This syllabus is a general representation of the course as previously offered and is subject to change.

BIOL 336 – Fundamentals of Evolutionary Biology

General Course Syllabus (as of August 2022)

About the Course:

Course Description: Natural selection; population genetics, quantitative genetics and systematics; classical and molecular approaches to the study of evolution.

Course Format: Lectures and Tutorials
Credits: 3
Prerequisites: One of BIOL 233, BIOL 234

Course Learning Objectives:

- Appreciate the central position of evolution in life sciences and how it relates to your own life.
- Understand that all of life is related through common ancestry and that evolution is an ongoing process.
- Develop a solid basic understanding of how evolution works, from the origin and spread of genetic variation in populations, to the evolution of novel traits, new species and lineages, and the shape of the tree of life.
- Understand the methods, approaches and evidence that scientists use to understand evolutionary mechanisms and history.

Textbooks and Additional Resources:

- **Textbook (recommended):** *Evolution (4th edition) by Douglas Futuyma and Mark Kirkpatrick*
- **Canvas (required):** Course materials will be provided on-line using UBC's Canvas interface: canvas.ubc.ca.

Evaluation:

Assessment	Weight
Lecture quizzes	10%
Tutorials	25%
Tutorial final essay	10%
Midterm	20%
Final Exam	35%

Details on Assessments:

Lecture quizzes

- You will have quizzes related to the lecture material on Canvas to aid with your learning of the material. This will mostly focus on review of previous lectures (but could include a few questions about upcoming classes).
- You will not be penalized If you miss one quiz (your lowest quiz grade will be dropped).

Tutorials

- Tutorials are held weekly and are a mandatory and important part of the course.
- Tutorials complement and augment the material covered in lecture, and include readings, examples and problem sets that supplement what we cover in lectures.
- Your tutorial grade will be based on a variable combination of tutorial assignments and participation. Each week's tutorial is equally weighted (except for the final tutorial essay), and the lowest week's mark will be dropped.
- Absence from tutorial at the scheduled time does not excuse you from the tutorial exercises. Absences must be explained to your TA ahead of time, if known, so that other arrangements can be made or within three days following the tutorial, if unexpected, otherwise the tutorial assignment will be given a zero mark.

Final Tutorial Essay

Writing is a core skill for all scientists and a skill that we will focus on throughout this course, building writing fluency throughout the term in tutorials and assignments. For your final tutorial assignment, you will be asked write a short paper to demonstrate your ability to formulate and defend a thesis using evidence.

Midterm and Final Exams

Exams will be mixed format, with short and longer answer questions that may include solving problems and interpreting data. Exams can cover materials from lectures and tutorials.

The final exam will include questions related to lectures and tutorials not covered on the midterm, as well as a more comprehensive portion, meaning that questions can span two or more course sections or topics.

Students who legitimately miss the midterm may be required to sit a make-up assessment, at the discretion of the instructors. Otherwise, midterm marks will be re-assigned to the cumulative portion of the final exam. It is your responsibility to explain your absence from the midterm within three days of the missed exam.

Schedule of Topics:

Week	Lecture Topic	Tutorial
1	L01: Introductory Lecture: An overview of evolution L02: Introduction to population genetics (haploid selection)	No tutorial this week
2	L03: Introduction to population genetics, continued (diploids) L04: Selection in diploids	T01: Domesticating foxes
3	L05: Source of variation (mutation) L06: Role of chance: Random genetic drift	T02: Pop Gen Problem set #1
4	L07: Associations among alleles at different loci L08: Understanding phylogeny	T03: Pop Gen Problem set #2
5	L09: Why phylogeny matters L10: Tree of Life	T04: Reading scientific papers
6	L11: Gene trees and human genetic history	T05: Phylogenetics Problem set

	L12: Adaptation or not?	
7	L13: Cooperation, conflict & co-evolution L14: Sexual selection	T06: Human adaptation to high elevation
8	**Midterm** L15: Evolution of Sex	Review tutorial
9	L16: Quantitative traits L17: Spatial patterns of genetic variation	T07: Sexual selection in widowbirds
10	L18: Genetics of Adaptation L19: Species and species concepts	T08: Adaptive differentiation in a desert plant
11	L20: Reproductive isolating barriers between species L21: Speciation: rapid and slow births of species	T09: Human Genetic Diversity
12	L22: Macroevolution L23: Closing lecture	T10: Ecological speciation in yeast
	Final Exam: scheduled during the UBC exam period	

Course Policies:

Policy on Attendance, Absences, and Missed Work

For short absences, you are responsible for catching up with course material and arranging to submit assignments as soon as possible. Unless absences are documented in a timely fashion, late submissions will be subject to penalty or may not be accepted. Communicating with the instructors about absences or late assignments is your responsibility. Absences from exams, assignments, or tutorials must be explained if at all possible ***within three days of the missed exam or quiz***; after this time, a grade of zero may be assigned.

If you have an ongoing issue that is preventing you from keeping up with your work, please talk to your TA and/or coordinating instructor as soon as possible, so that resources can be identified to support successful course completion.

Academic Honesty and Integrity

It is academic misconduct to present the work of someone else as if it were your own, or to help another student cheat by giving them work to present as their own. Individual assignments and exams are to be your work alone, not copied from others. Submitting quizzes or assignments for someone else is academic misconduct.

University Policies:

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence.

UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom.

UBC provides appropriate accommodation for students with disabilities and for religious, spiritual and cultural observances.

UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on the UBC Senate website.