Conservation of Wildlife Populations – WILD 470

INSTRUCTOR:

Dr. Colby Anton, Email: colbyanton@gmail.com
Office Hours: Tuesdays and Fridays 11-11:50, or by appointment
Office hours will be on Zoom link. Meeting ID: 945 8153 2441, Password: 4702021.
Please send me an email to let us know you will be attending office hours at that link.

TA:

Daniel Morina, Email: daniel.morina@umontana.edu
Office Hour: Mondays and Wednesdays 10-10:50 at this Zoom Link , Meeting ID: 516 042 5818 , Password: 4702021

REQUIRED READINGS:

Conservation of Wildlife Populations, 2nd edition, by L. Scott Mills

- Chapters for each class shown in brackets

Additional readings to be assigned

CLASS MEETING TIMES:

Most weeks:

MWF 9:00-9:50 STON 304; and Lecture Zoom Link, Meeting ID: 964 9613 9018, Password: 4702021

M 1:00-2:50 GBBL 26; Lab Zoom Link, Meeting ID: 941 0269 9799, Password: 811247

CLASS STRUCTURE: This will be a blended/hybrid class. *The first 2 weeks of the semester will be entirely remote on zoom*. Following the first 2 weeks of the semester, 1/2 the class will meet in person in either Monday or Wednesday in STON 304. Friday lectures will be replaced by online Moodle Lessons (marked by "ONLINE" in the schedule below). The day will be assigned to you in the first 2 weeks of the class. All lectures will also be available on zoom. For the Monday computer lab, 1/3 of the class will meet each week in GBBL 26. Again, this will be assigned to each student to start in the third week of the semester. For all the in-person sessions, the Zoom link will also be live and recorded, so if for any reason you need to or want to be remote, you can. This structure is subject to change.

COURSE OBJECTIVES: By the end of the course students should understand how we measure populations (abundance/density) and demographic rates (birth, death, immigration, emigration), what affects populations, and how we manage/conserve populations. Students will gain proficiency with quantitative methods in population ecology including various types of population models and several ways to estimate population processes. Additionally, students will demonstrate their understanding of the scientific method and proficiency of scientific writing.

TENTATIVE SCHEDULE

January			
	Mon	11	Intro & Reliable Knowledge [Ch. 1, 2]
	Mon	*11*	*Lab 1: Intro to R*
	Wed	13	Study design and Hypothesis testing [Ch. 2]
	Fri	15	Gaining Reliable Knowledge cont. [Ch. 2] **ONLINE**
	Mon	18	Martin Luther King Jr. Day – No Class
	Mon	*18*	Martin Luther King Jr. Day – No Lab
	Wed	20	Likelihood & AIC [Ch. 2]
	Fri	22	Estimating abundance (mark-recapture) [Ch. 4] **ONLINE**
	Mon	25	Capture Mark Recapture [Ch. 4]
	Mon	*25*	*Lab 2: Standard Error and Deviation*
	Wed	27	CMR Survival [Ch. 4]
	Fri	29	Exponential Population Growth [Ch. 5] **ONLINE**
	Annotated Bibliography Due		
February			
	Mon	1	Survival & Reproduction [Ch.4]
	Mon	*1*	*Lab 3: Population Estimation (Lincoln-Peterson)*
	Wed	3	Variability in Growth [Ch. 5]
	Fri	5	Age-Structured Population models [Ch. 6] **Matrix Online Exercise Also, MM2**
	Mon	8	Matrix population models 1 (3) [Ch. 6]
	Mon	*8*	*Lab 4: Hypotheses & Predictions*
	Wed	10	Matrix population models 2 (4)[Ch. 6]
	Fri	12	Sensitivity Analysis [Ch. 6] **ONLINE**
Hypotheses and Predictions for Research Proposal Due			
	Mon	15	President's Day – No Class
	Mon	15	President's Day – No Lab
	Wed	17	Matrix Exercises
	Fri	19	**Exam Review**
	Mon	22	**Exam 1**
	Mon	22	*Lab 5: Matrix Models I*

	Wed	*24*	*Disease **ONLINE***
	Fri	26	Density Dependence 1 [Ch. 7] **ONLINE**
March			
	Mon	1	Density Dependence 2 [Ch. 7]
	Mon	*1*	*Lab 6: Density Dependence*
	Wed	3	Density Dependence & Predation [Ch. 7,8] **ONLINE**
	Fri	5	Predation 1 [Ch. 8]
	Draft of Hypotheses & Methods Sections		
	Mon	8	Predation 2 [Ch. 8]
	Mon	*8*	*Lab 7: Peer Review*
	Wed	10	*Dr. Michael Sawaya, Guest Lecture*
	Fri	12	Genetic variation & fitness [Ch. 9] Migration/Dispersal **ONLINE**
	Mon	15	Connectivity [Ch. 10]
	Mon	*15*	*Lab 8: Stochasticity*
	Wed	17	Metapopulations & Ecological Traps [Ch. 10]
	Fri	19	Human perturbations on populations [Ch. 11] **ONLINE**
	Mon	22	Dr. Nick Decesare, *Guest Lecture*
	Mon	22	*Lab 9: Writing Lab*
	Wed	*24*	**Exam Review**
	Fri	26	**Exam 2**
	Mon	29	Harvest Management 1 [Ch. 14]
	Mon	29	*Lab 10: Small Population Conservation*
		Draft Research Proposal Due	
	Wed	*31*	Harvest Management 2 [Ch. 14]
April	Fri	2	No Class, Harvest Management 3 [Ch. 14] **ONLINE**
	Mon	5	Extinction Vortex [Ch. 12]
	Mon	*5*	*Lab 11: Harvest*
	Wed	7	*Cheyenne Stewart, Guest Lecture*

	Fri	9	Focal Species, **ONLINE**
	Proposal Reviews Due		
	Mon	12	Population Viability [Ch. 12]
	Mon	*12*	*Lab TBD, Distance Sampling*
	Wed	14	Daniel Morina, *Guest Lecture*
	Fri	16	Adaptive Management, **ONLINE**
	Mon	19	Case Study
	Mon	*19*	*Final Exam Review*
	Wed	21	*Conclusions and Final Thoughts*
	Fri	23	TBD
	Final Research Proposal Due		

GRADING: Grades will be based on 2 mid-term exams, a final, lab exercises, and a written research proposal (with multiple parts). Late lab assignments will be penalized 10% for each day late. Grades will be kept up to date on Moodle.

	percentage		pts
Exams	39%	Exam 1	100
		Exam 2	100
		Final	140
		subtotal	**340**
Labs	26%	12 labs @ 20 pts each*	**220**
Assignments/Quizzes	12%	6-8 pts/week	**99**
Proposal	23%	Annotated Bibliography	20
		Hypotheses/Predictions	20
		Draft Sections	30
		Full Draft	10
		Reviews	20
		Final Proposal	100
		subtotal	**200**
Total points	100.0%		**859**

***The lab with the lowest score will be dropped from final grade.**

RESEARCH PROPOSAL: Each student is required to prepare a research proposal on a topic of their choice related to wildlife population ecology. The proposal should include an introduction to the topic, hypotheses and predictions, research methods, expected results, implications, and literature cited. The proposal must also include a budget. The length of the proposal including all sections is 8 pages, double-spaced with 12-point font (5-6 pages text + cover letter, references, and budget). The full proposal assignment will be broken down into a few sub-assignments, including an annotated bibliography (due **Jan 29**), Hypotheses and Predictions (as bullet points, due **Feb 12**), a draft of the Hypothesis Section and the Methods Section (due **Mar 5),** a full draft (due **Mar 29**), anonymous peer-reviews (due **April 2**), and the final proposal (due **April 23**). See above for grade break-down. See Moodle for documents with more details.

UPPER DIVISION WRITING REQUIREMENTS: WILD 470 in conjunction with two additional upper division writing courses meets the university upper division writing requirement. WILD 470 specifically meets the following outcomes:

·Identify and pursue more sophisticated questions for academic inquiry
·Find, evaluate, analyze, and synthesize information effectively from diverse sources
·Manage multiple perspectives as appropriate
·Recognize the purposes and needs of discipline-specific audiences and adopt the academic voice necessary for the chosen discipline
·Use multiple drafts, revision, and editing in conducting inquiry and preparing written work

·Follow the conventions of citation, documentation, and formal presentation appropriate to that discipline
·Develop competence in information technology and digital literacy

COVID-19 SAFETY:

I expect students, TA, and I will follow UM safety protocols, as bulleted below. **If students decide not to follow all safety protocols, I will immediately transition all activities to fully remote for the entire class.** This is for the safety of everyone to minimize transmission. (Mostly asymptomatic) transmission is likely to occur on campus, whether through contacts at school, work, or socializing. We need to do our best to try to minimize that transmission. If you are young and healthy, your risk of severe infection is low, but it is not zero, and we need to be mindful of starting a chain of transmission that may eventually infect someone who is high risk. We are in this together.

Because this class is hybrid, you will be able to participate remotely if you have been exposed, need to quarantine, are sick, or if you would just like to minimize your risk. Please let me know if you have concerns or need any other accommodations. This is a novel and ever-changing landscape so mutual respect, honest and early communication, and flexibility are needed for us to have a successful semester.

UM safety guidelines:

- Mask use is required within the classroom
- You must clean your personal work space when you arrive and before you leave the classroom with your provided cleaning kits
- Classrooms may have one-way entrances / exits to minimize crowding
- Please do not congregate outside the classroom before and after class
- Specific seating arrangements will be used to ensure social distancing and support contact tracing efforts
- Class attendance will be recorded to support contact tracing efforts
- Drinking liquids and eating food is discouraged within the classroom (which requires mask removal)
- Stay home if you feel sick or are exhibiting any COVID-19 symptom
- If sick, please contact the Curry Health Center at (406) 243-4330
- Up-to-Date COVID-19 Information from the University of Montana
    - UM Coronavirus Website: https://www.umt.edu/coronavirus
    - UM COVID-19 Fall 2020 website: https://www.umt.edu/coronavirus/fall2020.php
- Please remain vigilant outside the classroom in mitigating the spread of COVID-19

PLAGIARISM: Plagiarism will not be tolerated and will result in failing the course.

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.

STUDENTS WITH DISABILITIES: 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 modification.

BASIC NEEDS: Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Office for Student Success (sarah.swager@umontana.edu or (406) 243-5225) for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable her to provide any resources that she may possess.

GRADING OPTION: Please note, this class is offered for traditional letter grade only, it is not offered under the credit/no credit option.

DROP DATES: After registering and through the **first seven (7) instructional days of the semester**, students may use Cyberbear add courses or change sections and credits; through the **first fifteen (15) instructional days of the semester**, students may use Cyberbear to drop courses. Fees are reassessed on the sixteenth day of the term. Added courses and credits may result in additional fees. For courses dropped by the fifteenth instructional day, no fees are charged and courses are not recorded. (For deadlines and refund policy for withdrawal from all courses, see the Withdrawal sections of this catalog.)

An instructor may specify that drop/add is not allowed on the internet. A drop/add form is used to make changes in these courses, if approved by the instructor.

Beginning the sixteenth (16) instructional day of the semester through the forty-fifth (45) instructional day, course adds & drops require instructor's and advisor's approvals using the Course Add/Change/Drop link in Cyberbear. A $10.00 processing fee is charged for each drop/add form. Added courses and credits may result in additional fees. There are no refunds or reductions of fees for courses dropped and grades of W (withdrew) are recorded.

Beginning the forty-sixth (46) instructional day of the semester through the last day of instruction before scheduled final examinations, students must petition to drop. The petition must be approved by the dean of the student's major as well as the instructor of the course and the student's advisor. A $10.00 processing fee is charged for each petition. There are no refunds or reductions of fees for courses dropped, and the instructor assigns a grade of WP (withdrew/passing) if the student's course work has been passing or a WF (withdrew/failing) if

the course work has been failing. These grades do not affect grade averages but they are recorded on students' transcripts.

Documented justification is required for dropping courses by petition. Some examples of documented circumstances that may merit approval are: accident or illness, family emergency, or other circumstances beyond the student's control.

The opportunity to drop a course for the current term for such a course ends on the last day of instruction before scheduled final exams. Dropping a course taken in a previous term or altering grading option or audit status for such a course is not allowed. The only exceptions are for students who have received a grade of NF (never attended).