Fall 9-1-2021

BIOO 320.01: General Botany

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General Botany
BIOO 320
Autumn Semester 2021

Overview: This course will survey the major evolutionary lineages of plants, emphasizing their diversity of forms, reproductive and dispersal strategies, and ecological life strategies. The course will use a combination of lectures and laboratories to convey information, and questions and conversations about the plants are welcome. Most class meetings will consist of a lecture of 70-90 minutes and an examination of plant materials. Grades will be based on writing assignments and an oral presentation. Feel free to ask questions and engage in the class as a dialogue.

The course learning objectives are to develop your understanding of the following:

- The basic attributes of plants and how plants differ from other forms of organismal life.
- The evolutionary diversification of plants and relationships among the main lineages.
- The timing of plant diversification and the role of fossils in reconstructing evolutionary history.
- How plant diversity is manifest in terms of body forms, reproductive attributes, functional specializations, and life cycles.
- How ecological limitations and opportunities influence different plant groups.

By the end of this course you should be capable of speaking and writing cogently and thoughtfully about each of these objectives using your understanding of factual information and examples.

Room and time: Health Science 102**;** 1.00-4.20 pm each Wednesday and Friday, except holidays (see schedule below).

Instructor: Larry Hufford (he/him)
Email: larry.hufford@umontana.edu
Office: Natural Science Annex 102; Office hours: Thursday 3-4 pm, Friday 11-12 am, or by appointment

Teaching assistant: Colette Berg (she/her)
Office: ISB 323C; Office hours: Wednesday 9AM - 12PM or by appointment

Recommended text: *Raven Biology of Plants*, Evert and Eichhorn, Macmillan, or any edition of *Biology of Plants*, Raven, Evert and Eichhorn, W.H. Freeman. The text is recommended to provide basic descriptions as well as excellent photographs and illustrations of the plants and structures we will discuss. Most plant biology texts can serve this purpose, and we would be glad to consult with you on other texts that you may have available.

Caveats: Everything in this syllabus is subject to change. We may spend more or less time on some lecture topics in ways that will shift the exact dates on which topics are presented. Dates of the question challenges will not change without consultation with students in the course.

Date	Lecture Topics	Laboratory Topics
Wednesday, 1 September	Course introduction; plantness and nonplants	No lab
Friday, 3 September	Autotrophy and evolution of photosynthesis	Cyanobacteria
Wednesday, 8 September	Diversity of photosynthetic organisms and idea of algae	Non-green algae
Friday, 10 September	Chlorophytes	Green algae
Wednesday, 15 September	Streptophytes	Algal streptophytes
Friday, 17 September	Transition to land plants, the embryophytes	Question challenge (Due 22 September)
Wednesday, 22 September	Hepatophytes and anthocerophytes	Liverworts and hornworts
Friday, 24 September	Bryophytes	Mosses
Wednesday, 29 September	Conducting cells and the movement of water and photosynthates	Conducting cells
Friday, 1 October	Polysporangiophytes	Question challenge (Due 6 October)
Wednesday, 6 October	Lycophytes	Lycopodium and Selaginella
Friday, 8 October	Early forests	Lepidodendroids and Isoetes
Wednesday, 13 October	Leaves	Structure and diversity of leaves
Friday, 15 October	Monilophytes-psilophytes	Psilophytes (whisk ferns)
Wednesday, 20 October	Monilophytes-arthrophytes	Arthrophytes (horsetails)
Friday, 22 October	Monilophytes-eusporangiate ferns	Question challenge (Due 27 October)
Wednesday, 27 October	Monilophytes- leptosporangiate ferns	Ferns
Friday, 29 October	Monilophytes-heterosporous ferns	Aquatic ferns
Wednesday, 3 November	Spermatophytes and their reproductive novelties	Question challenge (Due 10 November)
Friday, 5 November	Cycadophytes and ginkgophytes	Cycads and *Ginkgo*
Wednesday, 10 November	Coniferophytes	Conifers
Friday, 12 November	Gnetophytes	Gnetophytes
Wednesday, 17 November	Anthophytes and flowers	Flowers
Friday, 19 November	Pollination processes and flowering plant diversity	Question challenge (Due 24 November)
Wednesday, 24 November	No class	
Friday, 26 November	No class	
Wednesday, 1 December	Anthophyte dispersal: fruits and seeds	Fruits and seeds
Friday, 3 December	Beyond photosynthesis: mycotrophic, parasitic, and carnivorous plants	Mycotrophic, parasitic, and carnivorous plants
Wednesday, 8 December	Alternative lifestyles: aquatic, epiphytic, and succulent plants	Aquatic, epiphytic, and succulent plants
Friday, 10 December	Diversity of Montana plants	Question challenge (Due 14 December)

Grades
Grades for this course will be determined by performance on question challenges and a plant report.

For each question challenge, I will pose one or a few questions that will require a brief essay to answer.

The question challenges will be take-home assignments. For each question challenge, you must prepare an essay that answers the question(s) posed. The essay must be no longer than one side of an 8 ½ x 11 inch sheet of paper and printed at a reasonable font size (10-12 point). The essay must be turned-in on the indicated date to obtain full credit.

Each question challenge has a maximal value of 10 points. Grades on each question challenge will be assigned as either 10 points for meeting expectations, 5 points for partially meeting expectations, or 0 points for failing to sufficiently address the expectations of the question challenge. If you earn 0 or 5 points on an assignment, you may substantially revise your essay within one week of its due date for regrading. You may submit only one revision per question challenge.

Your plant report will be an oral presentations of approximately five minutes that will describe a plant or group of plants. Ideally, you will select a plant or group of plants with which you have personal experience or some special curiousity. The report should not only describe attributes of the plant but also explain your experience with or curiosity about the plant. I would like for us to understand how/why the plant is meaningful to you.

Your plant report will have a maximal value of 10 points. We will be randomly select dates for the plant reports, with one or two students presenting each week of the semester, beginning the third week.

A total of 70 points are available in the course. The point expectations to meet different grades are shown in the table below.

Points required for different letter grades		
Letter grade	**Percentage of points required**	**Points required**
A	>93%	>65
A-	90-93%	63-65
B+	87-89%	61-62
B	84-86%	59-60
B-	80-83%	56-58
C+	77-79%	54-55
C	74-76%	52-53
C-	70-73%	49-51
D+	67-69%	47-48
D	64-66%	45-46
D-	60-63%	42-44
F	<60%	<42

Attendance
"Students are expected to attend all class meetings and complete all assignments for courses in which they are enrolled. Instructors may excuse brief and occasional absences for reasons of illness, injury, family emergency, religious observance or participation in a University sponsored activity.... Instructors shall excuse absences for reasons of military service or mandatory public service."

"Cultural or ceremonial leave allows excused absences for cultural, religious, and ceremonial purposes to meet the student's customs and traditions or to participate in related activities."
http://www.umt.edu/catalog/acad/acadpolicy.

Please attend all classes unless you are feeling ill. If you are feeling ill, then please do not come to class.

University guidelines relevant to Covid-19 mitigation:

- Mask use is required in the classroom.
- If you feel sick and/or are exhibiting COVID-19 symptoms, please do not come to class and please do contact the Curry Health Center at (406) 243-4330.
- If you are required to isolate or quarantine, you will receive support in the class to ensure continued academic progress. Please contact me as soon as possible to arrange for access to materials.
- UM recommends students get the COVID-19 vaccine. Please direct your questions or concerns about vaccines to Curry Health Center.
- Maintain social distancing of at least 6 feet between individuals if possible.
- Class attendance will be recorded and seat assignments will be made to support contact tracing efforts.
- Drinking liquids and eating food is discouraged in the classroom.

Student Conduct Code
"Being a student at UM presupposes a commitment to the principles and policies embodied in the Code."
http://life.umt.edu/vpsa/student_conduct.php.

Learning disabilities accommodation:
"The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity (ODE). If you anticipate or experience barriers based on disability, please contact the ODE at: (406) 243-2243, ode@umontana.edu, or visit www.umt.edu/disability for more information. Retroactive accommodation requests will not be honored, so please, do not delay. As your instructor, I will work with you and the ODE to implement an effective accommodation, and you are welcome to contact me privately if you wish."