

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

BIOL 321 – Structure and Evolution of the Bryophytes

General Course Syllabus (as of January 2020)

About the Course:

Course Description: This course is a study of evolution, taxonomy and morphology of mosses, liverworts and hornworts with emphasis on living plants in their environment.

Course Format: Lecture and Laboratory

Credits: 3

Pre-requisites: BIOL 121

Course Learning Objectives:

To spark interest and appreciation for the miniature world of bryophytes.

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

- Identify the main groups of bryophytes and explain how their biology is similar and different from other embryophytes.
- Identify local species of bryophytes (accomplished through lab work and field trips).
- Evaluate the ecological importance of bryophytes and their role in a global health and sustainability.
- Evaluate the evolutionary relationships among the bryophytes and between them and the rest of the embryophytes.
- Compare the different adaptive strategies of bryophytes with tracheophytes.
- Evaluate the different uses of bryophytes (research and economic).
- Critically evaluate current and past research and literature.
- Develop microscopy and observational skills.
- Gain practical experience through self-directed projects (in the lab and field).
- Understand and make connections within and between biological systems.

Textbooks and Additional Resources:

FEES AND GUIDES:

- **Course Fee:** \$30.00 - includes Lab Manual, Moss Keying Guide (Schofield, 1992), small notebook, hand lens, downloadable liverwort key (Wagner, 2020), and photocopies.
 - (included): **Moss Keying Guide:** Some Common Mosses of British Columbia, 1992, Dr. W. B. Schofield.
- **Recommended:** Field Guide to Liverwort Genera of Pacific North America, Dr. W. B. Schofield (copies available for loan)

- **Paper:** Shaw, J. et.al. 2011 (Library Online Course Reserves)

REQUIRED SUPPLIES:

- Hand lens and notebook for field notes (included in course fee)
- One shoe box (for collections)
- Paper for "bryophyte packets" (recycled is just fine!)
- Paper lunch bags for collecting
- Scraper for collecting mosses firmly stuck to substrate
- **iCLICKERS (Required):** iClickers will be used to engage students in thinking, peer discussion, and providing feedback. Students are responsible for registering your iClicker on the Canvas website.
 - Students can visit the bookstore or Chapman Learning Commons to get the ID number if it has worn off. Remember, cheating of any kind will not be tolerated and that includes the dishonest use of iClicker (e.g., entering responses for an absent classmate) and copying another's work. If students are caught using more than one clicker at a time they will all be confiscated and turned into the Biology Office.

COURSE WEBSITE:

- **Public site:** <http://blogs.ubc.ca/biology321>
- **Canvas:** www.canvas.ubc.ca (login with CWL). Students are responsible for checking the Canvas site frequently. Canvas is used for posting the course schedule, project descriptions, announcements, lecture slides after class, pre-readings, exam preparation, registering clickers, grades, and more. **Note:** Check the schedule for location of classes as there are quite a few field trips.
- **Piazza (Optional):** Piazza is a discussion forum where students can ask questions related to BIOL 321 that can be seen and answered by their peers. It will be periodically monitored by the teaching team. The link is on BIOL 321 Canvas.

OTHER REFERENCE BOOKS:

- ***Introduction to Bryology***, Dr. W. B. Schofield - A number of copies will be available as this used to be the course textbook. While parts are outdated it is a very useful reference.
- ***How to Know the Mosses and Liverworts, Conrad and Redfearn*** - There will be a couple of copies available in lab. There is a copy in Woodward Library and in the Vancouver Public Library (main branch) - mainly used for liverwort identification.
- ***Plants of Coastal British Columbia***, Pojar and MacKinnon - Many students probably have this wonderful field guide. There are a few copies available in lab. Most libraries carry it... worth buying for your botanical pursuits.
- ***Moss Flora of the Pacific Northwest***, Eva Lawton - There is one copy in the lab and a few copies available in Woodward Library.

Evaluation:

Assessment	Weight
Lab Quizzes	3%
Assignments	3%
Wikipedia Assignments	2%
3-minute Short	marked for completion
Clickers/Participation	2%
Lecture Midterm	10%
Collection	10%
Presentation	5%
Wikipedia Project	15%
Final Lab Exam	25%
Final Lecture Exam	25%

Schedule of Topics:

The course schedule is tentative and will be adjusted depending on guest speakers, added field trips, and timing issues.

Week	Lecture Topic	Lab Topic
1	Unit 1: Introduction; Bryophyte Jumpstart	Lab 1: Introductory Lab Fieldtrip to Pacific Spirit Park
2	Unit 2: Asexual Reproduction in Bryophytes	Lab 2: Tissue Culture Exercise
3	Introduction to Mosses Unit 3: Arthrodontous Mosses	Lab 3: Bryopsida
4	Unit 4: Nematodontous Mosses	Lab 3: Bryopsida (Quiz 1) Lab 4A: Tetrarhizopsida Lab 4B: Polytrichopsida
5	Unit 4: Nematodontous Mosses (continued) Unit 5: Toothless Mosses - Andreaeopsida and Takakiopsida; Sphagnopsida	Lab 4B: Polytrichopsida (continued) Keying Practice, Bryos to Know Lab 5A: Andreaeopsida/ Andreaeobryopsida Lab 5B: Takakiopsida (Quiz 2)
6	Midterm Unit 5: Toothless Mosses - Sphagnopsida, Bog Ecology	Midterm Stage 2
7	Bog Field Study - Camosun Bog	
8	Unit 5C: Sphagnopsida Unit 6: Liverworts Fieldtrip	

	Camosun Bog Collection Processing	
9	Field study Lab 6: Jungermanniopsida	
10	Unit 6: Class Jungermanniopsida Unit 7: Class Marchantiopsida	Lab 6: Jungermanniopsida Lab 7: Marchantiopsida
11	Unit 7: Class Marchantiopsida Unit 8: Hornworts	Lab 7: Marchantiopsida (Quiz 3) Beaty Visit
12	Unit 8 – Hornworts: Lecture, Lab Lab Exam	
13	Class presentations – with BIOL 406 class	Course Grand Finale

Note: Students are required to attend one field trip outside of class time (choice of dates will be provided). There will be a number of optional weekend fieldtrips to be posted on the course website.

Course Policies:

Students are asked to keep in mind the BIOL 321 policy and UBC copyright laws, and to not distribute course material in any way. It is illegal for anyone to post or distribute any course materials (e.g. exam questions, written assignments) on other websites or to other groups. Only students registered in Biology 321 have legal access to the course materials.

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](#).