**WILD 4890: WILDLIFE POPULATION SCIENCE**

**SPRING SEMESTER 2017**

**INSTRUCTOR:** Dr. Bob Gitzen

**OFFICE:**  2337 Forestry and Wildlife Sciences Building

**OFFICE PHONE:** 844-1051

**E-MAIL:** rag0012@auburn.edu

**OFFICE HOURS:** Wednesdays 12-1 pm or by appointment or when my door is open

**TEACHING ASSISTANT:** Anna Tucker

**OFFICE:** 3203 Forestry and Wildlife Sciences Building

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**OFFICE HOURS:** By appointment

**COURSE DESCRIPTION:** This course focuses on principles of wildlife population dynamics, estimation of population parameters, and application of these principles and techniques to wildlife conservation and management.

**CLASS HOURS: Lecture:** 10:00-10:50 am Mondays and Wednesdays, Forestry & Wildlife Sci Bldg 1224. Computer **Lab:** 11:00 am - 12:50 pm Mondays, 2216 Forestry & Wildlife Sci Bldg.

**PREREQUISITES:** WILD 3280 and WILD 3750 with grades of C or better.

**REQUIRED TEXT: There is no required text. Weekly required readings will be assigned and made available via Canvas.**

There are two recommended supplemental texts:

Mills, L. S. 2013. Conservation of Wildlife Populations: Demography, Genetics, and Management. 2nd Edition. Wiley, West Sussex, UK.

Gotelli, N. J. 2008. A Primer of Ecology. 4th Edition. Sinauer, Sunderland, MA.

**COURSE FORMAT:** The course (3 credits) will include two 50-minute lectures and one lab meeting per week. Lectures will incorporate lectures, discussions, and in-class problem solving; labs will focus on computer applications. In-class and out-of-class assignments will include quizzes on required readings, statistical and population projection modeling assignments, and 3 exams.

**STUDENTS WITH DISABILITIES:** Students who need accommodations are asked to electronically submit their approved accommodations through AU Access and to arrange a meeting with me during the first week of classes, or as soon as possible if accommodations are needed immediately. If you have a conflict with my office hours, an alternate time can be arranged. To set up this meeting, please contact me by e-mail. If you have not established accommodations through the Office of Accessibility, but need accommodations, make an appointment with the Office of Accessibility, 1228 Haley Center, 844-2096 (V/TT). <https://fp.auburn.edu/disability/>

**COURSE OBJECTIVES:** Upon completion of this course, the student will:

1. Understand core theoretical aspects of wildlife population dynamics, such as population stability, factors affecting population changes, density-dependent and density-independent growth, interacting populations (effects of competition, predation, spatial structure), and stochasticity.
2. Be familiar with fundamental approaches for studying wildlife populations.
3. Possess basic proficiency in building and using quantitative models of population dynamics.
4. Understand application of population dynamics tools and principles to addressing wildlife management problems related to harvest management, conservation of small populations, and control of invasive species.

**GRADING:** Grades will be assigned based on the standard scale (90-100% = A; 80-90% = B; 70-80% = C; 60-70% = D; < 60% = F). Grade components will be as follows:

|  |  |
| --- | --- |
| *Component (% of course grade)* | *Points* |
| Lab Assignments | 100 |
| Reading Assignments | 100 |
| Two Mid-term Exams |  |
| Final Exam | 60 |
| *Total Points* | *300* |

**ATTENDANCE AND MAKE-UP EXAMS:** Although attendance technically is not required, it is essential if you want to succeed in the class.

Only legitimate excuses (university or instructor approved) will be accepted for missing in-class assignments and exams. Appropriate documentation will be required; for an unplanned medical issue, you need to provide a doctor’s note and this note MUST indicate that you could not be present. For planned absences, it is your responsibility to make arrangements with me before the class to be missed, preferably a week or more in advance. Make-up exams may differ from the missed exam. If you do not contact me (by phone, e-mail, or in person) prior to missing the exam, or at the earliest possible time, then you will receive a grade of zero for the exam, with no makeup possible.

See below for the penalty structure regarding late assignments. Generally you will have multiple days to complete longer assignments; therefore make-ups or deadline extensions will be allowed only for extended emergencies or for other acceptable excuses cleared with me at least 48 hrs before the assignment is due.

**CLASSROOM POLICIES:** See AU’s Policy on Classroom Behavior (<https://sites.auburn.edu/admin/universitypolicies/Policies/PolicyonClassroomBehavior.pdf>). Actions during class that cause unacceptable interference with learning by other students include - but are not limited to - arriving late (unless you have cleared an excuse with me), texting, failing to silence your cell phone, using computers for non-class activities during class periods, **disruptive talking**, etc. **Food, drinking, and spit-cups are not permitted in the computer lab!**

**ACADEMIC HONESTY:** All portions of the Auburn University Student Academic Honesty code (Title XII) found in the Student Policy eHandbook at <http://www.auburn.edu/student_info/student_policies/> will apply to this class. All academic honesty violations or alleged violations of the SGA Code of Laws will be reported to the Office of the Provost, which will then refer the case to the Academic Honesty Committee.

**HARASSMENT AND DISCRIMINATION:** Harassment or discrimination of any kind will not be tolerated. It is your responsibility to be familiar with the Harassment and Discrimination Policies in the student handbook. Any violations of these policies should be reported to the instructor so that the problem can be resolved. If for any reason you do not feel comfortable contacting me about such an issue, contact SFWS Student Services.

**WRITING ASSISTANCE:** The Miller Writing Center provides free support on any writing students are doing while at Auburn. The SFWS hosts a Miller Writing Center location in room 3407. See the Miller Writing Center's scheduling website (<https://fp.auburn.edu/writing/writingCenter.aspx>). All students are welcomed at all locations.

**STUDENT RESPONSIBILITIES:**

**I. Assigned Readings:** Readings will be assigned to be read outside of class and made available via Canvas. For all or most readings, you will also be assigned a quiz or similar short assignment. Out-of-class reading assignments (e.g. quiz on reading) must be completed before class starts. You will be responsible for all readings on exams and other assignments.

**II. Lab Assignments:** Weekly lab assignments will involve computer analyses and modeling, and questions about the results. Assignments usually will need to be completed before the following week's lab and will involve work outside of class.

**III. Exams:** There will be two mid-term exams and one final exam. Both will be closed-book and will cover all material (lectures/labs/readings covered in the class up to that point. Exams will be a mix question types (multiple choice, T/F, fill-in-the-blank; definitions; short answers; interpreting computer output).

**Penalty structure for all out-of-class assignments:**

* *Turned in by deadline time on date due: on-time.*
* *Turned in after deadline but by end of the next day (11:59 pm) after the date due (based on the time it is in my hands or on the time listed on the email in my inbox): Automatic late fee = 25% of assignment points, rounded up. The late fee is deducted, and then the assignment graded for content.*
* *Turned in any time thereafter: Late fee = 75% loss of points, rounded up.*

**VII. Canvas Course Site:** Check the Canvas site regularly to see announcements and discussions.

**Tentative Schedule: WILD 4890, Spring 2018**

| ***Week*** | ***Date*** | ***Tentative Topic*** | ***Reading Assignment (Canvas Quiz)*** |
| --- | --- | --- | --- |
| Week 1 | 1/10 | Introduction to course | None |
| Week 2 | 1/15 | MLK Day, no class |  |
|  | 1/17 | Characterizing population changes. Population models. | Berryman |
| Week 3 | 1/22 | Review of exponential / geometric model |  |
|  | *1/22 Lab* | *Density-independent Population Model* | *(Donovan and Weldon Chap 7)* |
|  | 1/24 | Invasive growth. density dependence and logistic model | Arim et al. 2016, Spread dynamics of invasive species |
| Week 4 | 1/29 | Density dependence | Bergman et al. 2015, DD in mule deer |
|  | *1/29 Lab* | *Density-dependent Population Model* | *(Donovan and Weldon Chap 8)* |
|  | 1/31 | Interspecific interactions in population dynamics |  |
| Week 5 | 2/5 | Interspecific interactions in population dynamics |  |
|  | *2/5 Lab* | *Interspecific Interactions* | *(Donovan and Weldon Chap 9 and/or 10)* |
|  | 2/7 | Age- and Stage-dependent Dynamics |  |
| Week 6 | 2/12 | Age- and Stage-dependent Dynamics |  |
|  | 2/12 Lab | *Age-Structured Model* | *(Donovan and Weldon Chap 13)* |
|  | 2/14 | **Midterm Exam 1** |  |
| Week 7 | 2/19 |  |  |
|  | 2/19 Lab | *Stage-Structured Model* | *(Donovan and Weldon Chap 14)* |
|  | 2/21 |  |  |
| Week 8 | 2/26 |  |  |
|  | 2/26 Lab | *Epidemic Activity* | *(TBD)* |
|  | 2/28 |  |  |
| Week 9 | 3/5 |  |  |
|  | *3/5 Lab* | *Abundance Estimation* |  |
|  | 3/7 |  |  |
|  | 3/12, 3/14 | SPRING BREAK |  |
| Week 10 | 3/19 |  |  |
|  | *3/19 Lab* | *Survival Analysis* |  |
|  | 3/21 |  |  |
| Week 11 | 3/26 |  |  |
|  | *3/26 Lab* | *Analyzing Population Change* | *TBD* |
|  | 3/28 |  |  |
| Week 12 | 4/2 |  |  |
|  | *4/2 Lab* | *Testing Harvest Decision* | *TBD* |
|  | 4/4 |  |  |
| Week 13 | 4/9 |  |  |
|  | *4/9 Lab* | *Population Viability Analysis 1: Estimating Parameters* | *TBD* |
|  | 4/11 |  |  |
| Week 14 | 4/16 |  |  |
|  | *4/16 Lab* | *Population Viability Analysis 2: Applying the PVA Model* | *TBD* |
|  | 4/18 |  |  |
| Week 15 | 4/23 |  |  |
|  | *4/23 Lab* | *Final Comprehensive Assignment* |  |
|  | 4/25 | Catch-up and Review |  |
| Finals Week | Tuesday 5/1 | **FINAL EXAM 8 am -1030 am** |  |

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| Population Reintroductions |
| Conservation of Small Populations |
| Conservation of Small Populations |
| Harvest theory and application |
| Harvest management |