

Department of Biology Course Outline

Fall 2024 / BIOL 4020 Genomics 3.0

Course Instructor: Logan Donaldson

How to address me: Professor Donaldson

Personal Pronouns: (he/him/his)

Email: logand@yorku.ca

Note: If you have a question or would like to talk with me, you can send an email or visit me during student hours immediately after class.

Phone: (416) 736-2100 ext. 22823

Student Hours: Tue & Thu, 10-11 am

What are 'Student Hours'?

Student hours are dedicated times through the week for the course instructor and TAs to meet with YOU.

Pop in to introduce yourself, ask questions about the course, or discuss content from the course.

Note: If these times don't work for you, email me and we can arrange an alternate time to meet.

Office Location: 323B Life Sciences Building (LSB)

Class Times: Tue & Thu, 8:30 am – 9:50 am

Class Location: Consult the YorkU website

Study Spaces on Campus:

<https://currentstudents.yorku.ca/study-spaces>

Course Format: this course is taught in-person. Classes will not be recorded.

Prerequisites: BIOL 3130 3.0

Land Acknowledgement

York University recognizes that many Indigenous Nations have longstanding relationships with the territories upon which York University campuses are located that precede the establishment of York University. York University acknowledges its presence on the traditional territory of many Indigenous Nations. The area known as Tkaronto has been cared for by the Anishinabek Nation, the Haudenosaunee Confederacy, and the Huron-Wendat. It is now home to many First Nation, Inuit, and Métis communities. We acknowledge the current treaty holders, the Mississaugas of the Credit First Nation. This territory is subject of the Dish with One Spoon Wampum Belt Covenant, an agreement to peacefully share and care for the Great Lakes region.

Course Information

Genomics as a field began during the pursuit of the first complete human sequence in the 1990s. Since then, the field has rapidly evolved in pace with new technologies drawn from biology, chemistry, bioinformatics, and engineering.

Course Calendar Description: Upon completion of this course, student will understand current molecular techniques in genome sequencing and annotation, the implications of genomics on many aspects of science and the future of medical treatment and disease prevention.

Upon successful completion of this course, students will be able to:

1. describe first/second/third generation sequencing methods
2. describe the milestones in the human genome project
3. show how genome variation contributes of health and human disease
4. browse and annotate genomic information
5. understand modern techniques to alter human genomes to ameliorate or cure disease

Lecture topics by unit:

1. The human genome project
2. Sequencing and genome construction
3. Types of variation
4. Gene editing technologies
5. Genome-wide association studies (time-permitting)
6. Sequence analysis and sequence comparison (time-permitting)

Inclusivity:

I am committed to fostering an environment for learning that is inclusive for everyone regardless of gender identity, gender expression, sex, sexual orientation, race, ethnicity, ability, age, and class. Your feedback is welcome.

Community guidelines:

The following values are fundamental to academic integrity and are adapted from the International Center for Academic Integrity*. In our course, we will seek to behave with these values in mind.

	As students, we will...	As a professor, I will...
Honesty	<ul style="list-style-type: none">• Honestly demonstrate our knowledge and abilities on assignments and exams• Communicate openly without using deception	<ul style="list-style-type: none">• Communicate openly and honestly about the expectations and standards of the course

	As students, we will...	As a professor, I will...
Responsibility	<ul style="list-style-type: none"> • Arrive to class on time and participate • Complete assignments on time 	<ul style="list-style-type: none"> • Arrive to class on time • Provide timely feedback on graded material
Respect	<ul style="list-style-type: none"> • Speak openly and provide sufficient space for others to voice their ideas 	<ul style="list-style-type: none"> • Help facilitate respectful exchange of ideas
Fairness	<ul style="list-style-type: none"> • Not seek unfair advantage over fellow students in the course 	<ul style="list-style-type: none"> • Create fair assignments and exams, and grade them in a fair, and timely manner • Treat all students equitably
Trust	<ul style="list-style-type: none"> • Not distribute course materials to others without authorization 	<ul style="list-style-type: none"> • Not modify the expectations or standards without communicating with everyone in the course
Courage	<ul style="list-style-type: none"> • Say or do something when we see actions that undermine YorkU values • Accept the consequences of upholding and protecting the above values 	<ul style="list-style-type: none"> • Say or do something when we see actions that undermine YorkU values • Accept the consequences of upholding and protecting the above values

Learning Materials

Website: All materials are available on eClass. There is no textbook or laboratory book.

Course Assessment

Research about learning strongly suggests that the most important factor in learning is doing the work of reading, writing, recalling, practicing, synthesizing, and analyzing. Learning happens best when people actively engage material on a consistent basis. By making the effort, you will meet the standards in this course. Graded material is marked according to a standard answer key with one mark assigned per statement or idea. Exams may be in short-answer (1-4 marks) or multiple-choice format, depending on the nature of the graded material.

COMPONENT	GRADE VALUE
MIDTERM EXAM	25% / 1 hour in class / consult eClass for the date
ASSIGNMENT	15% / consult eClass for the date
FINAL EXAM	60% / 2 hours / determined by the Registrar

Missed exam policy

The midterm is written in-person with an expected duration of 60 minutes. Missed exams are a very serious matter -- the onus is you to notify me within 24 hours and provide me enough information (like a medical note) for me to decide whether you will receive a zero or permission to write. I have limited ability to offer a rewrite - it will be a time (likely 7:30-8:30 am before classes) that you must find a way to attend because there will be no second chances. If I am unable to find a time for a makeup, the weight of the exam will be transferred to the final. I can make minor accommodations for the midterm examination time on that day; for example, if you cannot make the class but can arrive on campus later in the day.

Exam 3 is during the Final Exam period

The Final Exam will be scheduled by the Registrar's Office. A petition to your home Faculty is necessary to obtain permission to write a makeup exam (typically sometime during late February by the time the petition is assessed, and I set up a time).

Reappraisals of graded material

I will consider all reappraisals. If it's a mistake in addition, that can be handled in class. For other inquiries, I will provide feedback on assignments and exams by appointment or during Student Hours.

University Policies

Important Dates

Drop Deadline: consult the Yorker Calendar for the most up-to-date information

Course Withdrawal Deadline: consult the York Calendar for the most up-to-date information

Grading Scheme

In accordance with the York University Undergraduate Calendar Regulations, the letter grades assigned in undergraduate courses at York conform to the descriptions and grade ranges determined by current Senate policy.

Academic Honesty and Integrity

Academic misconduct undermines the values of honesty, trust, respect, fairness, and responsibility that we expect in this class. York University provides supports such as academic integrity workshops to ensure that all students understand the norms and standards of academic integrity that we expect you to uphold. York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty. The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards.

YorkU provides an academic integrity website with comprehensive information about academic honesty, how to improve your academic skills, and how to thrive at YorkU.

Examples of actions that do not adhere to York's Academic Integrity Policy include:

- Plagiarism (passing off someone else's work as your own)
- Accessing unauthorized sites for assignments or tests
- Unauthorized collaboration on assignment and exams
- Uploading work to third party repository sites
- Scanning, sharing, uploading, or publishing exams, tests, or scholarly work

For more information on what academic integrity is and why it is important see:

<https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity/>.

Information on the process of investigations into breaches of academic honesty:

<https://spark.library.yorku.ca/academic-integrity-breach-of-policy-on-academic-honesty/>

Important Note from the FSc Committee on Examinations & Academic Standards (CEAS):

Numerous students in Faculty of Science courses have been charged with academic misconduct when materials they uploaded to third party repository sites were taken and used by unknown students in later offerings of the course. Whenever a student submits work obtained through an external site, the submitting student will be charged with plagiarism and the uploading student will be charged with aiding and abetting. To avoid this risk, students are urged not to upload their work to these sites.

Assistance for Students (Academic and Well-Being)

Academic Advising: <https://www.yorku.ca/science/academic-advising/>

Departments also offer program-specific advising. Check with your Department's Undergraduate Office.

Centre for Human Rights, Equity, and Inclusion: <https://rights.info.yorku.ca>

Centre for Indigenous Students Services: <https://aboriginal.info.yorku.ca/>

Good2Talk 24-hour Ontario Student Helpline: 1-866-925-5454 /Text: GOOD2TALKON to 686868

Keep.meSAFE: <https://myssp.app/keepmesafe/ca/home>

Learning Commons (general academic learning supports including library research, time management, study skills, career planning, etc.): <https://learningcommons.yorku.ca/>

Peer Assisted Study Sessions (PASS): <https://www.yorku.ca/colleges/bethune/get-help/pass/>

Peer Tutoring: <https://www.yorku.ca/colleges/bethune/get-help/peer-tutoring/>

Sexual Violence Response and Support: <https://thecentre.yorku.ca>

Student Counselling, Health & Well-being: <https://counselling.students.yorku.ca/>

Support Services for International Students: <https://yorkinternational.yorku.ca/international-student-support/>

Writing Services: <https://www.yorku.ca/colleges/bethune/get-help/writing/>

York University Student Services: <https://family.yorku.ca/student-services/#SCD>

York University Student Well-being Resources: <https://www.yorku.ca/well-being/resources/students/>

Accessibility

York University is committed to principles of respect, inclusion, and equality of all persons with accessibility needs across campus. The University provides services for students with accessibility needs (including physical, medical, learning, and psychiatric needs) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.

Students in need of these services are asked to register with accessibility services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with accessibility services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.

Student Accessibility Services: <https://accessibility.students.yorku.ca>

York Accessibility Hub: <http://accessibilityhub.info.yorku.ca/>

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community and making accommodations for observances of special significance to adherents. Should any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course Director immediately. To arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete and submit an accommodation request form at least 3 weeks before the exam period begins <https://secure.students.yorku.ca/pdf/religious-accommodation-agreement-final-examinations.pdf>

Student and Instructor Conduct in Academic Situations

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at <http://secretariat-policies.info.yorku.ca/policies/disruptive-andor-harassing-behaviour-in-academic-situations-senate-policy/>.

Academic accommodation refers to educational practices, systems and support mechanisms designed to accommodate diversity and difference. The purpose of accommodation is to enable students to perform the essential requirements of their academic programs. At no time does academic accommodation undermine or compromise the learning objectives that are established by the academic authorities of the University.