Conservation of Wildlife Populations - WILD 470

Spring Semester 2020

Instructor: Dr. Colter Chitwood
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Class Meeting Times: M/W/F, 9:00 a.m. - 9:50 a.m., Liberal Arts 337

Lab Meeting Time: M, 1:00 p.m. - 2:50 p.m., Stone 107

Office Hours: Chitwood--M/W 10:00 a.m. - 10:50 a.m. (Forestry 314) or by appointment
Martin--F 12:00 p.m. - 12:50 p.m. (Stone 108) or by appointment

Course Description: This class is a senior-level course in population ecology, including how we measure wildlife populations and their demographic rates, how various factors affect wildlife populations, and how we manage and conserve wildlife populations.

Course Website: Moodle. If you have not used Moodle in prior courses, "Moodle 101 for Students" is a tutorial that can assist you in learning the basics.

Textbook: *Conservation of Wildlife Populations, 2nd edition*. L. Scott Mills (2013). The textbook is to be used as a resource. We will cover some chapters thoroughly and other chapters to a lesser extent. Please read assigned chapters **before** class. Additional readings and materials could be assigned throughout the semester; they will be provided directly from the instructor or will be available through the course website (i.e., Moodle).

Course Software (required): Program R (R Core Team 2018). Available **free**!

Course Outcomes:

- Increased understanding of how we measure wildlife populations (abundance/density) and demographic rates (birth, death, immigration, emigration)
- Increased understanding about factors that affect wildlife populations and demographic rates
- Increased understanding of how we manage and conserve wildlife populations
- Familiarity with quantitative methods in population ecology, including the use of Program R

Tentative Schedule and Required Readings:

Please complete readings before class each day.

Date	Topic	Readings
13-Jan	Course Introduction and Context	None
15-Jan	Study Design and Hypotheses 1	Ch. 1, 2
17-Jan	Study Design and Hypotheses 2	Ch. 1, 2
20-Jan	*MLK Day - University Holiday*	None
22-Jan	Abundance 1	Ch. 4
24-Jan	Abundance 2	Ch. 4
27-Jan	Survival and Reproduction 1	Ch. 4
29-Jan	Survival and Reproduction 2	Ch. 4
31-Jan	Exponential Growth	Ch. 5
3-Feb	Stochasticity in Growth	Ch. 5
5-Feb	Density Dependence and Logistic Growth 1	Ch. 7
7-Feb	Density Dependence and Logistic Growth 2	Ch. 7
10-Feb	Density Dependence and Logistic Growth 3	Ch. 7
12-Feb	Review for Exam 1	None
14-Feb	**Exam 1**	None
17-Feb	*Presidents' Day - University Holiday*	None
19-Feb	Age-structured Population Models 1	Ch. 6
21-Feb	Age-structured Population Models 2	Ch. 6
24-Feb	Stage-structured Population Models 1	Ch. 6
26-Feb	Stage-structured Population Models 2	Ch. 6
28-Feb	Predation 1	Ch. 8
2-Mar	Predation 2	Ch. 8
4-Mar	Genetic Variation 1	Ch. 9
6-Mar	Genetic Variation 2	Ch. 9
9-Mar	Metapopulations and Connectivity 1	Ch. 10
11-Mar	Metapopulations and Connectivity 2	Ch. 10
13-Mar	Human Perturbations 1	Ch. 11
16-Mar	*Spring Break*	None
18-Mar	*Spring Break*	None
20-Mar	*Spring Break*	None
23-Mar	Human Perturbations 2	Ch. 11
25-Mar	Disease Dynamics 1	TBA
27-Mar	Disease Dynamics 2	TBA
30-Mar	Review for Exam 2	None
1-Apr	**Exam 2**	None
3-Apr	Small Populations and PVA 1	Ch. 12
6-Apr	Small Populations and PVA 1	Ch. 12
8-Apr	Focal Species Management 1	Ch. 13
10-Apr	Focal Species Management 2	Ch. 13

13-Apr	Guest Lecture (J. Tack) - Focal Species	None
15-Apr	Harvest Management 1	Ch. 14
17-Apr	Harvest Management 2	Ch. 14
20-Apr	Harvest Management 3	Ch. 14
22-Apr	Harvest Management 4	Ch. 14
24-Apr	Course Wrap-up	None
27-Apr	Guest Lecture (H. Cooley) - Threatened Spp.	None
29-Apr	Guest Lecture (C. Jourdonnais) - Harvest	None
1-May	Review for Final Exam	None
7-May	**Final Exam**	None

Final Exam: Thursday, May 7, 10:10 a.m. - 12:10 p.m. in Liberal Arts 337

Tentative Lab Schedule:

Date	Topic
13-Jan	Lab 1: Intro to R
20-Jan	*MLK Day - University Holiday*
27-Jan	Lab 2: Estimating Abundance/Survival
3-Feb	Lab 3: Population Growth
10-Feb	Lab 4: Stochasticity and Density Dependence
17-Feb	*Presidents' Day - University Holiday*
24-Feb	Lab 5: Matrix Models 1
2-Mar	Proposal Work Day
9-Mar	Lab 6: Matrix Models 2
16-Mar	*Spring Break*
23-Mar	No Lab
30-Mar	Proposal Work Day
6-Apr	Lab 7: Small Population Conservation
13-Apr	Proposal Work Day
20-Apr	Lab 8: Harvest Management
27-Apr	Proposal Work Day

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

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 approximately 8 pages (i.e., 5-6 pages of text + cover page, literature cited, and budget). The proposal should be double-spaced with 12-point font. Your progress on the full proposal assignment will be monitored via several sub-assignments called memos. See below for grading break-down. The final research proposal will be submitted as a hard copy on Wednesday April 29. More details about the memos and the proposal will be provided during lecture and lab periods, as well as in documents posted on Moodle.

Lab Reports: Each student will complete 8 lab reports during the semester. We will discuss lab report structure, expectation, and grading during the appropriate lab periods.

Grading: Grades will be based on 2 mid-term exams, a final exam, 8 lab reports, 3 research proposal memos, and a research proposal. All assignments must be turned in as hard copies; emailed or other electronic files will not be accepted unless previously approved by the instructor or the TA. Late assignments will be penalized 10 points for each day late. However, the final research proposal **cannot** be turned in late; a late research proposal will receive a 0.

Assignments	**Points**
Exam 1	100
Exam 2	100
Final Exam	200
Lab Reports (8 @ 25 pts. each)	200
Memos (3 @ 50 pts. each)	150
Research Proposal	250
Total	*1000*

Grading Option Statement:

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

Classroom Etiquette and Participation:

- Laptops are allowed for solving problems, using Program R, or taking notes; however, you are not allowed to use laptops, cell phones, etc. to text, email, tweet, surf the internet, use Facebook, or otherwise disrupt learning opportunities for other students.
- If any classroom activities require cell phones, internet, etc., I will instruct you that they can be used.
- During each class period, I will pose a problem or ask a question that you will discuss in pairs or teams for about 5 minutes (before discussing with the class as a whole). I will assign teams and

will re-assign teams periodically during the semester. Participation in these exercises is a good idea because they will help you practice problems/questions you might see on exams!

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.

Students with Disabilities Statement:

- Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction for students with disabilities in collaboration with instructors and Disability Services for Students, which is located in Lommasson Center 154. The University does not permit fundamental alterations of academic standards or retroactive modifications.

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.

Basic Needs Security Statement:

- 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 for support. Furthermore, please notify the instructor if you are comfortable in doing so. This will enable him to provide any resources that he may possess.

Course Withdrawal Deadlines Statement:

Important dates restricting opportunities to drop a course during Spring Semester 2020:

- To 15th instructional day (Feb 3) -- Students can drop classes on CyberBear with refund and no 'W' on transcript.
- 16th to 45th instructional day (Feb 4 - Mar 24) -- Drop requires approval of instructor and advisor; $10 fee applies; no refund; student receives a 'W' on transcript.
- After 45th instructional day (Mar 25 - May 1) -- 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, switching majors, 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

5:00 p.m. of the 45th instructional day of the semester. Requests to drop must be signed by the instructor, advisor, and Associate Dean (in that order) so if you pursue this request, **leave sufficient time to schedule meetings with each of these individuals** (generally this will take at least 3-5 working days). A $10 fee applies if approved. Instructors must indicate whether the individual is Passing or Failing the class at the time of request.