e.g., non-science requirements)</li></ul> | <p>Visit the Undergraduate Office for questions about biology courses and programs, including:</p> <ul style="list-style-type: none"><li>• Biology course enrolments</li><li>• Letters of permission for Biology courses</li><li>• Deferred standing for a final exam in Biology</li><li>• Formal grade appraisal for a Biology course</li></ul> <p>If you require extra assistance/information, you can book an appointment with one of our academic advisors (the Undergraduate Program Director [UPD] and the First Year Academic Advisor). These appointments normally provide advice on specific questions; they do not repeat information provided in the mandatory group advising sessions, the calendar, or the website.</p> <p><b><i>Biochemistry students should normally see the Chemistry Undergraduate Program Director (UPD).</i></b></p> |

Students with special situations (including transfer credits) who require extra assistance/information may make an appointment with the Undergraduate Program Director. Normally these appointments provide advice on specific questions; they do not repeat information provided in the group sessions or available from a checklist/website. Always obtain and consult appropriate degree checklists prior to advising appointments. Advising times and directions for making an appointment are posted on the UG website under advising.

**Note: Biochemistry students should normally see the Undergraduate Program Director in Chemistry.**

#### Group Advising – first and second year students

The department provides **mandatory group advising sessions for first year students** that are held in March/April. These sessions include a review of degree requirements, choosing second year courses, understanding the prerequisite structure and other critical information. It is also an opportunity to get your questions answered. Following this session, most students are able to complete their enrolments for the coming year by themselves.

**Group advising sessions for second year students** are also held in March/April and students should attend. The focus of these sessions include choosing third and fourth year courses, completing your degree, what to do if you are not meeting the GPA requirements, information about the honours thesis course, etc.

#### Degree Progress

You are responsible for ensuring you complete your degree requirements, so make sure you understand your program requirements. Using a degree checklist from Science Academic Services (352 LB) or the degree requirements in this handbook, students should check their own progress towards an undergraduate degree. Students are encouraged to consult the University and Biology Undergraduate websites for additional helpful information. Common advising questions are answered

in our FAQ (Frequently Asked Questions) section of the biology undergraduate website under advising (also at the back of this handbook). If you have consulted the above resources and are still unclear, you can contact SAS, email [biology@yorku.ca](mailto:biology@yorku.ca), or make an appointment to see the program director.

## GRADES AND GRADING SCHEMES

Courses in Biology are graded according to the following scale. The grade point values are used to compute averages. Only courses taken at York University are included in the grade point averages.

**The letter-grade system (not percent range) is the fundamental system of assessment of performance in undergraduate programs at York University. Grades in the table below are used to calculate averages and credits.**

| Grade          | Grade Point | Per Cent Range*        | Description        |
|----------------|-------------|------------------------|--------------------|
| A+             | 9           | 90-100                 | Exceptional        |
| A              | 8           | 80-89                  | Excellent          |
| B+             | 7           | 75-79                  | Very Good          |
| B              | 6           | 70-74                  | Good               |
| C+             | 5           | 65-69                  | Competent          |
| C              | 4           | 60-64                  | Fairly Competent   |
| D+             | 3           | 55-59                  | Passing            |
| D              | 2           | 50-54                  | Marginally Passing |
| E <sup>‡</sup> | 1           | (Marginally below 50%) | Marginally Failing |
| F              | 0           | (Below 50%)            | Failing            |

\* The percentages indicated are **NOT** part of the official grading scheme and are meant only to be used as guidelines. Typically averages below 40% are considered F.

‡ A grade of an E does not represent successful completion of a prerequisite course.

### Definitions of Grading Descriptions

| Grade | Description        | Definition  |
|-------|--------------------|---|
| A+    | Exceptional        | Thorough knowledge of concepts and/or techniques and exceptional skill or great originality in the use of those concepts/techniques in satisfying the requirements of an assignment or course.  |
| A     | Excellent          | Thorough knowledge of concepts and/or techniques together with a high degree of skill and/or some elements of originality in satisfying the requirements of an assignment or course.            |
| B+    | Very Good          | Thorough knowledge of concepts and/or techniques together with a fairly high degree of skill in the use of those concepts/techniques in satisfying the requirements of an assignment or course. |
| B     | Good               | Good level of knowledge of concepts and/or techniques together with considerable skill in using them to satisfy the requirements of an assignment or course.                                    |
| C+    | Competent          | Acceptable level of knowledge of concepts and/or techniques together with considerable skill in using them to satisfy the requirements of an assignment or course.                              |
| C     | Fairly Competent   | Acceptable level of knowledge of concepts and/or techniques together with some skill in using them to satisfy the requirements of an assignment or course.                                      |
| D+    | Passing            | Slightly better than minimal knowledge of required concepts and/or techniques together with some ability to use them in satisfying the requirements of an assignment or course.                 |
| D     | Barely Passing     | Minimum knowledge of concepts and/or techniques needed to satisfy the requirements of an assignment or course.  |
| E     | Marginally Failing |   |
| F     | Failing            |   |

### Calculation of Averages

Two types of averages are calculated and reported to students: sessional and cumulative. All averages calculated for purposes such as determining eligibility to proceed and graduate are credit-weighted.

- Sessional GPA: This average reflects a student's grades for a particular academic session (e.g. Fall/Winter 2012-2013 Session).

- Cumulative GPA: This average reflects a student's grades over the entire undergraduate career in a student's particular degree program.

### Definitions of Pass and Fail

Passed courses: A passed course is one in which the student has achieved a grade of D or better. Failed courses: There are two failing grades on the Undergraduate Grading Scheme: E (marginal failure) and F (failure). Courses for which either an E or F are awarded will not qualify as prerequisites because they have not been successfully completed.

### Grades Release Dates (Grade Reports and Transcripts)

Grades submitted by an instructor are subject to review by the teaching unit in which the course is offered and by the Faculty Council or Faculty Committee on Academic Policy and Planning. **Final course grades may be adjusted to conform to program or Faculty grades distribution profiles.** Normally, grades appear on grade reports and transcripts as soon as they are submitted to the Registrar's Office.

### Calculation of Credit-Weighted Grade Point Average (GPA)

| Course                    | Letter Grade Achieved | Grade Point Achieved            | Weighted Grade Point Achieved (Credits x Grade Point) |
|---------------------------|-----------------------|---------------------------------|---|
| BIOL 1000<br>3.0          | A                     | 8                               | 3 x 8=24  |
| BIOL 1001<br>3.0          | A                     | 8                               | 3 x 8=24  |
| BIOL 2010<br>4.0          | B                     | 6                               | 4 x 6=24  |
| BIOL 2020<br>3.0          | B+                    | 7                               | 3 x 7=21  |
| BIOL 2021<br>3.0          | B+                    | 7                               | 3 x 7=21  |
| BIOL 2030<br>4.0          | C+                    | 5                               | 4 x 5=20  |
| BIOL 2040<br>3.0          | A+                    | 9                               | 3 x 9=27  |
| BIOL 2050<br>4.0          | B                     | 6                               | 4 x 6=24  |
| BIOL 2070<br>3.0          | B                     | 6                               | 3 x 6=18  |
| <b>Total credits = 30</b> |                       | <b>Total grade points = 203</b> |   |

Thus, credit-weighted grade point average in Biology courses =  $203/30 = 6.766$

## DEFERRED EXAMS

Deferred standing may be granted to undergraduate students who are unable to write their final examination at the scheduled time. In order to apply for deferred standing, students must obtain a *Final Exam/Assignment Deferred Standing Agreement* form (<http://www.registrar.yorku.ca/exams/deferred>), to be completed by the student and the course director. This form should be accompanied by appropriate supporting documentation (for example an “Attending Physician’s Statement”, also available from the Registrar’s website). The DSA form, together with supporting documentation, should be submitted to the Undergraduate Office or directly to the Course Director **within 5 working days** of the missed examination.

If the course director grants deferred standing, the agreement should describe the arrangement that has been agreed upon by the student and course director regarding how and when the course will be completed or exam written.

### Please Note:

- **Course directors are not obliged to grant deferred standing and are not obliged to provide a rationale for the decision.** Should the course director decline to grant (in other words, prefer to have the decision made by the petitions committee), he/she should indicate it on the DSA form. You then must submit an academic petition for deferred standing.
- A petition application can be obtained from the Registrar’s website and should be submitted to the Registrar within one week following a missed examination or the last day to submit coursework, together with supporting documentation.
- When preparing a DSA or petition, you must use the most current forms available from the Registrar’s website.
- If you miss a final exam, the final grade will appear as an F on your transcript until deferred standing has been approved and the Registrar is notified, at which time the Registrar will convert it to DEF.

**There is no provision for rewriting a final examination to improve a final grade.**

When students do not or cannot write a mid-term examination (not held during the formal examination period), alternate arrangements should be made with the course director before the last day of classes. The Deferred Standing Agreement does not apply.

Students who, because of religious commitment, cannot write a formally scheduled final examination on the date scheduled, should refer to the appropriate guidelines regarding the *Religious Observance Policy and Accommodation Guidelines* (<https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/wa/regobs>).

### Deferred Examination Times

**It is always the student’s responsibility to find out the date, time and place of the deferred exam by contacting the course director directly.** Please do not contact the Biology office wanting to know the day/time of your deferred exam. Deferred exams may be scheduled during the regular exam period or some time during the following term at the discretion of the course director.

## **POLICY ON RETURNING GRADED WORK TO STUDENTS**

Graded work from undergraduate courses must be returned directly to students under the supervision of the course instructor/teaching assistant/staff member. In the case of laboratory reports, normally it is the responsibility of each TA to return marked reports directly to the students during the laboratory period. Only the author of the report can pick it up. Unclaimed reports will be destroyed 1 week past the last day to request a final grade reappraisal (see Registrar's website). It is unacceptable to leave term work unattended in hallways or elsewhere.

## **PLAGIARISM AND ACADEMIC INTEGRITY**

The Biology Department takes academic dishonesty (including plagiarism) very seriously, and will prosecute offenders. It is your responsibility to know what constitutes plagiarism and academic dishonesty. Any breach of academic honesty will be dealt with according to the University's policies, which can be found at:

[http://www.yorku.ca/spark/academic\\_integrity/index.html](http://www.yorku.ca/spark/academic_integrity/index.html)

Please review the Senate Policy on Academic Honesty: <http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>

## **BETHUNE WRITING CENTRE**

Need help with writing? The Bethune Writing Centre offers instruction in academic writing to students affiliated with Bethune College. If you are an undergraduate student enrolled in Science or taking a Science course you may request an appointment with a Bethune writing instructor. They can help with all typical assignments including lab reports, short essays, research papers, Honours Theses, Plans of Study, technical reports, and feasibility reports. Appointments are made online at <http://bethune.yorku.ca/writing/>

## **FACULTY RESEARCH INTERESTS**

If you are interested in working with a faculty member in a research laboratory, we advise you to first find out more about their research program. Information about faculty member research is available from the Faculty of Science website.

## **GRADUATING**

Students planning to graduate in the coming year are reminded to submit an Application to Graduate to the Registrar's office. Normally applications are completed and submitted online through MyYorku.ca. If you meet the requirements for a degree program other than the one you are currently in, you can apply by completing the application to graduate form which is available from the same website and submitting it in hard copy to the Office of the Registrar. For application deadlines, see the website: <http://www.yorku.ca/mygrad/>

## ENROLLING IN COURSES

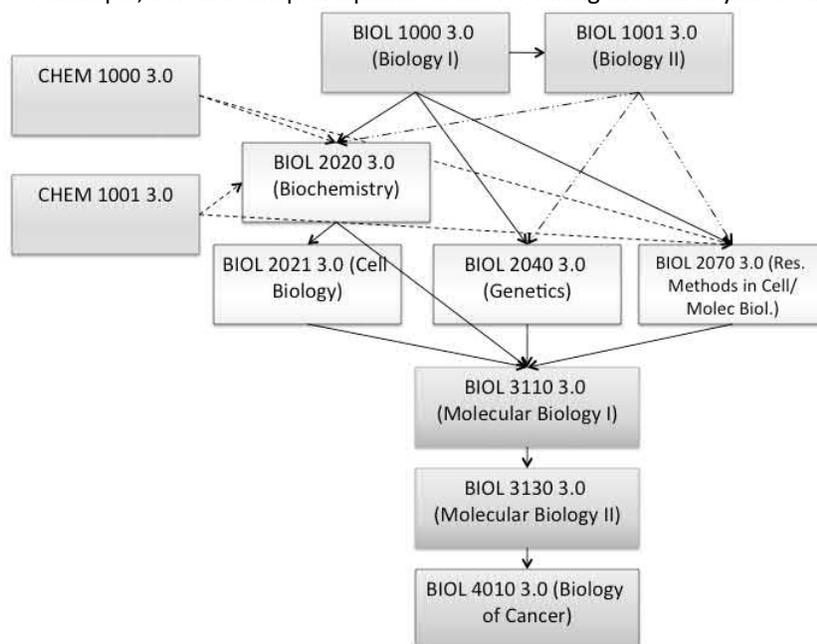
### SCHEDULING AND SCHEDULE CHANGES

Up to date schedule information is available from on <https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm>

Some course offerings may change after publication of this handbook; check the Registrar's website regularly, as well as the "enrolment updates" section of the biology undergraduate website.

### PREREQUISITES

- All Biology courses have pre- and/or co-requisites. Prerequisites reflect the fact that courses build upon concepts and skills gained from successfully completing earlier courses. Understanding of the material and skills taught in prerequisite courses is assumed by Course Directors. **PREREQUISITES ARE ENFORCED FOR ALL BIOLOGY COURSES. If you enroll in a course without successfully completing the prerequisite you will be de-enrolled from the course**
- Certain prerequisite courses must be completed early in the program to be eligible for upper-level courses in third or fourth year. For example, BIOL 2020/2021/2070 are required for many senior courses in cell and molecular biology. Thus we advise you to review senior course offerings and note their prerequisites when choosing second year courses. For example, below is the prerequisite "tree" for taking the fourth year course Biology of Cancer.



- IMPORTANT: If you have Transfer Credit from another institution** the enrolment system may block you from enrolling if your prerequisite courses are transfer credits. To avoid enrolment blocks, please email [biology@yorku.ca](mailto:biology@yorku.ca) **one week prior to your enrolment window**, providing your name, student number and the courses you wish to enrol in so that permission may be granted.

### TIPS FOR ENROLLING IN COURSES

All courses offered by the Department of Biology require direct enrolment by the student. Students should be sure to have all required pre-and co-requisites before enrolling in a course.

**Do NOT enrol in a course if you lack one or more prerequisites.** Contact the first year office for first year courses, the undergraduate office for second and third year courses, and the course director for fourth year courses if you have a special situation. **Be aware that prerequisites are strictly enforced.**

Blocks to Enrolment: For many courses, prerequisite filters are in place to prevent students lacking prerequisites from enrolling. In courses where this system is not employed, you will be de-enrolled without prior notification if you lack the pre/co-requisites.

**IMPORTANT: Students with Transfer Credits** from another institution may find that the enrolment system blocks you from enrolling if your prerequisite courses are transfer credits. **To avoid enrolment blocks, please email [biology@yorku.ca](mailto:biology@yorku.ca) one week prior to your enrolment window, providing your name, student number and the courses you wish to enrol in so that permission may be granted.**

If a course you want is completely full, continue to try to enroll during the open window period as many students drop and add courses, especially at the beginning of the term. Class sizes are usually determined by the physical size of the room, so seats will be limited. **We cannot guarantee you a place in a course that is full. We cannot keep waiting lists for courses other than SC/BIOL 3140 4.00 and SC/BIOL 4290 4.00.**

We strongly advise you **not to enroll in courses that overlap in the lecture/lab times**. In addition to being unable to be present at all lectures/labs for both courses, you risk the possibility of having test and exam conflicts. In such cases course directors are not required to provide accommodation, so beware of the risks.

### **COURSES WITH LABS AND/OR TUTORIALS**

Space in lab and tutorial sections are limited by equipment and room capacity, and certain lab times are in high demand. Unfortunately, we cannot guarantee you space in the lab of your choice, and therefore you will need to be flexible in terms of lab time. Many of you will have to have labs in the evening or at other non-preferred times, or you may have to rearrange other aspects of your schedule (such as lecture sections and/or work) in order to create a schedule with no conflicts. This can be very frustrating, but it is not something we can control. You will appreciate that we can only create space in a full lab by de-enrolling someone else, and we cannot do that. If the lab you want is full, please enroll in another lab that fits your schedule. **Enroll as early as possible to ensure fitting labs into your timetable.** As many lab courses fill quickly, some students enroll in any available lab section to be sure to have a place in the course. Should you take this approach, you should check on-line regularly for availability and try to transfer to a section that fits your schedule. Be aware that, if you are unsuccessful, **we cannot guarantee you a place in the laboratory section of your choice, nor in a lab section that fits your schedule.**

### **SPECIAL COURSES**

**SC/BIOL 4200 and 4000** are open only to Honours Biology students and require a certain GPA, special form and permission to enrol. Please see additional information in the Course Offerings Section of this handbook. Information packages and enrolment forms are available from the Biology undergraduate website.

**SC/BIOL 1500, 2900 and 2905** are not normally open to Biology majors and do **NOT** count towards BIOL credit totals for degree requirements. For permission to take BIOL 2905, please contact the undergraduate office.

**SC/BIOL 3140 and 4290** may require permission to enrol. Email [biology@yorku.ca](mailto:biology@yorku.ca) if you cannot enrol but have the prerequisites. Priority for these courses is given to students who require them as part of their degree requirements (Biochemistry, Biotechnology) but there are also spaces for other students.

### **ENROLMENT UPDATES**

Enrolment updates are normally posted on the "Enrolment Updates" section of the Biology undergraduate website.

### **REPEATING COURSES**

Students may repeat any course twice. In this case both the original and the repeated courses will appear on the transcript with a final grade. However, only the grade for the second or third attempt will be considered the grade of record and will be used in calculating the GPA. You do not get to choose the highest of three attempts

Students who take a course more than three times will find that the third attempt remains grade of record and counts towards GPA and credit totals. **Students may be blocked or de-enrolled from a course for a third time if there is limited space in the course.**

## **COURSE CREDIT EXCLUSIONS**

Courses designated as exclusions of one another **may not** both be taken for degree credit. If two courses listed as Course Credit Exclusions are taken, both will appear on the transcript, but the first course will have a **“No Credit Retained” (NCR)** notation, and the mark for that course will not be included in the York University GPA. Course credit exclusions are identified in the course descriptions. Course credit exclusions for BIOL courses offered through other departments usually cannot be used in place of the BIOL course (e.g. as a program requirement).

## **NATS COURSES**

Natural Science (NATS) courses are designed for non-science students. Biology students cannot take Biology-related NATS courses for credit. If you have transferred from a different science area or from another Faculty (e.g., LA&PS) you may get credit if the course is not a course credit exclusion with SC/BIOL 1010 6.0, SC/BIOL 1000 3.0 or SC/BIOL 1001 3.0. Biology-related NATS courses offered by the Faculty of Science include: SC/NATS 1550, 1610, 1620, 1640, 1660, 1670, 1675, 1680, 1690, 1695, 1770, 1800A, 1850 (formerly 1800J), 2700; and Glendon College: GL/NATS 1540 6.0, 1800, 2300, 2310, 3230, 3680. **If you wish to take a NATS course in spite of these restrictions, please check the CCE and NCR notes for a NATS course before enrolling.**

## **STILL HAVE QUESTIONS?**

Check out our FAQ section on our website at <http://science.yorku.ca/biology/undergraduate-program/advising/> or go to the FAQs in this Undergraduate Handbook.

## UNIVERSITY, SENATE, FACULTY AND DEPARTMENTAL REGULATIONS

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The following informational materials are to assist students, staff and faculty to find answers to questions concerning University, Senate, Faculty and Departmental regulations:

|   | Website   |
|---|---|
| York University Policies, Procedures & Regulations Database | <a href="http://www.yorku.ca/secretariat/policies/">http://www.yorku.ca/secretariat/policies/</a>                                     |
| Senate Policies   | <a href="http://www.yorku.ca/secretariat/policies/">http://www.yorku.ca/secretariat/policies/</a>                                     |
| University Procedures                                       | <a href="http://www.yorku.ca/secretariat/policies/">http://www.yorku.ca/secretariat/policies/</a>                                     |
| Presidential Regulations                                    | <a href="http://www.yorku.ca/secretariat/policies/">http://www.yorku.ca/secretariat/policies/</a>                                     |
| Faculty of Science  | <a href="http://science.yorku.ca/">http://science.yorku.ca/</a>   |
| Academic Services   | <a href="http://science.yorku.ca/current-students/academic-advising/">http://science.yorku.ca/current-students/academic-advising/</a> |
| Further Information for Potential Students                  | <a href="http://science.yorku.ca/future-students/">http://science.yorku.ca/future-students/</a>                                       |

Students are reminded that they may petition on reasonable grounds, in writing, any Faculty of Science regulation. All enquiries about regulations and petition procedures should be addressed to the Registrar's Office. For further information on petitions and appeals, students should see the web site:

<http://www.registrar.yorku.ca/petitions/academic>

Questions concerning the Undergraduate Program in Biology may be directed to Dr. Tamara Kelly (Undergraduate Program Director) by emailing [biology@yorku.ca](mailto:biology@yorku.ca). Students may also discuss matters of concern with the Departmental Chair, by booking an appointment with the Administrative Assistant, in Room 247 Farquharson.

## UNDERGRADUATE LABORATORY INFORMATION

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### SAFETY

It is extremely important, and required, that all students who take part in science laboratories be safety conscious. Specific safety instructions and rules will appear in individual lab manuals. As certain special precautions may be necessary for particular experiments, it is essential that students always listen to pre-lab talks so that they can observe the instructions given by their demonstrator and/or laboratory supervisor/course director. You must observe the following general rules:

1. Wear safety glasses as required.
2. Wear a lab coat in the laboratory at all times.
3. Read and understand the coded information on the labels on bottles.
4. Do not eat, drink or smoke in laboratories.
5. Dispose of your waste in the appropriate container(s).
6. Tidy and clean up your work area at the end of the period.
7. Report all accidents that happen in the laboratories.
8. Do not wear your lab coat, or gloves, outside the lab.
9. Do not wear open toed shoes inside the lab.

**Note:** Some laboratories may have additional rules.

### EQUIPMENT REQUIRED FOR LABORATORIES

Students are required to purchase the following items for some laboratories: safety glasses, lab coat, dissecting instruments, and laboratory manuals. Most items can be purchased from the bookstore, unless otherwise noted.

### TIMING OF LABS

Please take note of when your labs are, when they begin, and how frequently they occur. First year courses tend to have labs every other week, while second, third, and fourth year courses typically have labs every week.

## STUDENT ORGANIZATIONS

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### **YUBS— THE YORK UNIVERSITY BIOLOGICAL SOCIETY**

The York University Biology Society (YUBS) is a student-run organization dedicated to assisting all biology students from 1st to 4th year. We offer free tutoring in all biology courses as well as aid students in understanding and editing lab reports. YUBS offers free daily tutoring along with tutorials for core BIOL courses before every midterm and exam with helpful hints and stress-relieving methods for studying and preparing for your test. YUBS also organizes events such as the annual Meet the Professors Night and Professional seminars such as Medical School Seminars. For more information, check us out at the annual York Fest! For more information about our events, you can also visit our Facebook page and YU Connect called: “York University Biology Society”. Take the opportunity to visit us in room 111 Lumbers or email us at [biolsociety.yorku@gmail.com](mailto:biolsociety.yorku@gmail.com) to get involved today! Executive members’ office hours are listed on our Facebook page and on the office door.

### **BETHUNE COLLEGE**

Please visit our website at <http://bethune.yorku.ca>

#### **Student Ombuds Services (SOS)**

Peer Advising (SOS, 208 BC) is an academic student program that provides peer advising service for York students. Peer Advisors hold seminars and presentations on career options. SOS website: <http://bethune.yorku.ca/sos/>

#### **SOS Peer-Assisted Study Sessions (PASS)**

PASS are regularly scheduled, informal review sessions facilitated by a peer leader to assist students in understanding difficult concepts in a course. Students learn how to integrate course content and study skills while working together. PASS Leaders are students who have previously done well in the course, attend all class lectures, take notes, and act as model students. PASS: <http://bethune.yorku.ca/pass/>

#### **SOS Peer Tutoring**

Peer Tutoring is hosted in the Life Sciences Help Centre (LSHC, 102F BC). The LSHC provides physical space to students who wish to study in the proximity of a Peer Tutor (PT) who will answer their questions regarding concepts relevant to BIOL 1000/1001, CHEM 1000/1001, CHEM 2020, MATH 1505 and PHYS 1xxx. PTs will field questions from students facing challenges understanding course-related concepts. Unlike PASS, this is an open-door concept, with no structured study groups. Study Groups: <http://bethune.yorku.ca/tutoring/>

#### **SOS Peer Mentoring**

Peer Mentoring assists first-year students in making a successful transition to university life. All incoming first-year Bethune College students are matched with a Peer Mentor (PM) prior to September. PMs are successful upper-year students who are trained in mentoring first year students and are available to answer questions, give advice, and help incoming students adapt to university life. Peer Mentoring: <http://bethune.yorku.ca/mentoring/>

#### **SOS Class Representatives (CR)**

The CR program assigns a CR for many of the major courses in the Faculty of Science and Engineering. The role of CRs is to act as liaisons between the professor and students in the classroom. Class Reps: <http://bethune.yorku.ca/classreps/>

## CAREER INFORMATION

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### **BIOLOGY WEBSITE ([WWW.SCIENCE.YORKU.CA/BIOLOGY](http://www.science.yorku.ca/biology))**

This website contains news, information on our programs, course and enrolment updates, as well as career information for students with degrees in Biology and related fields.

### **YORK UNIVERSITY CAREER CENTRE**

As part of the York community, the Career Centre is a team of professionals who work with students, new grads, staff, faculty, and employers to support students and new grads (up to two years after graduation) in the development of career self-management skills. For more information, visit: <http://careers.yorku.ca/>

### **CO-REGISTRATION IN SCIENCE AND EDUCATION**

Students interested in pursuing a career as a science teacher may apply for admission to the Faculty of Education. Successful applicants work concurrently to complete the requirements of a normal academic program and a professional education program. Interested students should contact the Faculty of Education. There are also consecutive programs in Education that can be completed after finishing a BSc.

### **PROFESSIONAL SCHOOLS**

Students planning to proceed to a degree in Medicine, Dentistry or Veterinary Medicine should consult appropriate schools to obtain specific information about admission requirements. Very high grades are almost always essential, and many schools (e.g., optometry, veterinary, medicine) have specific course requirements. For additional information, you may contact Science Academic Services located in 352 Lumbers Building or SOS in Bethune College. Each year, Science Academic Services prepares a Pre-Professional Guidelines package regarding Ontario Medical/Dental/Veterinary schools.

### **SUMMER JOB OPPORTUNITIES**

Many faculty members in the department employ undergraduate students as assistants in their laboratories during the summer. Information regarding summer laboratory positions may be posted on <http://science.yorku.ca/biology> but are typically sent out via the Biology Undergraduate Listserv. Students are also encouraged to speak with individual professors if they are interested in working with them during the summer. Other positions may be advertised as RAY positions (Research at York) on the campus work link website: <http://sfs.yorku.ca/employment/ray/>

### **POSTGRADUATE EDUCATION IN BIOLOGY: A CAREER IN RESEARCH**

Students intending to progress beyond the BSc Honours level (to MSc or PhD) to pursue a career in research, will need to gain admission to an appropriate graduate program and be accepted to work in an individual Professor's laboratory. Requirements for entry, and the details of the program to be followed vary from institution to institution, but most require at least a B+ average in Biology in the last 2 years of study. Students who are interested in postgraduate work should consult a professor in the Department whose work is most closely related to the student's field of interest, or the Director of the Graduate Program in Biology, who will be happy to discuss these matters. Students with a high GPA are encouraged to apply for graduate scholarships to the National Science and Engineering Research Council of Canada (NSERC).

## PROGRAM REQUIREMENTS

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**IMPORTANT: The following degree requirements apply ONLY to students admitted to a BSc program in Fall 2012 or later.**

Student admitted prior to fall 2012 should consult the Faculty of Science Undergraduate Calendar (available online), or obtain a degree checklist from Science Academic Services.

### GENERAL INFORMATION REGARDING PROGRAM REQUIREMENTS

All programs are governed by the appropriate regulations of the University and the Faculty of Science. Students must become familiar with these regulations, most of which may be found in the York University Undergraduate Calendar, or in the Faculty of Science and Engineering Undergraduate Calendar. If any section needs clarification, students should refer to this handbook or to a departmental adviser.

**In the case of a difference between the information in this handbook and the information in the University Calendar, the University Calendar takes precedence.**

**NOTE: Students combining a minor in Biology with a major in another faculty must follow the regulations of the Faculty of the major.**

### NON SCIENCE REQUIREMENT

#### Approved Areas of Study

Students may choose courses from the following subject areas from the Faculty of Liberal Arts and Professional Studies:

- Anthropology
- English
- History
- Humanities (not cross-listed with Science & Technology Studies Courses)
- Philosophy
- Political Science
- Social Science (**not** cross-listed with Science & Technology Studies Courses)
- Sociology
- Women's Studies

#### Individually Approved Courses of Study

In addition to the above areas of study, the following individual courses will be accepted. Other courses from these departments **WILL NOT** satisfy the non-science General Education requirement.

- Arabic\* 2700 6.0
- Economics 1000 3.0, 1010 3.0, 1900 3.0
- French\* 2200 6.0
- Chinese\* 2200 6.0 (previously AS/CH 2700 6.0)
- Geography\*\* 1000 6.0, 1410 6.0, 2050 6.0, 2060 3.0, 2065 3.0 (courses cannot be used to satisfy non-science general education requirements for BSc or BSc Honours candidates majoring in geography).
- Hindi\* 2700 6.0
- Italian\* 2751 9.0, 2761 9.0, 2791 9.0
- Japanese\* 2700 6.0
- Linguistics\* 1000 6.0, 2400 3.0, 2410 3.0, 2430 3.0, 2450 3.0
- Modes of Reasoning 1730 6.0, 1760 6.0, 1770 6.0
- ENVS 1000 6.0, 2150 3.0
- Dance 1340 3.0, 2340 3.0
- Film 1401 6.0, 1410 6.0, 1701 3.0, 2401 6.0
- FACS 1900 6.0 (Fine Arts Cultural Studies)
- Music 1510 6.0, 1520 6.0, 1530 6.0, 1540 6.0, 1550 6.0
- Theatre 1500 6.0
- Visual Arts 1110 6.0, 2110 6.0, 2540 6.0, 2550 6.0, 2620 6.0

#### Restrictions

1. Courses which are cross-listed as SC courses or which are eligible for SC credit cannot count as non-science general education courses.
2. Courses whose major focus is increased facility in the use of a language cannot count as non-science general education courses. Such courses are offered in the departments marked with an \* above.
3. Quantitative courses focusing on techniques of mathematics or statistics cannot count as non-science general education courses. For example, this applies to some economics courses.

4. \*\* Geography courses cannot be used to satisfy non-science general education requirements for BSc or BSc Honours candidates majoring in geography.
5. \*\*\* Excluding women's studies courses which are cross-listed with natural science courses.
6. Humanities and Social Science courses cross-listed with Science and Technology Studies (STS) courses cannot count as non-science general education courses.

**Note:**

1. General education courses may not be taken on a pass/fail basis (see Pass/Fail Grading Option in the Faculty of Science Regulations Governing Examinations and Academic Standards section of this calendar).
2. Students may not take for credit any more than three humanities/social science foundation's courses (27 credits).

If you wish to take a course as a non-science gen ed that is not on the above lists, contact [sciquest@yorku.ca](mailto:sciquest@yorku.ca).

## **MAJOR REQUIREMENTS**

Biology programs require the completion of a specified number of credits in Faculty of Science Biology courses. This includes all credits passed from courses beginning with SC/BIOL AND SC/ENVB **with the following exclusions:** SC/BIOL 1500, SC/BIOL 2900, SC/BIOL 2905.

## **SCIENCE BREADTH REQUIREMENTS AND SCIENCE CREDITS (ALSO SEE FAQs)**

Science Breadth: Degree programs require completion of a specified number of credits in science disciplines outside the major. For programs in Biology and Environmental Biology, these include: BPHYS, CHEM (except for courses cross listed to BCHM or BIOL), EECS, MATH, PHYS, STS as well as some courses in PSYC, KINE and GEOG. It does **not** include courses in BCHM, BIOL, ENVB. See p. 58 for details.

Science Credits: In addition to breadth requirements, some degrees require a specified overall minimum number of science credits. For this requirement, please refer to p. 57 for details.

## DEPARTMENT OF BIOLOGY UNDERGRADUATE PROGRAMS

### BSc Biology degrees

- Bachelor (BSc) program (90 credits)
- Specialized Honours BSc program (120 credits; program is more specialized in terms of Biology, requiring more credits in Biology than Honours Major, as well as completion of an Honours Research Thesis)
  - Biology
  - Biomedical Sciences stream
  - Biotechnology stream
- Honours Major BSc program (120 credits)
  - Biology – flexible in its second year core and senior course options; students can choose courses from different areas in biology or focus their study in a particular field, such as physiology, cell and molecular biology, or ecology.
  - Biomedical Sciences stream
- Honours Double Major program (120 credit program that combines a major in Biology with a second major in another BSc program, e.g., psychology, chemistry, physics, math, kinesiology, computer science)
- Honours Major/Minor program (120 credit program that combines a major in Biology with a minor in another discipline from the Faculties of Science, Health, LA&PS, Environmental Studies, or the School of the Arts, Media, Performance & Design)
- Honours Minor (120 credit program that combines a major in another discipline with a minor in Biology)

### iBSc (International Bachelor of Science) Biology degrees

- Specialized Honours iBSc program (120<sup>0</sup> credit program that combines a major in Biology with an international component)
- Honours Major program
  - Biology
  - Biomedical Sciences stream
- Honours Major/Minor program

### BSc Environmental Biology degrees

- Bachelor (BSc) program
- Honours Major program
- Honours Double Major program
- Honours Major/Minor program
- Honours Minor

### BSc Biochemistry degrees

- Specialized Honours program
- Honours Major program
- Honours Double Major (120 credit that combines a major in Biochemistry with a second major in another discipline within the Faculty of Science)
- Honours Major/Minor program (120 credit program that combines a major in Biochemistry with a minor in another discipline)

### *What's the difference between the Bachelor and the Honours BSc programs?*

The Bachelor (BSc) program is a 3-year general degree, while all Honours BSc programs are 4-year degrees. If you're interested in grad school, then Honours BSc

### *What's the difference between an Honours Major and Specialized Honours?*

Both are Honours BSc programs and thus are 4-year programs. The primary difference between these two programs is the elective room for taking courses in other areas of Science. In the **Honours Major BSc Biology**, students are take a minimum of 51 Biology credits, while the **Specialized Honours BSc Biology** is a more focused program with a specialization in Biology, requiring more courses in Biology (57-68 credits), as well as completion of an Honours Research Thesis.

### ***Degrees with special focus***

The **Honours Major BSc Biology** is flexible both in its second year core and senior course options. Students can choose courses from many different areas in biology, focus study in a particular field such as physiology, cell and molecular biology or ecology. We also have several programs and streams that have a more structured focus, including:

- The **Environmental Biology program** focusses on the biology of environmental issues, integrating ecological theory and practice to predict, quantify, and address the impact of stressors such as habitat loss, pollutants, climate change, resource harvesting and invasive species on living systems. Available as a Bachelor (3-year) or Honours Major (4-year) program.
- **The Biomedical Science Stream** provides a comprehensive curriculum to prepare you for a career in biomedical research, medicine and other health-related professions. Courses focus on biomedically-relevant areas of cell and molecular biology and physiology: immunology, neurobiology, molecular genetics, cancer biology, animal physiology, proteomics, etc. You can do either an Honours Major or a Specialized Honours in the Biomedical Sciences stream.
- **The Biotechnology Stream** focuses on the innovative use of living organisms to create new products that improve human health, food and the environment. This stream includes courses in molecular and cell biology, genetics, chemistry and biochemistry as well as ethics. Note this is offered only as a Specialized Honours degree.
- The **International BSc (iBSc) Biology** degrees combine an honours program in Biology with an international component, language study, and at least one term abroad on international exchange. You can do either an iBSc Honours Major or iBSc Specialized Honours.
- The **Biochemistry program**, focuses on the chemistry of life, considering biology at the molecular and sub-molecular level. This program is shared with the department of Chemistry and is available as either an Honours Major (*NEW!*) or Specialized Honours program.

#### **Each program/degree comprises several parts:**

- A. General education requirements – these include the non-science requirement (12 credits, regardless of degree), Math, Computer Science, and foundational science credits.
- B. Major requirements – includes the program core (first and second-year courses)
- C. Science breadth – science courses outside the major, which helps provide a well-rounded foundational science....
- D. Upper level credits – minimum of 18 credits in the major (Biology) at the 3000 level or above. Honours programs also require a minimum of 12 credits within these must be at the 4000 level.
- E. Additional elective credits and minimum credit total (90 credits for Bachelor; 120 credits for Honours).
- F. Standing requirements – these are the minimum overall grade point average (cumulative) required to earn your degree. The requirements depend on the type of degree. A minimum overall GPA of 4.00 (C) is required for the Bachelor, while a 5.00 (C+) or 6.00 (B) is required for the Honours Major or Specialized Major. See below for details.

## DEGREE REQUIREMENTS FOR PROGRAMS IN BIOLOGY

The program core (24 credits) is defined as:

- [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#);
- [SC/BIOL 2070 3.00](#) or any three of [SC/BIOL 2010 4.00](#), [SC/BIOL 2030 4.00](#), [SC/BIOL 2050 4.00](#). Both [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#) may replace one of these three biology courses;
- additional courses from the following for a total of at least 18 2000-level credits: [SC/BIOL 2010 4.00](#), [SC/BIOL 2020 3.00](#), [SC/BIOL 2021 3.00](#), [SC/BIOL 2030 4.00](#), [SC/BIOL 2040 3.00](#), [SC/BIOL 2050 4.00](#), [SC/BIOL 2060 3.00](#), [SC/BIOL 2070 3.00](#), both [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#).

### Bachelor Program Biology

A. General education:

- non-science requirement: 12 credits;
- mathematics: [SC/MATH 1505 6.00](#), or six credits from [SC/MATH 1013 3.00](#), [SC/MATH 1014 3.00](#), [SC/MATH 1025 3.00](#);
- computer science: [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) (prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#)); [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#).

B. Major requirements:

- the program core specified above (24 credits);
- additional credits from biology courses, as required for an overall total of at least 46 credits from biology courses, including at least 12 credits at the 3000 level or above.

C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 15 of these 24 credits are satisfied by the General Education requirement.

D. Upper level: a minimum of 18 credits at the 3000 level or above.

E. Additional elective credits, as required, for an overall total of 90 credits.

F. Standing requirements: a minimum overall grade point average of 4.00 (C) is required in order to be eligible to graduate with a BSc degree (bachelor program).

### Honours Programs Biology

#### **SPECIALIZED HONOURS PROGRAM**

Students may follow a stream in biology, biomedical science or biotechnology.

A. General education:

- non-science requirement: 12 credits;
- mathematics: [SC/MATH 1505 6.00](#), or six credits from [SC/MATH 1013 3.00](#), [SC/MATH 1014 3.00](#), [SC/MATH 1025 3.00](#);
- computer science: [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) (prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#)); [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS](#)

[1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#). Note that the biomedical science and biotechnology streams require specific courses (see below).

B. Major requirements:

### Biology Stream

- The program core, as specified above (24 credits);
- [SC/BIOL 3100 2.00](#), [SC/BIOL 4000 8.00](#) or [SC/BIOL 4000 3.00](#);
- additional credits from biology courses, as required for an overall total of at least 68 credits from biology courses, including at least 18 credits at the 3000 or higher level, of which at least 12 credits are at the 4000 level.

### Biomedical Science Stream

- [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#);
- one of [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#); [HH/PSYC 1010 6.00](#);
- [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#); [SC/BIOL 2020 3.00](#); [SC/BIOL 2021 3.00](#); [SC/BIOL 2040 3.00](#); [SC/BIOL 2070 3.00](#); [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#); a minimum of one of [SC/BIOL 2030 4.00](#) or [SC/BIOL 2060 3.00](#); [SC/BIOL 3100 2.00](#); [SC/BIOL 4000 8.00](#) or [SC/BIOL 4000 3.00](#);
- a minimum of nine credits chosen from the following courses: [SC/BIOL 3060 4.00](#); [SC/BIOL 3070 4.00](#); [SC/BIOL 3110 3.00](#); [SC/BIOL 3130 3.00](#); [SC/BIOL 3150 4.00](#); [SC/BIOL 3155 3.00](#); [SC/BIOL 4010 3.00](#);
- additional biology credits from the following courses, as required, for an overall total of 68 biology credits: [SC/BIOL 2010 4.00](#), [SC/BIOL 2030 4.00](#), [SC/BIOL 2060 3.00](#), [SC/BIOL 3010 3.00](#), [SC/BIOL 3060 4.00](#), [SC/BIOL 3070 4.00](#), [SC/BIOL 3071 3.00](#), [SC/BIOL 3110 3.00](#), [SC/BIOL 3120 3.00](#), [SC/BIOL 3130 3.00](#), [SC/BIOL 3140 4.00](#), [SC/BIOL 3150 4.00](#), [SC/BIOL 3155 3.00](#), [SC/BIOL 4010 3.00](#), [SC/BIOL 4020 3.00](#), [SC/BIOL 4030 3.00](#), [SC/BIOL 4061 3.00](#), [SC/BIOL 4110 4.00](#), [SC/BIOL 4141 3.00](#), [SC/BIOL 4150 3.00](#), [SC/BIOL 4151 3.00](#), [SC/BIOL 4155 3.00](#), [SC/BIOL 4200 3.00](#), [SC/BIOL 4220 4.00](#), [SC/BIOL 4270 3.00](#), [SC/BIOL 4285 3.00](#), [SC/BIOL 4290 4.00](#), [SC/BIOL 4310 3.00](#), [SC/BIOL 4320 3.00](#), [SC/BIOL 4350 4.00](#), [SC/BIOL 4360 3.00](#), [SC/BIOL 4370 3.00](#), [SC/BIOL 4380 3.00](#), [SC/BIOL 4410 3.00](#), [SC/BIOL 4450 4.00](#), [SC/BIOL 4510 3.00](#);
- within the 68 biology credits, at least 18 credits must be at the 3000 level or higher, of which at least 12 credits must be at the 4000 level. This must also include a minimum of seven credits from 3000 level or higher biology courses with an associated laboratory component.

### Biotechnology Stream

- [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#); [SC/PHYS 1410 6.00](#);
- one of [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#).
- [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#), [SC/BIOL 2020 3.00](#), [SC/BIOL 2021 3.00](#), [SC/BIOL 2040 3.00](#), [SC/BIOL 2060 3.00](#), [SC/BIOL 2070 3.00](#) and both [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#);
- [SC/CHEM 2080 4.00](#); [SC/CHEM 3070 3.00](#) or [SC/CHEM 3071 3.00](#) or [SC/CHEM 4050 3.00](#); [SC/CHEM 3080 4.00](#);
- [SC/BIOL 3100 2.00](#); [SC/BIOL 3110 3.00](#); [SC/BIOL 3130 3.00](#); [SC/BIOL 3140 4.00](#); [SC/BIOL 3150 4.00](#);
- [SC/BIOL 4000 8.00](#) or [SC/BIOL 4000 3.00](#); [SC/BIOL 4290 4.00](#);
- a minimum of 9 credits chosen from the following courses in lists A and B, with a minimum of six credits chosen from list A.
  - List A: [SC/BIOL 3010 3.00](#), [SC/BIOL 3120 3.00](#), [SC/BIOL 3155 3.00](#), [SC/BIOL 4020 3.00](#), [SC/BIOL 4030 3.00](#), [SC/BIOL 4061 3.00](#), [SC/BIOL 4285 3.00](#);
  - List B: [SC/BIOL 3160 4.00](#) ([SC/BIOL 2010 4.00](#) is a prerequisite), [SC/BIOL 4010 3.00](#), [SC/BIOL 4040 3.00](#), [SC/BIOL 4150 3.00](#), [SC/BIOL 4151 3.00](#), [SC/BIOL 4160 3.00](#), [SC/BIOL 4270 3.00](#), [SC/BIOL 4370 3.00](#), [SC/BIOL 4510 3.00](#);

- additional biology credits as required for an overall total of at least 57 biology credits, including at least 12 credits at the 4000 level.

C. Science breadth: a total of 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 15 of these 24 credits are satisfied by the General Education requirement. In the biomedical science and biotechnology streams, this requirement is fully satisfied by the above requirements.

D. Upper level: a minimum of 42 credits at the 3000 level or above.

E. Additional elective credits, as required, for an overall total of 120 credits.

F. Standing requirements: to declare Specialized Honours requires successful completion of at least 24 credits, a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed and a minimum cumulative credit-weighted grade point average of 6.00 (B) over all biology courses completed.

To proceed in each year of a Specialized Honours program requires a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed and a minimum cumulative credit-weighted grade point average of 6.00 (B) over all biology courses completed.

To graduate in a Specialized Honours program requires successful completion of all Faculty requirements and departmental required courses, a minimum cumulative credit-weighted grade point average of 6.00 (B) over all biology courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

### **HONOURS MAJOR PROGRAM (BSC)**

In addition to the Biology Honours Major, students may follow a stream in biomedical science.

#### **Biology Honours Major**

A. General education:

- non-science requirement: 12 credits;
- mathematics: [SC/MATH 1505 6.00](#), or six credits from [SC/MATH 1013 3.00](#), [SC/MATH 1014 3.00](#), [SC/MATH 1025 3.00](#);
- computer science: [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) (prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#)); [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#). Note that the biomedical science stream requires specific courses (see below).

B. Major requirements:

#### **Biology stream**

- The program core, as specified above (24 credits);
- additional credits from biology courses, as required, for an overall total of at least 51 credits from biology courses, including at least 18 credits at the 3000 or higher level, of which at least 12 credits are at the 4000 level.

#### **Biomedical Science Stream**

- [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#);

- one of [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#); [HH/PSYC 1010 6.00](#);
- [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#), [SC/BIOL 2020 3.00](#), [SC/BIOL 2021 3.00](#), [SC/BIOL 2040 3.00](#), [SC/BIOL 2070 3.00](#), [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#); a minimum of one of [SC/BIOL 2030 4.00](#) or [SC/BIOL 2060 3.00](#);
- a minimum of nine credits chosen from the following courses: [SC/BIOL 3060 4.00](#); [SC/BIOL 3070 4.00](#); [SC/BIOL 3100 2.00](#); [SC/BIOL 3110 3.00](#); [SC/BIOL 3130 3.00](#); [SC/BIOL 3150 4.00](#); [SC/BIOL 3155 3.00](#); [SC/BIOL 4010 3.00](#);
- additional biology credits from the following courses, as required, for an overall total of 51 biology credits: [SC/BIOL 2010 4.00](#), [SC/BIOL 2030 4.00](#), [SC/BIOL 2060 3.00](#), [SC/BIOL 3010 3.00](#), [SC/BIOL 3060 4.00](#), [SC/BIOL 3070 4.00](#), [SC/BIOL 3071 3.00](#), [SC/BIOL 3100 2.00](#), [SC/BIOL 3110 3.00](#), [SC/BIOL 3120 3.00](#), [SC/BIOL 3130 3.00](#), [SC/BIOL 3140 4.00](#), [SC/BIOL 3150 4.00](#), [SC/BIOL 3155 3.00](#), [SC/BIOL 4000 3.00](#), [SC/BIOL 4000 8.00](#), [SC/BIOL 4010 3.00](#), [SC/BIOL 4020 3.00](#), [SC/BIOL 4030 3.00](#), [SC/BIOL 4061 3.00](#), [SC/BIOL 4110 4.00](#), [SC/BIOL 4141 3.00](#), [SC/BIOL 4150 3.00](#), [SC/BIOL 4151 3.00](#), [SC/BIOL 4155 3.00](#), [SC/BIOL 4200 3.00](#), [SC/BIOL 4220 4.00](#), [SC/BIOL 4270 3.00](#), [SC/BIOL 4285 3.00](#), [SC/BIOL 4290 4.00](#), [SC/BIOL 4310 3.00](#), [SC/BIOL 4320 3.00](#), [SC/BIOL 4350 4.00](#), [SC/BIOL 4360 3.00](#), [SC/BIOL 4370 3.00](#), [SC/BIOL 4380 3.00](#), [SC/BIOL 4410 3.00](#), [SC/BIOL 4450 4.00](#), [SC/BIOL 4510 3.00](#);
- within the 51 biology credits at least 18 credits must be at the 3000 level or higher, of which at least 12 credits must be at the 4000 level. This must also include a minimum of seven credits from 3000 level or higher biology courses with an associated laboratory component.

C. Science breadth: a total of 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 15 of these 24 credits are satisfied by the General Education requirement. In the biomedical science stream this requirement is fully satisfied by the above requirements.

D. Upper level: 42 credits at the 3000 level or above.

E. Additional elective credits, as required, for an overall minimum total of 85 credits from science disciplines (including the major) and an overall total of 120 credits.

F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses, a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all biology courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

### **HONOURS DOUBLE MAJOR PROGRAM**

All Honours BSc degree candidates should consult departmental advisers as early as possible concerning course requirements for particular Honours Double Major programs. Possible subject combinations for Honours Double Major BSc degree programs are listed under Undergraduate Degree Programs in the Faculty of Science Undergraduate Degree and Certificate Programs section. Students should consult with a departmental advisor to plan their studies in order to meet the requirements for both majors and their prerequisites.

A. General education:

- non-science requirement: 12 credits;
- mathematics: [SC/MATH 1505 6.00](#), or six credits from [SC/MATH 1013 3.00](#), [SC/MATH 1014 3.00](#), [SC/MATH 1025 3.00](#);
- computer science: [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) (prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#)); [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#).

B. Major requirements:

- [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#);
- at least 12 credits from 2000-level biology courses in the program core;
- additional credits from biology courses, as required for an overall total of at least 42 credits from biology courses, including at least 18 credits at the 3000 level or above, of which at least 12 credits are at the 4000 level;
- the course requirements for the second major .

C. Science breadth: a total of 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 15 of these 24 credits are satisfied by the General Education requirement. Satisfied if the other major is another science discipline.

D. Upper level: 42 credits at the 3000 level or above.

E. Additional elective credits, as required for an overall total of 120 credits.

F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses, a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all biology courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

### **HONOURS MAJOR/MINOR PROGRAM**

An Honours Major in biology may be combined with an Honours Minor in another subject area in an Honours Major/Minor BSc degree program. Possible subject combinations are listed under Undergraduate Degree Programs in the Faculty of Science Undergraduate Degree and Certificate Programs section.

Students may follow a stream within the Honours Major/Minor program in Biomedical Science (stream requirements are listed under the Biology Honours Major program). This stream may be combined with other approved science minors.

A. General education:

- non-science requirement: 12 credits;
- mathematics: [SC/MATH 1505 6.00](#), or six credits from [SC/MATH 1013 3.00](#), [SC/MATH 1014 3.00](#), [SC/MATH 1025 3.00](#);
- computer science: [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) (prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#)); [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#).

B. Major requirements:

#### **Biology stream**

- the program core as specified above (24 credits);
- additional credits from biology courses, as required, for an overall total of at least 51 credits from biology courses, including at least 18 credits at the 3000 or higher level, of which at least 12 credits are at the 4000 level.
- The course requirements for the minor.

#### **Biomedical Science Stream**

- [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#);

- one of [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#); [HH/PSYC 1010 6.00](#);
- [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#), [SC/BIOL 2020 3.00](#), [SC/BIOL 2021 3.00](#), [SC/BIOL 2040 3.00](#), [SC/BIOL 2070 3.00](#), [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#); a minimum of one of [SC/BIOL 2030 4.00](#) or [SC/BIOL 2060 3.00](#);
- a minimum of nine credits chosen from the following courses: [SC/BIOL 3060 4.00](#); [SC/BIOL 3070 4.00](#); [SC/BIOL 3100 2.00](#); [SC/BIOL 3110 3.00](#); [SC/BIOL 3130 3.00](#); [SC/BIOL 3150 4.00](#); [SC/BIOL 3155 3.00](#); [SC/BIOL 4010 3.00](#);
- additional biology credits from the following courses, as required, for an overall total of 51 biology credits: [SC/BIOL 2010 4.00](#), [SC/BIOL 2030 4.00](#), [SC/BIOL 2060 3.00](#), [SC/BIOL 3010 3.00](#), [SC/BIOL 3060 4.00](#), [SC/BIOL 3070 4.00](#), [SC/BIOL 3071 3.00](#), [SC/BIOL 3100 2.00](#), [SC/BIOL 3110 3.00](#), [SC/BIOL 3120 3.00](#), [SC/BIOL 3130 3.00](#), [SC/BIOL 3140 4.00](#), [SC/BIOL 3150 4.00](#), [SC/BIOL 3155 3.00](#), [SC/BIOL 4000 3.00](#), [SC/BIOL 4000 8.00](#), [SC/BIOL 4010 3.00](#), [SC/BIOL 4020 3.00](#), [SC/BIOL 4030 3.00](#), [SC/BIOL 4061 3.00](#), [SC/BIOL 4110 4.00](#), [SC/BIOL 4141 3.00](#), [SC/BIOL 4150 3.00](#), [SC/BIOL 4151 3.00](#), [SC/BIOL 4155 3.00](#), [SC/BIOL 4200 3.00](#), [SC/BIOL 4220 4.00](#), [SC/BIOL 4270 3.00](#), [SC/BIOL 4285 3.00](#), [SC/BIOL 4290 4.00](#), [SC/BIOL 4310 3.00](#), [SC/BIOL 4320 3.00](#), [SC/BIOL 4350 4.00](#), [SC/BIOL 4360 3.00](#), [SC/BIOL 4370 3.00](#), [SC/BIOL 4380 3.00](#), [SC/BIOL 4410 3.00](#), [SC/BIOL 4450 4.00](#), [SC/BIOL 4510 3.00](#);
- within the 51 biology credits at least 18 credits must be at the 3000 level or higher, of which at least 12 credits must be at the 4000 level. This must also include a minimum of seven credits from 3000 level or higher biology courses with an associated laboratory component.

C. Science breadth: a total of 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 15 of these 24 credits are satisfied by the General Education requirement. Satisfied if the minor is another science discipline.

D. Upper level: 42 credits at the 3000 level or above.

E. Additional elective credits, as required for an overall total of 120 credits.

F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses, a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all biology courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

### **HONOURS MINOR**

- [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#);
- at least 12 credits from biology courses at the 2000 level;
- at least nine credits from biology courses at the 3000 or higher level, including at least three credits at the 4000 level;
- additional credits from biology courses at the 2000 or higher level, as required for an overall total of at least 30 credits from biology courses.

**Note:** it is recommended that students interested in cell biology, genetics, molecular biology and biochemistry take the following courses: [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#), [SC/CHEM 1000 3.00](#), [SC/CHEM 1001 3.00](#), [SC/BIOL 2020 3.00](#), [SC/BIOL 2021 3.00](#), [SC/BIOL 2040 3.00](#), [SC/BIOL 2070 3.00](#), [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#), [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#), [SC/CHEM 1000 3.00](#), [SC/CHEM 1001 3.00](#), [SC/BIOL 2020 3.00](#), [SC/BIOL 2021 3.00](#), [SC/BIOL 2040 3.00](#), [SC/BIOL 2070 3.00](#), [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#), plus a minimum of nine additional credits from biology courses at the 3000 or higher level. For other areas of interest, students are advised to choose their 2000-level biology courses wisely, based on the prerequisites for the courses they wish to take at the 3000 or higher level. Check the course outlines in this publication for course prerequisites.

## International Bachelor of Science

All Honours iBSc degree candidates must complete an international component in addition to the normal requirements of biology and the BSc. For further information about the international Bachelor of Science, refer to the International Bachelor of Arts and International Bachelor of Science in the Faculty of Science programs of study section.

### **SPECIALIZED HONOURS IN BIOLOGY (HONOURS IBSC)**

A. General education:

- non-science requirement: 12 credits (may be satisfied in whole or part by courses in the international component);
- mathematics: [SC/MATH 1505 6.00](#), or six credits from [SC/MATH 1013 3.00](#), [SC/MATH 1014 3.00](#), [SC/MATH 1025 3.00](#);
- computer science: [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) (prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#)); [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#).

B. Major requirements:

- the program core as specified above (24 credits);
- [SC/BIOL 3100 2.00](#);
- [SC/BIOL 4000 8.00](#) or [SC/BIOL 4000 3.00](#);
- additional credits from biology courses, as required for an overall total of at least 62 credits from biology courses, including at least 18 credits at the 3000 or higher level, of which at least 12 credits are at the 4000 level.

In addition, the following must be completed for the international component:

- a minimum of 12 credits of language study in one of the languages offered at York University;
- a minimum of 12 credits of non-science courses with an international component (refer to sample list of courses in the section on international degrees), which will also serve to meet the non-science requirement of the general education component;
- an additional six credits of language study or non-science international component courses, for a total of 30 credits;
- one to two exchange terms abroad as a full-time student at an institution with which York University has a formal exchange agreement.

C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 15 of these 24 credits are satisfied by the above requirements.

D. Upper level: a minimum of 42 credits at the 3000 level or above.

E. Additional elective credits, as required, for an overall total of 120 credits.

F. Standing requirement: to declare Specialized Honours requires successful completion of at least 24 credits, a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed and a minimum cumulative credit-weighted grade point average of 6.00 (B) over all biology courses completed.

To proceed in each year of a Specialized Honours program requires a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed and a minimum cumulative credit-weighted grade point average of 6.00 (B) over all biology courses completed.

To graduate in a Specialized Honours program requires successful completion of all Faculty requirements and departmental required courses, a minimum cumulative credit-weighted grade point average of 6.00 (B) over all biology courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

### **HONOURS MAJOR PROGRAM (IBSC)**

Students may follow a stream within the Honours Major program in biomedical science.

#### A. General education:

- non-science requirement: 12 credits (may be satisfied in whole or part by courses in the international component).
- mathematics: [SC/MATH 1505 6.00](#), or six credits from [SC/MATH 1013 3.00](#), [SC/MATH 1014 3.00](#), [SC/MATH 1025 3.00](#);
- computer science: [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) (prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#)); [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#).

#### B. Major requirements:

##### **Biology stream**

- the program core as specified above (24 credits);
- additional credits from biology courses, as required, for an overall total of at least 45 credits from biology courses (42 credits if [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#) are chosen in the core);

##### **Biomedical Science Stream (iBSc)**

- [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#);
- one of [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#); [HH/PSYC 1010 6.00](#);
- [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#), [SC/BIOL 2020 3.00](#), [SC/BIOL 2021 3.00](#), [SC/BIOL 2040 3.00](#), [SC/BIOL 2070 3.00](#), [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#); a minimum of one of [SC/BIOL 2030 4.00](#) or [SC/BIOL 2060 3.00](#);
- a minimum of nine credits chosen from the following courses: [SC/BIOL 3060 4.00](#); [SC/BIOL 3070 4.00](#); [SC/BIOL 3110 3.00](#); [SC/BIOL 3130 3.00](#); [SC/BIOL 3150 4.00](#); [SC/BIOL 3155 3.00](#); [SC/BIOL 4010 3.00](#);
- additional biology credits from the following courses, as required, for an overall total of 42 biology credits: [SC/BIOL 2010 4.00](#), [SC/BIOL 2030 4.00](#), [SC/BIOL 2060 3.00](#), [SC/BIOL 3010 3.00](#), [SC/BIOL 3060 4.00](#), [SC/BIOL 3070 4.00](#), [SC/BIOL 3071 3.00](#), [SC/BIOL 3100 2.00](#), [SC/BIOL 3110 3.00](#), [SC/BIOL 3120 3.00](#), [SC/BIOL 3130 3.00](#), [SC/BIOL 3140 4.00](#), [SC/BIOL 3150 4.00](#), [SC/BIOL 3155 3.00](#), [SC/BIOL 4000 3.00](#), [SC/BIOL 4000 8.00](#), [SC/BIOL 4010 3.00](#), [SC/BIOL 4020 3.00](#), [SC/BIOL 4030 3.00](#), [SC/BIOL 4061 3.00](#), [SC/BIOL 4110 4.00](#), [SC/BIOL 4141 3.00](#), [SC/BIOL 4150 3.00](#), [SC/BIOL 4151 3.00](#), [SC/BIOL 4155 3.00](#), [SC/BIOL 4200 3.00](#), [SC/BIOL 4220 4.00](#), [SC/BIOL 4270 3.00](#), [SC/BIOL 4285 3.00](#), [SC/BIOL 4290 4.00](#), [SC/BIOL 4310 3.00](#), [SC/BIOL 4320 3.00](#), [SC/BIOL 4350 4.00](#), [SC/BIOL 4360 3.00](#), [SC/BIOL 4370 3.00](#), [SC/BIOL 4380 3.00](#), [SC/BIOL 4410 3.00](#), [SC/BIOL 4450 4.00](#), [SC/BIOL 4510 3.00](#);
- within the 42 biology credits at least 18 credits must be at the 3000 level or higher, of which at least 12 credits must be at the 4000 level. This must also include a minimum of seven credits from 3000 level or higher biology courses with an associated laboratory component.

In addition, the following must be completed for the international component:

- a minimum of 12 credits of language study in one of the languages offered at York University;

- a minimum of 12 credits of non-science courses with an international component (refer to sample list of courses in the section on international degrees), which will also serve to meet the non-science requirement of the general education component;
- an additional six credits of language study or non-science international component courses, for a total of 30 credits;
- one to two exchange terms abroad as a full-time student at an institution with which York University has a formal exchange agreement.

C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 15 of these 24 credits are satisfied by the above requirements.

D. Upper level: a minimum of 42 credits at the 3000 level or above.

E. Additional elective credits, as required, for an overall total of 85 credits from science disciplines (including the major) and an overall total of 120 credits.

F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses, a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all biology courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

### **HONOURS MAJOR/MINOR PROGRAM (IBSC)**

Students may follow a stream within the Honours Major/Minor program in biomedical science (stream requirements are listed under the Biology Honours Major program). This stream may be combined with other approved science minors.

A. General Education:

- non-science requirement: 12 credits (may be satisfied in whole or part by courses in the international component);
- mathematics: [SC/MATH 1505 6.00](#), or six credits from [SC/MATH 1013 3.00](#), [SC/MATH 1014 3.00](#), [SC/MATH 1025 3.00](#);
- computer science: [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#)
- foundational science: one of [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) (prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#)); [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#).

B. Major requirements:

#### **Biology stream**

- the program core as specified above (24 credits);
- additional credits from biology courses, as required, for an overall total of at least 45 credits from biology courses (42 if [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#) are chosen in the core), including at least 18 credits at the 3000 or higher level, of which at least 12 credits are at the 4000 level;
- the course requirements for the minor.

#### **Biomedical science stream**

- [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#);
- one of [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#); [HH/PSYC 1010 6.00](#);

- [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#), [SC/BIOL 2020 3.00](#), [SC/BIOL 2021 3.00](#), [SC/BIOL 2040 3.00](#), [SC/BIOL 2070 3.00](#), [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#); a minimum of one of [SC/BIOL 2030 4.00](#) or [SC/BIOL 2060 3.00](#);
- a minimum of nine credits chosen from the following courses: [SC/BIOL 3060 4.00](#), [SC/BIOL 3070 4.00](#), [SC/BIOL 3110 3.00](#), [SC/BIOL 3130 3.00](#), [SC/BIOL 3150 4.00](#), [SC/BIOL 3155 3.00](#), [SC/BIOL 4010 3.00](#);
- additional biology credits from the following courses, as required, for an overall total of 42 biology credits: [SC/BIOL 2010 4.00](#), [SC/BIOL 2030 4.00](#), [SC/BIOL 2060 3.00](#), [SC/BIOL 3010 3.00](#), [SC/BIOL 3060 4.00](#), [SC/BIOL 3070 4.00](#), [SC/BIOL 3071 3.00](#), [SC/BIOL 3100 2.00](#), [SC/BIOL 3110 3.00](#), [SC/BIOL 3120 3.00](#), [SC/BIOL 3130 3.00](#), [SC/BIOL 3140 4.00](#), [SC/BIOL 3150 4.00](#), [SC/BIOL 3155 3.00](#), [SC/BIOL 4000 3.00](#), [SC/BIOL 4000 8.00](#), [SC/BIOL 4010 3.00](#), [SC/BIOL 4020 3.00](#), [SC/BIOL 4030 3.00](#), [SC/BIOL 4061 3.00](#), [SC/BIOL 4110 4.00](#), [SC/BIOL 4141 3.00](#), [SC/BIOL 4150 3.00](#), [SC/BIOL 4151 3.00](#), [SC/BIOL 4155 3.00](#), [SC/BIOL 4200 3.00](#), [SC/BIOL 4220 4.00](#), [SC/BIOL 4270 3.00](#), [SC/BIOL 4285 3.00](#), [SC/BIOL 4290 4.00](#), [SC/BIOL 4310 3.00](#), [SC/BIOL 4320 3.00](#), [SC/BIOL 4350 4.00](#), [SC/BIOL 4360 3.00](#), [SC/BIOL 4370 3.00](#), [SC/BIOL 4380 3.00](#), [SC/BIOL 4450 4.00](#), [SC/BIOL 4510 3.00](#);
- within the 42 biology credits at least 18 credits must be at the 3000 level or higher, of which at least 12 credits must be at the 4000 level. This must also include a minimum of seven credits from 3000 level or higher biology courses with an associated laboratory component;
- the course requirements for the minor.

In addition, the following must be completed for the international component:

- a minimum of 12 credits of language study in one of the languages offered at York University;
- a minimum of 12 credits of non-science courses with an international component (refer to sample list of courses in the section on international degrees), which will also serve to meet the non-science requirement of the general education component;
- an additional six credits of language study or non-science international component courses, for a total of 30 credits;
- one to two exchange terms abroad as a full-time student at an institution with which York University has a formal exchange agreement.

C. Science breadth: a total of 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. On the biology stream, 15 of these 24 credits are satisfied by the General Education requirement. In the biomedical science stream this requirement is fully satisfied by the above requirements. Satisfied if the minor is another science discipline.

D. Upper level: 42 credits at the 3000 level or above.

E. Additional elective credits, as required, for an overall total of 120 credits.

F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses, a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all biology courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

**Important note:** some major/minor combinations will require students to complete more than 120 credits. Students are advised to consult minor requirements as early as possible and to plan their program of study in consultation with an academic adviser and the iBSc supplemental calendar. Courses taken to meet requirements of the minor can also count as international component and/or non-science requirements for the BSc General Education Requirement. In fact, in order to complete the degree requirements within the minimum number of credits some double counting will be necessary. Minors that can, with appropriate planning, be completed with the biology major within 120 credits include African studies, culture and expression, East Asian studies, environmental studies, European studies, geography, German studies, French studies, history, international development studies, Italian culture, Italian studies, Latin American and Caribbean studies, Portuguese studies, psychology, race, ethnicity and indigeneity, South Asian studies and Spanish.

## DEGREE REQUIREMENTS FOR PROGRAMS IN ENVIRONMENTAL BIOLOGY

*NOTE: Most ENVB courses are crosslisted to BIOL*

### Program Core

The program core (35 or 36 credits) is defined as:

- [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#);
- [SC/ENVB 2050 4.00](#);
- [SC/BIOL 2060 3.00](#);
- [SC/BIOL 2070 3.00](#) or [SC/BIOL 2010 4.00](#); [SC/BIOL 2030 4.00](#) (both [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#) may replace one of the two 4 credit biology courses);
- additional courses as required for a total of at least 18 2000-level credits chosen from the following:
  - [SC/BIOL 2010 4.00](#),
  - [SC/BIOL 2020 3.00](#) (cross-listed to: [SC/BCHM 2020 3.00](#)),
  - [SC/BIOL 2021 3.00](#) (cross-listed to: [SC/BCHM 2021 3.00](#)),
  - [SC/BIOL 2030 4.00](#),
  - [SC/BIOL 2040 3.00](#),
  - [SC/BIOL 2070 3.00](#),
  - [SC/CHEM 2020 3.00](#),
  - [SC/CHEM 2021 3.00](#);
- [SC/ENVB 3001 2.00](#) (cross-listed to: [SC/BIOL 3001 2.00](#)) or [SC/ENVB 3001 3.00](#) (cross-listed to: [SC/BIOL 3001 3.00](#));
- [SC/ENVB 3170 3.00](#);
- [SC/ENVB 4245 3.00](#) (cross-listed to: [SC/BIOL 4245 3.00](#));
- [SC/BIOL 4255 3.00](#) (cross-listed to: [EU/ENVS 4111 3.00](#)).

**Note:** both [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) are required as prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#) if they are chosen in the program core.

### Bachelor Program

A. General education:

- non-science requirement: 12 credits. [EU/ENVS 1000 6.00](#) is recommended for students interested in taking additional environmental studies courses;
- mathematics: [SC/MATH 1505 6.00](#) or six credits from [SC/MATH 1013 3.00](#), [SC/MATH 1014 3.00](#), [SC/MATH 1025 3.00](#);
- computer science: [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) (prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#)); [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#).

B. Major requirement:

- the program core, as specified above (35 or 36 credits);
- additional credits from the following list of courses for an overall total of at least 42 credits from environmental biology and biology courses of which at least 12 credits are at the 3000 or higher level:
  - [SC/ENVB 3002 2.00](#) (cross-listed to: [SC/BIOL 3002 2.00](#)),
  - [SC/ENVB 3002 3.00](#) (cross-listed to: [SC/BIOL 3002 3.00](#)),
  - [SC/BIOL 3150 4.00](#),
  - [SC/BIOL 3200 3.00](#),
  - [SC/ENVB 3170 3.00](#),

- [SC/ENVB 3250 4.00](#) (cross-listed to: [SC/BIOL 3250 4.00](#)),
- [SC/ENVB 3270 3.00](#) (cross-listed to: [SC/BIOL 3270 3.00](#)),
- [SC/ENVB 3280 4.00](#) (cross-listed to: [SC/BIOL 3280 4.00](#)),
- [SC/ENVB 3290 4.00](#) (cross-listed to: [SC/BIOL 3290 4.00](#)),
- [SC/BIOL 3500 3.00](#) (cross-listed to: [EU/GEOG 3500 3.00](#), [SC/GEOG 3500 3.00](#)),
- [SC/BIOL 4085 4.00](#),
- [SC/ENVB 4095 3.00](#) (cross-listed to: [SC/BIOL 4095 3.00](#)),
- [SC/ENVB 4230 4.00](#) (cross-listed to: [SC/BIOL 4230 4.00](#)),
- [SC/ENVB 4245 3.00](#) (cross-listed to: [SC/BIOL 4245 3.00](#)),
- [SC/ENVB 4250 3.00](#) (cross-listed to: [SC/BIOL 4250 3.00](#)),
- [SC/ENVB 4255 3.00](#),
- [SC/ENVB 4265 3.00](#) (cross-listed to: [SC/BIOL 4265 3.00](#)),
- [SC/BIOL 4305 3.00](#),
- [SC/BIOL 4390 3.00](#),
- [SC/ENVB 4700 3.00](#) (cross-listed to: [SC/BIOL 4700 3.00](#)),
- [SC/BIOL 4710 3.00](#);
- [SC/GEOG 1400 6.00](#).

C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 21 of these 24 credits are satisfied by the above requirements.

D. Upper level: a minimum of 18 credits at the 3000 level or above.

E. Additional elective credits, as required, for an overall total of 90 credits.

F. Standing requirements: a minimum overall grade point average of 4.00 (C) is required in order to be eligible to graduate with a BSc degree (bachelor program).

## Honours Programs

### HONOURS MAJOR PROGRAM

A. General education:

- non-science requirement: 12 credits. [EU/ENVS 1000 6.00](#) is recommended for students interested in taking additional environmental studies courses;
- mathematics: [SC/MATH 1505 6.00](#) or six credits from [SC/MATH 1013 3.00](#), [SC/MATH 1014 3.00](#), [SC/MATH 1025 3.00](#). (**Note:** students intending to combine environmental biology with applied mathematics, chemistry, computer science, earth and atmospheric science, mathematics, mathematics for education, physics and astronomy or statistics should not take [SC/MATH 1505 6.00](#).);
- computer science: [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) (prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#)); [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#).

**Note:** both [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) are required as prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#) in the program core.

B. Major requirements:

- The program core as specified above (35 or 36 credits);
- [SC/ENVB 4700 3.00](#);

- additional credits from the following list of courses for an overall total of at least 51 credits from environmental biology and biology courses, including at least 18 credits at the 3000 or higher level, of which at least 12 credits must be at the 4000 level:
  - [SC/ENVB 3002 2.00](#) (cross-listed to: [SC/BIOL 3002 2.00](#)),
  - [SC/ENVB 3002 3.00](#) (cross-listed to: [SC/BIOL 3002 3.00](#)),
  - [SC/BIOL 3150 4.00](#),
  - [SC/BIOL 3200 3.00](#),
  - [SC/ENVB 3250 4.00](#) (cross-listed to: [SC/BIOL 3250 4.00](#)),
  - [SC/ENVB 3270 3.00](#) (cross-listed to: [SC/BIOL 3270 3.00](#)),
  - [SC/ENVB 3280 4.00](#) (cross-listed to: [SC/BIOL 3280 4.00](#)),
  - [SC/ENVB 3290 4.00](#) (cross-listed to: [SC/BIOL 3290 4.00](#)),
  - [SC/BIOL 3500 3.00](#) (cross-listed to: [EU/GEOG 3500 3.00](#), [SC/GEOG 3500 3.00](#)),
  - [SC/ENVB 4000 3.00](#) or [SC/ENVB 4000 8.00](#),
  - [SC/BIOL 4085 4.00](#),
  - [SC/ENVB 4095 3.00](#) (cross-listed to: [SC/BIOL 4095 3.00](#)),
  - [SC/ENVB 4200 3.00](#),
  - [SC/ENVB 4230 4.00](#) (cross-listed to: [SC/BIOL 4230 4.00](#)),
  - [SC/ENVB 4250 3.00](#) (cross-listed to: [SC/BIOL 4250 3.00](#)),
  - [SC/ENVB 4265 3.00](#) (cross-listed to: [SC/BIOL 4265 3.00](#)),
  - [SC/BIOL 4305 3.00](#),
  - [SC/BIOL 4390 3.00](#),
  - [SC/BIOL 4710 3.00](#);
- [SC/GEOG 1400 6.00](#).

C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 21 of these 24 credits are satisfied by the above requirements.

D. Upper level: a minimum of 42 credits at the 3000 level or above.

E. Additional elective credits, as required, for an overall minimum total of 85 credits from science disciplines (including the major) and an overall total of 120 credits.

F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses, a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all environmental biology and biology courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

### **HONOURS DOUBLE MAJOR PROGRAM**

All BSc Honours degree candidates should consult departmental advisors as early as possible concerning course requirements for particular Honours Double Major programs. Possible subject combinations for BSc Honours Double Major degree programs are listed in the Undergraduate Degree and Certificate Programs section of the Faculty Rules.

A. General education:

- non-science requirement: 12 credits. [EU/ENVS 1000 6.00](#) is recommended for students interested in taking additional environmental studies courses:
- mathematics: [SC/MATH 1505 6.00](#) or six credits from [SC/MATH 1013 3.00](#), [SC/MATH 1014 3.00](#), [SC/MATH 1025 3.00](#). (Note: students intending to combine environmental biology with applied mathematics, chemistry, computer science, earth and atmospheric science, mathematics, mathematics for education, physics and astronomy or statistics should not take [SC/MATH 1505 6.00](#).);
- computer science: [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) (prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#)); [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS](#)

[1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#).

B. Major requirements:

- [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#);
- [SC/ENVB 2050 4.00](#);
- [SC/BIOL 2060 3.00](#);
- any two of:
  - [SC/BIOL 2010 4.00](#),
  - [SC/BIOL 2020 3.00](#),
  - [SC/BIOL 2021 3.00](#),
  - [SC/BIOL 2030 4.00](#),
  - [SC/BIOL 2040 3.00](#),
  - [SC/BIOL 2070 3.00](#).
  - Both [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#) may replace one of these two biology courses.
- [SC/ENVB 3001 2.00](#) or [SC/ENVB 3001 3.00](#);
- additional credits from the following list of courses for an overall total of at least 42 credits from environmental biology and biology courses, including at least 18 credits at the 3000 or higher level, of which at least 12 credits must be at the 4000 level:
  - [SC/ENVB 3002 2.00](#) (cross-listed to: [SC/BIOL 3002 2.00](#)),
  - [SC/ENVB 3002 3.00](#) (cross-listed to: [SC/BIOL 3002 3.00](#)),
  - [SC/BIOL 3150 4.00](#),
  - [SC/ENVB 3170 3.00](#),
  - [SC/BIOL 3200 3.00](#),
  - [SC/ENVB 3250 4.00](#) (cross-listed to: [SC/BIOL 3250 4.00](#)),
  - [SC/ENVB 3270 3.00](#) (cross-listed to: [SC/BIOL 3270 3.00](#)),
  - [SC/ENVB 3280 4.00](#) (cross-listed to: [SC/BIOL 3280 4.00](#)),
  - [SC/ENVB 3290 4.00](#) (cross-listed to: [SC/BIOL 3290 4.00](#)),
  - [SC/BIOL 3500 3.00](#) (cross-listed to: [EU/GEOG 3500 3.00](#), [SC/GEOG 3500 3.00](#)),
  - [SC/ENVB 4000 3.00](#) or [SC/ENVB 4000 8.00](#),
  - [SC/BIOL 4085 4.00](#),
  - [SC/ENVB 4095 3.00](#) (cross-listed to: [SC/BIOL 4095 3.00](#)),
  - [SC/ENVB 4200 3.00](#),
  - [SC/ENVB 4230 4.00](#) (cross-listed to: [SC/BIOL 4230 4.00](#)),
  - [SC/ENVB 4245 3.00](#) (cross-listed to: [SC/BIOL 4245 3.00](#)),
  - [SC/ENVB 4250 3.00](#) (cross-listed to: [SC/BIOL 4250 3.00](#)),
  - [SC/ENVB 4255 3.00](#),
  - [SC/ENVB 4265 3.00](#) (cross-listed to: [SC/BIOL 4265 3.00](#)),
  - [SC/BIOL 4305 3.00](#),
  - [SC/BIOL 4390 3.00](#),
  - [SC/ENVB 4700 3.00](#) (cross-listed to: [SC/BIOL 4700 3.00](#)),
  - [SC/BIOL 4710 3.00](#)

C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 15 of these 24 credits are satisfied by the above requirements. Satisfied if the second major is another science discipline.

D. Upper level: a minimum of 42 credits at the 3000 level or above.

E. Additional elective credits, as required, for an overall total of 120 credits.

F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses, a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all

environmental biology and biology courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

### **HONOURS MAJOR/MINOR PROGRAM**

An Honours Major in environmental biology may be combined with an Honours Minor in another subject area in a BSc Honours Major/Minor degree program. Possible subject combinations are listed in the Undergraduate Degree and Certificate Programs section of the Faculty Rules.

#### A. General education:

- non-science requirement: 12 credits. [EU/ENVS 1000 6.00](#) is recommended for students interested in taking additional environmental studies courses;
- mathematics: [SC/MATH 1505 6.00](#) or six credits from [SC/MATH 1013 3.00](#), [SC/MATH 1014 3.00](#), [SC/MATH 1025 3.00](#). (Note: students intending to combine environmental biology with applied mathematics, chemistry, computer science, earth and atmospheric science, mathematics, mathematics for education, physics and astronomy or statistics should not take [SC/MATH 1505 6.00](#).);
- computer science: [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of [SC/CHEM 1000 3.00](#) and [SC/CHEM 1001 3.00](#) (prerequisites for [SC/BIOL 2020 3.00](#) and [SC/CHEM 2020 3.00](#)); [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) and [SC/PHYS 1412 3.00](#); [SC/PHYS 1421 3.00](#) and [SC/PHYS 1422 3.00](#); [SC/PHYS 1011 3.00](#) and [SC/PHYS 1012 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#).

#### B. Major requirements:

- the program core as specified above (35 to 36 credits);
- [SC/ENVB 4700 3.00](#);
- additional credits from the following list of courses for an overall total of at least 51 credits from environmental biology and biology courses, including at least 18 credits at the 3000 or higher level, of which at least 12 credits must be at the 4000 level:
  - [SC/ENVB 3002 2.00](#) (cross-listed to: [SC/BIOL 3002 2.00](#)),
  - [SC/ENVB 3002 3.00](#) (cross-listed to: [SC/BIOL 3002 3.00](#)),
  - [SC/BIOL 3150 4.00](#),
  - [SC/BIOL 3200 3.00](#),
  - [SC/ENVB 3250 4.00](#) (cross-listed to: [SC/BIOL 3250 4.00](#)),
  - [SC/ENVB 3270 3.00](#) (cross-listed to: [SC/BIOL 3270 3.00](#)),
  - [SC/ENVB 3280 4.00](#) (cross-listed to: [SC/BIOL 3280 4.00](#)),
  - [SC/ENVB 3290 4.00](#) (cross-listed to: [SC/BIOL 3290 4.00](#)),
  - [SC/BIOL 3500 3.00](#) (cross-listed to: [EU/GEOG 3500 3.00](#), [SC/GEOG 3500 3.00](#)),
  - [SC/ENVB 4000 3.00](#) or [SC/ENVB 4000 8.00](#),
  - [SC/BIOL 4085 4.00](#),
  - [SC/ENVB 4095 3.00](#) (cross-listed to: [SC/BIOL 4095 3.00](#)),
  - [SC/ENVB 4200 3.00](#),
  - [SC/ENVB 4230 4.00](#) (cross-listed to: [SC/BIOL 4230 4.00](#)),
  - [SC/ENVB 4250 3.00](#) (cross-listed to: [SC/BIOL 4250 3.00](#)),
  - [SC/ENVB 4265 3.00](#) (cross-listed to: [SC/BIOL 4265 3.00](#)),
  - [SC/BIOL 4305 3.00](#),
  - [SC/BIOL 4390 3.00](#),
  - [SC/BIOL 4710 3.00](#);
- [SC/GEOG 1400 6.00](#);
- the course requirements for the minor.

C. Science breadth: 24 credits in science disciplines outside the major, of which three credits must be at the 2000 level or above. 21 of these 24 credits are satisfied by the above requirements. Satisfied if the minor is another science discipline.

D. Upper level: a minimum of 42 credits at the 3000 level or above.

E. Additional elective credits, as required, for an overall total of 120 credits.

F. Standing requirements: to graduate in an Honours program requires successful completion of all Faculty requirements and departmental required courses, a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all environmental biology and biology courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

### **HONOURS MINOR**

An Honours minor in environmental biology may be combined with an Honours major in another subject area. Possible subject combinations are listed in the Undergraduate Degree and Certificate Programs section of the Faculty Rules.

- [SC/BIOL 1000 3.00](#) and [SC/BIOL 1001 3.00](#);
- [SC/ENVB 2050 4.00](#);
- [SC/BIOL 2060 3.00](#);
- any two of:
  - [SC/BIOL 2010 4.00](#),
  - [SC/BIOL 2020 3.00](#),
  - [SC/BIOL 2021 3.00](#),
  - [SC/BIOL 2030 4.00](#),
  - [SC/BIOL 2040 3.00](#),
  - [SC/BIOL 2070 3.00](#);
  - Both [SC/CHEM 2020 3.00](#) and [SC/CHEM 2021 3.00](#) may substitute for one of these two biology courses.
- [SC/ENVB 3001 2.00](#) (cross-listed to: [SC/BIOL 3001 2.00](#)) or [SC/ENVB 3001 3.00](#) (cross-listed to: [SC/BIOL 3001 3.00](#));
- additional credits from the following list of courses for an overall total of at least nine credits from environmental biology and biology courses at the 3000 or 4000 level:
  - [SC/ENVB 3002 2.00](#) (cross-listed to: [SC/BIOL 3002 2.00](#)),
  - [SC/ENVB 3002 3.00](#) (cross-listed to: [SC/BIOL 3002 3.00](#)),
  - [SC/BIOL 3150 4.00](#),
  - [SC/ENVB 3170 3.00](#),
  - [SC/BIOL 3200 3.00](#),
  - [SC/ENVB 3250 4.00](#) (cross-listed to: [SC/BIOL 3250 4.00](#)),
  - [SC/ENVB 3270 3.00](#) (cross-listed to: [SC/BIOL 3270 3.00](#)),
  - [SC/ENVB 3280 4.00](#) (cross-listed to: [SC/BIOL 3280 4.00](#)),
  - [SC/ENVB 3290 4.00](#) (cross-listed to: [SC/BIOL 3290 4.00](#)),
  - [SC/BIOL 3500 3.00](#) (cross-listed to: [EU/GEOG 3500 3.00](#), [SC/GEOG 3500 3.00](#)),
  - [SC/BIOL 4085 4.00](#),
  - [SC/ENVB 4095 3.00](#) (cross-listed to: [SC/BIOL 4095 3.00](#)),
  - [SC/BIOL 4200 3.00](#),
  - [SC/ENVB 4095 3.00](#),
  - [SC/ENVB 4230 4.00](#) (cross-listed to: [SC/BIOL 4230 4.00](#)),
  - [SC/ENVB 4245 3.00](#) (cross-listed to: [SC/BIOL 4245 3.00](#)),
  - [SC/ENVB 4250 3.00](#) (cross-listed to: [SC/BIOL 4250 3.00](#)),
  - [SC/ENVB 4255 3.00](#),
  - [SC/ENVB 4265 3.00](#) (cross-listed to: [SC/BIOL 4265 3.00](#)),
  - [SC/BIOL 4305 3.00](#),
  - [SC/BIOL 4390 3.00](#),
  - [SC/ENVB 4700 3.00](#) (cross-listed to: [SC/BIOL 4700 3.00](#)),
  - [SC/BIOL 4710 3.00](#);
- additional credits from the above listed environmental biology and biology courses at the 2000 or higher level, as required for an overall total of at least 30 environmental biology or biology credits.

## DEGREE REQUIREMENTS FOR PROGRAMS IN BIOCHEMISTRY

### Honours Programs

#### **SPECIALIZED HONOURS PROGRAM**

A. General education:

- non-science requirement: 12 credits;
- mathematics: [SC/MATH 1013 3.00](#) and [SC/MATH 1014 3.00](#);
- computer science: one of [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of the following courses or combinations: [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) or [SC/PHYS 1421 3.00](#) or [SC/PHYS 1011 3.00](#) or [SC/PHYS 1800 3.00](#), and [SC/PHYS 1412 3.00](#) or [SC/PHYS 1422 3.00](#) or [SC/PHYS 1012 3.00](#) or [SC/PHYS 1801 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#)

B. Major requirements:

- the program core, as specified above (51 credits);
- [SC/BCHM 3140 4.00](#); [SC/BCHM 4000 8.00](#); [SC/BCHM 4050 3.00](#); [SC/BCHM 4290 4.00](#);
- nine credits from any other 3000- or 4000-level biochemistry, biology or chemistry courses.

C. Science breadth: satisfied by above requirements.

D. Upper level requirement: satisfied by above requirements.

E. Additional elective credits, as required, for an overall total of at least 120 credits.

F. Standing requirements: To declare Honours requires successful completion of at least 24 credits, a minimum cumulative credit-weighted grade point average of 5.50 (B) over all science courses completed, and a minimum cumulative credit-weighted grade point average of 4.25 over all courses completed.

To proceed in each year of the Honours program requires a minimum cumulative creditweighted grade point average of 5.00 (C+) over all science courses completed, and a minimum cumulative credit-weighted overall grade point average as specified in the Academic Standards section of the Faculty of Science Regulations Governing Undergraduate Degree Requirements section.

To graduate in Honours biochemistry requires successful completion of all Faculty requirements and all required program courses, a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all science (SC) courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

#### **HONOURS MAJOR PROGRAM (BSC)**

A. General education:

- non-science requirement: 12 credits;
- mathematics: [SC/MATH 1013 3.00](#) and [SC/MATH 1014 3.00](#);
- computer science: one of [LE/EECS 1520 3.00](#) or [LE/EECS 1530 3.00](#) or [LE/EECS 1540 3.00](#);
- foundational science: one of the following courses or combinations: [SC/PHYS 1410 6.00](#); [SC/PHYS 1420 6.00](#); [SC/PHYS 1010 6.00](#); [SC/ISCI 1310 6.00](#); [SC/PHYS 1411 3.00](#) or [SC/PHYS 1421 3.00](#) or [SC/PHYS 1011 3.00](#) or [SC/PHYS 1800 3.00](#), and [SC/PHYS 1412 3.00](#) or [SC/PHYS 1422 3.00](#) or [SC/PHYS 1012 3.00](#) or [SC/PHYS 1801 3.00](#); [SC/ISCI 1301 3.00](#) and [SC/ISCI 1302 3.00](#)

B. Major requirements:

- the program core, as specified above (51 credits);
- twelve credits from 4000-level biochemistry, biology or chemistry courses.

C. Science breadth: satisfied by above requirements

D. Upper level requirement:

- additional elective credits or credits satisfying a minor or second major at the 3000 or 4000 levels for a minimum 42 credits at the 3000 and 4000 levels
- Co-registration option: Students may take 6 - 15 credits of certain SC/SENE courses to help satisfy the upper-year and overall credit requirements while co-registered for one term at Seneca@York, and in adherence to Senate legislation and Seneca College standards, deadlines and procedures. For these purposes, students may choose from the following SC/SENE courses in analytical and instrumental technology, pharmaceutical technology and material science: [SC/SENE 2081 3.00](#), [SC/SENE 2082 3.00](#), [SC/SENE 2083 3.00](#), [SC/SENE 2084 3.00](#), [SC/SENE 3072 3.00](#), [SC/SENE 3073 3.00](#), [SC/SENE 3074 3.00](#), [SC/SENE 3083 3.00](#), [SC/SENE 3084 3.00](#), [SC/SENE 3091 3.00](#). Once completed, SC/SENE courses will appear on the York transcript and the grades earned will count in the York grade point average calculations.

E. Additional elective credits, as required, for an overall total of at least 120 credits.

F. Standing requirements: To declare Honours requires successful completion of at least 24 credits, a minimum cumulative credit-weighted grade point average of 5.00(C+) over all science courses completed, and a minimum cumulative credit-weighted grade point average of 4.25 over all courses completed.

To proceed in each year of the Honours program requires a minimum cumulative credit-weighted grade point average of 5.50 (B) over all science courses completed, and a minimum cumulative credit-weighted overall grade point average as specified in the Academic Standards section of the Faculty of Science Regulations Governing Undergraduate Degree Requirements section.

To graduate in Specialized Honours biochemistry requires successful completion of all Faculty requirements and all required program courses, a minimum cumulative credit-weighted grade point average of 5.50 (B) over all science (SC) courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

### ***HONOURS DOUBLE MAJOR PROGRAM***

The Honours Major in Biochemistry may be combined with a major in a second science, other than Biology or Chemistry. Possible subject combinations are listed under Undergraduate Degree Programs in the Faculty of Science Undergraduate Degree and Certificate Programs section.

The following are minimum requirements:

- the requirements of the Honours Major in Biochemistry;
- the requirements for the second major, noting that some courses, in particular the General Education courses, specified for one Major will also satisfy some of the requirements of the second Major.

Some major subjects may specify more than the minimum 36 credits, such that the combined degree may require more than the minimum 120 credits required to graduate with an Honours degree.

Standing requirements: To declare, proceed and graduate with an Honours Double Major BSc with a Major in Biochemistry, students must meet the standing requirements specified above for the Honours Major programs. The second major may have more stringent requirements.

### ***HONOURS MAJOR/MINOR PROGRAM***

The Honours Major in Biochemistry may be combined with a minor in a second subject, other than Biology or Chemistry. Possible subject combinations are listed under Undergraduate Degree Programs in the Faculty of Science Undergraduate Degree and Certificate Programs section.

The following are minimum requirements:

- the requirements of the Honours Major in Biochemistry;
- the requirements for the Minor, noting that some courses specified for one subject may also satisfy part of the requirements of the other subject.

Some minor subjects may specify more than the minimum 30 credits, such that the combined degree may require more than the minimum 120 credits required to graduate with an Honours degree.

Standing requirements: To declare, proceed and graduate with an Honours Major/Minor BSc with a Major in Biochemistry, students must meet the standing requirements specified above for the Honours Major program.

## FREQUENTLY ASKED QUESTIONS

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### **CAN I TAKE BCHM 4000 OR ENVB 4000 INSTEAD OF BIOL 4000?**

If you are in an Honours program in Biology (with or without a stream) and require or wish to do an honours thesis, you must take BIOL 4000. If you are a Biochemistry major you must take BCHM 4000 and if you are an Environmental Biology major you must take ENVB 4000. It is possible for Biology students in BIOL 4000 to pursue a research project in the general areas of biochemistry or environmental biology, as long as the supervisor is a member of the Biology Department or the Biology Graduate Program, and the project is approved by the BIOL 4000 course director.

### **CAN I TAKE CHEM 2050 4.00 TOWARDS MY BIOLOGY OR BIOCHEMISTRY DEGREE?**

CHEM 2050 4.00 is an introductory biochemistry course designed for Chemistry students who did not take BIOL 1000 3.00 and BIOL 1001 3.00. CHEM 2050 4.00 is a course credit exclusion for BIOL/BCHM 2020 3.00, which means that students cannot take both courses for credit. Only BIOL/BCHM 2020 3.00 will count towards the Biology/Biochemistry 2000-level core and towards BIOL/BCHM credit totals.

### **DOES ORGANIC CHEMISTRY (CHEM 2020 3.00/2021 3.00) COUNT TOWARDS MY BIOL CREDIT TOTALS?**

No. CHEM 2020/2021 can contribute towards your total overall credits and total SC credits. It can also be used (in most programs) to fulfill part of the 2000-level core if both courses (CHEM 2020 and 2021) are completed. However, it is not a Biology course, and does not count towards your BIOL credits.

### **WHAT SECOND YEAR COURSES CAN I TAKE IF I HAVEN'T SUCCESSFULLY COMPLETED CHEM 1000 AND CHEM 1001?**

Students who are missing CHEM 1000 and/or CHEM 1001 (but who have completed BIOL 1000/1001) can take the following second year BIOL courses:

| Course Code   | Course Title                                |
|---------------|---|
| BIOL 2010 4.0 | Plant Biology                               |
| BIOL 2030 4.0 | Animals                                     |
| BIOL 2040 3.0 | Genetics                                    |
| BIOL 2050 4.0 | Ecology (Note: BIOL 2060 is a co-requisite) |
| BIOL 2060 3.0 | Statistics for Biologists                   |

BIOL 2020, 2021, 2070 and CHEM 2020/2021 require CHEM 1000 and 1001 as prerequisites. Please remember that only courses from Table 1 will count towards the Biomedical Program.

### **CAN I TAKE A NON-BIOLOGY STATISTICS COURSE TOWARDS MY 2000-LEVEL BIOLOGY CORE REQUIREMENTS?**

BIOL 2060 is the only statistics course that will count towards your total BIOL credits and satisfy one of the 2000-level Biology core requirements. Other statistics courses, such as the course credit exclusions for BIOL 2060 (e.g. MATH 2560, PSYC 2021, etc.) will not be included in your total BIOL credits, and cannot be used towards the Biology 2000-level core.

However, in most cases you can use a non-Biology statistics course as a prerequisite for a course that requires BIOL 2060 (e.g. BIOL 2050, 4085) – check with the course director. If you complete two statistics courses that are course credit exclusions, you will lose credit for the first one.

### **I HAVE TRANSFER CREDITS (ADVANCED STANDING) FROM ANOTHER INSTITUTION AND AM NOT SURE HOW THAT AFFECTS MY PROGRAM.**

If you have transferred from another university or college, you probably have been granted transfer credit for some of your courses. Normally you receive information about your transfer credit at the time of advising so first refer back to your original

advising documentation and transfer credit statement. If you have outstanding questions, please feel free to book an advising appointment. Be sure to bring copies of your transfer credit information and advising documents when you come.

Some points that Biology transfer students should be aware of:

- The York enrolment system cannot see prerequisites that are transfer credit. Thus if you plan to enroll in a particular biology course, and the prerequisite courses were taken at your previous institution, you will need special permission to enroll. Please email [biology@yorku.ca](mailto:biology@yorku.ca) a week before your enrolments window to ensure permission is mounted for you (see pp. 10-11 of this handbook for details).
- If you have been given BIOL credits at the 1000 level, but NOT course credit exclusions for BIOL 1000/1001, you will have to take BIOL 1000/1001.
- If you have been given BIOL credits at the 2000 level, but without course credit exclusions for our second year core courses, you will be required to complete the entire second year core. For example, if you have credit for BIOL 2XXX 3.0 it means you have 3 BIOL credits at the second year level that will count towards your major credit totals but is not equivalent to any York course.
- Transfer credit for a course in statistics may not be used as part of the second year core, nor as a Biology credit, if course credit exclusion for BIOL 2060 3.0 has not been granted (for example you may receive MATH credit rather than BIOL).
- We suggest you make an advising appointment at least a year before graduation to ensure that all degree requirements are met.
- Courses at different institutions vary in terms of content, breadth, depth and academic level. You may have a course credit exclusion for a York course but still be missing some background, and/or may have completed a course elsewhere that overlaps with one or more York courses but not to a great enough extent to warrant a course credit exclusion.
- If you feel a course was not properly assessed, you may request a re-assessment. Contact the transfer credit office (Registrar, Bennett Centre) for the form and procedure.

### **DO I NEED TO DO AN HONOURS THESIS? IS THE BIOL 3100 PREREQUISITE REQUIRED?**

BIOL 3100 is ALWAYS a prerequisite for BIOL 4000 and ENVB 4000. Please consult your degree requirements to determine whether the thesis is required for your degree. You can obtain the degree checklist from Science Academic Services (354 LB).

### **I AM NOT SURE HOW TO SELECT MY COURSES FOR NEXT YEAR**

Group advising sessions for first and second year students are held each spring, in late February or March. Make sure you attend one of these sessions. Times and places are posted on the list serve, this website and are available from the UG office. Slides from previous group advising sessions are posted on the website under advising, together with a variety of other advising information. Please review the advising section of the website for answers to your questions. Degree requirements are found in the handbook and in checklist form from Science Academic Services.

When you're choosing your courses, keep your program requirements in mind, and look ahead to future years in your program. A long-term view is helpful so that you can complete prerequisites in time to allow you to take your preferred upper-year courses.

BIOL 1000 3.0, BIOL 1001 3.0, CHEM 1000 3.0, and CHEM 10013.0 are important prerequisites in most Biology programs. *Failure to complete key prerequisite courses may result in delays in completing a degree program.*

After reviewing all of the information under the advising section, if you still have questions visit Science Academic Services (for general questions), email [biology@yorku.ca](mailto:biology@yorku.ca) (for Biology-related questions) or make an appointment to speak with a Biology advisor (see biology website under advising for advising times or email [biology@yorku.ca](mailto:biology@yorku.ca)).

### **I AM INTERESTED IN CHANGING MY MAJOR TO BIOLOGY.**

Please review the minimal requirements for entering Biology before requesting for a program change. Requests for a change of major to Biology must be submitted online on the <http://www.registrar.yorku.ca/program/change/> website. The

requirements for entering Biology can be found on our website: [science.yorku.ca/biology/undergraduate-program/advising/](http://science.yorku.ca/biology/undergraduate-program/advising/), under the “Change of Major” tab.

### **I WOULD LIKE TO KNOW THE GPA REQUIREMENTS FOR MY PROGRAM.**

To graduate in a Bachelor program requires a minimum overall grade point average of 4.00 (C). If you have passed 90 credits but your GPA is below 4.00, you may attempt to raise your average by taking up to 12 additional credits, to a maximum of 102 credits. You may then be blocked from further enrolment.

To graduate in an Honours Major program in Biology requires a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all biology courses completed, and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

To declare, proceed and graduate in a Specialized Honours program (*i.e.*, Biology, Biomedical Science, and Biotechnology) requires a minimum cumulative credit-weighted grade point average of 6.00 (B) over all biology courses completed and a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

The minimum 5.00 (C+) biology grade point average is not required where biology is the minor in an Honours Major/Minor program. Only the minimum 5.00 (C+) overall grade point average is required in that case.

### **WHAT IF I DON'T MEET THE GPA REQUIREMENTS FOR MY PROGRAM?**

Students who were admitted into an Honours program in Biology, but do not meet the GPA requirements, will be moved into the Bachelor Program in Biology. Students in an Honours Specialized program not meeting the GPA requirement will normally be blocked from enrolling until they choose another program (ie Honours Major or Bachelor).

If you have not yet completed ~75 credits, we generally recommend that you work on raising your average.

If you have completed ~75 credits, please make an appointment for advising, and we can assess your individual situation and discuss the options available to you.

### **I THINK I AM READY TO GRADUATE.**

You should review your degree checklist from Science Academic Services to ensure that you will have satisfied all of the requirements for your degree program. If you have Transfer Credits or any other unusual circumstances, you may wish to book an advising appointment to discuss your eligibility for graduation.

You must apply online by the specified deadlines in order to graduate. Please consult the <http://www.yorku.ca/mygrad/> for details.

### **I NEED TO PREPARE A PETITION.**

Information on petitions and preparing petition package(s) are available on the <http://www.registrar.yorku.ca/petitions/academic/> section of the <http://www.registrar.yorku.ca/> website. This website should be your primary source of information.

If you want to discuss whether your concern requires a petition, please speak to an advisor in Science Academic Services in 352 Lumber Building.

### **I AM EXPERIENCING PERSONAL PROBLEMS THAT ARE AFFECTING MY SCHOOL WORK.**

It can be very difficult to deal with personal problems while going to school. York University has many support resources available, and we encourage students to take advantage of them. Remember, these services are designed for you, to help you cope and succeed with life while at university. Most of these services are confidential, and provide a safe environment for you to discuss your situation.

Counselling and Disability Services (Bennett Centre) offers a range of services including personal counselling, group development workshops, learning skills training, and support for learning disabilities and psychiatric disabilities.

There are also many other support services on campus, such as those offered by Bethune College if you are a science student.

Additional resources may be found in Toronto at <http://www.211toronto.ca/>.

### **I WANT A REAPPRAISAL OF MY WORK AND WANT TO KNOW WHAT ACADEMIC GROUNDS ARE (E.G. WHEN MY LAB MANUAL SAYS THAT TO ASK A LAB COORDINATOR FOR A REAPPRAISAL OF A LAB ASSIGNMENT, ACADEMIC GROUNDS ARE REQUIRED).**

Requests for reappraisal of assignments or tests usually must include academic grounds. Having academic grounds typically means that you feel the material was improperly graded and you have evidence to support it. Thus grounds are reasons for reappraisal that are directly related to the assignment/subject matter, specifically addressing the items you feel were not graded correctly and providing some evidence that you should have received a higher grade. Academic grounds can be evaluated in terms of accuracy and relevance – they do not refer to whether you like your grade or not or involve claims that cannot be assessed objectively.

Common reasons for reappraisal that are **not** considered to be academic grounds:

- “I deserve more marks because I worked really hard and never missed a class.”
- “My mark does not reflect the amount of time, effort, understanding and knowledge of the material covered in the course.”
- “I got As and A+s in all my other courses.”
- “I’m really close to the letter grade cut-off.”
- “The majority of the other students ended up with a high grade and I am at least 2 letter grades below them.”
- “I need a higher grade to get into graduate school.”
- “I wasn’t feeling well and have had a difficult term because of personal issues, which interfered with my academic performance.” \*

*\*Graders can only assess the work before them. Course Directors cannot guess at how you might perform under better circumstances and assign a grade based on that guess. However, in some cases, extenuating circumstances may be appropriate grounds for submitting a petition to drop a course after the drop deadline. Please consult the documentation regarding undergraduate petitions for more information; please consult the <http://registrar.yorku.ca/petitions/academic/> website.*

Reappraisals are not automatically granted. Courses usually have guidelines and policies (including time limits) for reappraisal requests during the term. Normally if you feel you have grounds for reappraisal of anything but the final exam, it needs to be dealt with before the end of classes. You should not wait until you receive your final grade and then decide you want to have lab reports reappraised, for example. Formal grade reappraisal requests to a department (normally for the final exam, after release of final grades) must follow the [University Reappraisal Policies](#).

Many reappraisal requests are denied because students do not provide suitable academic grounds or follow the posted guidelines.

Students should be aware that where reappraisal requests are granted, the grade may be raised, lowered or confirmed.

### **I MISSED MY LAB/MIDTERM/FINAL.**

As a general rule if you miss something because of illness, *see a doctor on the day that you are ill* and have the doctor complete a physician’s statement (part of the petitions package).

If you miss a lab, you should first review the course outline and lab policies in the manual or on the course website to determine the course-specific policies in place. If you do not find any information, contact your laboratory coordinator as soon as possible and obtain documentation (e.g. a doctor’s note). The lab coordinator may allow you to make up the missed

lab, if there is available space in another lab. (Some labs, particularly those extending across more than one week, cannot be made up.)

If you miss a midterm, refer to the course outline and website for course policies, and contact your course director as soon as possible, again, obtaining documentation.

If you miss your final exam, you will need to request deferred standing. Please consult the website: <http://www.registrar.yorku.ca/exams/deferred/>. Your professor may decide to grant or decline your request for a deferred exam. If your request is declined, you may submit a petition for deferred standing. (Please note that some professors routinely expect all students who miss a final exam to petition for permission to write a deferred exam, so denial is not a commentary on whether you have grounds or not.)

Please note that it is your responsibility to make arrangements with the course director to complete the DSA form and to submit the Deferred Standing Agreement form to the Biology Department by the specified deadline (usually within a week of missing the final exam).

If you have been granted a deferred exam, check with your professor to find out the date, time and location of the exam.

### **I WOULD LIKE TO TAKE A COURSE AT ANOTHER UNIVERSITY.**

Please download the "Letter of Permission" form from the Registrar's Office website. This form includes the regulations for submission.

### **WHAT COUNTS TOWARDS SCIENCE CREDITS?**

- All courses that begin with SC, such as SC/BIOL, SC/CHEM, SC/NATS, etc.
- All courses from LE/EECS and major courses from LE/ESSE
- Some KINE/PSYC courses: as a general rule if the course description does not say it does NOT count towards science credit, then it is OK and will count as science.
- SC/GEOG courses but not AP/GEOG courses.

### **WHAT COURSES CAN COUNT TOWARD SCIENCE BREADTH REQUIREMENTS?**

Science degree programs require completion of a specified number of credits in science disciplines outside the major. For Biology and Environmental Biology programs, courses that count towards science breadth include the following:

SC/CHEM –excluding SC/CHEM 1500, 1509 and SC/CHEM courses cross-listed to BCHM or BIOL.

LE/EECS – all courses

LE/EESE – some courses (consult Undergraduate Program Director or email [biology@yorku.ca](mailto:biology@yorku.ca))

SC/MATH –excluding SC/MATH 1510, 1520, 1532, 1581

SC/PHYS –excluding SC/PHYS 1510

SC/STS – all courses

HH/PSYC and HH/KINE –excluding courses that are identified as being non-science in the course description (has something like the following in the course description: "Note this course does not count for science credit")

SC/GEOG –excludes courses listed as AP/GEOG or GL/GEOG (must have SC prefix).

Excluded science subjects that do NOT count towards science breadth for biology and environmental biology programs: SC/NATS, SC/BIOL, SC/BCHM, SC/BPHS, SC/ENVB

### **CAN I TAKE COURSES OFFERED AT GLENDON COLLEGE?**

Glendon College offers courses in a Bilingual program that begin with GL/BIOL. Some third and fourth year Glendon Biology courses will count towards major credit for the BSc Biology and Environmental Biology programs in the Faculty of Science at Keele Campus (not for Biochemistry, Biotechnology or Biomedical Science). In all cases you must obtain permission from the Undergraduate Program Director to have a course from Glendon count towards your degree.

Ensure you enrol in SC/BIOL not GL/BIOL courses.

**WILL MATH 1510 6.0 AND MATH 1520 3.0 COUNT TOWARDS THE SCIENCE BREADTH REQUIREMENT?**  
No.