COURSE OUTLINE
Molecular Evolution – 20433 – Biology 435 – A01 Second Term, Jan-Apr 2023

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Molecular Evolution – 20433 – Biology 435 – A01

Instructor:
Gregory Owens

Email: grego@uvic.ca
Office hours: Friday 1:00 to 2:00 pm in Cunningham 040.

When and where:
Lectures: Mondays and Thursdays, 11:30 am-12:50 pm
Cornett Building A229

Territory Acknowledgement: *We acknowledge and respect the lək̓ʷəŋən peoples on whose traditional territory the university stands, and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day.*

Course description:
Molecular evolution is an exciting and rapidly developing field of study that is especially concerned with a) understanding how and why DNA sequences and genomes change, and b) reconstructing the evolutionary history of genes, genomes, and organisms. This course will cover a broad array of current topics in molecular evolution, spanning population genetics, phylogenetics, and genomics. The first portion of the course will provide an introduction to molecular population genetics and phylogenetics. The second portion will survey current topics and recent primary literature. There will be one mid-term, one final exam, one student presentation, one paper critique, two short quizzes, and computer exercises using population genetic, phylogenetic, and bioinformatics software. Details on the assignments will be provided in the lectures.

Textbook:
There is no required text. There may be required readings consisting of journal articles (uploaded onto Brightspace).

Copyright Statement:
All course content and materials are made available by instructors for educational purposes and for the exclusive use of students registered in their class. The material is protected under copyright law, even if not marked with a ©. **Any further use or distribution of materials to others requires the written permission of the instructor, except under fair dealing or another exception in the Copyright Act.** Violations may result in disciplinary action under the Resolution of Non-Academic Misconduct Allegations policy (AC1300).
Students may not distribute lecture notes or any exams or quizzes from the course without permission of the instructor, and to do so, through note-sharing sites or other means, violates the Policy on Academic Integrity.
Biol 435 Spring 2022, Grade Distribution and Important Dates:

Midterm test (Mon. Feb. 13)	20%
Final (exam period, TBA)	25%
Check-in quiz (week of Jan. 30)	2.5%
Check-in quiz (week of Mar. 13)	2.5%
Group Presentation	25%
Feedback for group presentation	3%
Paper critique (Fri. Apr. 7)	10%
Computer exercises (due Feb. 6, Feb. 27, Mar. 13)	12%

To pass the course, students must:
1) Write the **Final Exam**
2) Complete the **Paper Critique**
3) Complete the **Group Presentation**
4) Score a grade of 50.0 points, or greater, for the entire course.

If any of 1 through 3 are not completed, the student will automatically fail the course and receive an "N" ('Incomplete') on their transcript. If a student successfully completes 1 through 3, but is not successful in 5, they will receive an "F" on their transcript.

Penalty for late submissions: 5% per day.

Exams:
The midterm and final exam will be online, and open book. This means that you are allowed to write the exam in your own location unsupervised. For the midterm, the regular lecture hall will be available for space. As an open book

exam, you are welcome to use your own notes, reference books or the internet. **You are not allowed to communicate with others or use AI software.**

Note these important dates:
Last day for 100% reduction of tuition fees for standard courses – Sun. Jan. 22
Last day for adding second term courses – Wed. Jan 25
Last day for 50% reduction of tuition fees for standard courses – Sun. Feb. 12
Last day for withdrawing from 2nd term courses without penalty of failure – Tues. Feb. 28

Holidays (no class):
Mon. Feb 20 – Reading Break
Thu. Feb. 23 – Reading Break

Medical documentation for short-term absences is not required. Attendance is important. Students who cannot attend due to illness are asked to notify their instructors immediately. If you miss (or know beforehand that you will be missing) a test because of illness, accident, family affliction, you are required to contact the appropriate instructor in a timely manner after the test (normally within seven calendar days).
Policies regarding undergraduate student academic concessions and deferrals are also detailed here: https://www.uvic.ca/registrar/students/appeals/acad-concession/index.php

Students are reminded that final exams in the Faculty of Science run from April 11 through April 26. Final exams will not be rescheduled for students who make travel plans that conflict with the officially scheduled final exam for this course.

The convention used for assigning letter grades is as follows:
A+ (90-100), A (85-89), A- (80-84), B+ (77-79), B (73-76), B- (70-72), C+ (65-69), C
(60-64), D (50-59), F (0-49)

Please be sure to consult the UVic calendar for more information on UVic policies and procedures:
https://www.uvic.ca/calendar/future/undergrad/index.php#/home

An important message from your instructor on academic integrity:

As a teacher, mentor, scientist, researcher, and member of the University of Victoria community, academic integrity is of the highest importance to me.

Students are required to abide by all academic regulations set as set out in the University calendar, including standards of academic integrity. Violations of academic integrity (e.g. cheating and plagiarism) are considered serious and may result in significant penalties.

It is absolutely essential that you understand and uphold academic integrity. To this end, I ask you to please read UVic's framework on academic integrity, which you can find here: https://www.uvic.ca/students/academics/academic-integrity/index.php

You can also find UVic's Policy on Academic Integrity in the UVic calendar: https://www.uvic.ca/calendar/undergrad/index.php#/policy/Sk_0xsM_V

To help avoid plagiarism and cheating, please read the UVic Libraries' plagiarism guide: https://www.uvic.ca/library/research/citation/plagiarism/

I reserve the right to use plagiarism detection software or other platforms to assess the integrity of student work.

Please see read UVic's Student code of conduct and standards for professional behaviour: https://www.uvic.ca/services/advising/advice-support/academic-units/student-codeof-conduct/index.php

BIOL 435 Tentative Lecture Schedule

Mon. Jan. 9	1. Introduction & genetic variation
Thu. Jan. 12	2. Population genetics: Genetic variation
Mon. Jan. 16	3. Population genetics: Genetic variation
Thu. Jan. 19	4. Population genetics: Mutation
Mon. Jan. 23	5. Population genetics: Selection
Thu. Jan. 26	6. Population genetics: Selection, Linkage
Mon. Jan. 30	7. Population genetics: Genetic drift
Thu. Feb. 2	8. Population genetics: Drift, Population structure
Mon. Feb. 6	9. Population genetics: Neutral theory
Thu. Feb. 9	10. Molecular genetics: Neutral theory
Mon. Feb. 13	**Midterm**
Thu. Feb. 16	11. Genome Sequencing
Feb. 20, 23	Reading Week
Mon. Feb. 27	12. Phylogenetics
Thu. Mar. 2	13. Tree of life
Mon. Mar. 6	14. Prokaryote genomes
Thu. Mar. 9	15. Eukaryote genomes
Mon. Mar. 13	16. Transposable and other selfish genetic elements
Thu. Mar. 16	17. Evolution of new genes and functions I
Mon. Mar. 20	18. Evolution of new genes and functions II: gene duplication
Thu. Mar. 23	19. Rapidly evolving genes and adaptation
Mon. Mar. 27	20. Sex chromosomes
Thu. Mar. 30	21. Mitochondria and small genomes
Mon. Apr. 3	22. Speciation
Thu. Apr. 6	23. TBA

Class recording: Due to the evolving Covid situation, please be aware that sessions in this course may be recorded to allow students who are not able to attend to watch later. The recording will be posted in Brightspace. Students who have privacy concerns can contact me and will have the option to limit their personal information shared in the recording. If you have other questions or concerns regarding class recording and privacy please contact privacyinfo@uvic.ca

Online conduct: The University of Victoria is committed to promoting critical academic discourse while providing a respectful and supportive learning environment. All members of the university community have the right to this

experience and the responsibility to help create such an environment. The University will not tolerate racism, sexualized violence, or any form of discrimination, bullying or harassment.

Please be advised that, by logging into UVic's learning systems or interacting with online resources, and course-related communication platforms, you are engaging in a university activity.

All interactions within this environment are subject to the university expectations and policies. Any concerns about student conduct may be reviewed and responded to in accordance with the appropriate university policy.
To report concerns about online student conduct: onlineconduct@uvic.ca

Mental health: A note to remind you to take care of yourself. Diminished mental health can interfere with optimal academic performance. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone. Here are some UVic web sites with links to many useful resources that are available to you: https://www.uvic.ca/student-wellness/index.php
https://onlineacademiccommunity.uvic.ca/LearnAnywhere/

Course Experience Survey (CES):
I value your feedback on this course. Towards the end of term you will have the opportunity to complete a confidential course experience survey (CES) regarding your learning experience. The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to http://ces.uvic.ca. You will need to use your UVic NetLink ID to access the survey, which can be done on your laptop, tablet or mobile device.