UF IFAS CALS
UNIVERSITY of FLORIDA

WIS 4501 - INTRODUCTION TO WILDLIFE POPULATION ECOLOGY (CLASS # 16833)

Spring, 2026
In-person, 3 Credits

Instructor:

Dr. Madan K. Oli
324 Newins-Ziegler Hall
(352) 846-0561; olim@ufl.edu
Office hours: Tuesdays, 9:00 am-11:00 am (Zoom or in-person by appointment)

Teaching Assistant:
Suyash Sawant
s.sawant@ufl.edu
Office location: NZH 301-A
Office hours: 10:30-11:30 am, Mondays and Wednesdays

Lectures and Labs:
Location: MCCB 2102 (2102 McCarty Hall B)
Time: Monday, Wednesday (Lectures) and Friday (Labs), period 3 (9:35-10:25 am)

Course Learning Objectives
This course is designed to expose students to concepts and models in population ecology, and their applications to conservation and management of wildlife populations. By the end of the semester, students will:
- Have a thorough understanding of concepts and models of population dynamics and species interactions;
- Become familiar with topics such as population viability analysis, life history theory and population regulation; and
- Become familiar with the application of ecological theories and models to conservation and management of wildlife populations.

Course Prerequisites
- WIS4601C (Quantitative Wildlife Ecology)
- Familiarity with personal computers and software packages such as R, Microsoft Word and Excel. Students lacking aforementioned background should contact instructors at the beginning of the semester.

Textbooks, Learning Materials, and Supply Fees
1. **Lecture outlines and discussion papers:** Lecture outlines, discussion papers, and other reading materials will be available through the Canvas e-Learning site (http://elearning.ufl.edu/). Please note that lecture outlines are not designed to replace lectures. You must be present in the class to take notes and participate. You are

responsible for keeping up to date on all announcements and material covered during class.

To login to the Canvas e-Learning system, go to the e-Learning (http://elearning.ufl.edu/), and use your GatorLink username and password. You must have an active GatorLink ID to access e-Learning. Should you encounter problems with your GatorLink account or need assistance, contact the GatorLink website (http://gatorlink.ufl.edu) or UF Computing Help Desk: The Hub, 392-HELP. If you need assistance with the e-Learning system, please visit e-Learning Support Services home page or contact the e-Learning Support Team (UF Helpdesk HUB 132; Phone: (352) 392-HELP (4357) and select option 2; Email: learning-support@ufl.edu.

2. **Lab manual and write-ups:** Fridays' classes will primarily (but not exclusively) focus on implementing population models using the freely available computer program, R (https://cran.r-project.org/). To facilitate learning, we have developed a self-guided lab manual for each section of the course. This document is meant to serve as a self-guided instruction manual on the implementation of population models and other analyses relevant to ecology and management of wildlife populations. For each modeling section of the course, we will: (1) briefly review the relevant concepts and models; (2) provide step-by-step instructions on how to implement relevant models, along with R code and the results they produce; and (3) provide data and code that complement the laboratory material. It would be helpful if you read through the lab manual/exercises and work through the code before coming to the class.

3. **R resources:** Most of the lab problems will require the use of R (you will have to submit the completed homework along with your R code), so it is critical that you are comfortable with the program. We will provide a basic introduction to R early in the semester. However, we strongly encourage you to explore it on your own as well - this is often the best and most efficient way to learn R. Fortunately, there are many online resources that can help you; a quick google search provides links to many documents – use what you like (https://www.google.com/search?q=R+manuals&ie=utf-8&oe=utf-8). There are also several online books designed to help you learn R programming that can be downloaded free of cost (e.g., https://intro2r.com). Use resources that you like or find helpful.

4. **Required textbook:** There is no required textbook for this course. We will provide the lecture outlines and required reading materials via Canvas. The Lab Manual (also on Canvas) contains summary of relevant concepts and code that may be useful for completing lab assignments.

Required Technology & How to Obtain Technology

A laptop computer for Friday's classes. We will extensively use the program R and R Rtudio, both of which are available for download free of charge (https://cran.r-project.org/; https://posit.co/downloads/).

Class Demeanor/Expectations

Students are expected to attend all classes and fully engage themselves in all aspects of the class. Full participation in computer exercises and discussion sessions is required and expected. For Friday's classes, students will need to bring a laptop computer. Students are strongly encouraged to meet with instructors periodically, especially if they need assistance.

Caution: We expect you to complete all lab assignments, quizzes, and exams independently. **Copying other students' codes or answers and submitting it as your own work is against the course policy and will be considered plagiarism.**

Technical Support

UF Computing Help Desk & Ticket Number: All technical issues require a UF Helpdesk Ticket Number. The UF Helpdesk is available 24 hours a day, 7 days a week. https://helpdesk.ufl.edu/ | 352-392-4357.

Course Schedule

Module	Date	Lab #	Topic	Assessment
Course overview	12-Jan		Course overview, expectations	
What are populations?	14-Jan		Introduction to population ecology	
	16-Jan	Lab 1	R and R studio setup, R programming for new users	
	19-Jan		**MLK Day no class**	
Unstructured population growth I	21-Jan		Exponential population growth model	
	23-Jan	Lab 2	Scientific methods (Lab 1 due)	
Unstructured population growth I	26-Jan		Stochasticity and stochastic exponential population growth models	
Unstructured population growth II	28-Jan		Density-dependence and logistic population growth model	
	30-Jan	Lab 3	Exponential growth models *(Lab 2 due)*	
Unstructured population growth II	2-Feb		Logistic growth models: extensions and the Allee effect	
	4-Feb		Logistic growth models: extensions (cont.)	

	6-Feb	Lab 4	Logistic growth models *(Lab 3 Due)*	Quiz 1
Structured models I	9-Feb		Age structure and life table analysis	
Structured models I	11-Feb		Life table analysis (cont.)	
	13-Feb	Lab 5	Life table analysis *(Lab 4 Due)*	
	16-Feb		Recap and examples	
Structured models II	18-Feb		Age structured matrix population models: parameter estimation and asymptotic analysis	
	20-Feb	Lab 6	Matrix algebra review *(Lab 5 Due)*	
Structured models II	23-Feb		Matrix population models: age structured models (cont.)	
Structured models II	25-Feb		Matrix population models: sensitivity and elasticity analysis	
	27-Feb	Lab 7	Age-structured matrix models *(Lab 6 Due)*	Quiz 2
Structured models III	2-Mar		Matrix population models: stage structured models	
Structured models III	4-Mar		Matrix population models: stage structured models	
	6-Mar	Lab 8	Stage-structured matrix models I *(Lab 7 Due)*	
	9-Mar		Recap and examples	
	11-Mar		**Exam 1**	
	13-Mar	N/A	Exam recovery. No new lab assignment. *(Lab 7 Due)*	Quiz 3
	14-21 Mar		**Spring Break (No class)**	
Metapopulation dynamics	23-Mar		Metapopulation dynamics I – Levins' model and extensions	
Metapopulation dynamics	25-Mar		Metapopulation dynamics II – Incidence function model	
	27-Mar	Lab 9	Stage-structured matrix models II	
	30-Mar		Population Viability Analysis (PVA)	

	1-Apr		Population Viability Analysis (cont.)	
	3-Apr	Lab 10	Stage structured matrix model (cont.) *(Lab 9 Due)*	Quiz 4
Species interactions I	6-Apr		Species interactions I: Introduction & host-parasite interactions (infectious disease dynamics)	
Species interactions I	8-Apr		Infectious disease dynamics (cont.); recap and examples	
	10-Apr	Lab 11	Unstructured PVA *(Lab 10 Due)*	
Species interactions II	13-Apr		Species interactions II: Competition	
Species interactions II	15-Apr		Two-species interactions II: Competition (cont.)	
	17-Apr	Lab 12	Structured PVA *(Lab 12 Due)*	Quiz 5
Population cycles	20-Apr		Population cycles	
	22-Apr		**Exam 2**	
	23-24-Apr		Reading days (No classes)	
	29-April		(Optional) Final Exam 3:00 - 5:00 PM Lab 12 due	

Grading Policy

Course grading is consistent with [UF grading policies.](#)

Course Grading Structure

	Points	Percent
Homework (labs) 10@10	100	25
Quizzes 5@20	100	20
Exam 1	100	20
Exam 2	100	35

Grading Scale

Grade	Percentage
A	> 92
A-	90-92
B+	85-90
B	83-85
B-	80-83
C+	75-80
C	73-75
C-	70-73
D+	65-70
D	63-65
D-	60-63
S	<60

Lab exercises and homework problems

Homework problems (see below for due dates) will be based on computer exercises and/or discussion papers. You will have to use the software R to solve many of the homework problems. An introductory tutorial on the use of R will be provided at the beginning of the course, and you will find examples of needed code in the self-guided laboratory manual. Please read the relevant chapters of the lab manual and work through example codes before coming to Friday's class.

You will have **one week** to complete the homework problems**.** Weekly lab assignments will be due before lab the following week (9:30 on Fridays; see course schedule for due dates). The majority of the assignments will require use of the software R. A brief introduction to R will be provided at the beginning of the course and we will provide examples with needed code in class examples. A minimum of 10 lab exercises will be assigned over the semester. If an extra exercise is assigned, we will count your 10 best exercises towards your grade.

1. Completed assignments and R code (as *.R file format) that you used to complete the assignment must be submitted using Canvas's **Assignment** tools. Hard copy or e-mail submissions will not be accepted. You will be allowed to revise and resubmit your assignments until the deadline, but not after that. You are responsible for ensuring that completed assignments are correctly uploaded to Canvas.

2. Submissions after the deadline will be treated as late submissions, and 10% of the total assignment points will be deducted for each business day after the deadline for 7 days; submissions will not be accepted after that.

3. If you experience any problem with the e-Learning system or while uploading assignments, contact the helpdesk immediately (352) 392-4357 (select option 2) or e-mail: learning-support@ufl.edu. Retain your e-mail or helpdesk ticket number as documentation of your problem.

Cumulative (mastery) quizzes

There will be five **quizzes** (20 points per quiz; 100 points total) assigned via Canvas. **Each quiz will be comprehensive**, and will include questions from the lectures, labs, and assigned reading materials covered until that day. For each quiz, you are allowed two attempts; higher of the two grades will be recorded. Please see the course schedule for the quiz due dates.

Exams

There will be two midterm exams (100 points each). Exam 2 and the optional final exam will be comprehensive. The optional final exam may be used in place of your exam 2 scores.

The midterm exams 1 & 2 will be fully online and will be assigned via Canvas. **The optional final exam will be in-person exam** held in the classroom on 29 April 2025, 3:00 – 5:00pm.

Extra-credit activities

To help students improve their grades, extra-credit activities will be available. Details will be announced in the class and via Canvas announcements. Extra-credit points will be added to your homework points, and used for final grade calculations.

Course Policies

1. **Attendance policy:** You are expected to attend all classes. However, we will not take attendance; we trust that you are in the class to learn and therefore will make every effort to attend the class. You are responsible for any announcements and all material covered during lectures, computer exercises, and discussion sessions. If you must miss a class, please talk to your classmates (or one of us) to see what you missed.
2. **Make-up exam/quiz policy:** For unexcused absences, make-up exams will not be given.
3. **Exam 2 and final exam:** Midterm exam 2 and the (optional) final exam will be comprehensive.
4. **Questions regarding grades:** We do not discuss grades over the telephone or e-mail. If you have concerns regarding your grades, you must meet us during office hours (or by appointment).
5. **Announcements and notices:** All course-related announcements and notices (including homework assignments, changes in schedule, etc.) will be posted on the e-Learning course homepage. Please be sure to visit the e-Learning homepage regularly.
6. **Late submission of lab assignments:** Homework assignments submitted after the deadline will be treated as late submissions, and 10% of the total assignment points will be deducted for each day after the deadline for 7 days; submissions will not be accepted after that.
7. **Discussion of course-related issues, assignments, or long questions:** Please avoid sending e-mails or phone messages that cannot be answered with a few words. If you have questions or issues that require discussion or a detailed explanation, please meet with us via Zoom.

8. **Lab exercises and homework related questions:** Please direct all questions related to the lab exercises or homework problems to your TA.
9. **Academic honor:** On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied:" On my honor, I have neither given nor received unauthorized aid in doing this assignment."
10. **AI use policy:** We encourage you to use AI resources (including Large Language Models (LLMs)) as learning tools to assist with ideation and grammar/editing. Note, however, that AI frequently makes mistakes; you must carefully evaluate information generated by AI tools. Also, you must complete all exams, quizzes and homework problems on your own and may my rely on AI to do your homework or complete other assignments. You should include a statement in any submitted assignment describing how you used the AI tool and which tool you used. You should also keep in mind that you are still responsible for the quality and accuracy of anything you submit.

The University of Florida's Information Technology offers Navigator chat, featuring a large number of LLMs. Many students find Google Notebook LM particularly helpful to create study guides and guided notes. Note, however, that AI tools make mistakes, experience the so called "AI Hallucination", and you must verify that information generated by AI tools is accurate and consistent with the lecture and lab materials. Some guidance regarding the use of AI tools can be found here.

Academic Policies and Resources
Academic policies for this course are consistent with university policies. See https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/

Campus Health and Wellness Resources
Visit https://one.uf.edu/whole-gator/topics for resources that are designed to help you thrive physically, mentally, and emotionally at UF.

Please contact UMatterWeCare for additional and immediate support.

Software Use
All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Course Evaluations
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/

Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodation within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.

0001 Reid Hall, 392-8565, www.dso.ufl.edu/drc/

Privacy and Accessibility Policies

- Instructure (Canvas)
  - Instructure Privacy Policy
  - Instructure Accessibility
- Zoom
  - Zoom Privacy Policy
  - Zoom Accessibility