Department of Biology Course Outline

SC/BIOL 4020 3.0 Genomics
Fall 2017-2018

Course Description

Upon completion of the course, students will have an understanding of the basic molecular techniques developed for genome sequencing and annotation, the implications of genomics on basic science, and the future of medical treatment and disease prevention.

Prerequisites

SC/BIOL 2060 3.00 or SC/MATH 2560 3.00 or SC/MATH 2565 3.00 or HH/PSYC 2020 6.00 or HH/PSYC 2021 3.00

SC/BIOL 3200 3.00

SC/BIOL 3110 3.00

Course Instructors and Contact Information

Dr. Logan Donaldson
323B Life Science Building
logand@yorku.ca

Schedule

Thursdays / 2:30-5:30 pm
Please consult the calendar for the most up to date information

Evaluation

10% Assignment #1
30% Exam #1
10% Assignment #2
50% Final #2

Important Dates

Resources

All resources provided on line

Learning Outcomes

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

- Use a genome analysis and annotation software
- Perform sequence alignments
- Construct and optimize expression vectors for bacterial systems
- Understand the impact of genome variation on health and human disease

Course Content

The most up-to-date course content is found at ldserver.biol.yorku.ca/biol4020/syllabus

Unit 1 – Introduction to Genomics

Unit 2 – The Human Genome project

Unit 3 – Next generation sequencing methods

Unit 4 – Single nucleotide polymorphisms (determination, impact, and workshop)

Unit 5 – Genomics of pathogenic bacteria

Unit 6 – Synthetic organism design and editing

Unit 7 – Designing and optimizing gene expression systems

Experiential Education and E-Learning

Students in the course will get practical experience with genome analysis software and cloning software.

Other Information

All resources are provided online. Some suggestions for studying the most relevant aspects of the course and reaching learning milestones will be provided on the course blog at ldserver.biol.york.ca/biol4020

Students need to attend all lectures in order to excel in the course. While every attempt is made to provide detailed reading material and presentation slides, the exams are drawn from the experiences in the classroom.

In lieu of office hours, the instructor is available before and after class to answer all questions, individually or with a group.

Course Policies

Attendance for all exams is mandatory. Exams missed on the ground of medical circumstances must be supported by an Attending Physician's Statement, which can be downloaded from: http://www.registrar.yorku.ca/pdf/attend_physician_statement.pdf, or a statement by a psychologist or counsellor. Students are NOT expected to disclose the nature of the illness. The document must specify the date of consultation, contact information (phone number of the hospital; legible name of the health provider) that would allow verification of the document, a statement that the student would not have been able to attend class (or carry out activities) during the relevant period of time.

Missed in class exams will be rescheduled within two days after the absence period described above. If the make-up exam is missed, a grade of zero will be recorded with no exceptions.

Within the limits of the Copyright Act, students may make a manual reproduction of a work, make a copy of the work projected as an image. Students cannot disseminate any material, especially off-campus on external slide sharing websites. The content is protected on the within the York University system for usage and is invisibly watermarked to enable tracking/identification on off-campus sites.

University Policies

Academic Honesty and Integrity
York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards.
There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve students' research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website at - http://www.yorku.ca/academicintegrity/

Access/Disability
York University is committed to principles of respect, inclusion and equality of all persons with disabilities across campus. The University provides services for students with disabilities (including physical, medical, learning and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.
Student's in need of these services are asked to register with disability 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 disabilities services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.
Additional information is available at the following websites:
Counselling & Disability Services - http://cds.info.yorku.ca/
Counselling & Disability Services at Glendon - http://www.glendon.yorku.ca/counselling/personal.html
York Accessibility Hub - http://accessibilityhub.info.yorku.ca/

Ethics Review Process

York students are subject to the York University *Policy for the Ethics Review Process for Research Involving Human Participants.* In particular, students proposing to undertake research involving human participants (e.g., interviewing the director of a company or government agency, having students complete a questionnaire, etc.) are required to submit an *Application for Ethical Approval of Research Involving Human Participants* at least one month before you plan to begin the research. If you are in doubt as to whether this requirement applies to you, contact your Course Director immediately.

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. Please note that to arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete an Examination Accommodation Form, which can be obtained from Student Client Services, Student Services Centre or online at
http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf (PDF)

Student 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/