

WILD 541

Research Design Lab – 1 credit

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Computer lab: Wednesday 2:00-3:50pm, Stone 107

Office Hours: Tuesday & Thursday 10:00-11:00am

Co-requisite: WILD 540 – Research Design, Dr. Hugh Robinson (required)

Course objectives: To introduce wildlife biology students to the R statistical analysis environment to complement and enhance learning objectives of WILD 540 – Research Design. Specifically, students will be expected to learn R programming skills, R data management and R graphing functions as well an introduction to statistical analysis in R. Exercises will be designed to expose students to elements of Research Design taught in lectures including basic probability theory, basic statistical approaches, sampling design, statistical power, maximum likelihood, generalized linear models and extensions, random effects models.

Required Readings: There will be no assigned textbook for this class, but it is expected that students read at least this basic introduction to R available free on the R page – I will highlight readings from this through the semester.

Venables, W.N., Smith, D.M., and the R Core Team. 2015. [An introduction to R: Notes on R: A programming environment for Data Analysis and Graphics. Version 2.15.1 \(2012-06-22\).](#)

Online videos: RStudio provides a number of instructional videos that will be very useful for this course. You can access them at <https://www.rstudio.com/resources/webinars/>.

Software:

The computer laboratory portion of the class will depend on the use of the open-source statistical program R, **R-project** <http://www.r-project.org/>. R is free and available for download from the website above.

WBIO 541 Grades

Lab Assignments	50%
Class Participation	20%
Student Research Project	30%

Lab Assignments: Students will be required to complete 5 lab assignments following key R labs through the semester. R lab assignment instructions will accompany each lab and will be due by the following lab.

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Class Participation: this is an interactive graduate-level class, and as such, class participation through discussion, questions, leadership and co-teaching will constitute 20% of the grade for the class.

Student Project: The student project will form a key component of the joint goals of WILD 540 and 541, and will culminate in a student designed and tailored project to explore the statistical basis of research design for their own research. There will only be one student project between both courses, but the

grading for WILD 541 for this class will be based on assessment of the students submitted data files, R code, and data analysis (figures, tables, etc.) used in the student project report. **Schedule**

- Week 1: Intro to R
- 2: Data management
- 3: Data management
- 4: Understanding error messages and searching for help
- 5: Likelihood
- 6: General Linear Models
- 7: General Linear Models
- 8: Sampling
- 9: Sampling
- 10: Open lab for student projects (simulation)
- 11: Open lab for student projects (simulation)
- 12: Power analysis Occupancy Monitoring
- 13: Open lab for student projects (power analysis)
- 14: Thanksgiving
- 15: Presentations