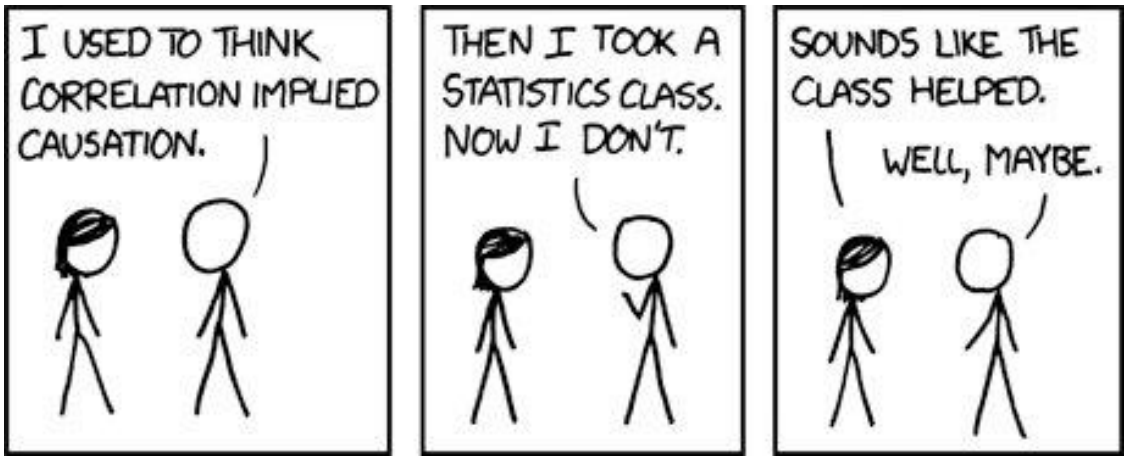
Introduction to Biostatistics - Honors – WILD 240



Fall Semester 2016
Instructor: Dr. Mark Hebblewhite
Associate Professor, FOR 308
E-mail: mark.hebblewhite@umontana.edu

CLASS MEETING TIMES:

Tues	9:40-11:00	Stone 106
Thur	9:40-11:00	Stone 106

OFFICE HOURS (FOR 304):

TR 11:10-12 (after class)

COURSE DESCRIPTION:

Introduction to statistical ecology: probability distributions, hypothesis testing, statistical theory, philosophy of science and fitting models to data with emphasis on problems in ecological sampling.

COURSE WEBSITE:

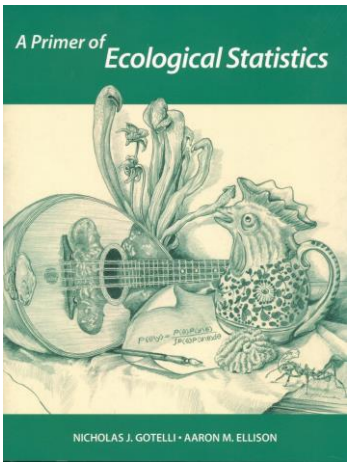
Moodle (WILD 240)

PRE-REQUISITES:

Calculus and/or consent of instructor.

TEXTBOOK:

A Primer of Ecological Statistics, 2nd edition. Gotelli and Ellison (2013). Chapter reading assignments for each class shown in brackets with the corresponding dates in class. Readings are required to be read BEFORE class when assigned. Additional readings will be assigned through the semester.



COURSE OBJECTIVE:
To avoid the above joke by the end of the semester; to instill statistical literacy in students; familiarize students with the basic concepts of probability, sampling, and different statistical approaches; and to gain hands-on experience analyzing, collecting, and managing data for ecological research using R and Excel.

SCHEDULE & REQUIRED TEXTBOOK READINGS
Readings should be read before class each day, additional readings to be assigned from other sources.

DRAFT Class Schedule & Readings

No.	Date	Topic	Readings
1	30-Aug	Course Introduction and Context	None
2	1-Sep	Concepts of Probability	Chapter 1
3	6-Sep	Concepts of Probability	Chapter 1
4	8-Sep	Probability Distributions	Chapter 2
5	13-Sep	Probability Distributions	Excel Assignment
6	15-Sep	Introduction to R	Assigned readings
7	20-Sep	Descriptive Statistics in R	Chapter 3
8	22-Sep	Guest Lecture	Assigned readings
9	27-Sep	Guest Lecture	Assigned readings
10	29-Sep	Descriptive Statistics	Chapter 4
11	4-Oct	**Exam I**	
12	6-Oct	Designing Field Studies	Chapter 6
	7-Oct/8-Oct	**Yellowstone Field Trip**	Assigned readings
13	11-Oct	Descriptive Statistics from Yellowstone	Chapter 3
14	13-Oct	Designing Experiments	Chapter 6
15	18-Oct	Designing Experiments	Chapter 6
16	20-Oct	Experimental Design	Chapter 7
17	25-Oct	Three Statistical Frameworks	Chapter 5
18	27-Oct	Three Statistical Frameworks	Chapter 6
19	1-Nov	ANOVA	Chapter 10
20	3-Nov	No Class	
	8-Nov	Election Day - No Classes, Offices Closed	
21	10-Nov	ANOVA II	Chapter 10

No.	Date	Topic	Readings
	15-Nov	**Exam II**	
22	17-Nov	Regression	Chapter 9
23	22-Nov	Regression in R	Chapter 9
24	24-Nov	Thanksgiving Break - No Classes, Offices Closed	Assigned readings
25	29-Nov	Survival Analysis	Assigned readings
	1-Dec	General Linear Models	Assignet readings
26	6-Dec	Generalized Linear Models - Binomial	Assigned readings
27	8-Dec	Last Class - Philosophy of Science	Assigned readings
Final Exam			
	19-Dec	10:10 - 12:00 Take Home	

FINAL EXAM:
Officially December 19, 10:10 – 12:00. But final exam will be TAKE HOME instead of in class, with the take home exam due by 12 noon on December 19 by email.

FIELD TRIPS:
We will have 1-2 field trips this semester to learn about data collection, experimental design, and the application of statistics to wildlife ecology. One will be to the Blackfoot valley where we will work with Dr. John Maron to learn about his predator exclusion experiments to test effects of predation on small mammal and grassland species. The second will be an overnight camping field trip to Yellowstone National Park (proposed on Friday and Saturday Oct 7/8) to see a field experiment to test for the effects of predation by reintroduced wolves on riparian vegetation (trophic cascades). We will discuss field trips more in class.

GRADING:
Grades will be based on 2 mid-term exams, a final exam, and weekly homework assignments. Late assignments will be penalized 10% for each day late. All assignments must be turned in as hard copies, emailed or other electronic files will not be accepted.

Mid-term exam 1:	25%
Mid-term exam 2:	25%
Final take-home exam:	25%
Homework:	25%

HOMEWORK:
There will be weekly homework assignments assigned typically every Thursday due the next Tuesday in class covering class material, R assignments, and readings.

EXAMS:
Exams in class will be written, focusing on definitions, concepts, calculations by hand with calculators, interpreting data, and relating statistical concepts to ecology. The take-home exam will be similar, but involve analysis of a real dataset.

Students with Disabilities Statement

- The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). If you think you

may have a disability adversely affecting your academic performance, and you have not already registered with DSS, please contact DSS in Lommason 154 or 406 243 2243. I will work with you and DSS to provide an appropriate accommodation. (Course Syllabus Statements)

Student Conduct Code Statement

- All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at: Student Conduct Code.
- Please note: The student conduct code gives instructors the right to address plagiarism. Plagiarism will be handled with an automatic grade of 0 for the assignment in question for all students caught plagiarizing, and additional disciplinary action in consultation with the Dean of the College of Forestry and Conservation and as directed by the Student Conduct Code.

Grading Option Statement

- This class is offered for traditional letter grade only, it is not offered under the credit/no credit option.
- Assignments will be graded using a mix of quantitative (i.e., marks/points) and qualitative (i.e., letter grade) depending on the nature of assignments.

Course Withdrawal Deadlines Statement

- Official Dates and Deadlines Fall 2016

Important Dates Restricting Opportunities to Drop a Course Fall 2016:

Deadline	Description	Date
To 15th instructional day	Students can drop classes on Cyberbear	Sept 19
16th to 45th instructional day	Drop requires form with instructor and advisor signature, a $10 fee from registrar's office, student will receive a 'W'.	Sept 20 through October 31
Beginning 46th instructional day	Students are only allowed to drop a class under very limited and unusual circumstances. Not doing well in the class, deciding you are concerned about how the class grade might affect your GPA, deciding you did not want to take the class after all, and similar reasons are not among those limited and unusual circumstances. If you want to drop the class for these sorts of reasons, make sure you do so by the end of the 45th instructional day of the semester.	November 1