

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

BIOL 412 – Phytogeography

General Course Syllabus (as of September 2019)

About the Course:

Course Description: The course explores the processes that influence the distribution of plants across biomes, ecosystems, communities, and populations. Topics provide a description and interpretation of present and past floristic vegetational patterns, and an integration of evolutionary, ecological, and phytogeographical concepts. Terrestrial and aquatic plants are considered.

Course Format: Lecture

Credits: 3

Prerequisites: BIOL 121. Restricted to students of third and fourth years.

Course Learning Outcomes:

By the end of this course, students should be able to:

- Apply principles of biogeography to predict and explain general characteristics of a plant community at any random point on the globe.
- Design studies and critically evaluate data to explain biogeographic patterns (including use of statistical programming language R).
- Interpret, summarize and apply knowledge found in primary scientific literature to biogeographic questions.
- Effectively communicate biogeographic principles in writing and the spoken word.

Textbooks and Additional Resources:

Textbook (optional): Lomolino, MV, BR Riddle, RJ Whittaker. 2016. Biogeography (5th Ed.). Sinauer & Assoc.: Sunderland, Massachusetts. ISBN-13: 978-1605354729

*The 4th edition of this book is also an acceptable text for this class.

iClickers: students are responsible for obtaining and registering their iClicker. As an alternative to iClickers, REEF Polling may be enabled to allow participation on their smart phone, tablets and laptops. Students are encouraged to check costs and whether REEF polling works with their device.

Grading Scheme:

| Assessment | Weight |
|---|-------------|
| Journal discussion and preparation (Phyt Club) | |
| - Pre-class quiz | 4% |
| - Journal question and response | 5% |
| Rapid feedback – iClicker questions | 2% |
| Individual assignments | |
| - Skeletons in the closet | 5% |
| - Herbarium visit assignment | 4% |
| - Individual species evaluation | 10% |
| Collaboration – Term Project | 25% |
| Exams | |
| - Mid-term | 15%* |
| - Final exam | 30%* |
| Total | 100% |

*Note: If desired, students may choose how the value of Mid-term and Final Exams will contribute to their final grade. Students may choose a value within the ranges provided:

- Midterm: 10-20% of final grade.
- Final: 25-35% of final grade.

Students should make sure that the chosen values add up to a total grade value of 100% and that they inform the instructor of their choice by the specified deadline. No changes will be permitted after that date. Proposed values will be used for all students who do not specify otherwise.

DETAILS OF ASSESSMENTS:

Journal discussion and preparation: A critical skill for students' future careers will be the ability to understand, synthesize and discuss information related to their occupation. During the second half of most class meetings, students will discuss a peer-reviewed paper related to that day's lecture. These papers will range from classic papers in ecology to cutting edge research. The goal of these discussions will be to reinforce key concepts of phytogeography, discuss findings that are reported in the paper, the wider implications of the paper and answer questions students have about the paper.

Before lecture, students will be expected to read the paper that is assigned for the day. As an incentive to read the paper there will be a **pre-reading quiz** for that day's paper.

Students will be in groups of 4 or 5 for in-class discussions. Throughout the term, students will take turns leading their group's discussion. All students should come to class with a list of questions that will lead the group to think critically about the paper, and take turns speaking and listening to each other's ideas. Everyone will work together to clarify, extend, and challenge ideas in order to gain deeper knowledge of the subject. During the final 5 or 10 minutes of class the leaders from each group will share these

main points with the entire class. Students are also encouraged to utilize the course discussion board, before, during and after discussions to share further questions and findings across groups. In order to receive credit students must participate in discussions (both as a leader and as an active participant) and come prepared to the discussion with a typed list of question(s) that will be turned in at the conclusion of the day's meeting with a written response to the question they posed.

iClicker questions: iClickers will be used in class to encourage active involvement in lecture, and to give students a real-time opportunity to test their understanding of the material being presented.

Individual assignments: Assignments throughout the term would ask students to take part in a herbarium tour, conduct a data analysis on a phenological data set, and produce a species identification analysis and write-up in scientific paper format. Further details will be provided on the course website.

Term project: The term project is a collaborative project that will incorporate concepts introduced in class. The project will be carried out in groups of four or five. Details will be provided on the course website.

Term Project Evaluation:

| | |
|--------------------------------|------------|
| Research Proposal | 15% |
| Research Proposal Presentation | 10% |
| Final Report | 45% |
| Final Presentation | 15% |
| Peer Evaluation | 15% |
| <hr/> PROJECT TOTAL | <hr/> 100% |

Exams: There will be a Mid-term and a Final exam. The Final exam will be during the finals period (time, date & location to be announced later in the term). Questions will be on material from both lectures and discussion papers. The final will be comprehensive.

Schedule of Topics:

A sample tentative schedule from 2018W2 is below. It is likely that this schedule will be modified as the term progresses.

| Week | Lecture Topics | Due |
|-------------|---|--|
| 1 | Introduction to the course | |
| 2 | History of biogeography Climate | |
| 3 | Geography and geology Species distributions | Phenology project group formation Species selection |
| 4 | Species distributions Communities & ecosystems | Skeletons in closet |

| | | |
|----|--|--|
| 5 | Biomes Herbarium tour | |
| 6 | Diversification Present research proposal | Research proposals |
| 7 | Diversification Review for Mid-term | Individual species analysis |
| 8 | Mid-term Exam Dispersal | |
| 9 | Speciation Changing Earth | |
| 10 | Student presentations | Project final paper Final presentations |
| 11 | Changing Earth The Pleistocene | |
| 12 | The Pleistocene Island Biogeography | |
| 13 | Island Biogeography Review for Final | |
| | Final Exam | |

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](#).