UNIVERSITY OF THE FRASER VALLEY

ORIGINAL COURSE IMPLEMENTATION DATE: January 1997
REVISED COURSE IMPLEMENTATION DATE: September 2022
COURSE TO BE REVIEWED (six years after UEC approval)**:** January 2028
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 416	**Number of Credits:** 3 Course credit policy (105)

Course Full Title: Evolution
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 investigation of the mechanisms and processes of evolution that occur from the molecular to the species level and across a few generations to millennia. Evolutionary analysis will be applied to the study of the history of life, natural selection, sexual selection, speciation, life history characteristics, and contemporary topics such as human medicine and environmental issues.

Prerequisites (or NONE):	BIO 210, BIO 220, and one 300-level or above Biology course.
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	33
Tutorials/workshops	12
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: Gregory Schmaltz	**Date of meeting:**	October 1, 2021
Faculty Council approval	**Date of meeting:**	November 5, 2021
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	January 28, 2022

Learning Outcomes:

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

1. Explain the central role of evolutionary theory to all of biology.
2. Summarize the primary evolutionary processes that act at the molecular, organismal and species levels.
3. Apply the principles of population and quantitative genetics to address empirical and theoretical questions in evolutionary biology.
4. Interpret phylogenetic trees and use phylogenetic and other methods to infer the history of biological evolution with genetic and morphological data.
5. Apply evolutionary theory and concepts to empirical, theoretical and contemporary issues in evolutionary biology.
6. Lead and summarize discussions on evolutionary topics.
7. Investigate evolutionary questions using primary literature.

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.)*

A combination of lectures, case studies, small group research, student presentations and written assignments.

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.	Futuyma	Evolution	☒	Sinauer	2017
2.	Herron, Freeman	Evolutionary Analysis	☒	Pearson	2017
3.			☐		
4.			☐		
5.			☐		

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

Typical Evaluation Methods and Weighting

Final exam:	25%	Assignments:	15%	Field experience:	%	Portfolio:	%
Midterm exam:	15%	Term Paper:	25%	Practicum:	%	Seminar presentation:	10%
Quizzes/tests:	10%	Lab work:	%	Shop work:	%	Total:	100%

Details (if necessary):

Typical Course Content and Topics

History of evolutionary thought
Evidence for evolution
Phylogenetics
Mechanisms of evolution
Population genetics
Sexual reproduction
Evolution at multiple loci
Adaptation
Senescence and life history
Sexual selection
Speciation and macroevolution
History of life
Molecular evolution
Darwinian medicine
Evolution and the environment