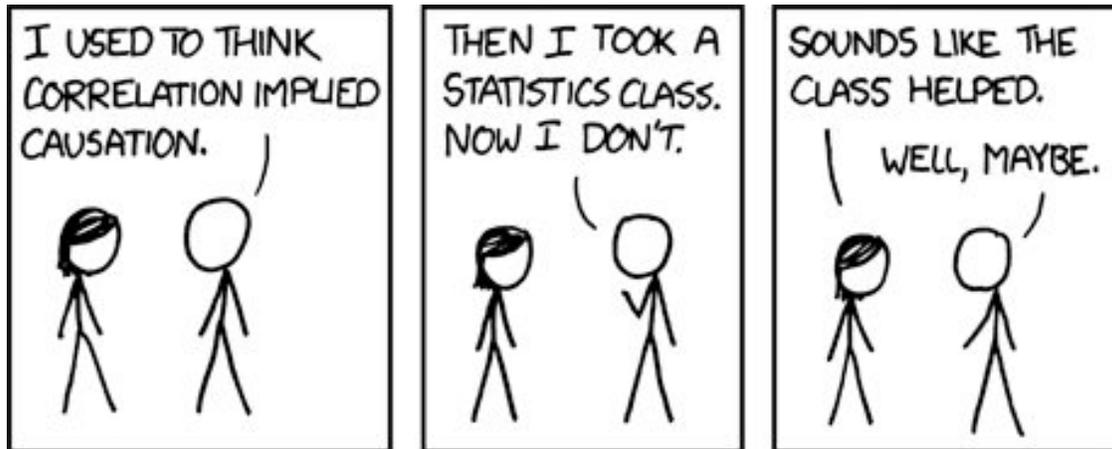# Introduction to Biostatistics - Honors - WILD 240 (3 credits)

Fall Semester 2021
Instructor: Dr. Victoria Dreitz
Associate Professor & Director – Avian Science Center, FOR 313
Email: Victoria.Dreitz@umontana.edu
Office Hours: 11 AM to 12 PM and by appt (via Zoom or in-person)

Class Meeting Times: Tu/Th, 9:30 - 10:50 AM, Stone (SH) 106. This is a computer laboratory, thus, a computer workstation is available to you.

Office Hours: 11 AM to 12 PM Thursdays AND BY APPOINTMENT, available via zoom and in-person (masks required, subject to change). 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 emphasis on problems in ecological sampling.

Course Website: MOODLE UMOnline (https://umonline.umt.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 per day 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.

Prerequisites: Calculus and/or consent of instructor

Textbook: I will be supplying readings on the various topics throughout the semester from a variety of resources. Please read assigned materials **before** class (hint: may help you with quizzes). I will also provide additional materials that will serve as reference resources.

Course Software (required): Program R (R Core Team 2018), available free at https://www.r-project.org and R Studio (recommended) available FREE at: https://rstudio.com/products/rstudio/download/#download

Course Outcomes:
- Instill statistical literacy in students
- Familiarize students with the basic concepts of probability, sampling, and different statistical approaches
- Gain experience collecting, managing, and analyzing data for ecological research using Program R and Excel (we will mainly use Excel for our data files).
- (Also, to avoid the cartoon joke by the end of the semester!)

COVID protocols:
- *Mask use is required within the classroom/computer laboratory (SH 106)*.
- We encourage you to wipe down the keyboard and CPU (especially if you have to push the "ON" button) prior and post class (wipes will be supplied). Most computers will be on, you only need to hit a key on the keyboard to turn them on.
- I may ask students to demonstrate examples on the whiteboards in the classroom. I will supply the dry erase markers and ask for your assistance in wiping them down pre- and post-use.
- If you feel sick and/or are exhibiting COVID-19 symptoms, please do NOT come to class and contact the Curry Health Center at (406) 243-4330.
- If you are required to isolate or quarantine, you will receive support in the class to ensure continued academic progress. Please notify me to make alterative arrangements.
- UM recommends students get the COVID-19 vaccine. Please direct your questions or concerns about vaccines to Curry Health Center.
- Seating arrangements will be used to support contact tracing efforts. On the first day of class, decide what computer workstation you would like to sit at for the duration of the course. Please do not deviate from this computer workstation without discussing so with me first.
- Class attendance will be recorded to support contact tracing efforts.
- Drinking liquids and eating food is discouraged within the classroom, especially within the computer laboratory (SH 106).
- If guidelines/mandates/procedures for COVID-19 changes, I will inform you in class and through Moodle.

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.
- If you have questions about this policy, please see me.

***Tentative* Schedule (*subject to change, I will post updated schedule on Moodle*):**
Note, I will post readings, approximately 1 week in advance, in which I expect you to have read prior to class). In addition, I will periodically post reference materials (each one of us, has our own learning style) as additional resources on Moodle. And recognize, there are a lot more out there!!!

Date	Topic	Assignments (Due Dates)
31-Aug	Course Introduction and Context	
2-Sep	Probability	
7-Sep	Probability	Homework 1
9-Sep	Probability Distributions	Quiz 1
14-Sep	Probability Distributions	Homework 2
16-Sep	Introduction to R	Quiz 2
21-Sep	Descriptive Statistics in R	Homework 3
23-Sep	Confidence Intervals	Quiz 3
28-Sep	Exam 1	
30-Sep	Hypotheses	
5-Oct	Hypotheses	Homework 4
7-Oct	Experimental Design	Quiz 4
12-Oct	Experimental Design - Power Analysis	Homework 5
14-Oct	Managing Data	Quiz 5
19-Oct	Managing Data	Homework 6
21-Oct	Regression	Quiz 6
26-Oct	Regression	Homework 7
28-Oct	Analysis of Variance	Quiz 7
2-Nov	Analysis of Variance	
4-Nov	Exam II	
9-Nov	Panel Discussion (Field Studies and Data)	
11-Nov	Veterans Day - University Holiday, No Class	
16-Nov	General Linear Models	Quiz 8
18-Nov	General Linear Models	Homework 8
23-Nov	Model Selection and Inference	Quiz 9
25-Nov	Thanksgiving - University Holiday, No Class	
30-Nov	Occupancy or Abundance	Homework 9
2-Dec	Occupancy or Abundance in Bayesian Context	Quiz 9
7-Dec	Course Review and Wrap Up	Quiz 10
9-Dec	Exam III	

Grading: Grades will be based on 3 exams, weekly homework assignments, quizzes, and participation (including attendance). Late assignments will be penalized 10% for each day late. Attendance and participation points (see policies above) are designed to keep you engaged in the class!

Tentative Grading	
Exam 1	20%
Exam 2	20%
Exam 3	20%
Homework	20%
Quizzes	10%
Participation	10%

Note: Moodle will likely be used for submitting homework and taking quizzes and exams.

Classroom Etiquette and Participation:
- While you will have access to a computer workstation, your laptop is allowed for solving problems, using Program R. However, you are not allowed to use laptops, CELL PHONES (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' opportunities to learn and participate in class. ***This includes noncompliance with UM COVID protocols/guidelines/mandates, along with my COVID protocols.***

UM Policies/Guidelines/Information

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 effective accommodation, and you are welcome to contact me privately if you wish.

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 (or see link: https://www.umt.edu/student-affairs/community-standards/default.php).

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 completion or make-up of assignments as defined in the syllabus, at the discretion of the instructor.

Grading Option Statement:
- Please note, 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 drop a course during Fall 2021:

Sept. 8, 2021 (5 p.m.)	**Class Day 7:** Last day for students to add classes via CyberBear without consent of instructor.
Sept. 20, 2021 (before 5 p.m.)	**Class Day 15:** • **Last day to drop individual classes on CyberBear with refund** • Last day to withdraw from (drop all courses) with a partial refund – Withdrawal Policy linked below. • Last day to add classes with electronic override on CyberBear. • Last day to change credits in variable credit courses & switch grade mode in CyberBear. • Last day to change grading option to or from audit. • Last day to buy or refuse UM's student health insurance coverage.
Sept. 20, 2021 (after 5 p.m.)	Any student not registered for at least one course (on schedule in CyberBear) must submit a Petition to Register & Pay After the Deadline. Petitions are reviewed weekly by committee and are not guaranteed approval. Due by Oct. 12th.

Sept. 21–Nov. 1, 2021 (5 p.m.)	**Through Class Day 45:** • Course adds & drops require instructor's & advisor's approval using the Course Add/Change/Drop link in CyberBear. $10 fee applies per add or drop. • A 'W' will appear on the transcript for dropped classes. No refunds. • Students can change variable credit amounts and grading options (**except audit**) on eligible courses using the Course Add/Change/Drop link in CyberBear.
Oct. 12, 2021	Last day to submit a <u>Petition to Register & Pay After the Deadline</u> for this semester.
Nov. 2–Dec. 10, 2021 (5 p.m.)	After Class Day 45: • Adds require instructor's and advisor's approval using the Course Add/Change/Drop link. $10 fee applies. • Drops require instructor's, advisor's, and Dean's approval via Course Add/Change/Drop link. $10 fee applies. • A 'WP' or 'WF' will appear on the transcript for dropped classes. No refunds. • Students can change variable credit amounts, or change grading options, (except audit) using the Course Add Change Drop link in Cyberbear.