

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

BIOL 209 – Biodiversity of Algae, Fungi and Bryophytes

General Course Syllabus (as of August 2019)

About the Course:

Course Description: A course on the diversity, ecology, cell biology and evolutionary origins of multicellular eukaryotes, illustrated through mosses and liverworts; fungi and slime molds; and fresh water and marine algae.

Course Format: Lecture and Laboratory

Credits: 4

Prerequisites: One of: BIOL 121, SCIE 001. (Or 8 transfer credits of first-year biology.)

Course Learning Objectives:

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

- Apply the taxonomic ranks and conventions to the hierarchical classification of fungi and plants.
- Interpret a phylogeny tree to map where ancestral characters evolved, and provide biological explanation for nodes and internodes.
- Specify the processes and character changes that take place in the life cycle and reproductive phases of algae, fungi, and bryophytes.
- Explain the importance of algae, fungi, and bryophyte life cycle to ecosystem interactions such as diseases, anti-fungal drugs, or species conservation.
- Given a diagram, label and explain the cellular structures and functions, and predict the impact of environmental factors to their form (e.g. habitat, ecology).
- Diagram the correct number of chromosomes and mating type alleles at each life cycle stage.
- Analyze and record key features of microscopic structures by using a microscope and making biological sketches.
- Locate, observe, and identify fungi, algae, and bryophyte specimens in the field.

Textbooks and Additional Resources:

Textbook: Raven Biology of Plants, by Evert, Eichhorn and Raven 8th ed.; 7th ed. Biology of Plants will be OK.

UBC Canvas: Students will find all course resources either on the course Canvas site or linked from it.

Evaluation:

Assessment	Weight	Notes
Lecture	50%	Breakdown: 10% Fungi Lecture midterm 10% Algal Lecture midterm 2% Interpret research papers 2% PRS clicker questions 26% Comprehensive Lecture final
Lab	50%	Breakdown: 10% Lab quizzes/projects/assignments 20% Lab midterm 20% Lab final

In this integrated lab/lecture course, all exams will draw on both lecture and laboratory material. **To pass this course, a student must pass the laboratory portion of the course;** a passing grade in lecture will not compensate for a failing laboratory grade.

Schedule of Topics:

Below are examples from 2018W1. Please note the content and order of topics may differ a little bit every year.

Lecture Schedule:

Week	Lecture Topic
1	Introduction to the course and its instructors Amoebae in tubes: Introduction to fungal cell structure
2	How fungal cells take up nutrients Classification & intro to Basidiomycota cells, cycles and criteria for reproductive success Basidiomycota and the chromosomal genetics of mating.
3	Ascomycota: Yeasts, molds, and problems in identification. Ascomycota: Environmental deterioration and start of sex. Ascomycota: Sexual development and the burden of haploid motherhood.
4	Ascomycota: Shooting ascospores and other forms of dispersal. Intro to Mucoromycota Mucoromycota and human disease; Chytridiomycota Fungus project due
5	Fungal Phylogeny Lecture exam: Fungi ALGAE: Introduction and Origin
6	Research Paper #1 Assignment due. Submit online via Canvas ALGAE: Origin (continued) and Roles of Algae in Global Ecosystem ALGAE: Reproduction
7	ALGAE: Oomycota (Intro) and Phaeophyceae (1)

	ALGAE: Phaeophyceae (2); Mariculture & Algal Products ALGAE: Mariculture; Current Methods of Species Identification
8	ALGAE: Bacillariophyceae & Rhodophyta Research Paper #2 Assignment due ALGAE: Rhodophyta & Dinophyta ALGAE: Chlorophyta (1)
9	ALGAE: Chlorophyta (2) & The Big Picture: Review <i>Mary Berbee</i> fungus like protists, oomycetes Liverworts: Marchantiophyta: how to recognize a leafy liverwort. Algal project due
10	Algae Lecture Exam Liverworts: Leafies, sexual reproduction, elating liverwort experiences Liverworts: Bring out the band shaped thalli
11	Bryophyta: Mosses Research Paper #3 Assignment due 11:00pm. Submit online via Canvas. Moss Diversity
12	<i>Sphagnum</i> and chemical warfare in the bog Opportunities in Biology Heterotrophic protists, slime molds, Myxomycota. Bryophyte projects due
13	Heterotrophic protists, slime molds, Dictyosteliomycota Constructing phylogenies Constructing phylogenies and evolution through geological time

Lab Schedule (example from 2018W1, subject to change):

Lab	Lab Topic
1	Microscopy
2	Basidiomycota
3	Ascomycota I
4	Ascomycota II
5	Mycorrhizal Fungi
6	Oomycetes, Phaeophyceae & Bacillariophyceae
7	Rhodophyceae & Dinophyta
8	Chlorophyta, Zygnematales & Charales
9	Marchantiophyta
10	Bryophyta & Anthophyta Myxomycota & Dictyosteliomycota

Course Policies:

- A make-up lecture examination will be scheduled for those who miss a lecture midterm exam for a valid and documented reason. Make up laboratory exam questions will be offered at the time of the laboratory final for students who miss a lab midterm for a valid and documented reason.

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](#).