ORIGINAL COURSE IMPLEMENTATION DATE: September 2020

REVISED COURSE IMPLEMENTATION DATE:

COURSE TO BE REVIEWED (six years after UEC approval)**:** January 2026

Course outline form version: 05/18/2018

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

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

Course Code and Number: BIO 333	**Number of Credits:** 3 Course credit policy (105)

Course Full Title: Bioinformatics I

Course Short Title:

(Transcripts only display 30 characters. Departments may recommend a short title if one is needed. If left blank, one will be assigned.)

Faculty: Faculty of Science	**Department (or program if no department):** Biology

Calendar Description:

An introduction to major concepts in bioinformatics. Students will use both classroom and computer-based methods to explore how genomic and proteomic data is obtained, assembled, and analyzed. Students will be introduced to software and databases used in bioinformatic analysis.

Prerequisites (or NONE):	BIO 220.
Corequisites (if applicable, or NONE):	
Pre/corequisites (if applicable, or NONE):	

Antirequisite Courses *(Cannot be taken for additional credit.)*

Former course code/number:

Cross-listed with:

Dual-listed with:

Equivalent course(s):

(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.)

Typical Structure of Instructional Hours

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**

Labs to be scheduled independent of lecture hours: ☐ No ☐ Yes

Special Topics *(Double-click on boxes to select.)*

This course is offered with different topics:

☒ No ☐ Yes *(If yes, topic will be recorded when offered.)*

Independent Study

If offered as an Independent Study course, this course may be repeated for further credit: *(If yes, topic will be recorded.)*

☒ No ☐ Yes, repeat(s) ☐ Yes, no limit

Transfer Credit

Transfer credit already exists: *(See **bctransferguide.ca**.)*

☒ No ☐ Yes

Submit outline for (re)articulation:

☒ No ☐ Yes *(If yes, fill in transfer credit form.)*

Grading System

☒ Letter Grades ☐ Credit/No Credit

Maximum enrolment (for information only): 24

Expected Frequency of Course Offerings:

annually *(Every semester, Fall only, annually, etc.)*

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 and compare current and historical biological databases.
- Create sequence alignments using bioinformatic software to compare genetic and proteomic structure for biological macromolecules.
- Examine the information contained within DNA sequences using bioinformatic software to identify the presence of important regions (such as gene and pseudogene regions).
- Analyze groups of sequences from different organisms and predict evolutionary relationships using statistical methods.

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.	Lesk	Introduction to Bioinformatics	☒	Oxford UP	
2.	Xiong	Essential Bioinformatics	☒	Cambridge	
3.			☐		
4.			☐		
5.			☐		

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:	45%	Assignments:	20%	Field experience:	%	Portfolio:	%
Midterm exam:	25%	Project:		Practicum:	%	Other:	%
Quizzes/tests:	10%	Lab work:		Shop work:	%	Total:	100%

Details (if necessary):

Typical Course Content and Topics

Database introduction

Sequence alignment

Gene annotation

Phylogenetics

Comparative genomics

Proteomics