

INTRODUCTION TO WILDLIFE POPULATION ECOLOGY (WIS4501) SPRING 2012

Instructor:

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Office location: 324 Newins-Ziegler Hall
Office hours: Tuesday, 1:30-2:30 pm; Wednesday, 10:30am – 12:30pm

Teaching Assistants:

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Lectures:

Location: Newins-Ziegler 112
Time: Monday, Wednesday, and Friday, period 3 (9:35-10:25am)

COURSE OBJECTIVES

This course is designed to expose students to concepts and models in population ecology, and their application to conservation and management of wildlife populations. By the end of the semester, students will:

- Have a thorough understanding of various models of population dynamics;
- Become familiar with the application of concepts and models in population ecology to conservation and management of wildlife populations; and
- Become familiar with concepts and models of species interaction, population regulation and population cycles.

COURSE MATERIALS

1. **Lecture outlines and discussion papers:** Lecture outlines, discussion papers, and other reading materials will be available through the Sakai e-Learning site (<https://elearning2.courses.ufl.edu/portal>). Please note that lecture outlines are not designed to replace lectures. You must be present in the class to take notes. You are responsible for keeping up to date on all announcements and material covered during the class.

To login to the Sakai e-Learning system, go to the e-Learning Support Services homepage <https://elearning2.courses.ufl.edu/portal> 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 GatorLink website (<http://gatorlink.ufl.edu>) or UF Computing Help Desk: The Hub, 392-HELP for assistance. If you need assistance with the e-Learning system, please visit e-Learning Support Services home page (<https://elearning2.courses.ufl.edu/portal/help/main>) or contact e-Learning

Support Team (UF Helpdesk [HUB 132](#); **Phone:** (352) 392-HELP (4357); **Email:** learning-support@ufl.edu).

2. **Computer programs:** All computer programs that are needed for this course will be installed in computers available in the CALS computer lab (McCarty Hall B, Room 2103). Links to sites from where some of these programs can be downloaded will also be available through the Sakai e-Learning site.
3. **Required textbook:** There is **no required textbook** for this course.

EXPECTATIONS OF STUDENTS

1. **Students are expected** to attend all classes, and fully engage themselves in all aspects of the class.
2. Active participation is essential; full participation in discussions is required and expected.
3. Students are expected to arrive at class on time, ready to learn and participate, and with a positive and respectful attitude toward the instructor and fellow students. Students are expected to complete the homework assignments in time.
4. Students are expected to refrain from using cell phones during the class.
5. Students are strongly encouraged to meet with instructors periodically, especially if they need assistance.

GRADING

Grading will be based on:

Mid-term exam	30%
Homework problems	20%
Quizzes	10%
Final exam (cumulative)	30%
Attendance and participation	10%

Final course grades will be assigned as follows: >92 = A, 90-92% = A-, 85-90% = B+, 83-85% = B, 80-83% = B-, 75-80% = C+, 73-75% = C, 70-73% = C-, 65-70% = D+, 63-65% = D, 60-63% = D-, and <60% = E.

Homework problems

Homework problems will be based on lectures, computer exercises and/or discussion papers. Many of the homework problems will require the use of computer software packages (e.g., MS Excel, POPTOOLS, VORTEX). A tutorial on the use of relevant software packages will be provided prior to assigning problems that require the use of software packages. You will have **one week** to complete the home work problems. We will assign homework problems using the Sakai e-Learning system.

1. Completed assignments must be submitted using the Sakai'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 must follow Sakai's file naming convention (e.g., file name should not contain spaces) or the system will not accept your submission.
2. Submissions 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 5 days; submissions will not be accepted after that.
3. If you experience any problem with 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.

Quizzes

Quizzes are designed to test your comprehension of the material being covered, and will consist of online and in-class quizzes. Online quizzes will be mostly multiple choice type problems. Answering some questions will require calculations; you should bring a calculator to the class or have it handy when you are taking an online quiz. Online quizzes will be administered using the **Assessments** tool in Sakai.

Online quizzes will be announced in the class, and you may take the quiz anytime within a 24-hour window. Students will be allowed to take a quiz twice and the higher of the two scores will be recorded in the grade book. If you did not do well in the first attempt, we strongly encourage you to study the material before taking the quiz again.

In-class quizzes will NOT be announced; they will be based on required reading and/or recent lectures. In-class quizzes will include short answer or multiple choice questions.

Make-up quizzes will not be given for unexcused absences.

Discussion papers

Discussion of primary research or review papers will be an important part of the course. Papers will be available online prior to the discussion date. You are required to read the papers, and actively participate in the discussion. Quizzes and exams will include questions based on discussion papers.

Extra credit activities

Students can earn extra credit by attending and critiquing spring 2012 Wildlife Ecology and Conservation seminars. A complete list of seminars can be found at: <http://www.wec.ufl.edu/seminars>. Some relevant details follow:

1. Students should submit the completed (typed) seminar critique form (attached at the end of the syllabus) using the e-Learning Assignment tool (hard copy or e-mail submissions will not be accepted). The critiques (which should include a brief summary) should be submitted **no later than 5pm Friday following the seminar. Late submissions will NOT be accepted.**

2. For each seminar attended and critiqued, students will receive a maximum of 5 extra credit points. You may submit up to 4 seminar critiques, **for a maximum of 20 points total**.

Extra credit points will be added to your homework points, and used for calculation of final grades. **Thus, a student can potentially earn 120 points (out of 100 points) from homework problems and extra credit activities.**

Important notes: (1) You are responsible for making sure that the file you submit follows Sakai file naming convention and that it opens correctly in Sakai. If your file name contains spaces (e.g. My Extra Credit 1), it will not open in Sakai; you will not receive credits for files that do not open. (2) You will **be able to submit no more than 1 extra credit seminar critiques per month for the month of January February, March and April**. If you submit more than one seminar critiques in any given month, you will receive credit for only one of them.

COURSE POLICIES

1. **Attendance policy: Attendance is required.** You are responsible for any announcement, and all material covered during lectures, computer exercises, and discussion sessions. We will randomly take attendance in the class, and your attendance will also be monitored via in-classes quizzes. Remember that attendance and participation will contribute to 10% of the course grade.
2. **Make-up exam/quiz policy:** For unexcused absences, make-up exams or in-classes quizzes will not be given.
3. **Cell phones:** Cell phones must be turned off during the class.
4. **Final exam:** The final exam will be comprehensive.
5. **Questions regarding grades:** We do not discuss grades over the telephone or e-mail. If you have concerns regarding your grades you must come and see us.
6. **Announcements and notices:** All course-related announcements and notices (including homework assignments, changes in schedule) will be posted on the Sakai e-Learning homepage. Please be sure to visit the e-Learning homepage regularly.
7. **Discussion section and homework assignments:** All questions related to Discussion/computer exercises and homework problems should be directed to your TA.
8. **Late submission of homework 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 5 days; submission will not be accepted after that.
9. **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 detailed explanation, please come see us. If your query is of general interest to the class, you may post your questions in Sakai **Discussions/communications forum/Questions about the course**; we will respond to these questions/queries in the order they are posted.

COURSE OUTLINE

PART I. INTRODUCTION

1. Population ecology: what and why?
2. Population ecology as science

PART II. UNSTRUCTURED POPULATION GROWTH MODELS

1. Models in population ecology
2. BIDE model
3. Exponential population growth models
4. Density dependence
5. Logistic population growth models

PART III. STRUCTURED POPULATION GROWTH MODELS

1. Life tables: construction and analysis
 - Age structure: why it matters
 - Methods of compiling life tables/fecundity tables
 - Life table analysis (generation times, net reproductive rates, population growth rates etc.)
2. Age- and stage-structured matrix population models
 - Age-structured (Leslie) matrix models
 - Matrix algebra review
 - Population projection, population growth rate, stable age distribution and reproductive values
 - Sensitivity/elasticity analysis
 - Life-cycle graphs and stage-structured models
 - Analysis of stage-structured models
 - Model modification and limitations

PART IV. METAPOPOPULATION DYNAMICS

1. Spatial structure of populations; why space matters
2. Metapopulations and extinction risk
3. Models of metapopulation dynamics
 - Classic metapopulation (Levin's) model
 - Spatially realistic metapopulation theory
 - Overview of incidence function model (IFM) and stochastic patch occupancy model (SPOM)

PART V. POPULATION VIABILITY ANALYSIS (PVA)

1. Introduction to PVA: what, why and how?
2. Components of PVA

3. Viability of PVA: evaluating PVA results
4. Overview of PVA models

PART VI. SPECIES INTERACTIONS

1. Dynamics of infectious diseases
 - SIR model
2. Competition
 - Nature of competition
 - Lotka-Volterra competition model
3. Predation
 - Nature of predation
 - Lotka-Volterra predation model

PART VII. WILDLIFE HARVEST

1. Maximum sustained yield
2. Introduction to harvest models

PART VIII. POPULATION CYCLES AND POPULATION REGULATION

1. What are population cycles?
2. Hypotheses of population cycles; empirical evidence
4. Hypotheses of population regulation
5. Population regulation vs. population limitation

PART IX. LIFE-HISTORY

1. Life-history traits
3. Life history trade-offs, and evolution of life-history traits
5. Cole's dilemma: semelparity or iteroparity?

PREREQUISITES

- WIS3401, PCB 3034C or equivalent
- Familiarity with personal computers and software such as Microsoft Word and Excel. Students lacking aforementioned backgrounds should contact instructors at the beginning of the semester.

CRITICAL DATES

First day of class:	9 January
Martin Luther King Jr. Day:	16 January (no class)
Midterm exam:	February 29
Spring break:	March 3-10 (no class)
Last day of class:	April 25
Reading days:	April 26-27
Final exam:	May 3, 7:30-9:30, Newins-Ziegler 112

GENERAL NOTICE TO STUDENTS

Academic Honesty

As a result of completing the registration form at the University of Florida, every student has signed the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."

UF Counseling Services

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. Both the Counseling Center and Student Mental Health Services provide confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance. These resources include:

- University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling;
- Student Mental Health, Student Health Care Center, 392-1171, personal counseling;
- Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual counseling;
- Career Resources Center, Reitz Union, 392-1601, career development assistance and counseling.

Technology requirements

Access to and on-going use of a computer is required for all students to successfully complete their UF degree programs. Competency in the basic use of a computer is expected for students in this course. The complete official UF policy on the student computer requirement is found at:

<http://training.helpdesk.ufl.edu/computing.shtml>.

Software Use

All faculty, staff and students of the University are required 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.

Classroom Accommodation

If you require specific accommodations to complete this course, please contact the UF Disability Resource Center (located at Room 0001 Reid Hall) by phone: (325) 392-8565 or online at: www.dso.ufl.edu/drc/.

Template for WEC seminar Critique (WIS 4501 extra credit activity)**Date:** _____**Speaker:** _____**Seminar title:** _____**Student's name:** _____**Introduction**

Is the background information sufficient to understand the topic? [Yes/No, brief comments]

Have the questions/hypotheses been outlined clearly? What were they?

Is the topic, as covered in the introduction, framed into a larger perspective? Are we told why we should care about the topic?

Methods

Are the methods appropriate for testing the hypotheses or answering questions? Were the statistical (or other) analyses appropriate and adequate? Were they clearly presented?

Results

Have the results been presented clearly? Have the results been adequately interpreted for the audience?

What were the main findings?

Discussion/Conclusion

Did the speaker answer his/her research questions? Were the results discussed in the context of hypotheses or questions?

Is there a clear message? Is the message put into the larger context of the talk?

Style

Good transitions/flow (for example, between background info and research question or hypothesis).

Time management (e.g., too long, too short, unbalanced)

Was the speaker easy to follow? Presented information in a logical and organized manner? Graphics adequate?

List three concerns/weaknesses:

List three strengths:

Summary of the seminar