

LRES 510 Biodiversity Survey and Monitoring Class Syllabus
CRN:24474/24447

Fall Semester: One whole week (5 full days) prior to fall semester termed “Pre-semester Week 1”. After that we go on-line for the following seven weeks of semester (see below for details).

Location: The week-long intensive class section (8 am to ~ 5pm) will start each day in Leon Johnson Hall 339 and then travel to a field location.

Instructors & Teaching Assistants:

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Office hours: Monday and Wednesday 12-1 pm. You can also make an appointment to meet with any of us virtually.

Course description in catalogue: Biodiversity survey and monitoring designs, sampling methods, and data evaluation techniques are introduced. Emphasis is on plants but other taxa are addressed for agricultural, rehabilitation and wildland systems. One week of fieldwork required prior to semester; course completion mid-October. First week co-convened with ENSC 410.

More detailed description: Both careers and graduate studies in land resources and conservation management require knowledge of how to design, execute, and analyze data concerning biodiversity at multiple scales in time and space. This course will provide students with the theoretical and practical skills associated with surveying and monitoring designs, sampling methods and data analysis techniques to answer questions about biodiversity. We will concentrate on applying and evaluating these methods using plants but will also gain field experience with other taxa. Application of the biodiversity designs and methods will be to three main system types: agriculture, rehabilitation/restoration, and wildland.

Course objectives:

- Understand a variety of methods and techniques to measure and sample for biodiversity.
- Develop hands-on knowledge of various biodiversity sampling methods and response metrics used on plants and insects.
- Gain knowledge of sampling design, data collection methods, and basic data analysis.
- Understand how to apply methodologies to different field situations depending on goals of management or research.
- Develop biodiversity research project.

Course schedule: During the first week topic areas will be introduced using an interactive lecture format and readings. Hands-on aspects of these topics will be applied under field conditions. In order for this class structure to be possible, students will be required to take a one-week intensive class section (40 hrs) prior to the start of the fall semester. **To prepare for this week - students are required to complete readings (~10-20 hrs). There are quizzes pertaining to these readings and associated lectures daily during the first week.** The aim of the pre-field class readings and associated quizzes is to ensure ample background knowledge is acquired to gain maximum benefit from the intensive class section.

There are two options for the development of a research project and your choice must be approved by Dr. Rew.

Option 1: develop a biodiversity sampling project that is linked to your own research project, however, you need to have this data already collected or be able to complete by Wednesday August 23rd (or *within the first 8 days of semester*).

Option 2: join together with other 510 (or ENSC410) students for a project and data collection but then complete the rest of the analyses individually. The last day or two of the one-week intensive (Saturday/Sunday this year) will be spent collecting data for research projects. *Please note IF additional data needs to be collected do so within the first 8 days of semester.*

During semester class time will be used to learn and discuss biodiversity topics in more depth, and explore data analysis techniques using data collected during the field portion of the course. Students will then apply this information and learned techniques to their biodiversity research data. We will aim for **one hour on-line video discussion each week**, if we cannot find a time we all agree on we will have to do written on-line discussion (see below). We will also have a weekly on-line statistics discussion with a video attached.

Textbooks: Semester discussions are based on the following book: "Biological Diversity: frontiers in measurement and assessment" Edited by Anne E. Magurran and Brian J. McGill, Oxford Press. **It is required.** Additional literature is posted on the class website.

Expectations: It is expected that you:

- will wear a mask in the vehicles and in proximities of less than 6' if not vaccinated
- will perform the required reading ***prior to attending the pre-semester intensive class section and normal semester classes. Participation in class discussion is expected.***
- ***attend the entire intensive section*** which will generally be from 8 am – 5pm though earlier starts and later finish times are possible, as is staying away from Bozeman for 1 or more nights (not this year). The intensive section will take place the week directly before the start of semester (Tuesday-Saturday/Sunday). ***As part of each day will be spent outdoors you are expected to have appropriate attire and sufficient sustenance for the duration.***
- **do not skip any of the first intensive week of class – each 8 hour day is essentially worth 2-2.5 weeks of a semester.**
- spend one-two days of the intensive week collecting research project data (see above), however, you are expected to complete any further necessary data collection in your own time within the first 8 days of semester. If you already have data from your research project you can use that but need to check with Dr. Rew first.
- attend class on-line for the first 7 weeks of semester, during which you will continue development of your research project and will cover new subject material through reading, discussion and writing assignments (more detail below). The final project due date is approximately 8 weeks into the fall semester.

- under all situations, will participate by asking questions and providing constructive commentary. Collecting, entering and analyzing data is also a requirement.
- are willing and capable of using various computer software packages such as word, and excel, and preferably have an understanding of R.
- will not use mobile phones and other portable electronic devices for personnel topics during class.
- *not plagiarize*. Plagiarism includes direct copies from websites as well as books and journals. If a student is caught plagiarizing it can lead to expulsion from the class and sometimes college.
- will have internet access and use email to communicate with the instructors and TA and that you check the course web site for updates on readings and assignments.
- will contact Dr. Rew or TAs, as appropriate, if you are ill or have an emergency that will impact your capacity to attend and participate in class.

Grading: Your grade in the course will be based on your performance in quizzes (~25-30%), data analysis homework assignments (~25-30)%, class and field participation (~5-10%), and biodiversity project (~35-40%). (As you can see the exact percentages may vary). *Turning in assignments late is not acceptable, if less than 24 hours late you will get 10% deduction if more you get 0, this class is too compressed to have late assignments.*

Grades are calculated as follows:

A >94	B+ 87-89.9	C+ 77-79.9	D+ 67-69.9	F <60
A- 90-93.9	B 84-86.9	C 74-76.9	D 64-66.9	
	B- 80-83.9	C- 70-73.9	D- 60-63.9	

We will determine a time for on-line video discussions, if we cannot meet for a virtual video chat we will revert to written discussion. IF we have to do on-line written discussion you are expected to complete the readings by Monday noon. Discussion questions will be posted by Monday at noon (usually the Friday before). You are expected to respond to the questions by Wednesday at midnight and have additional discussions with your peers until Saturday evening (3 days later). You should aim to add at least 1-2 meaningful discuss/debate/questions per week.

The on-line video statistics discussion is to help you understand the homeworks, there will be a video posted each week that you are expected to review and can then ask about anything that is unclear.

Academic Integrity

“Montana State University believes that academic honesty and integrity are fundamental to the scholastic mission of higher education and have established standards to sustain them. Students who violate these standards will be subject to academic and/or disciplinary sanctions.” According to MSU policy, “The integrity of the academic process requires that credit be given where credit is due. Accordingly, it is academic misconduct to present the ideas or works of another as one’s own work, or to permit another to present one’s work without customary and proper acknowledgment of authorship. Students may collaborate with other students only as expressly permitted by the instructor. Students are responsible for the honest completion and representation of their work, the appropriate citation of sources and the respect and recognition of others’ academic endeavors.” (Policy 340.00) Other Conduct Guidelines and Grievance Procedures for Students for 2004-2005 are available on the Web: at http://www2.montana.edu/policy/student_conduct/. Students in this course are encouraged to discuss assignments and share ideas, but each must hand in his or her own original work to receive credit. Students must work independently and without aids on quizzes. **Cheating or plagiarism will result in course failure.**

Students with Disabilities

If you have a documented disability for which you are or may be requesting accommodation, you are encouraged to contact your professor and Disabled Student Services as soon as possible. Their office is located in the Strand Union Building Room 155, phone 406-994-2824.

Inclusivity Statement:

I support an inclusive learning environment where diversity and individual differences are understood, respected, appreciated, and recognized as a source of strength. MSU expects that students, faculty, administrators and staff at MSU will respect differences and demonstrate diligence in understanding how other peoples' perspectives, behaviors, and worldviews may be different from their own.