Field Botany (BIOL-34000-01)
Spring 2020 Syllabus

Dr. Jennifer L. Ison
[redacted]

Time and location
Lecture & Lab: Tues. & Thur. 1- 3:50 pm, RWW 260/270 and field sites

Course TA: [redacted]

About this course:
Introduction to the principles of field botany and plant biology. Lecture topics will include floral biology and pollination, plant physiology, ethnobotany, and biogeography. Labs topics include floral and vegetative morphology, plant family characteristics, the use of keys, and basic collecting techniques. This course fulfills an upper-level course lab elective for the Biology major and an upper-level course elective for the Environmental Studies major (Conservation track).

Course objectives:
- Synthesize and apply knowledge from ecology, physiology, and systematics in order to evaluate plant evolution and how plants respond to their environment.
- Through field observation, generate natural history-based questions and execute a natural history-based research project.
- Gain hands-on botanical field identification and collection skills.
- Effectively communicate plant science information to other biologists and non-scientists.
- Foster your curiosity and appreciation of plants and their interactions with the natural world.

Course texts
Required textbook: Botany: An Introduction to Plant Biology by J. Mauseth 6th ed.
Required guide: Field identification of the 50 most common plant families by L. Struwe
Recommended text: Plant Identification Terminology: An Illustrated Glossary by Harris & Harris.
Additional readings will be posted on Moodle

Course Organization:
Broadly defined, 'botany' covers many exciting fields of plant biology, including systematics, ecology, physiology, natural history, morphology, and evolution. We will examine the field of botany by exploring a series of interrelated topics organized into modules and a final natural history unit. While each module will typically focus on one field, all modules will integrate knowledge from multiple fields in plant biology.

A central goal of this course is to give you background and skills to become a field botanist. Learning to recognize and recall diagnostic features of major plant families is a key skill to becoming a confident and capable field botanist. In this course, we will focus on 40-50 of the most common plant families in temperate regions. Each module will have 3-7 focal plant families that we will use to help illustrate concepts in the module and we will learn key distinguishing features of the family. Once spring arrives, we will spend most class periods outside putting our skills into practice by collecting and identifying plants.

Course Organization:
Below is general information about topics and activities for each module. For the most up-to-date information, please check Moodle.

Module 1: What is a plant? Topics covered: -Evolution and characters of land plants -Plant classification systems -Major land plant groups -Alternation of generations Lab/field activities: -Classification activity -Greenhouse plant groups -Life-cycle diagraming -Identification of focal families Focal families/groups: -Equisetaceae -ferns (generic) -moss (generic) -Psilotaceae (not in guide)	**Module 2: Germination is radicle!** Topics covered: -Major clades of Angiosperms & their characteristics -Morphology of monocots & eudicots -Seed dormancy and germination physiology Lab/field activities: -Greenhouse clade identification -Observing recent germinates -Identification of focal families Focal families: - Alliaceae -Ranunculaceae -Amaranthaceae -*Cyperaceae* -Malvaceae -*Magnoliaceae*
Module 3: A whorl of a time. Topics covered: -Flower and inflorescence morphology -Pollination ecology -Angiosperm life-cycle Lab/field activities: -Floral formula practice -Flowers of the herbarium -Identification of focal families Focal families: -Asteraceae -Caryophyllaceae -Apiaceae -Apocynaceae	**M 4: Every (vascular) plant needs a companion (cell).** Topics covered: -Cell types -Phloem and the pressure-flow hypothesis -Tropical plant ecology -Root morphology Lab/field activities: -Tropical plants in the greenhouse -Vascular tissue slides -Identification of focal families Focal families: -Bromeliaceae -Orobanchaceae -Arecaceae
Module 5: How do redwoods move water? Topics covered: -Xylem and water & mineral transport -Meristem regions, woody tissue -Trees of campus Field activities: -Campus tree identification - Dichotomous key exercise -Identification of focal families Focal families: -Fagaceae -Juglandaceae -Pinaceae -*Cupressaceae*	**Module 6: The magnificent saguaro** Topics covered: -Photosynthesis -Drought and desert adaptations -Stem morphology -Desert plant ecology Lab/field activities: -Desert plants in the greenhouse -Identification of focal families Focal families: -Cactaceae -Asphodelaceae -Poaceae

Module 7: When is a mulberry not a berry? Topics covered: -Fruit morphology -Leaf arrangements -Natural history of the garden -Seed dispersal ecology Lab/field activities: -Natural history exercise -Fruit and vegetable observations -Identification of focal families Focal families: -Moraceae -Ericaceae -Solanaceae -Cucurbitaceae -Anacardiaceae -Fabaceae	**Module 8: Spring is the air!** Topics covered: -Spring ephemerals ecology -Spring pollinators ecology and biology Field activities: -Plant collecting -Field identification -Identification of focal families Focal families: -Araceae -Geraniaceae -Iridaceae -Amaryllidaceae -Rosaceae -Liliaceae - -Orchidaceae
Module 9: The spice of life. Topics covered: -Herbivory -Ethnobotany Field activities: -Plant collecting -Field identification using scent -Identification of focal families Focal families: -Rubiaceae -Lamiaceae -Brassicaceae -Lauraceae	**Module 10: And the rest is history!** Field activities: -Plant collecting -Field identification -Natural history project

Tentative **class and lab schedule:** Please note that this is a new iteration of this course, and many aspects of the schedule are intentionally designed to be more fluid. In addition, much of the field activities are weather dependent and will change. Therefore, for up-to-date information, please refer to Moodle. All non-textbook readings will be posted on Moodle. You are responsible for checking Moodle and staying up-to-date on readings and assignments if the schedule changes.

Date	**Module**	**Major* assignment**
T. Jan. 14	M1: What is a plant?	
Th. Jan. 16	M1: What is a plant?	
T. Jan. 21	M2: Germination is radicle!	
Th. Jan. 23	M2: Germination is radicle!	
T. Jan. 28	M3: A whorl of a time	**Exam I: M1 & M2****
Th. Jan. 30	Guest speaker Dr. Skogen & Outreach project intro	
T. Feb. 4	M3: A whorl of a time	
Th. Feb. 6	M4: Every (vascular) plant needs a companion (cell)	
T. Feb. 11	M4: Every (vascular) plant needs a companion (cell)	
Th. Feb. 13	Outreach project workday	Outreach project draft due

Date	Module	Major* assignment
T. Feb. 18	M5: How do redwoods move water	**Exam II: M3 & M4****
Th. Feb. 20	M5: How do redwoods move water	
T. Feb. 25	M5: How do redwoods move water	**Outreach project due**
Th. Feb. 27	M6: The magnificent saguaro	
T. Mar. 3	M6: The magnificent saguaro	
Th. Mar. 5	Introduction to Natural History	**Exam III: M5 & M6****
Mar 9-20	*SPRING BREAK*	
T. Mar. 24	M7: When is a mulberry not a berry?	
Th. Mar. 26	M7: When is a mulberry not a berry?	
T. Mar. 31	M8: Spring is in the air!	
Th. Apr. 2	M8: Spring is in the air!	
T. Apr. 7	M9: The spice of life	
Th. Apr. 9	M9: The spice of life	
T. Apr. 14	Plant family review	
Th. Apr. 16		**Exam IV & comprehensive plant family practical**
T. Apr. 21	M10: The rest is history!	
Th. Apr. 23	M10: The rest is history!	
T. Apr. 28	M10: The rest is history!	
Th. Apr. 30	M10: The rest is history!	
Tue. May 5 at 3 pm	Natural History Project Due	

* minor assignments will be posted on Moodle. Textbook and paper reading assignments are posted on Moodle

** these exams are the first 60 mins of a given class period. Most exams will have a small lab practical component.

Grade components.

Item	Percentage of final grade
In class exams:	
Module exams x3 (12% each)	36%
Synthesis essay exam & comprehensive practical	18%
Lab assignments, reading responses, & other assignments	10%
Outreach website project	10%
Plant family expert project	8%
Natural history project	15%
Engagement and professionalism	3%

Grading scale:
A = 100-93% A- = 93-90%
B+ = 89-87% B = 87-83% B- = 83-80%
C+ = 79-77% C = 77-73% C- = 73-70%
D = 69- 60%
F < 60%

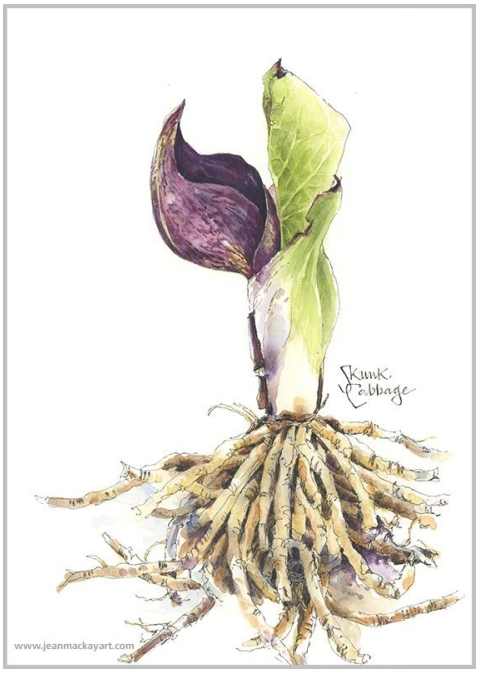
General course information
Please check your COW email and the course Moodle page daily for new announcements or reminders. You are responsible for staying up to date with the information that I announce through Moodle and over email.

Missed and late exams, quizzes, and assignments: Make-up exams will only be given with a letter from a doctor or the Dean of Students. You must contact me BEFORE the scheduled exam or as soon as possible afterward if it is a medical emergency; be prepared to make-up the exam as soon as possible. Missing an exam without an excused and documented absence will result in you receiving zero points for the exam. All assignments turned in late will lose **10%** of the total points **each day** unless there are extenuating circumstances, which can be verified.
Re-grade policy: If you believe that an error has been made in grading your course work please contact me within a week from the date the assignment was returned to you.
Class etiquette: Cell phones must remain on silent and unused during lecture and lab. Laptop use in lecture is by permission of the instructor only. No tobacco in class. Drinks in spill-proof containers are okay. As a general rule, no food in class (exceptions can be made, especially during long outdoor labs).

Dressing and preparing for outdoor labs: You need to come to lab ready to be out in the field. This means you must be wearing either hiking boots or tennis shoes. Wear old clothes that you will not mind when they get dirty (because they will get dirty!). Many field sites will have insects including mosquitoes, bees, and ticks. The field sites often have poison ivy, therefore, you must wear long pants. You are responsible for checking the weather before lab and dressing appropriately. We will have lab outside even in the rain or snow. For lab please bring a bag or backpack with 1) your lab notebook and a pencil 2) sunscreen 3) water bottle and 4) other weather gear (e.g. umbrella, coat, hat). If you would like to wear bug repellent please do not spray the repellent until we get to the field site. There will be a lot of us per vehicle and it will make for a more pleasant trip if you wait. All your lab and fieldwork should be recorded in your lab notebook. This notebook will be outside, probably in rain, and needs to be a high quality notebook with a hardcover. It is your responsibility to keep track of your notebook.

***** It is your responsibility to inform me if you have any medical conditions that could arise during a lab (e.g. bee/nut allergies).*****

General course information continued



Class and lab attendance: Given that this is a lab/lecture combination course, missing just a day of class is the same as missing a week's worth of lecture or an entire lab period. Of course, there are a number of potential issues that could arise during the semester and your health (both physical and mental) and safety should always be your top priority. If are you are sick or have another extenuating circumstance that requires you to miss class, please contact me via email as soon as possible. Please note that depending on my schedule, I may not be able to get back to you right away, but missing class for health or safety reason would be an excused absence. If you have to miss class due to a college-sanctioned event or a planned extenuating circumstance, please inform me at least a week ahead of time. You are responsible for all of the material missed, and assignments must be submitted before the deadline to avoid late penalties. Since one class period is a significant portion of the course material unexcused absences are very disruptive for your and your peers' learning. Therefore, there is a strict attendance policy for class; you will fail the course if you have more than 2 unexcused absences from class. Although I would rather you show up late than not at all, tardiness is highly disruptive to the class. If you are chronically tardy, I reserve the right to deduct points. In addition, since a number of class sessions take place off campus, if you are late to class you will miss the transport and it will count as an unexcused absence.

The Learning Center – APEX: The Learning Center, which is in APEX (Gault library) offers a variety of academic support services, programs and 1:1 meetings available to all students. Popular areas of support include time management techniques, class preparation tips and test taking strategies. In addition, the Learning Center coordinates peer-tutoring for several academic departments. Students are encouraged to schedule an appointment at the APEX front desk or visit the Learning Center Website for additional options.

An additional support that the Learning Center offers is English Language Learning. Students can receive instruction or support with English grammar, sentence structure, writing, reading comprehension, reading speed, vocabulary, listening comprehension, speaking fluency, pronunciation, and American culture through 1:1 meetings with the Learning Center staff, ELL Peer Tutoring, ELL Writing Studio courses, and other programming offered throughout the year. Students seeking ELL support are encouraged to visit the APEX front desk.

The Learning Center also coordinates accommodations for students with diagnosed disabilities. At the beginning of the semester, students should contact the Learning Center [redacted] to make arrangements for securing appropriate accommodations. Although the Learning Center will notify professors of students with documented disabilities and the approved accommodations, students are encouraged to speak with professors during the first week of each semester. If a student does not request accommodations or does not provide documentation to the Learning Center, faculty are under no obligation to provide accommodations.

General course information continued

Title IX reporting policy: The College of Wooster is committed to fostering a campus community based on respect and nonviolence. In accordance with Title IX, Wooster is legally obligated to investigate incidents of sexual harassment and sexual assault that occur on our campus. Faculty who become aware of any incident of sexual violence (including harassment, rape, sexual assault, relationship violence, or stalking) are required by law to notify Wooster's Title IX Coordinator. For more information about your rights and reporting options at Wooster, including confidential and anonymous reporting options, please visit http://www.wooster.edu/offices/titleix/.

Academic Integrity: Each student in this course is expected to abide by the Code of Academic Integrity as printed in the Scots Key. I have a zero tolerance policy for academic dishonesty, including plagiarism and cheating. Because class and laboratory exercises may involve group work and group study sessions can be useful, you are encouraged to study with other students to discuss information and concepts covered in class. ***However, any work submitted by a student in this course for academic credit must be the student's own work***. Penalty for violation of this Code may result in no credit for the assignment, failure of the course, and/or disciplinary action by the College. Here are some specific *examples* (not an exhaustive list!) of academic dishonesty:

- Copying another student's assignment – either a current or past student.
- Collaborating with another student on a homework assignment without express permission from me.
- Paraphrasing/copying any text from any resource without providing a reference.
- Extensive paraphrasing/copying of text from any resource (even if you provide a reference).
- Turning in the same assignment to multiple courses, in the same or different semesters, without prior consent from both professors

Wild Geranium, Cranesbill - Geranium maculatum