

BIOL 331

Analytical Genomics

Winter Term (2018-19)

CALENDAR DESCRIPTION

This course will explore the structure of genomes and the nature and origin of gene families as well as large scale functional genomics methods for analysis of novel gene function.

PREREQUISITE BIOL 205/3.0.

SCHEDULE

Lectures: Wednesday 7:00pm-9:00pm, Wednesday 7:30pm-8:30pm. STIRLG B.

Tut.: Thursday 6:30pm-7:30pm. STIRLG B.

Instructor	Dr. P. Young
Instructor Contact	youngpg@queensu.ca , Phone: 533-6148, Rm. 2443 Bioscience
Office Hours	TBA
TA:	See Course Website
TA Contact Information	See Course Website
Office Hours	TBA

Learning Objectives

Genomics is one of the most rapidly moving fields in modern science. It has an impact in all areas of biology and life science. The course has two broad areas of focus:

1. Bioinformatics

Approximately one third of the course is directed at introducing genomic databases and the software tools to compare sequence and infer evolutionary relationships. Four assignments during the term ensure that students become proficient at running various programs and interpreting the results. Web based software is used; no direct programming is involved.

2. Functional genomics

The other two thirds of the course focusses on assigning biological function to genes discovered through sequencing programs. The approaches include computer analysis, mutational analysis, gene and protein interaction, 3-D structure. The student will have an appreciation of the strengths and limitations of such methods as well as recognition of the current limits of experimental science. This portion of the course relies heavily on the current research literature.

Learning Hours

<i>Teaching method</i>		<i>Average hours per week</i>	<i>Number of weeks</i>	<i>Total hours</i>
In-class hours	Lecture	3	12	36
	Seminar			
	Laboratory			
	Tutorial	1	12	12
	Practicum			
	Group learning			
	Individual instruction			
Other	Online activity	10	4	40
	Off-campus activity			
	Private study	2	12	24
Total hours on task				112

Textbooks/Readings

No textbook assigned. A text will be available on reserve.

Much of the course is taught from the research literature and material available online

Grading Scheme

Component	Weight (%)	Date
midterm	20	February
final	40	April
4 web based assignments/reports	40	Throughout term

Grading Method

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale.

When letter grades are employed, the following scale will be employed for purposes of calculating your course average:

Arts & Science Letter Grade Input Scheme

Assignment mark	Numerical value for calculation of final mark
A+	93
A	89
A-	82
B+	78
B	75
B-	72

C+	68
C	65
C-	62
D+	58
D	55
D-	52
F48 (F+)	48
F24 (F)	24
F0 (0)	0

Your course average will then be converted to a final letter grade according to Queen's Official Grade Conversion Scale:

Queen's Official Grade Conversion Scale

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

Academic Integrity and Queen's Code of Conduct

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and conduct conform to the principles of academic integrity. Information is available in the Arts and Science Calendar (see Academic Regulation 1 - <http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations>, on the Arts and Science website (see <http://www.queensu.ca/artsci/academics/undergraduate/academic-integrity>), and at Biology's website (<http://www.queensu.ca/biology/undergrad/integrity.html>) and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulations on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

Accommodation Policy, Exam Conflicts, and Other Conflicts

Students who feel they need accommodations for disabilities or extenuating circumstances, or have a conflict between exams or other commitments should consult the Biology Department's website for details about how to proceed (<http://www.queensu.ca/biology/undergrad/integrity.html>). In general, the earlier a

course coordinator is apprised of an extenuating circumstance, the more likely an accommodation can be made. Students are encouraged to be proactive in anticipating difficulties, when it is possible to do so.

Students may apply to write a make-up or deferred exam if they have an exam conflict as defined in the Academic Regulations of the Faculty (See Arts and Science Calendar Regulation 8 - <http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations>). In this case, the student should report to the Exams Office first to verify that there is a genuine exam conflict. Biology professors will not consider your situation to be a conflict unless it meets the criteria set out by the Faculty of Arts and Sciences.

Students may request a make-up or deferred exam if they have an exam conflict with off-campus travel associated with a field course (e.g BIOL-307/3.0 or 407/3.0) that is held during the fall or winter terms.

Copyright

This material is designed for use as part of BIOL 331 at Queen's University and is the property of the instructor unless otherwise stated. Third party copyrighted materials (such as book chapters and articles) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law.

Accommodation of Disabilities

Queen's University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact the Disability Services Office (DSO) and register as early as possible. For more information, including important deadlines, please visit the DSO website at: <http://www.queensu.ca/hcnds/ds/>

Turnitin

Queen's University has engaged the services of Turnitin to collect personal information on its behalf under the authority of the Queen's University Royal Charter, 1841, as amended.

Please read Turnitin's Privacy Pledge, Privacy Policy, and Terms of Service: http://turnitin.com/en_us/about-us/privacy. The Terms of Service constitute a legal agreement between you and Turnitin so please read these documents carefully.

Please note that Turnitin uses cookies and other tracking technologies; however, Queen's has negotiated with Turnitin such that neither Turnitin nor its third-party partners will use data collected through cookies or other tracking technologies for marketing or advertising purposes. For further information about how you can exercise control over cookies, see Turnitin's Privacy Policy: http://turnitin.com/en_us/about-us/privacy#policy. By continuing to use Turnitin, you consent to the collection, use and disclosure of your personal information as described above.

Turnitin may provide other services that are not connected to the purpose for which Queen's University has engaged Turnitin. Your independent use of Turnitin's services is subject solely

to Turnitin's Terms of Service and Privacy Policy, and Queen's University has no liability for any independent interaction you choose to have with Turnitin.