BIOL 331
Analytical Genomics

Winter Term (2022-23)

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 and regulation.

PREREQUISITE BIOL 205/3.0.

Instructor	**Dr. George diCenzo and Dr. Maria Aristizabal**
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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 gene and genome sequences and infer evolutionary relationships. Assignments during the term ensure that students become proficient at running various programs and interpreting the results. Web based software is used; no direct programing 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. 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

Teaching method		*Average hours per week*	*Number of weeks*	*Total hours*
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	25	TBA
final	25	TBA
2 web based assignments/reports	40	Throughout term
4 quizzes	10	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.

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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/hcds/ds/

Turnitin

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