

Quantitative Methods for Natural Resources

Instructors: Dr. Bobby Davis, Dr. Lisa Izzo

Office: TNR 188 (BD), TNR 443 (LI)

Office Hours: By Request, email for an appointment

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Course Time and Location: Wednesdays, 12:00 - 1:50 pm, TNR 322 (Advanced Computer Lab)

Objectives: The goal of the course is to survey analyses applicable to a broad range of problems in ecological research and understand how to implement and interpret them in statistical software (specifically R and R Studio). This will provide a foundation so that you will be able to apply these analyses in future research and continue learning new quantitative approaches to research throughout your career.

Student Learning Outcomes:

1. Students will be able to understand principles of commonly used statistical analyses in Natural Resources and when it is appropriate to utilize each method
2. Students will be able to code and interpret outputs for common statistical analyses in the open source program R
3. Students will competently present, discuss, and interpret results from common statistical analysis in both written and oral forms

Textbook: No textbook will be required for this class, instructors will provide relevant readings based on the topic each week. Students will be expected to read these before class each week.

Grading: Grades for the class will be based on four homework assignments (40%) and a final project resulting in a written report (in the structure of a manuscript, 40%) and an in-class presentation (20%). Final grades for the course will be graded using the following scales: A = 93%; A- = 90%; B+ = 87%; B = 83%; B- = 80%; C+ = 77%; C = 73%; C- = 70%; D+ = 67%; D = 60%; F = <60%.

Attendance Policy: Your attendance is expected, but if circumstances occur where you are not able to attend class due to graduate student responsibilities (e.g., field work, conferences), illness, or personal reasons, please notify the instructors and arrangements will be made to deliver the course materials to you.

Format: The course will consist of a 2-hour lecture-lab period weekly. Assignments will be given based on the materials presented in lecture. The class period will cover programming the statistical analyses in the program R. A final project that will involve analyzing the student's

own data will serve as the final for this class. Rubrics for the final project and presentation will be handed out at the appropriate time in the semester.

Academic Integrity: Academic dishonesty in any form will not be tolerated. You will adhere to the Student Academic Standards outlined in Chapter UWS 14 of the Wisconsin Administrative Code (<http://www.uwsp.edu/dos/Documents/CommunityRights.pdf>). Cheating or plagiarism related to any of the course assessments will result in a score of zero for that assessment.

Students with Disabilities: The university has a legal responsibility to provide accommodations and program access as mandated by Section 504 and the Americans with Disabilities Act (ADA). The university's philosophy is to not only provide what is mandated, but also convey its genuine concern for one's total well-being. If accommodations are needed, please contact the instructors as well as the Disability Resource Center, 108 CCC, DRC@uwsp.edu, (715) 346-3365.

Inclusivity: It is our intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit. It is our intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally, or for other students or student groups. If you have experienced a bias incident (an act of conduct, speech, or expression to which a bias motive is evident as a contributing factor regardless of whether the act is criminal) at UWSP, you have the right to report it to the Dean of Students office directly at dos@uwsp.edu.

See next page for course schedule

Course Schedule:

Week of	Topic	Instructor
Jan 23	Couse Intro & R Intro/Refresher	LI
Jan 30	<i>No class, Wisconsin AFS</i>	
Feb 6	Basic Stats and Nonparametric Equivalentents	BD
Feb 13	<i>No class, Midwest Fish & Wildlife Conference</i>	
Feb 20	Applications in ANOVA	BD
Feb 27	Multivariate Statistics - MANOVA and PERMANOVA	BD
Mar 6	Multivariate Statistics - Ordination and Clustering	BD
Mar 13	Multivariate Statistics – Classification - Abstracts Due	BD
Mar 20	<i>Spring Break, No class</i>	
Mar 27	Linear Regression and Model Selection	LI
Apr 3	Mixed Models	LI
Apr 10	GLMs	LI
Apr 17	Time Series Analysis	LI
Apr 24	Spatial Stats	LI
May 1	Mark Recapture Analysis	Guest lecture
May 8	Final Project Presentations	
Finals week	Final Project Presentations - Final Project Papers Due	