

LRES 510 Biodiversity Survey and Monitoring Methods Class Syllabus
CRN: 24447

Fall Semester: One whole week (5 full days) prior to fall semester termed “intensive class section” that will be spent in the field.
3 hours per week for 1st five full weeks of semester which will be on-line.

Location: The week-long intensive class section (8 am to ~ 5pm) will start each day in Willson 1-115 and then travel to a field location.

Instructors: Dr. Tim Seipel
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Dr. Lisa Rew will assist with the field component.

Course 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. Application of the biodiversity designs and methods will be to three main system types: agriculture, rehabilitation/restoration, and wildland.

Course objectives:

- Gain knowledge of sampling design, data collection methods, and basic statistical analysis for biodiversity data.
- Understand how to apply methodologies to different field situations depending on goals of management or research.
- Develop and complete a biodiversity research project (R designated course).

Course learning outcomes:

After successful completion of this course students will:

- Have experience in performing different sampling designs, data collection methods in three systems (agriculture, degraded/reclamation, and wildlands)
- Be able to perform basic statistical analysis of biodiversity data
- Have designed, performed, analyzed and written-up a research project

Course schedule: Topic areas will be introduced using an interactive lecture format and on-line 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 there will be required readings and quizzes on these topics during the first week. The aim of the quizzes is to ensure ample background knowledge is acquired to gain maximum benefit from the intensive class section. Dr. Seipel will be available for consultation during this period.

Students will develop research project associated with questions of particular interest. The expectations of 400-level students will be for them to develop a biodiversity research project of interest to them. This individual project, combined with field experiences, will fulfill the R component of undergraduate requirements. 500-level

graduate students will develop a biodiversity sampling program with their own research data, if appropriate, that will include more attention to power analyses and data analysis. The last day of the one-week intensive will be spent collecting data for research projects. *Please note students will need to, and are expected to complete another 8-16 hours of data collection within the first 2 weeks of semester.*

During semester the remaining class time (15 hours) will be used to teach various related concepts in more depth, and explore data analysis techniques using data collected during the field portion of the course.

Prerequisites: Basic ecology and statistics

Textbooks: There are no required texts but the following book is highly recommended. "Biological Diversity: frontiers in measurement and assessment" Edited by Anne E. Magurran and Brian J. McGill, Oxford Press. Additional literature will be posted on the class website.

Expectations: It is expected that you:

- will perform the required reading and associated on-line quizzes prior to attending the intensive class section. You have to pass the quizzes to attend the intensive section but multiple attempts are permitted.
- attend the entire intensive section which will generally be from 8 am – 5pm though earlier starts and later finish times are possible. The intensive section will be the week directly before the start of semester. As part of each day will be spent outdoors you are expected to have appropriate attire and sufficient sustenance for the duration.
- spend one day of the intensive week collecting research project data, however, you are expected to complete the necessary data collection (likely a further 8-16 hours) in your own time within the first two weeks of semester.
- attend class for the first 5 weeks of semester, during which you will complete your research project. Class periods terminate after 5 weeks but the project is due in a week later.
- 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 which are turned on and audible 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.

Grading: Your grade in the course will be based on your performance in quizzes (25%), homework assignments (25)%, class and field participation (20%), and biodiversity project (30%). (Percentages are estimates and may vary slightly.) *Turning in assignments late is not acceptable.*

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	