

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: BIO 433		Number of Credits: 3 Course credit policy (105)															
Course Full Title: Bioinformatics II Course Short Title: <i>(Transcripts only display 30 characters. Departments may recommend a short title if one is needed. If left blank, one will be assigned.)</i>																	
Faculty: Faculty of Science		Department (or program if no department): Biology															
Calendar Description: Students will consider recent literature and focus on current topics in bioinformatics, including analysis of the benefits and limitations of existing software, unique challenges in the analysis of different "omics" data, as well as the legal and ethical implications involved with examining and storing genetic information.																	
Prerequisites (or NONE):		BIO 333.															
Corequisites (if applicable, or NONE):																	
Pre/corequisites (if applicable, or NONE):																	
Antirequisite Courses <i>(Cannot be taken for additional credit.)</i> Former course code/number: Cross-listed with: Dual-listed with: Equivalent course(s): <i>(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)</i>		Special Topics <i>(Double-click on boxes to select.)</i> This course is offered with different topics: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <i>(If yes, topic will be recorded when offered.)</i>															
		Independent Study If offered as an Independent Study course, this course may be repeated for further credit: <i>(If yes, topic will be recorded.)</i> <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, repeat(s) <input type="checkbox"/> Yes, no limit															
		Transfer Credit Transfer credit already exists: <i>(See bctransferguide.ca.)</i> <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Submit outline for (re)articulation: <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Yes <i>(If yes, fill in transfer credit form.)</i>															
Typical Structure of Instructional Hours <table border="1"> <tr> <td>Lecture/seminar hours</td> <td>25</td> </tr> <tr> <td>Tutorials/workshops</td> <td>20</td> </tr> <tr> <td>Supervised laboratory hours</td> <td></td> </tr> <tr> <td>Experiential (field experience, practicum, internship, etc.)</td> <td></td> </tr> <tr> <td>Supervised online activities</td> <td></td> </tr> <tr> <td>Other contact hours:</td> <td></td> </tr> <tr> <td>Total hours</td> <td>45</td> </tr> </table>		Lecture/seminar hours	25	Tutorials/workshops	20	Supervised laboratory hours		Experiential (field experience, practicum, internship, etc.)		Supervised online activities		Other contact hours:		Total hours	45	Grading System <input checked="" type="checkbox"/> Letter Grades <input type="checkbox"/> Credit/No Credit	
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Labs to be scheduled independent of lecture hours: <input type="checkbox"/> No <input type="checkbox"/> Yes		Maximum enrolment (for information only): 24 Expected Frequency of Course Offerings: annually <i>(Every semester, Fall only, annually, etc.)</i>															
Department / Program Head or Director: Anthony Stea		Date approved: December 2019															
Faculty Council approval		Date approved: December 2019															
Dean/Associate VP: Lucy Lee		Date approved: December 2019															
Campus-Wide Consultation (CWC)		Date of posting: January 17, 2020															
Undergraduate Education Committee (UEC) approval		Date of meeting: January 31, 2020															

Learning Outcomes:

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

- Evaluate the advantages and limitations of the statistical and computational elements within bioinformatic software.
- Describe the challenges in analyzing some types of biological information (e.g. RNA sequences) and the role of epigenetic influences on biological information.
- Discuss the ethical considerations for the use of genetic information (e.g. public release of information).
- Design a computational approach to solve specific questions in bioinformatics
- Critically analyze primary scientific literature. This will entail reading and analyzing experimental methodology and results in the research paper and then summarizing the main findings to the class (or to the instructor).
- Communicate bioinformatic information to technical and non-technical audiences by writing a report or oral presentation, introducing a research project, describing the experimental methodology, and summarizing the main results and conclusions.

Prior Learning Assessment and Recognition (PLAR)

☒ Yes ☐ No, PLAR cannot be awarded for this course because

Typical Instructional Methods (*Guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion.*)

Lectures, laboratory exercises and reports, problem sets.

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Text(s) and Resource Materials (*If more space is required, download Supplemental Texts and Resource Materials form.*)

Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1. Pevsner	Bioinformatics and Functional Genomics	<input checked="" type="checkbox"/>	Wiley	2015
2.		<input type="checkbox"/>		
3.		<input type="checkbox"/>		
4.		<input type="checkbox"/>		
5.		<input type="checkbox"/>		

Required Additional Supplies and Materials (*Software, hardware, tools, specialized clothing, etc.*)

A computer lab will be required for part of this course.

Typical Evaluation Methods and Weighting

Final exam:	40%	Assignments:	15%	Field experience:	%	Portfolio:	%
Midterm exam:	20%	Project:	25%	Practicum:	%	Other:	%
Quizzes/tests:	%	Lab work:	%	Shop work:	%	Total:	100%

Details (if necessary):**Typical Course Content and Topics**

Database utilization
 Sequence alignments
 Gene annotation
 Comparative genomics
 Proteomics
 Using Analysis software
 RNA seq analysis
 Epigenetic analysis
 Student Presentations on topical research