

ESM 206B - STATISTICS & DATA ANALYSIS FOR ENVIRONMENTAL SCIENCE AND MANAGEMENT

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Appointments by arrangement

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<https://www.bren.ucsb.edu/academics/course.asp?number=206B>
The course picks up where 206A left off.

Tentative topics by date

30 March	Review Multiple Regression
1 April	Model Selection in Multiple Regression
6 April	Nonlinear Regression
8 April	Logistic Regression
13 April	Using Regression in Experimental Design
15 April	Analysis of Covariance
20 April	Bootstrapping & Monte Carlo
22 April	Bootstrapping & Monte Carlo
27 April	Similarity Metrics
29 April	Similarity Metrics for Multivariate Stats

Readings

There is no text to buy. You may at times find helpful readings in Helsel & Hirsch (the free PDF online, as suggested in 206A).

<https://www.bren.ucsb.edu/academics/courses/206a/Readings/HelselHirsch.pdf>

Generally, I or Nick will suggest or require readings from the primary literature or other resources online, and will link them from the course website a week or so in advance.

These are the text books that I would recommend to anyone doing research in ecology and environmental sciences:

Gotelli & Ellison. A Primer of Ecological Statistics. Sinauer.

Neter et al. Applied Linear Statistical Models. McGraw-Hill.

Zar. Biostatistical Analysis. Prentice-Hall.

Hilborn & Mangel. The Ecological Detective: confronting models with data.
Princeton.

Burnham & Anderson. Model selection and multi-model inference: a practical information-theoretic approach. Springer.

Manly. Multivariate Statistical Methods: a primer. Chapman & Hall.

Clarke & Warwick. 1994. Change in marine communities: an approach to statistical analysis and interpretation. Plymouth Marine Laboratory, National Research Council: Plymouth, U.K. (highly readable introduction to multivariate stats!)

Class format

Lectures meet twice per week in Bren 1414:

Monday & Wednesday 3:30 – 4:45pm

Labs meet once per week, in the GIS lab. There are three sections:

Tuesday 10-10:50am; Tuesday 11-11:50am; Wednesday 8-8:50am

In the labs, you will be doing analyses that relate to recent or upcoming lecture material.

Assignments and grading

Learning to actually do statistical analysis requires practice, so we will provide problems to work on in the lab sections. These will include both exercises in running specific analyses and interpreting the results, and exercises where you have to decide what sort of analysis to do. We recommend that you work on these problem sets outside of class on your own, especially if you do not finish them in your weekly lab section.

By Week 4, you will receive a “microexam” to take home, which will be a single problem, typically requiring that you both make some conceptual decisions and then run an analysis.

The practice problems in the lab may be worked in groups, and you may ask anyone for help.

However, you must work on the microexam on your own - you can use books, readings and online resources, but you can not talk to your peers about the problem or ask anyone for help.

Contact

I spend very little time on campus. The National Center for Ecological Analysis & Synthesis (NCEAS; www.nceas.ucsb.edu) is downtown, just 2 blocks from the Carrillo bus transit center (http://www.sbmta.gov/Lines/Line_24x.htm). We can set up meetings at my office downtown, if you would like to visit NCEAS, or potentially on campus before class on Monday or Wednesday. Email is the best way to reach me. I do not check phone messages very frequently.