

The University of Western Ontario
Department of Biology

Fall 2024

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O MW 12:30 - 1:30 pm Dr. Ben Rubin
o 1 hour per week time TBD Office: BGS 3072
O (attendance optional) W 2:30 - 5:30 Email: brubin2@uwo.ca

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Biology/Statistics 2244A/B or similar introductory undergraduate statistics course.

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Biology 4259F or Biology 9 te e

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Laptop: Bring your own to lectures and labs.
Software (free):

R version 4.4.1 (June 2024) (<https://cran.r-project.org/>) of R and RStudio on your laptop.
uninstall R, RStudio, and all libraries, and then install the most recent version of R and RStudio which is hosted online.

Books

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Beckerman, A.P., D.Z. Childs, O.L. Petchey. 2017. Getting Started with R: An Introduction for Biologists. 2nd edition. Oxford University Press, Oxford, UK. Electronic access via the library.

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This course aims to help you become an informed user and consumer of statistics. Statistical methods allow us to answer questions and learn about the world around us from data. As a biologist, you might apply analysis of variance to learn about the effects of different diseases on plant growth, linear regression to explore the impacts of climate change on species diversity, or logistic regression to understand the factors affecting an animal's presence in the landscape.

In introductory courses, you may have been taught these methods as if they were recipes to follow. My goal is to help you understand these techniques, and more complex procedures, more deeply so that you can choose an appropriate analysis for your study and report your results clearly. Our discussions will focus on understanding the assumptions underlying the methods we study and developing good practices of statistics that you can take forward to new problems.

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By the end of this course you should be able to:

1. Explain the assumptions of the methods studied in class.
2. Decide whether a specified method is appropriate to analyze data from a given study.
3. Implement the methods studied in class in R and interpret the results.
Report the results of your analysis in language appropriate for a publication in biology.

Your course grade will be calculated based on the following elements:

Lecture attendance and reading reports	10%
Writing assignments (top 3 of 4)	30%
Summary and critique of statistical analysis and reporting in a scientific paper	15%
Data analysis assignments (top 9 of 11)	30%
Seminar leading and participation	15%

Brief description of each element:

k – for each reading assignment you will be asked to state the three to five main points and to rate your own understanding of each point on a scale from 1 to 10. These are due Monday mornings at 8:30AM. Grading scheme: full credit if submitted, no credit if not submitted

‡ – essays of 500 to 600 words tha

The policy on Accommodation for Religious Holidays can be found here:

