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WILD 240.80: Introduction to Biostatistics - Honors

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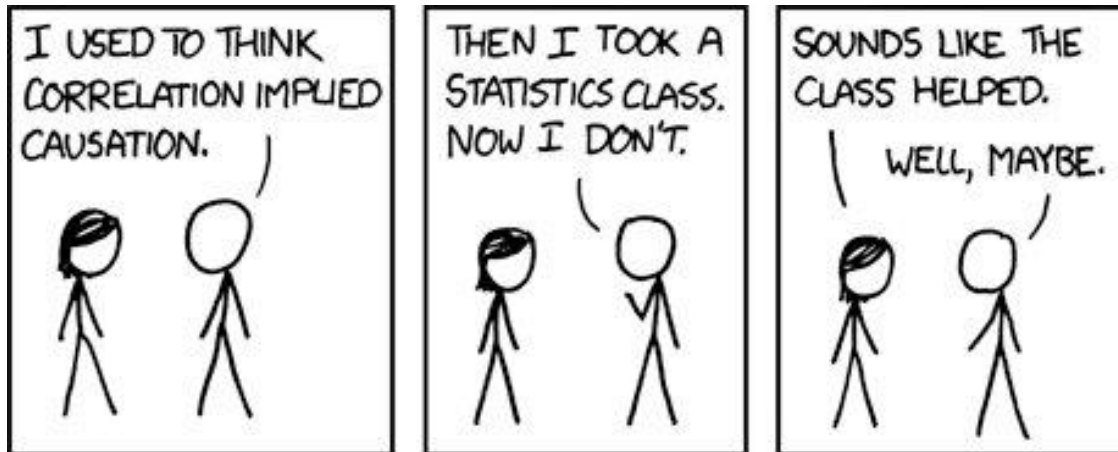
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Introduction to Biostatistics - Honors - WILD 240 (3 credits)



Fall Semester 2022

Instructor: Dr. Victoria Dreitz

Professor & Director – Avian Science Center, STONE 307B

Email: Victoria.Dreitz@umontana.edu

Office Hours: 1 PM to 3 PM Monday and by appt (via Zoom or in-person)

Learning Assistant: Vincent Gugliotti

Wildlife Biology Student

Email: vincent.gugliotti@umconnect.umt.edu

Weekly Study Sessions: TBD

Class Meeting Times: Tu/Th, 9:30 - 10:50 AM, Stone (SH) 106. This is a computer lab with workstations available for your use. You are welcome to use your laptop instead of the workstation provided.

Office Hours: 1 PM to 3 PM Mondays AND BY APPOINTMENT, available via zoom and in-person. If you want to meet via zoom, let me know, and I'll send you the link!

Course Description: This class is an introduction to statistical ecology, including probability distributions, hypothesis testing, statistical theory, philosophy of science, and fitting models to data with an emphasis on problems in ecological sampling.

Prerequisites: Calculus and/or consent of instructor

Course outcomes: By the end of the semester, students will be able to...

- Demonstrate comprehension and the ability to communicate statistics

- Describe probability distributions of data
- Discuss appropriate sampling and statistical approaches based on research needs
- Collect, manage, and analyze data for ecological research using program R and Excel

Textbook: *None required.* I will supply required readings and additional, optional reference material on the various topics throughout the semester from various resources. Please read the assigned materials *before* class! It will help you with quizzes. The course is loosely based on *A Primer of Ecological Statistics, Second Edition*, by Gotelli and Ellison (2013).

Course Website: MOODLE UOnline (<https://umonline.umd.edu/>). If you have not used Moodle in prior courses, 'Moodle 101 for Students' is a tutorial that can assist you in learning the basics. In addition, there are numerous Youtube videos on Moodle available. *PLEASE SEND EMAILS TO ME THROUGH MOODLE!!!* I often get >100 emails daily, so if you want me to respond quickly, please send emails through the course website. I have set up my email to mark emails from students in this course based on the Moodle platform.

Course Software (required): *Program R* is available free at <https://www.r-project.org/>, and R Studio (recommended) is a recommended user interface for R: <https://rstudio.com/products/rstudio/download/#download>. You may use R on your personal computer or your workstation in the lab.



Grading: Your overall grade will tentatively be based on exams, homework (almost weekly), quizzes (almost weekly), participation (including active involvement in class, discussion forums, attendance), and a project (you will get a chance to practice what you learn addressing a question of your choosing). Grading is subject to change. This course is Traditional Grading (e.g., A, B, C, etc.)

- Late assignments will be penalized 10% for each day late. For example, a homework assignment originally worth 100% points due on Sept 8th will be worth a maximum of 90% if turned in on Sept 13th. After 5 days, you will receive a 0 for that assignment.
- *Grammar and spelling*- This is not a writing class. However, being able to articulate statistics is highly important. That is, statistics is not just about writing down equations. Please make sure the work you turn in is clear so I can give you the appropriate number of points. Take time to explain yourself and your logic. I am most interested in your logic on how you got your answer.
- *Homework*- These assignments allow you to practice the theory and concepts. You are welcome to work with other students on the homework, but please do not simply share answers.
- *Quizzes*- These are short and open book, usually multiple choice.
- *Exams* (2 total) - These are closed book, but I will provide you with any equations you might need.
- *Final project*- You will be conducting your own research project in this class, in which we will focus on the concepts discussed! I will guide you through the steps (including gathering and

<i>Tentative Grading</i>	
Exam 1	15%
Exam 2	15%
Project	20%
Homework	25%
Quizzes	10%
Participation	15%

analyzing data). You will present your work in class at the end of the semester and turn in a write-up. It is a good idea to keep track of your work on this project throughout the semester!

Class Attendance Policy: Attendance is required and is part of your participation grade!

- After the one unexcused absence, you will lose the attendance/participation points for each day missed.
- If you have a legitimate excuse for missing class (e.g., illness; injury; University event; family emergency; religious, cultural, or ceremonial event), please tell me in advance and be prepared to provide appropriate evidence.
- Please enter the classroom on time! Quizzes and exams will start promptly when class begins, and no extra time will be given to students entering the classroom late. Entering the classroom late, especially repeatedly, will result in a grade reduction.
- If you have questions about this policy, please see me.

Tentative Topics and Schedule: We will be covering several topics that will introduce you to doing true experiments (laboratory-based) and pseudo-experiments (in nature). These topics include sampling, study design, descriptive statistics, probability, probability distributions, estimation, hypothesis testing, analysis of variance/linear regression, and correlations.

I will post lectures, readings, and reference materials as best I can approximately 1 week in advance. However, sometimes we (the class as a unit) do not get through materials as fast as I assume, or we go quicker. I have taught this course for numerous years, and every cohort is different.

A few things you should plan on are:

- A quiz every week
- Homework every week
- Two Exams:
 - Exam 1 – **Sept 29th**
 - Exam 2 – **Nov 3rd**
- Project Presentation and Report (no later than the Final) – **10:10-12:10, Thursday, Dec 15th**.

Classroom conduct: While you will have access to a computer workstation, your laptop is allowed for solving problems and using Program R. However, you are not allowed to use laptops, cell phones (i.e., please shut them off or on silent mode), etc. to text, email, tweet, surf the internet, use Facebook, or otherwise disrupt learning opportunities for other students. I reserve the right to take away participation points if you disrupt your classmates' learning opportunities and participation in class. This includes noncompliance with UM's COVID protocols/guidelines/mandates.

UM Policies/Guidelines/Information

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 must be familiar with the [Student Conduct Code \(www.umt.edu/student-affairs/community-standards/default.php\)](http://www.umt.edu/student-affairs/community-standards/default.php).

Students with Disabilities Statement:

- The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity (ODE). If you anticipate or experience barriers based on disability, please contact the ODE at (406) 243-2243, ode@umontana.edu, or visit www.umt.edu/disability for more information. Retroactive accommodation requests will not be honored, so please, do not delay. As your instructor, I will work with you and the ODE to implement an adequate accommodation, and you are welcome to contact me privately if you wish.

Cultural Leave Statement:

- Cultural or ceremonial leave allows excused absences for cultural, religious, and ceremonial purposes to meet the student's customs and traditions or to participate in related activities. To receive an authorized absence for a cultural, religious, or ceremonial event, the student or their advisor (proxy) must submit a formal written request to the instructor. This must include a brief description (with inclusive dates) of the cultural event or ceremony and the importance of the student's attendance or participation. Authorization for the absence is subject to approval by the instructor. Appeals may be made to the Chair, Dean, or Provost. The excused absence or leave may not exceed five academic calendar days (not including weekends or holidays). Students remain responsible for the completion or make-up of assignments.

Grading Option Statement:

- Please note, that this class is offered for traditional letter grade only; it is not offered under the credit/no credit option.

Course Withdrawal Deadlines Statement:

Important dates restricting opportunities to add or drop a course during Fall 2022 can be found at: www.umt.edu/registrar/calendar/autumn.php