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BIOO 335.00: Rocky Mountain Flora

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BIOO 335: Rocky Mountain Flora

Spring 2015

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

Course Objectives

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

Instructor: Prof. Lila Fishman

Email: lila.fishman@mso.umt.edu

Phone: 243-5166

Office: 309A Health Sciences Bldg.

Office Hours: T/Th 12:00-1:00 in HS309A, plus open lab times TBA

Teaching Assistants (in charge of labs): office hours and contact info TBA in lab

Ryan Hegstad (ryan1.hegstad@umontana.edu)

Jacob Lucero (jacob.lucero@umontana.edu)

Robert Niese (robert.niese@umontana.edu)

Lectures: MW 11:10-12:00 in McGill Hall 210

- **Texts and equipment (*available in bookstore*)**
- *Required:* Lesica, P. Manual of Montana Vascular Plants (bring to every lab)
- *Optional:* Plant dissection tools kit
- *Optional:* Illustrated field guide such as Plants of the Rocky Mountains. However, field guides are NOT a substitute for the Lesica text, as they are not suitable for species-level plant ID here. Botany in a Day is a good guide to family-level identification. There are also many useful online guides to both terminology and taxa, such as those at Learn Plants Now and Montana Plant-Life. However, please use these resources for images and supplementary information only. Taxonomies and definitions vary (and the internet is full of mis-information), so use the text and lecture/lab materials that we provide as your final authority (or ask!!).

Labs: Thursdays 10:10-12:00, 1:10-3:00, 3:10-5:00, Fridays 9:10-11:00, 12:10-2:00 NS 202.

Laboratory content and grading will be explained during the 1st lab session. We will go outside some days, so please wear appropriate footwear/outerwear. Please bring your Lesica text and dissecting kit (if you have one) every session. 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 materials at the end of the semester for grading).

Moodle Course Supplement

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

Course Policies

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

<u>Points per assignment</u>		<u>Grades</u>
Exam 1	100 points (20%)	A-, A = 90-100%
Exam 2	100 points (20%)	B-, B, B+ = 80-89%
Final Exam	150 points (30%)	C-, C, C+ = 70-79%
Lab	150 points (30%)	D-, D, D+ = 60-69%
Total	500 points	F = <60%

Note: The point percentages corresponding to letter grades are guidelines, not absolutes. However, any curving will be in favor of students (that is, if you score 80%, you will get at least a B-). More detail on lab assignments and grading will be provided in the labs.

Late/missed exams

If you must miss an exam due to a schedule conflict with an *approved* activity (e.g., participation in a sporting event), please let me know 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, etc.), you must contact me via email *as soon as possible* (i.e., not the following week). Make-up exams may be possible, with appropriate justification. Your TA will provide policies regarding late/missed lab quizzes/assignments during the first weeks of lab.

General policies

[University policies](http://www.umt.edu/registrar/students/dropadd.php) (<http://www.umt.edu/registrar/students/dropadd.php>) on drops, adds, changes of grading basis, etc. will be observed. 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, but later changes will require substantial justification.

Accessibility policies

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). Please contact DSS if you may have a disability requiring accommodation, and we will work with you and DSS to provide appropriate accommodation. *You must let me know by the Monday of an exam week if you will be using DSS services for exam-taking.* Please contact me directly about accessibility issues with course documents; they were recently re-formatted, but may not be ideal yet.

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, and by doing any assigned readings prior to class. There is TON of new terminology in this course; it is important to keep up with it weekly or you could become overwhelmed.

▪ **Ask questions!**

Questions during lecture and lab are encouraged. Please let me know if you need help with any material; my office hours and open lab times are reserved for students. If you cannot attend office hours, please contact me to arrange another 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 plant life around you, so practice looking at plants systematically whenever you can.

Gain extra credit!

You can earn extra credit points (up to 8 total, 4 each x 2 times, in weeks 2-13) for sharing plant-related observations and questions at the beginning of each lecture. *Please post an accompanying photo or note to the Extra Credit link on Moodle (in first section) by 9:00 am pre-lecture, so that I have a record of your points and can put any images in the day's slides.*

BIOO 335: ROCKY MOUNTAIN FLORA**SPRING 2015 SCHEDULE**

Note: This is a guide to course content and the general order of topics, but is subject to adjustment during the semester; natural groups of taxa don't always fit neatly into 50 minutes! Updates will be posted online. Exam dates will not change. Asterisks indicate the likely dates of lab quizzes.

<u>Date</u>	<u>Topic</u>	<u>Readings (in Lesica book)</u>
January 26	1. Course Intro/Overview of land plants	
January 28	2. Plant Systematics & Taxonomy	
February 2	3. Non-seed plants	
February 4	4. Seed Plants - Gymnosperms	handouts
February 9	5. More Gymnosperms	handouts
February 11	6. Intro to Angiosperms – Vegetative terms	handouts
February 16	President's Day Holiday - no class	
February 18	7. Floral terms & Basal Angiosperms	handouts, 42-45
Lab 4*	Flowers - Ranunculaceae	
February 23	8. Caryophyllaceae	54-56
February 25	9. Other Caryophyllidae	
March 2	10. Rosaceae	181-184, 112-113, 185-187
MARCH 4	EXAM 1 (LECTURES 1-9)	
March 9	11. More Rosids	
March 11	12. Rosidae trees	114-116, 153-160, 176-179
Lab 7*	Salicaceae, Betulaceae, <i>Acer</i>	
March 16	13. Angiosperm reproduction	125-129, 229-231, 160-165
March 18	14. Brassicaceae, Onagraceae, Fabaceae	
March 23	15. Asteridae/Asteridae shrubs	77-81, 185-186, 190-192, 198-203
March 25	16. Special topic (Plant domestication?)	
Mar 30-Apr 3	SPRING BREAK	
April 6	17. Asterids II and review	218-224, 251-253, 265-269
APRIL 8	EXAM 2 (LECTURES 10-16)	
		218-224, 251-253, 265-269
April 13	18. More Asterids II	
April 15	19. Asterids III	203-210, 193-197
April 20	20. Intro to monocots - Liliaceae	270-273 (skim allied families)
April 22	21. Orchidaceae and Iris	273-280, 293-297
Lab 12	Liliaceae, Orchidaceae, <i>Iris</i>	
April 27	22. Special topic (Invasive plants)	350-356
April 29	23. Grasses	
May 4	24. Rushes and sedges	345-349
May 6	25. Overview	

BIOO 335: PLANTS-TO-KNOW LIST (Spring 2015)

Families (-aceae) 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

Sorbus, 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

Mentha

Caprifoliaceae

Linnaea, Symphoricarpos

Apiaceae

Lomatium

Asteraceae

Artemesia, 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

Rocky Mountain Flora Lab
Robert Niese
Robert.Niese@umontana.edu
Office Hours: by appointment

Text book: *Manual of Montana Vascular Plants* by Peter Lesica

Optional materials: hand lens (strongly recommended)
photo guide to Rocky Mountain plants
plant dissection kit
(you can find all of the above at the Naturalist Mercantile and get a discount!)

Student Expectations:

- Lab time is used to:
 - 1) Learn how to "see" plants
 - 2) Understand how plants are organized
 - 3) Be able to recognize common taxa on sight
 - 4) Learn to use resources like dichotomous keys to identify unknown plants

So...

- Arrive on time for lab
- Come to lab prepared by studying that week's material
- Work in self-motivated but collaborative fashion with other individuals! Study groups are HIGHLY recommended.
- Attend the full 2-hour session and help in lab clean-up and reorganization at the close of lab.
- Labs cannot be made-up before or after their scheduled week because each lab requires considerable and unique set-up. Therefore, do NOT MISS LAB. See me for exceptions.

Grading: Your grade in Rocky Mountain Flora will be determined as follows.

1 st mid- term	100 pts
2 nd mid-term	100 pts
Final exam	150 pts
Lab quizzes	40 pts (5 lab quizzes and you can drop your lowest score)
Plant collection	60 pts
Lab notebook	26 pts (up to 2 pts/class, drop your lowest score)
<u>Lab final</u>	<u>24 pts</u>
Total points	500

1. **Lab quizzes.** 5 quizzes will be given at the start of lab meetings that cover our activities for that week. Weeks with quizzes are shown in the schedule below. Each quiz is worth **10 points**. Quizzes cannot be made up before or after their scheduled week unless specifically cleared with me BEFOREHAND and IN WRITING. No exceptions. We will drop your lowest quiz at the end of the semester.
- **Plant collection.** I will give more detail on this later in the semester.

