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Spring 2-1-2019

BIOO 335.00: Rocky Mountain Flora

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Instructor

Dr. Lila Fishman (www.fishmanlab.org)

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Office: Interdisciplinary Science Building (ISB) 319

Office hours: Tues/Thurs 11:30 -1:00 or by appt.

Teaching Assistants (for labs): *office hours and contact info TBA in lab*

Robert Niese (robert.niese@umontana.edu)

Colette Berg (colette.berg@umontana.edu)

Laurel Genzoli (laurel.genzoli@umontana.edu)

Course Objectives and Learning Outcomes

Welcome to the fascinating world of plant diversity! This course introduces basic concepts in plant systematics (plus ecology and evolution), with focus on the vascular plants of Montana.

- *Learn general skills of plant identification and classification*
- *Recognize important plant families and genera of the region*
- *Understand the origins and functions of plant diversity in Montana*

Course format

The lecture and lab components of this course are highly integrated, and you will receive a single composite grade. The Lectures provides a **systematic** overview of families and genera, as well as the conceptual framework and terminology necessary for identifying and studying land plants. The lab is structured to reinforce the lecture material and to exercise hands-on plant ID skills, including keying to the species level.

Lecture: MW 11:00-11:50 in McGill 210

Labs: Thursdays/Fridays in NS202.

- **Thursday Labs: 10:00-11:50 (02, Robert), 1:00-2:50 (03, Laurel), 3:00-4:50 (04, Laurel)**
- **Friday Labs: 9:00-10:50 (05, Colette), 12:00-1:50 (06, Colette)**

More detail on lab assignments and grading will be provided in the labs.

Note: Your lab notebook will be graded, so plan on keeping *separate* notebooks for Lecture and Lab (or use a 3-ring binder for everything and separate the lab material at the end of the semester).

Course materials

Texts and equipment (available in bookstore)

Required: Lesica, P. Manual of Montana Vascular Plants (please bring to *every* lab after first week)

Optional: Plant dissection tools kit (this can be useful in lab)

Optional: Illustrated field guide such as Plants of the Rocky Mountains, guides to family-level identification (e.g. Botany in a Day), and online guides such as Montana Plant-Life may be used as resources for field ID. However, they are not always suitable for species-level identification and taxonomies vary, *so use the Lesica text and the provided lecture/lab materials as your final authority.*

Moodle Course Supplement

All materials (handouts, PowerPoint presentations, etc.) will be posted on the course Moodle page. Please contact me if you have trouble accessing materials for this course via Moodle (but see UMOonline for general Moodle issues!) Each lab will also have a Moodle page as well. **Note:** *The online materials are intended as a supplement to in-class note-taking, not as a substitute for attendance. You are expected to attend all lectures and labs.*

Assessment

Course grades will be based on 2 in-class exams, a final exam, and the lab.

Points per assignment

Exam 1	100 points (20%)
Exam 2	100 points (20%)
Final Exam	150 points (30%)
<u>Lab</u>	<u>150 points (30%)</u>
Total	500 points

Grades

A-, A = 90-100%
B-, B, B+ = 80-89%
C-, C, C+ = 70-79%
D-, D, D+ = 60-69%
F = <60

Note: percentages corresponding to letter grades are guidelines, but any curving will be in favor of students (i.e., a score 80% = B- or better). We generally DO NOT have to curve the course.

Late/missed exams

If you must miss an exam due to a schedule conflict with an *approved* activity (e.g., participation in a UM-team sporting event), please notify me at least a week prior to the exam so that an alternative exam and time can be arranged. If you miss an exam due to an unplanned event (e.g., illness, car accident) you must contact me via email *as soon as physically possible* (i.e., within a day). Make-up exams may be possible, with appropriate justification. Your TA is your contact person for making up missed labs and will provide his/her policies regarding lab assignments during the first weeks of lab.

Extra credit

Students can earn extra credit points (up to 5 points, for one observation) for sharing plant-related observations and/or questions at the beginning of lecture in weeks 2-13. Please post a photo or note to the Extra Credit link on Moodle by 9:00 am pre-lecture, so that I have a record of your points and can add any images in the day's slides. You must be present in class to earn points. This is the only extra credit opportunity, so please take advantage of it prior to the end of the course.

General policies

Students with disabilities

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and [Disability Services for Students \(DSS\)](#). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with DSS, please contact DSS. We are happy to work with you and DSS to provide appropriate accommodations for your learning and assessment; please make any requests for accommodation as early during the semester as possible.

Academic Misconduct

Although you may work collaboratively during the labs, any work submitted for grading must be exclusively your own. Cheating on exams or quizzes is, of course, a violation of the Student Conduct Code. Cheating includes permitting another student to copy your work during an exam. Furthermore, copying another student's specimen labels or mounting specimens you did not collect or ID yourself is as much cheating as copying exam or quiz answers. In addition, you may not turn in work from another course (*including, for example, a plant collection from a previous offering of this course*) for credit in this course. Students found to violate the Academic Conduct Code will receive a failing grade for the course, and will also be fully subject to University sanctions. For more information on UM policies on misconduct, see the [Student Conduct Code](#).

Adds, drops, and changes of grading

University policies are described in the [course catalog](#). For general information on the semester schedule, see UM's [dates and deadlines](#) document. We will follow [University policies](#) (<http://www.umt.edu/registrar/students/dropadd.php>) on drops, adds, changes of grading basis, etc. in this course. After the 15th day of instruction, status changes are not automatic through Cyberbear. I will generally approve changes in grading status until the week after Exam 1 grades are posted; later changes to grading status (e.g., a switch to CR/NC) will require substantial justification of extenuating circumstances.

How to succeed in this course

Be present!

You will get the most out of this course by committing to attend all of the lectures and labs. There is a TON of new terminology, and we USE that terminology in identifying plants. Therefore, it is important to keep up with the material weekly rather than trying to assimilate it all at once before each exam.

Ask questions!

Questions during the lecture and lab are always encouraged. Please talk to me or your TA as soon as you need help with any material, or if you just have questions about plants. Different study strategies are most effective for different topics (and learning types); take advantage of our accumulated experience rather than going it alone. My office hours and open lab times later in the semester are reserved for students. If you cannot attend scheduled office hours, please contact me via email (lila.fishman@mso.umt.edu) to arrange an individual meeting time.

Look closely at the world around you!

The point of this class is to give you the tools to identify and understand the abundant and diverse plant life around you, so practice looking at plants systematically whenever you can.

BI00 335 Topic Schedule - Spring 2019 (* = lab quiz week)

Week	Date	Lecture topics	Lab topics
	Jan.10	No class or lab this week	<i>Listed pages are in Lesica key</i>
1	Jan. 14	1. Course Intro	Lab intro
	Jan. 16	2. Plant Systematics & Taxonomy	<i>handouts</i>
2	Jan. 21	MLK Jr. Holiday - no class	Non-seed plants
	Jan. 23	3. Non-seed plants (mosses, ferns)	<i>Handouts, p. 52-72</i>
3	Jan. 28	4. Conifers	Conifers, walk & keying
	Jan. 30	5. Conifers 2	<i>Handouts, p. 73-81</i>
4*	Feb. 4	6. Angiosperms – vegetative terms	Flowers - Ranunculaceae
	Feb. 6	7. Ranunculaceae and Floral terms	<i>handouts, p. 81-102</i>
5	Feb. 11	8. Caryophyllaceae +	Caryophyllaceae, <i>Opuntia</i> , etc.
	Feb. 13	9. Rosaceae	<i>p. 111-164</i>
6*	Feb. 18	Presidents' Day Holiday - no class	Rosaceae, Saxifragaceae, <i>Ribes</i>
	Feb. 20	10. More Rosids	<i>p. 243-289</i>
7	Feb. 25	EXAM 1 (Lectures 1-9)	Salicaceae, Betulaceae, <i>Acer</i>
	Feb. 27	11. Rosidae trees	<i>p. 181-185, 108-110, 351</i>
8	Mar. 4	12. Brassicaceae, Onagraceae, Fabaceae	Rosidae herbs
	Mar. 6	13. Reproductive diversity	<i>p. 186-224, 290-340,</i>
9*	Mar. 11	14. Asteridae shrubs (guest)	Asteridae shrubs
	Mar. 13	15. Special topic (guest)	<i>p. 225-236, 341, 473-476, 243</i>
10	Mar. 18	16. Asteridae II	Solanaceae, Lamiaceae, Boraginaceae
	Mar. 20	17. More Asteridae	<i>p. 341-395, 403-426, 459-462, 237</i>
		SPRING BREAK	

Week	Date	Lecture topics	Lab topics
11	Apr. 1 Apr. 3	18. Asteraceae, Apiaceae, etc. EXAM 2 (Lectures 10-17)	Asteraceae, Apiaceae, <i>Phlox</i> etc. <i>p. 472-580</i>
12*	Apr. 8 Apr. 10	19. Intro to monocots - Liliaceae 20. Orchidaceae and <i>Iris</i>	Liliaceae, Orchidaceae, <i>Iris</i> <i>p.717-742</i>
13	Apr. 15 Apr. 17	21. Poaceae (Grasses) 22. Domestication	Poaceae, Collection prep <i>p. 645-715, handouts</i>
14*	Apr. 22 Apr. 23	23. Rushes and sedges 24. Review	Cyperaceae, Juncaceae, Lab final <i>p. 593-644, handouts</i>
	May 2	FINAL EXAM 10:10-12:00	Plant collection due at final exam

BIOO 335: PLANTS-TO-KNOW LIST (Spring 2019)

Families (-aceae suffix) in **bold** and all listed genera (***bold italics***) are “plants-to-know”. (

NON-VASCULAR PLANTS

Recognize mosses vs. other plants

FERNS AND THEIR ALLIES

Equisetaceae

Polypodiaceae

Lycopodiaceae

GYMNOSPERMS (CONIFERS)

Pinaceae

Abies, Larix, Picea, Pinus, Tsuga

Pseudotsuga

Cupressaceae

Juniperus, Thuja

Taxaceae

Taxus

ANGIOSPERMS (FLOWERING PLANTS) /

BASAL FAMILIES

Nymphaeaceae

EUDICOTS

BASAL EUDICOTS

Ranunculaceae

Delphinium, Ranunculus,

Aquilegia

Berberis/Mahonia (Berberidaceae)

CARYOPHYLLIDAE

Caryophyllaceae

Silene

Polygonaceae

Eriogonum

Opuntia (Cactaceae)

Lewisia (Portulacaceae)

Chenopodium (Amaranthaceae)

ROSIDAE

Saxifragaceae

Lithophragma

Onagraceae

Chamerion/Epilobium

Brassicaceae

Sisymbrium

Fabaceae

Lupinus, Vicia

Rosaceae

Amelanchier, Prunus, Rosa,

Potentilla

Salicaceae

Salix, Populus

Betulaceae

Betula, Alnus

Acer (Aceraceae)

Ribes (Grossulariaceae)

Viola (Violaceae)

ASTERIDAE

Ericaceae

Arctostaphylos, Vaccinium

Solanaceae

Solanum

Boraginaceae

Myosotis

“Scrophulariaceae” (now 3+ families)

Castilleja, Mimulus, Penstemon

Lamiaceae

Agastache

Caprifoliaceae

Linnaea, Symphoricarpos

Apiaceae

Lomatium

Asteraceae

Artemisia, Balsamorhiza,

Centaurea

Cornus (Cornaceae)

Philadelphus (Hydrangaceae)

Dodecatheon (Primulaceae)

Phlox (Polemoniaceae)

MONOCOTS

PETALLOID MONOCOTS

Liliaceae

Erythronium, Fritillaria

Orchidaceae

Calypso %

Iris (Iridaceae) (

GRASSLIKE MONOCOTS %

Poaceae

Agropyron, Festuca

Cyperaceae

Carex

Juncaceae

Juncus