FW 599: An introduction to data management and R software for fisheries and wildlife applications

Credit hours: 1

Instructor: Jim Peterson, Office: 176 Nash Hall

Meeting Periods: Mondays 13:00-14:20 Withycombe Hall 205 (PC)

Course Materials: All course materials will be available online.
(http://www.petersonlabosu.org/121-2/)

Course Format: Includes lectures and interactive computer exercises. We attempt to employ an interactive classroom environment to explore the tools researchers and managers use to create, manipulate, and analyze datasets with R software. The beginning of the course consists of an introduction to the R environment with emphasis on the importance of creating a database that is functional, error free, and easily analyzed. We then focus on using R software to manipulate datasets and conduct analyses.

Day	Lecture and lab	Assignment*
27-Sep	The R environment, directories, libraries, reading, writing, and working cross platforms	Write an R script to set directories and read/write in data in several formats
4-Oct	Databases: types, formats, and practical considerations (MS Access)	Create a relational database consisting of animal counts, habitat measures, and weather measures
11-Oct	R objects, attributes and working with data.frames, vectors, matrices, and lists	Write an R script that create various data types, queries object attributes, and coerces objects
18-Oct	Selecting and sub setting data, appending, merging, sorting and duplicating	Write an R script that reads 2 or more datasets, combines them using a common field, sorts, removes duplicates, and writes the combined dataset to a file.
25-Oct	More data tricks-- working with dates, for-loops and if-else	Write an R script that used for-loops and if then statements to change elements of vectors and matrices, then uses matrix and vector operators to perform the same functions.

1-Nov	Calculating counts, means, sums, ranks, eigenvalues, and related information	Write an R script to check for errors, transform, and summarize values in a dataset, plus estimate lambda for a (Leslie) pop demographic matrix.
8-Nov	Creating and working with R functions	Write an R script for a function that reads in data from an external source, summarizes the data, creates a data summary table, and writes it to a report.
15-Nov	R graphics	Write R script that creates various figures for scientific reports and publications.
22-Nov	Statistical analysis with R	Write R script that fits linear and logistic regression models, plot residuals, extract parameter estimates and model fit measures.
29-Nov	R markdown	Write an R script for simulating an ecological process of your choice.

Grades: Grading will be pass/no pass and based on: 1) class participation with an emphasis on participation in discussions and interactive hands on exercises (50%) of grade and computer exercises (50%).

All assignments are R scripts that should be submitted to Jim Peterson via email in text format with *your last name as part of the file name, e.g., "Peterson_assign_1.R".* Each assignment will be worth 10 points and students will be allowed to correct and resubmit the assignment once. Each computer exercise will be due within 1 week by 5 pm (i.e., the following Monday @ 5 PM). Late assignments are penalized ***1 point per day***, unless written permission is sought (by you) and given (by the instructors). All corrected exercises must be resubmitted within 1 week of receiving the graded assignment. While we encourage professional collaboration, we stipulate that all assignments be your own creation.

Learning Resources: Students will be provided with lessons, R code, example Access databases, and information through the course website.

Statement Regarding Students with Disabilities

"Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations

and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations."

Expectations for Student Conduct: All students are expected to comply with the regulations pertaining to academic honesty detailed in the Oregon University System, Student Conduct Code https://studentlife.oregonstate.edu/sites/studentlife.oregonstate.edu/files/code_of_student_conduct_final.pdf

Reach Out for Success: University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at oregonstate.edu/ReachOut. If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255)