Field Ecology (BIOE342)
Summer 2018 Syllabus

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Note: This syllabus and schedule are subject to change. Weekly assignments and readings on separate document

Synopsis: The course engages major concepts and approaches in modern ecology via immersive field experiences, hands-on sampling, and project-based learning in both aquatic and terrestrial habitats. Topics range from physiological and behavioral ecology to population and community ecology to ecosystem ecology and touches on themes of disturbance, invasive species, and climate change. The course will build students’ natural history knowledge of the biota of the Rocky Mountain region while directly engaging them in active research projects of FLBS / UM faculty. This course is conducted largely outdoors regardless of weather conditions so that ecological phenomena can be examined in real time and real life. All-day and overnight trips will be conducted throughout the course, taking students into a range of aquatic and terrestrial environments near the Bio Station and the adjacent mountain areas including Glacier National Park. Students should be physically fit and able to hike 10 miles per day. Students will conduct directed measurements connected to ongoing research projects of the faculty, developing technical skills as well as skills in analysis and interpretation in written and oral form. Lecture materials will largely be presented in video format so students should bring laptop, tablet, or smartphone to view materials. Meets UM writing requirement.

Learning outcomes: After taking this course students will gain knowledge of major ecological concepts and improve their proficiency in scientific study design and analysis. Detailed learning outcomes for the class will be provided at the start of the course.

Prerequisites: College level biology, chemistry, and mathematics or permission of instructor.

TEXTS & MATERIALS (required)


Electronic copies of supplementary reference materials will be provided by the professors and FLBS.

You are also required to purchase a Rite-In-The-Rain notebook (All-weather LEVEL no. 313) for use in the class.
GRADING

Your grade in this class is determined by five components:

1.) Field notebooks: Thoroughness, legibility, content of observations and data entry will be evaluated. This is important because not just you, but fellow students, will be partly relying on data you record. Every week you will place photos of field notebook pages and transcribe data from your field notebooks to a shared google drive by each Friday 5 PM. This will be checked weekly by instructors. 15%

2.) Journal article summaries. During weeks 2-4, you will read a published research paper relevant to the week’s theme and prepare a 1-page synopsis. These are due prior to Data and Donuts on Mondays. Each is worth 5% for a total of 15%

3) CURE research project report and poster presentations. 35% of grade (based on final written report (individual; 20%) and final group poster; 15%).

4) Exams (Weekly - Fridays at 11AM). Each exam is worth 5%. Overall, exams are 20% of grade total

5) Attitude, preparedness, and participation. 15%

BRING YOUR LAPTOP COMPUTER or TABLET – all materials are digital.

APPROACH AND PHILOSOPHY

The goal in this class is to give students an immersive, research-oriented, and hands-on learning experience that covers and integrates major concepts and approaches of ecology in both aquatic and terrestrial ecosystems of western Montana. Students will learn the natural history of these habitats and get to know their inhabitants, engage in real scientific field research, and acquire skills in data acquisition, analysis, and interpretation.

Please note – the course is taught almost entirely outside, regardless of weather, Monday through Thursday, often using 10 hours or more per day. We will hike some almost every day and on some days we will hike all day, studying ecology as we go. Students must be prepared. If you are quite certain that you can hike at least 10 miles with a light pack in a day, you will really enjoy this course. If you are not sure of your hiking skills in the rough terrain of mountain landscapes but you like to exercise and are really committed to learning ecology in this marvelous field setting, Jim and Diana will help you enjoy hiking as a part of the ecological experience. You can also expect to get wet, either from the rain or in the process of sampling of lakes and streams. You can also expect to have fun and develop lifelong friendships and professional relationships with your fellow students and with your instructors and other professionals you will meet during the course.

Please note that we seek to create a positive learning environment for all in our class. So, everyone is expected to adhere to the FLBS Code of Conduct. We also expect you to follow norms of academic honesty.
All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor. All students need to be familiar with the UM Student Conduct Code. The code is available for review online. Cheating WILL get you an F in this course and will be reported to the UM academic office. (link: https://tinyurl.com/y85k9jga)

The University of Montana assures equal access to instruction through collaboration between students with disabilities. If you have a disability that adversely affects your academic performance, please let us know so we can make an accommodation.

CURE: Classroom-based Undergraduate Research Experience: Each student will be part of an active, “real world”, research project led by one of your instructors. This project is a major component of your class grade. This project will involve experimental manipulations leading to intensive data collection and analysis; ultimately, a paper will be published in the scientific literature. In the shorter term, each student will prepare a report on his/her results in this research and collaborate with teammates in summarizing their overall findings in a scientific poster presentation. The purpose of the research project is to provide hands-on experience in planning, conducting, and conveying REAL ecological research. See information elsewhere with more details about this project.

Outside of Class: Use Friday–Sunday periods to read, review, and work on assignments and projects. You cannot do well in this course without reading the text. We will cover many of the major topics in the book during the first week and then reinforce them by repeatedly revisiting concepts and processes as we encounter them during our field trips. Your grasp of these concepts will be assessed weekly in a Friday exam. Students are expected to take notes in the field, make directed measures in the field, and in groups or pairs to analyze and present data (group work products). You will also likely spend time working on samples and analyzing data from your CURE research project. If any time at all remains (!), hiking on the off days is encouraged because there is so much to see around FLBS but conduct your trips in the context of the course content.

COURSE SCHEDULE

We follow our schedule rain or shine; topics may vary depending on what we encounter in the field. The schedule is kept and updated (live) at a link that will be provided at the start of class. Generally, we will work on our CURE research project on Mondays, Tuesday, Wednesday, and Thursday will involve field trips and fieldwork with overnight trips to Glacier National Park in weeks 2 and 4, and Fridays will involve research project time and a weekly exam.