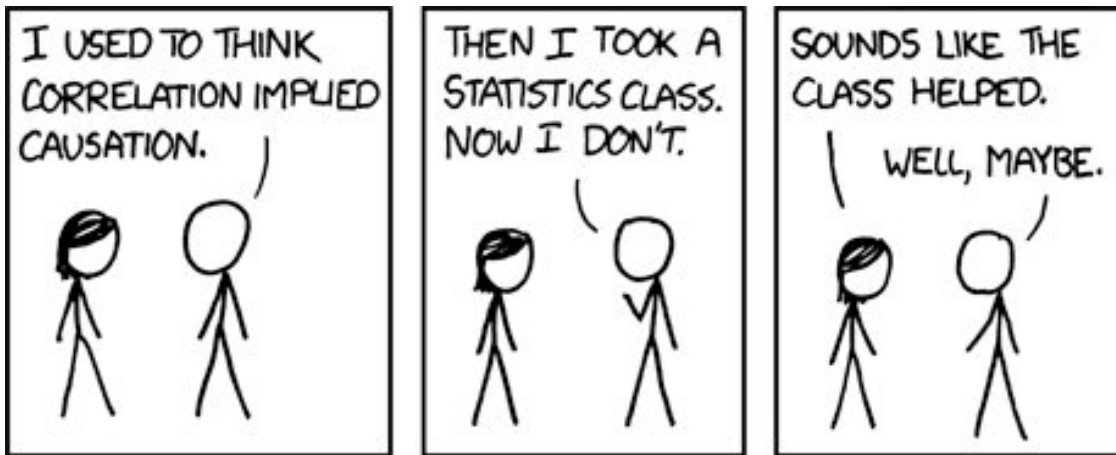


WILD 240 - HONORS INTRODUCTION TO BIostatISTICS (3 CR)
SPRING 2021



Instructor: Kaitlyn (Kaity) Reintsma
PhD Candidate in Wildlife Biology

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*put WILD 240 in the subject line so I can prioritize you!

Office hours: Thursdays 11 am - 12 pm and by appointment

- In person with masks required- FOR 303
- Zoom- <https://umontana.zoom.us/j/6938314610>

Class meeting times: Tuesdays and Thursdays, 9:30 - 10:50 am

Class location: *Stone Hall (SH) 106*- this is a computer lab with workstations available for your use.

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. Prerequisites are 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 be supplying required readings and additional, optional reference material on the various topics throughout the semester from a variety of resources. Please read assigned materials *before* class! It will help you

with quizzes. The class is loosely based off A Primer of Ecological Statistics, Second Edition by Gotelli and Ellison (2013).

Course website: Moodle found through UOnline (<https://umonline.umt.edu/>). I will post announcements, assignments, quizzes, exams, and forums through Moodle. You can also check your current grade on Moodle. The basics of Moodle are taught in a tutorial, "Moodle 101 for Students", on the course Introduction page if you are not familiar with the site.



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

Grading: Your overall grade will be based on exams, homework, quizzes, participation, and the final project as shown in the table on the right. This may change depending on if the class schedule changes. Traditional grading (e.g., A is 90-100%, B is 80-89%, etc.).

<i>Participation</i>	10%	40 points
<i>Quizzes</i>	15%	60 points (6 each)
<i>Homework</i>	25%	100 points (10 each)
<i>Exam I</i>	15%	60 points
<i>Exam II</i>	15%	60 points
<i>Final project</i>	20%	80 points
<i>Total</i>	100%	400 points

- *Late assignments-* work will be penalized 10% for each day late. For example, a homework assignment originally worth 10 points that is due on January 25th will be worth a maximum of 7 points if turned in on January 28th. After 5 days you will receive a 0 for that assignment.
- *Grammar and spelling-* This is not a writing class, but I need to be able to understand you! Please make sure the work you turn is clear so I can give you the appropriate number of points.
- *Homework-* These assignments give you a chance to practice the theory we are learning in the lecture. You are welcome to work with other students on the homework, but please do not simply share answers. Your lowest homework grade will be dropped at the end of the semester.
- *Quizzes-* These are short and open book, but you have only 10 minutes to complete the quiz between 9:30 and 9:40 am the day of the quiz in the computer lab. Your lowest quiz grade will be dropped at the end of the semester.
- *Exams-* These are closed book, but I will provide you with any equations you might need. The exams will be open for students in the computer lab between 9:30 am and 10:50 am the day of the exam.
- *Final project-* You will be conducting your own research project in this class through your final project! I will guide you through the steps as problems in your homework then give you more details and set you free to do your own work towards the end of the semester. During finals week you will present

your project to the class and turn in a write-up to Moodle. It is a good idea to keep track of your work on this project throughout the semester!

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

- After the one unexcused absence, you will lose all participation points for the day(s) 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 will also result in reduction of participation points.
- To gain full participation points you should attend class on time, ask questions, participate in class discussions, and post in the Moodle forums.

Tentative class schedule: The schedule below is likely to change based on class needs and desires. See Moodle for the most up-to-date schedule.

Date	Topic	Assignment(s) due
18-Jan	Course introduction and context	
20-Jan	Probability	Quiz 1
25-Jan	Probability	Homework 1
27-Jan	Introduction to R	Quiz 2
1-Feb	Probability distributions	Homework 2
3-Feb	Probability distributions	Quiz 3
8-Feb	Descriptive statistics in R	Homework 3
10-Feb	Confidence intervals	Quiz 4
15-Feb	Hypotheses testing	Homework 4
17-Feb	Hypotheses testing	Quiz 5
22-Feb	Exam I	
24-Feb	Experimental design	
1-Mar	Experimental design: power analysis	Homework 5
3-Mar	Managing data	Quiz 6
8-Mar	Managing data	Homework 6
10-Mar	Regression	Quiz 7
15-Mar	Regression	Homework 7
17-Mar	Analysis of variance	Quiz 8

22-Mar	Analysis of variance	Homework 8
24-Mar	Spring break- no classes	
29-Mar	Spring break- no classes	
31-Mar	Model selection and inference	
5-Apr	Model selection and inference	Homework 9
7-Apr	Panel discussion: field studies and data	Quiz 9
12-Apr	Exam II	
14-Apr	General linear models	
19-Apr	General linear models	Homework 10
21-Apr	Occupancy models	Quiz 10
26-Apr	Abundance models	
28-Apr	Community models	
3-May	Demographics models	Homework 11
5-May	Frequentist vs Bayesian statistics	Quiz 11
11-May (8-10 am)	Finals week: project presentations	Project write-up

COVID precautions

- *Mask use is required within the computer laboratory (SH 106).*
- 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 alternative arrangements.
- Please note this class is occasionally recorded to share lectures with students that cannot be in class.
- UM recommends students get the COVID-19 vaccine. Please direct your questions or concerns about vaccines to Curry Health Center.
- Drinking liquids and eating food is discouraged within the classroom. Please eat or drink away from the computer equipment or in the hallway if you must eat or drink.
- I encourage you to wipe down the keyboard, CPU, and any other shared supplies (e.g., markers) pre- and post-use. Disinfectant wipes will be supplied in the hallway.
- I encourage you to spread out in the computer lab to maintain social distancing.
- Class attendance will be recorded to support contact tracing efforts and participation.

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' opportunities to learn and participate in class. This includes noncompliance with UM and this class's COVID protocols/guidelines/mandates.

The Writing Center: The Writing and Public Speaking Center provides free, one-on-one tutoring to students at all levels and at any time in the writing process and it will be useful for communicating statistics in your homework and final project. www.umt.edu/writingcenter.

UM POLICIES AND GUIDELINES

Grading option: This class is offered for traditional letter grade only.

Student conduct code: 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 \(or see link: https://www.umt.edu/student-affairs/community-standards/default.php\)](https://www.umt.edu/student-affairs/community-standards/default.php).

Cultural leave: 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.

Mental health: College students often experience issues that may interfere with academic success such as academic stress, sleep problems, juggling responsibilities, life events, relationship concerns, or feelings of anxiety, hopelessness, or depression. If you or a friend is struggling, we strongly encourage you to seek support. Helpful, effective resources are available on campus.

- If you are struggling with this class, please visit during office hours or contact me by email.
- Check in with your academic advisor if you are struggling in multiple classes, unsure whether you are making the most of your time at the University of

Montana.

- Reach out for Support-Curry Health Center Counseling-to make a counseling appointment call 406-243-4712 or email mary.rust@mso.umt.edu.
- If you feel that you would benefit from general wellness skills to support your overall stress, reach out to Curry Health Center Wellness: 406-243-2809.
- If you are experiencing a mental health crisis and seeking immediate help, call 911, go to the nearest hospital emergency room or call Campus Safety at 406-243-4000.
- If you have experienced sexual assault, relationship violence, bullying, intimidation, or discrimination contact Student Advocacy Resource Center (SARC): 406-243-4429; 24-hour support line: 406-243-6559.

Students with disabilities: 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.

COVID resources

- Curry Health Center is offering COVID-19 vaccines to anyone who would like one.
- Curry Health Center offers free COVID-19 testing to UM students.
- If you have COVID symptoms, please get a COVID test at Curry Health Center. To assist with contact tracing, please sign the self-disclosure form so that if you test positive, Curry can share this information with the health department and the University.
- If you test positive for COVID, you will be required to self-isolate, per Missoula City/County Health Department protocol. Please let me know so I can help you to receive materials and keep up with the class.
- If you need to attend class remotely, please take advantage of these [resources for online and remote students](#).

Course withdrawal deadlines: More information can be found at <https://www.umt.edu/registrar/calendar/spring-2022.php>.

Dates	Description
October 4, 2021	Spring Semester 2022 advising PINs and class schedule available.

<p>October 25 - October 29, 2021</p>	<p>Spring semester 2022 priority class registration for continuing students begins according to class standing or special registration group.</p>
<p>October 30, 2021 - January 26, 2022</p>	<p>Open registration for Spring semester continues on CyberBear through the 7th class day.</p>
<p>January 18, 2022</p>	<p>Spring classes begin Class waitlists expire; instructors may grant registration overrides at their discretion.</p>
<p>January 21, 2022</p>	<p>Residency reclassification questionnaires for Spring 2022 due, though they can be accepted up to the 15th class day. Earlier submission is encouraged to allow time for review and correction or to turn in missing documents. Residency reclassifications may affect tuition and fee assessment.</p>
<p>January 26, 2022 (by 5:00 p.m.)</p>	<p>Spring Class Day 7: Last day for students to add classes via CyberBear without consent of instructor.</p>
<p>January 27 - February 7, 2022</p>	<p>Instructors must issue registration overrides in CyberBear to approve any Spring class adds. Departments may continue to enter registration overrides via Banner</p>

<p>February 7, 2022 (by 5:00 p.m.)</p>	<p>Spring Class Day 15:</p> <ul style="list-style-type: none"> • Last day to drop individual Spring classes on CyberBear with no "W"; refunds where applicable • Last day to withdraw from Spring (drop all courses) with no "W"s; partial refunds where applicable – see Withdrawal Policy below. • Last day to add Spring classes with registration override on CyberBear. • Last day to change Spring credits in variable credit courses & switch grade mode in CyberBear. • Last day to change Spring grading option to or from audit. • Last day to buy or refuse UM's student health insurance coverage.
<p>February 7, 2022 (after 5:00 p.m.)</p>	<p>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 Tuesday, March 1, 2022</p>
<p>February 8 – March 29, 2022 (by 5:00 p.m.)</p>	<p>Through Spring Class Day 45:</p> <ul style="list-style-type: none"> • Spring 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.

<p>February 22, 2022</p>	<p>Summer 2022 course registration opens for all students and continues throughout the start of summer courses. No advising PIN required. Visit UM's summer site for details.</p> <p>Autumn 2022 advising for priority registration begins.</p>
<p>March 1, 2022 (by noon)</p>	<p>All Petitions to Register & Pay After the Deadline DUE at 12:00pm (noon). Petitions are reviewed weekly by committee and are not guaranteed approval. Approved petitioners must pay within two weeks.</p>
<p>March 28 - April 8, 2022</p>	<p>Autumn 2022 priority registration begins for continuing students according to class standing. See priority registration page for the registration timetable. Advising PIN required for undergraduate students.</p> <p>Note: priority registration period expanded to 2 weeks.</p>
<p>March 30 - May 6, 2022 (by 5 p.m.)</p>	<p>After Spring Class Day 45:</p> <ul style="list-style-type: none"> • Adds require instructor's & advisor's approval using the Course Add/Change/Drop link. \$10 fee applies. • Drops require instructor's, advisor's, & 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.
<p>May 6, 2022</p>	<p>Last day of Spring instruction Last day to withdraw from Spring semester (drop all classes) by 5:00 p.m.</p>

May 9 - May 13, 2022	Spring Semester final exams week
May 20, 2022	Grades post to CyberBear and to student transcripts <i>on or around</i> this date.