SYLLABUS
SPECIAL TOPICS COURSE: DEER POPULATION MODELING
SPRING 2025

Credits

1 credit

Instructor

Dr. Aniruddha Belsare
Assistant Professor of Disease Ecology
College of Forestry, Wildlife, and Environment
College of Veterinary Medicine
Office: 2345 CFWE Building, 602 Duncan Dr.
Phone: 334-844-1037
Email: abelsare@auburn.edu

Class Hours

Wednesday, 11 – 11:50 am

Class Location

CFWE 1219

Office Hours

By appointment

Course Description

This special topic course will focus on the principles and techniques of modeling the population dynamics of big game species, with a specific emphasis on white-tailed deer. We will discuss foundational concepts in population ecology, demographic modeling, and harvest dynamics, gaining hands-on experience with data analysis and model building. By the end of the course, students will be equipped to construct, analyze and interpret population models to support wildlife management and conservation efforts.

Course Objectives

After completion of this course, students will be able to

1. Clearly define basic terms and demonstrate an understanding of key ecological and biological processes influencing big game population dynamics;
2. Organize, analyze and interpret population and harvest data;
3. Develop skills to build and implement population models;
4. Communicate modeling results effectively to inform management decisions.

Class format

The class will meet on Wednesday at 11 am. Much of the class will be discussion-based, with students expected to read an assigned paper before each session and come prepared to engage in discussions. The course will explore a range of population models, from simple exponential growth models to advanced agent-based models of deer population dynamics.

Course Readings

Readings will be assigned every week, and will comprise of research papers, review articles, and occasionally book chapters. All readings will be placed on the course site.

Tentative lecture schedule

Week 1: Introduction to population modeling

Week 2: Life history and demographics of white-tailed deer

Week 3: Population growth models: exponential and logistic

Week 4: Vital rates: survival and reproduction

Week 5: Basic structure of an accounting model for deer population

Week 6: Developing an accounting model for deer population

Week 7: Understanding model outputs

Week 8: Incorporating age and sex structure into the deer population model

Week 9: Using real-world data to parameterize the model

Week 10: Sensitivity analysis

Week 11: Model validation

Week 12: Estimating vital rates from field and harvest data

Week 13: Visualizing model outputs

Week 14: Exploring agent-based model of deer population: OvPOP

Week 15: Review and presentations

Grading

Your grade (satisfactory/unsatisfactory) will be based on class attendance, participation, and class presentation.

Classroom Policies

- Attendance is critical given that attendance & participation in class comprise ~60% of the student's grade. Students are granted excused absences from class for the following reasons: Illness of the student or serious illness of a member of the student's immediate family, death of a member of the student's immediate family, trips for student organizations sponsored by an academic unit, trips for University classes, trips for participation in intercollegiate athletic events, subpoena for a court appearance and religious holidays. Students who wish to have an excused absence from this class for any other reason must contact the instructor in advance of the absence to request permission. The instructor will weigh the merits of the request and render a decision. When feasible, the student must notify the instructor prior to the occurrence of any excused absences, but in no case shall such notification occur more than one week after the absence. Appropriate documentation for all excused absences is required.
- Weekly assignments and other course notifications will be disseminated via Canvas. Students are responsible for checking Canvas to ensure they are up-to-date on course information. Note that each student has control over her/his notifications via Canvas and can edit settings to alert them when an announcement is posted, an assignment is due, a grade is released, etc.
- Students who need accommodations are asked to electronically submit their approved accommodations through AU Access and to make an individual appointment with the instructor during the first week of classes – or as soon as possible if accommodations are needed immediately. 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).
- All portions of the Auburn University Student Academic Honesty code (Title XII) found in the Student Policy eHandbook Links to an external site. 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.
- The Auburn University Classroom Behavior Policy is strictly followed in the course; please refer to the Student Policy eHandbook Links to an external site. for details of this policy. Given that we will be discussing sometimes controversial topics, particular attention will be paid to students' efforts to treat their peers with courtesy and respect.
- If normal class and/or lab activities are disrupted due to illness, emergency, or crisis situation, the syllabus and other course plans and assignments may be modified to allow completion of the course. If this occurs, an addendum to your syllabus and/or course assignments will replace the original materials.

Mental Health

If you are experiencing stress that feels unmanageable (personal or academic) during the semester, Auburn University's Student Counseling & Psychological Services (SCPS) offers a variety of services to support you. The mission of SCPS is to provide comprehensive preventative and clinical mental health services to enhance the psychological well-being of individual students, as well as the broader campus culture. As an instructor, I am available to speak with you regarding stresses related to your work in this course, and I can assist in connecting you with the SCPS network of care. You can schedule an appointment yourself with the SCPS by calling (334)844-5123 or by stopping by their offices on the bottom floor of Haley Center or the second floor of the Auburn University Medical Clinic.Links to an external site.
If you or someone you know needs to speak with a professional counselor immediately, the SCPS offers counseling during both summer term as well as the traditional academic year. Students may come directly to the SCPS and be seen by the counselor on call, or you may call 334.844.5123 to speak with someone. Additional information can be found at http://wp.auburn.edu/scsLinks to an external site.

Basic Needs

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course or others is urged to contact Auburn's Basic Needs Center for support at https://aub.ie/basicneedsLinks to an external site.. Furthermore, please notify the professor if you are comfortable in doing so as this will allow the faculty member to connect you with any other known resources.

Justification for Graduate Credit

This course is eligible for graduate credit given that we will be discussing topics relevant to practicing scientists that are unlikely to be encountered by even higher-level undergraduate students. Further, students will be responsible for independent learning regarding assigned discussion topics which will facilitate classroom wide learning through discussions with their peers.