Glendon’s Biology program provides a bilingual science degree option that integrates a comprehensive examination of major topics with a critical empirical approach, in a beautiful forested campus which offers a natural teaching and research environment in our own backyard.

BACHELOR OF SCIENCE IN BIOLOGY

Biology Office: 160 York Hall
Coordinator: Radu Guiasu
Telephone: 416.487.6732
Fax: 416.487.6851
www.glendon.yorku.ca/biology
E-mail: biology@glendon.yorku.ca
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FOR COURSE DESCRIPTIONS, PLEASE SEE INSERT
ABOUT OUR PROGRAM

Interested in studying science at Glendon? We heard you! In response to the increasing demand for scientifically-literate grads, we are pleased to launch a BSc in Biology, the fastest growing and most sought after of the undergraduate sciences.

Our program draws on the success of our Environmental and Health Studies program and Glendon’s position as a leader in bilingual education to provide a top-quality program with courses in English and/or in French.

OUR FOCUS

Our biology program is a great option if you’re interested in exploring the major topics in biology with an emphasis on conservation biology, ecology and animal behaviour. Although the discipline of biology is diverse, conservation biology, ecology and animal behaviour are amongst the most important features of the environmental aspects of our daily activities. As a student in our program, you will be at the forefront of scientific research in ecology and conservation that shapes and reflects what the potential employers in relevant fields are looking for.
OUR PROFESSORS & INSTRUCTORS

RADU GUIASU (COORDINATOR)
Associate Professor, 361 York Hall
Telephone: 416.736.2100 ext. 88174
Email: rguiasu@glendon.yorku.ca
Teaching and research areas: Environment, Ecology, Conservation Biology, Biodiversity, Invasion Biology, Animal Behaviour, Animal Competition and Aggression, Freshwater Ecosystems, Crayfish, Ichthyology (Fishes), Phylogenetics (Cladistics), Biogeography.

JOCELYN MARTEL
Ph. D. (Carleton – Biology), M. Sc. (UQAM – Biology), B. Sc. (Sherbrooke – Biology (Ecology))
Associate Professor, 333 York Hall
Telephone: 416-736-2100 ext. 88274
Email: jmartel@glendon.yorku.ca
http://www.glendon.yorku.ca/jmartel
Teaching and research areas: Ecology, Biology, Climate Change, Environment, Entomology, Botany.

LAURA MCKINNON
NSERC Banting Postdoctoral Fellow (U. of Toronto), Ph. D. (Université du Québec à Rimouski – Biology), M. Sc. (U. of Michigan – Zoology)
Assistant Professor, D117 Hilliard
Telephone: (416) 736-2100 x88481
Email: lmck@glendon.yorku.ca
Teaching and research areas: Trade-offs between direct (physiological) and indirect (trophic interactions) effects of climate change on the growth and survival of chicks of Arctic nesting birds; Effects of spatial and temporal variations of trophic constraints (predation risk, food availability on reproduction of migratory birds), Ecology and evolution of migratory strategies of Arctic nesting birds.
VALERIE SCHOOF

Ph. D. (Tulane University, LA – Anthropology), M. A. (Tulane University, LA – Anthropology)
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Teaching and research areas: Anthropology, Biology, Environmental Biology, Ecology and Primate Studies

STAFF

SPENCER MUKAI

Lab Technician, 344 York Hall
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Email: smukai@yorku.ca
WHY BIOLOGY AT GLENDON?

Studying biology at Glendon comes with features that set us apart. These are our top five:

- Our forested campus offers a natural teaching environment with direct access to field studies and research literally in our own backyard.
- Our small campus and personalized approach to teaching and learning go a long way to supporting our students’ success.
- We are the first and only BSc in biology in Southern Ontario to offer course options in both English and/or French.
- Our program integrates social sciences/humanities to add valuable breadth and critical thinking and communication skills to your degree.
- Glendon students can take biology courses in the Faculty of Science at York’s Keele Campus; biology is the longest-established scientific program at York and is home to internationally-recognized teaching and research professors.

INTERNATIONAL BSC OPTION

Our bilingual and trilingual international Bachelor of Science degree follows the same structure as the BSc, but has additional language courses, internationally-oriented courses and an international exchange – typically completed in your third year.

HANDS-ON EXPERIENCE

Our program includes advanced research opportunities rarely offered at the undergraduate level. You will regularly experience the results of original current research, learn theory through practice (for example, on-campus insect sampling), and keep up to date with the latest developments in ecology and conservation-related fields.
CAREER CONNECTIONS

A worldwide focus on public health and environmental issues calls for more biology and health science graduates who can work in the science professions. In Ontario in particular, there is a need to provide health-related services in English and French.

If you are interested in conservation biology, field ecology, biotechnology, forensic science, veterinary medicine, medical school or other science-based graduate work, you may be able to complete the required science courses while studying biology.

http://biology.csusb.edu/careers
FREQUENTLY ASKED QUESTIONS

HOW MANY COURSES DO I NEED IN MY MAJOR/MINOR?

The number of courses required in the major/minor varies according to the program and concentration which you wish to pursue. Specific program requirements are outlined in the York University Undergraduate Calendar. Please review them carefully and if you have any questions, please contact the Office of Academic Services.

CAN A COURSE BE USED TO SATISFY THE REQUIREMENTS OF MY MAJOR AND MY MINOR?

A cross-listed course can be used to satisfy the requirements of your major OR of your minor, but not both.

CAN A SINGLE COURSE BE USED TO SATISFY THE REQUIREMENTS OF MY MAJOR AND MY GENERAL EDUCATION REQUIREMENTS AT THE SAME TIME?

Cross-listed course can be used to satisfy the requirements of both your major and your General Education requirements. For example, GL/PSYC 3680 3.0 (EN) which is cross-listed with GL/NATS 3680 3.0 (EN) will count for 3 credits only, but it satisfies two requirements (major requirement in Psychology and General Education requirement in Natural Science).

IF I COMPLETE THE MINIMUM REQUIREMENTS FOR MY MAJOR AND THEN TAKE ADDITIONAL COURSES IN MY MAJOR, WILL THE ADDITIONAL COURSES BE INCLUDED IN MY AVERAGES?

YES. All courses taken are included in the calculation of your cumulative overall and major grade point averages.
WHAT GRADE POINT AVERAGES DO I NEED TO GRADUATE?

<table>
<thead>
<tr>
<th>BA degree (90 credits)</th>
<th>Honours BA degree (120 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative \textit{overall} average: 4.0 (C)</td>
<td>Cumulative \textit{overall} average: 5.0 (C+)</td>
</tr>
<tr>
<td>Cumulative \textit{major} average: 4.0 (C)</td>
<td>Cumulative \textit{major} average: 5.0 (C+)</td>
</tr>
</tbody>
</table>

WHAT DOES ACADEMIC PROBATION MEAN?

Students are placed on academic probation because their averages are below the requirements for their level. Once students are placed on academic probation, they must watch their averages very carefully - obtaining grades of D+ and below while on probation will result in debarment from the University for two years. Therefore, passing courses at the University level is not sufficient. Students must maintain the minimum averages for their level published in the York University Undergraduate Calendar (Glendon section) to be eligible to continue in their program at Glendon Campus.

I WOULD LIKE TO TAKE A COURSE AS A VISITING STUDENT AT ANOTHER UNIVERSITY?

Before applying to become a visiting student at another university, you need to obtain a Letter of Permission (LOP), which is available from the Academic Services, Room C105 York Hall. If the course which you wish to take is in your major, the authorization of your major department/program is required.

WHAT IS THE TRILINGUAL AND BILINGUAL PROGRAM (IBA)?

The international Bachelor of Arts (iBA) programs offer a top-quality liberal arts education with an international perspective. Available as a bilingual or trilingual program, the iBA allows a student to reflect on international issues within and beyond their area of specialization. For more information, please visit the website of the Recruitment and Liaison: http://www.glendon.yorku.ca/iba

WHAT ARE ACADEMIC ACCOMMODATIONS?

Academic accommodations are adjustments to the learning environment that support your academic endeavours while at the same time maintaining the essential academic requirements of the course and program of study. Academic Accommodation for Students with Disabilities Procedures: http://www.glendon.yorku.ca/academic-services/exams/alternate-accommodation-for-students-with-disabilities/
ACADEMIC ADVISING & RESOURCES

Glendon's Office of Academic Services provides a range of registration and support services to students. This office is responsible for maintaining the integrity of student academic records and offers information on University and College rules and regulations, courses and registration, grade reporting and degree audit, graduation and transcripts, and academic advising. You will be able to obtain information on all academic matters from initial registration through to graduation.

ACADEMIC SERVICES

Room C102 York Hall
2275 Bayview Avenue Toronto, Ontario
M4N 3M6
Canada

Telephone: 416.487.6715
Fax: 416.487.6813
Email: acadservices@glendon.yorku.ca
Website: www.glendon.yorku.ca/acadservices

QUICK LINKS:

Undergraduate Calendar: http://calendars.registrar.yorku.ca

Lecture Schedule: https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm

Policies, Procedures and Regulations (incl. Academic Honesty):
http://www.yorku.ca/secretariat/policies/index-policies.html

http://www.yorku.ca/secretariat/policies/index-policies.html
LANGUAGE TRAINING CENTRE FOR STUDIES IN FRENCH

The Language Training Centre for Studies in French welcomes students who want to improve their knowledge of French in order to meet Glendon’s base bilingual requirement, which is the minimum requirement to graduate from Glendon. The FSL courses are open to all students majoring and minoring in fields other than French Studies or Translation.

The Language Training Centre for Studies in French  

fsl@glendon.yorku.ca  
416-736-2100 x88222  
LISTE DE COURS / COURSE LISTINGS

Les cours offerts en 2018-2019 sont en caractères gras. Pour les descriptions, consulter le programme dans lequel les cours sont enseignés. / Only those courses in bold are offered in 2018-2019. For descriptions, consult the program teaching these courses.

GL/Biol 1000 6.0 (EN) Introduction to Biological Science
GL/Biol 1000 6.0 (FR) Introduction aux Sciences Biologiques
GL/Phys 1420 6.0 (FR) Physique avec applications aux sciences de la vie
GL/Biol 2203 6.0 (FR) Utilisation et conservation des ressources biologiques
GL/Biol 2300 3.0 (EN) General Ecology
GL/Biol 2310 3.0 (EN) Fundamentals of Conservation Biology
GL/Biol 2320 3.0 (FR) Botanique
GL/Biol 2325 3.0 (EN) Zoology
GL/Biol 3000 3.0 (EN) Field Techniques in Ecology
GL/Biol 3001 3.0 (EN) Behavioural Ecology
GL/Biol TBD 6.0 (EN) Animal Physiology
GL/Biol 3200 6.0 (EN) Historical Trends in Human-Environmental Interrelationships
GL/Biol 3230 6.0 (FR) Génétique et santé humaine
GL/Biol 3305 6.0 (EN) Evolution and Ecology of Humans
GL/Biol 4000 3.0 & 6.0 (FR) Projet de Recherche
GL/Biol 4000 3.0 & 6.0 (EN) Honours Thesis
GL/Biol 4200 6.0 (EN) Invasion Biology, Biogeography and Evolution
GL/BIOL 4210 3.0 (EN) Insect Herbivore Ecology

GL/BIOL 4215 3.0 (EN) Animal Communication and Sensory Ecology

COURSES OFFERED BY OTHER DEPARTMENTS IN SUPPORT OF THE BIOLOGY BSC PROGRAM

GL/ITEC 2635 3.0 (EN) Creation and Management of a site on the WWW

GL/ITEC 2635 3.0 (FR) La création et la gestion d’un site sur le WWW

GL/ITEC 2915 3.0 (EN) Computer Usage and Software Applications I

GL/ITEC 2915 3.0 (FR) L’utilisation de l’ordinateur et des logiciels d’application I

GL/ITEC 2925 3.0 (EN) Computer Usage and Software Applications II

GL/ITEC 2925 3.0 (FR) L’utilisation de l’ordinateur et des logiciels d’application II

GL/MATH 1610 3.0 (EN) Introduction to Statistical Methods I

GL/MATH 1620 3.0 (EN) Introduction to Statistical Methods II

GL/MATH 1660 3.0 (EN) Linear Algebra I

GL/MATH 1930 3.0 (FR) Calcul différentiel et intégral I

GL/MATH 1930 3.0 (EN) Calculus I

GL/MATH 1940 3.0 (FR) Calcul différentiel et intégral II

GL/MATH 1940 3.0 (EN) Calculus II

GL/MATH 2660 3.0 (EN) Linear Algebra II

GL/MATH 2670 6.0 (EN) Second Year Calculus

GL/MATH 2670 6.0 (FR) Calcul des fonctions des plusieurs variables
GL/NATS 1500 6.0 (FR) Nutrition, santé et société
GL/NATS 1605 6.0 (EN) W Communication, Health and Environment
GL/NATS 1605 6.0 (EN) Y Communication, Health and Environment
GL/NATS 1770 6.0 (EN) Heredity and Society
GL/NATS 1890 6.0 (EN) Introduction to the Science, Technology and Society
GL/NATS 2315 6.0 (EN) Human Physiology in Health and Disease
GL/NATS 2920 6.0 (EN/FR) Medieval Science: Thought and Practice
GL/NATS 3206 3.0 (EN) Human Parasitology
GL/NATS 4205 3.0 (EN) Human-Insect Interactions
GL/NATS 4210 3.0 (EN) Environmental Physiology

GL/PSYC/NATS 3670 3.0 (EN) Psychobiology
GL/PSYC/NATS 3670 3.0 (FR) Psychobiologie
GL/PSYC/NATS 3675 3.0 (EN) Humans as Primates: Comparative Evolution
GL/PSYC/NATS 3680 3.0 (EN) Evolution of Behavior in Animals
DESCRIPTION DES COURS / COURSE DESCRIPTIONS

GL/BIOL 1000 6.0 (EN) INTRODUCTION TO BIOLOGICAL SCIENCE

This course is an introduction to the fundamental biological concepts in science. Topics covered includes structure and function of biological molecules, cell biology and membrane physiology, genes, genetics, developmental biology, evolutionary biology, animal behaviour and the history of life.

Prerequisites: OAC Biology or 12U Biology, OAC Chemistry or 12U Chemistry.

Course Credit Exclusion: GL/NATS 1540 6.00 (exemptions subject to York policy: http://secretariat-policies.info.yorku.ca/policies/cross-listed-courses/).

GL/BIOL 1000 6.0 (FR) INTRODUCTION AUX SCIENCES BIOLOGIQUES

Ce cours est une introduction aux concepts biologiques fondamentaux de la science. Les sujets abordés comprendront la structure et la fonction des molécules biologiques, la biologie cellulaire et physiologie des membranes, les gènes, la génétique, la biologie développementale, la biologie évolutive, le comportement des animaux et l’histoire de la vie.

Conditions préalables : OAC Biology ou 12U Biology, OAC Chemistry ou 12U Chemistry.

Cours incompatibles : GL/NATS 1540 6.00 (exemptions sous réserve de la politique de York : (http://secretariat-policies.info.yorku.ca/policies/cross-listed-courses/).

GL/PHYS 1420 6.0 (FR) PHYSIQUE AVEC APPLICATIONS AUX SCIENCES DE LA VIE

Ce cours enseigne les principes fondamentaux de la physique en soulignant les applications aux sciences de la vie. Les sujets abordés incluent : la cinétique, la dynamique, la quantité de mouvement et d’énergie dans les mouvements linéaire et rotationnel ; la théorie cinétique élémentaire et la thermodynamique ; le courant électrique et l’électricité statique ; les ondes et l’optique ; ainsi que les éléments de base de la physique moderne. Remarque : Ce cours requiert de solides connaissances en calcul. Un laboratoire de trois heures est prévu toutes les deux semaines.
Conditions préalables : SPH4U, MHV4U, MHF4U.

Cours incompatibles : SC/PHYS 1010 6.00, SC/PHYS 1410 6.00, SC/PHYS 1420 6.00, SC/PHYS 1800 3.00, SC/PHYS 1801 3.00, SC/ISCI 1301 3.00 and SC/ISCI 1302 3.00.

**GL/Biol 2203 6.0 (FR) UTILISATION ET CONSERVATION DES RESSOURCES BIOLOGIQUES**

Ce cours analyse les effets de l'activité humaine sur les ressources renouvelables biologiques : biodiversité, agriculture, forêts, pêcheries, etc. Le cours traite de sujets d'actualité tels que les invasions biologiques, la désertification, les perturbateurs endocriniens et les organismes transgéniques.

Condition préalable: GL/Biol 1000 6.00 ou permission du département.

Cours incompatible: GL/NATS 2203 6.00.

**GL/Biol 2300 3.0 (EN) GENERAL ECOLOGY**

This course is an introduction to the scientific study of relationships between organisms and their physical and biological environments. General principles will be used to interpret patterns in the distribution, abundance, and characteristics of organisms in space and time.

Prerequisites: SC/Biol 1000 3.00 and SC/Biol 1001 3.00 (or SC/Biol 1010 6.00) or permission of the Department. Previously offered as: GL/NATS 2300 3.00.

**GL/Biol 2310 3.0 (EN) FUNDAMENTALS OF CONSERVATION BIOLOGY**

This course explores species preservation methods, the causes of their decline and the effects of human intervention. Concepts and theories underlying conservation biology are used to develop critical thinking in matters related to biodiversity and the protection of endangered species.

Prerequisites: SC/Biol 1000 3.00 and SC/Biol 1001 3.00 (or SC/Biol 1010 6.00) or permission of the Department. Previously offered as: GL/NATS 2310 3.00.
GL/BIOL 2320 3.0 (FR) BOTANIQUE

Ce cours est une synthèse de nos connaissances actuelles sur les plantes, leur fonctionnement, leur origine, leur évolution et leur rôle dans les écosystèmes. Le cours comprend trois heures de cours théorique et trois heures de travaux pratiques en laboratoire par semaine.

Condition préalable : GL/BIOL 1000 6.00 ou permission du département.


GL/BIOL 2325 3.0 (EN) ZOOLOGY

This course is an overview of our present knowledge of animals, their function, their origin, their evolution and their role in ecosystems.

Prerequisite: GL/BIOL 1000 6.00 or permission of the department.

Course credit exclusions: SC/BIOL 2030 4.00. Previously offered as: GL/BIOL 2325 6.00.

GL/BIOL 3000 3.0 (EN) FIELD TECHNIQUES IN ECOLOGY

This course introduces students to a wide variety of modern field techniques used in ecological research. The course permits students to acquire hands-on experience with field techniques and put these techniques to use for their own ecological research project.

Prerequisites GL/BIOL 1000 6.00 and GL/BIOL 2300 3.00.

Offered in the summer

GL/BIOL 3001 3.0 (EN) BEHAVIOURAL ECOLOGY

Using an ethological approach, this course examines the mechanistic and evolutionary causes of animal behaviour, including social behaviour (competition, cooperation), communication, foraging, anti-predator behaviour, habitat selection, reproduction and mating systems, and parental care.

Prerequisite: GL/BIOL 1000 6.00
GL/Biol 3200 6.0 (EN) Historical Trends in Human-Environmental Interrelationships

This course examines the impact of ancient environments upon living organisms with reference to specific biological problems such as extinction, and the historical impact of human activities on the environment.

Prerequisite: GL/Biol 2300 3.00 or GL/Biol 2310 3.00 or permission of the department. Previously offered as: GL/Nats 3200 6.00.

GL/Biol 3230 6.0 (FR) Genétique et Santé Humaine

Le cours présente les bases cellulaires et moléculaires de la génétique. Il adopte une approche historique de la génétique moderne mendélienne et classique et vise à initier les étudiant(e)s à l’analyse génétique moderne du génotype des maladies humaines.

Condition préalable : GL/Biol 1000 6.00 ou permission du département.

Cours incompatible: GL/Nats 3230 6.00.

GL/Biol 3305 6.0 (EN) Evolution and Ecology of Humans

This course contrasts the ecological conditions attendant upon early human evolution with the complex environmental situations now faced by modern technological societies. Essential themes are Darwinism, the effect of earlier cultures upon the environment and selected modern examples in human ecology.

Prerequisites: GL/Biol 1000 6.00 or permission of the department.

Prior to Summer 2017: course credit exclusion: GL/Biol 2305 3.00.

GL/Biol 4200 6.0 (EN) Invasion Biology, Biogeography and Evolution

The course presents a balanced, comprehensive, evolutionary, and critical analysis of the young and rapidly expanding field of invasion biology. The complex role of non-native species in novel ecosystems is discussed in depth through numerous examples and case studies.

Prerequisite: GL/Biol 2310 3.00.
GL/BIOL 4210 3.0 (EN) INSECT HERBIVORE ECOLOGY

This course analyses the mechanisms underlying plant defense against herbivores and insect adaptations to utilize plants for nutrition, defense and shelter. These mechanisms are examined at the molecular and organismal levels in the context of both ecological interactions and evolutionary processes.

Prerequisite: GL/BIOL 2300 3.00 or permission of the department.

GL/BIOL 4215 3.0 (EN) ANIMAL COMMUNICATION AND SENSORY ECOLOGY

Explores the various categories of signals used by animals in a variety of contexts and the sensory channels which allow these signals to be sent, received and analysed.

Prerequisite: GL/BIOL 2300 3.00 or permission of the department. Previously offered as: GL/NATS 4215 3.00.

GL/BIOL 4000 3.0 & 6.0 (FR) PROJET DE RECHERCHE

Ce cours permet aux étudiants de compléter un projet de recherche en biologie, approfondi en laboratoire, sur le terrain et / ou en bibliothèque, sous la supervision d'un membre du corps professoral de biologie à Glendon.

GL/BIOL 4000 3.0 & 6.0 (EN) HONOURS THESIS

This course allows students to complete an in-depth laboratory, field, and/or library research project in Biology under the supervision of a full-time faculty member from Glendon's Biology Program.