

# EVSP342

**STUDENT WARNING:** This course syllabus is from a previous semester archive and serves only as a preparatory reference. Please use this syllabus as a reference only until the professor opens the classroom and you have access to the updated course syllabus. Please do NOT purchase any books or start any work based on this syllabus; this syllabus may NOT be the one that your individual instructor uses for a course that has not yet started. If you need to verify course textbooks, please refer to the online course description through your student portal. This syllabus is proprietary material of APUS.

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## Course Summary

**Course :** DM526 **Title :** Population Ecology

**Length of Course :** 8 Dave Bertocci

**Prerequisites :** **Credit Hours :** 3

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## Description

**Course Description:** This course examines the fundamental laws of population ecology, providing an overview of the underpinnings of population theory. Emphasis is placed on these principles as applied to conservation and management of fish and wildlife populations. Topics include assessing extinction risk of rare species, invasion dynamics of exotic species, demographic and environmental stochasticity, metapopulation dynamics, structured populations, species interactions, interspecific interactions, and micro-evolutionary processes. Use of case studies will demonstrate the application of population ecology models and methods to the management of fish and wildlife populations, and provide the opportunity to apply concepts to current problems and challenges in this field. Students will complete quantitative analyses throughout this course, and a familiarity with college algebra or statistics is encouraged.

### Course Scope:

This course is a study of the quantitative methods associated with the field of population ecology, as well as in-depth study of specific populations, their behavior, demographics, and processes. Student will learn both mathematical modeling and general ecological principles through a variety of assignments and activities.

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## Objectives

After successfully completing this course, you will be able to:

LO-1 Explain the fundamental patterns of population dynamics.

LO-2 List commonly used mathematical models in the field of population ecology.

LO-3 Apply mathematical models to describe population dynamics.

LO-4 Predict changes in populations based on known variables and key assumptions.

LO-5 Define the terms habitat fragmentation, metapopulation, mutualism, parasitism, dispersal, predation, and competition.

## Outline

### **Week 1: Part I. Single-Species Populations Density-independent growth**

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Course Objectives

**LO-1**

**LO-5**

Readings

Rockwood, Ch. 1

Week 1 Lesson

Assignments

Forum #1 (Introduction and Topic 1)

Worksheet #1

### **Week 2: Density-dependent growth and intraspecific competition Population regulation**

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Course Objectives

**LO-1**

**LO-2**

**LO-5**

Readings

Rockwood, Ch. 2 and 3

Week 2 Lesson

Assignments

Forum #2

Worksheet #2

### **Week 3: Populations with age structures**

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Course Objectives

**LO-3**

**LO-4**

**LO-5**

Readings

Rockwood, Ch. 4

Week 3 Lesson

Assignments

Forum #3

Worksheet #3

### **Week 4: Metapopulation ecology**

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Course Objectives

**LO-3**

**LO-4**

**LO-5**

Readings

Rockwood, Ch. 5

Week 4 Lesson

Assignments

Forum #4

### **Midterm Assessment**

Submit paper topic for approval

### **Week 5: Life-history strategies & Population Sampling**

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Course Objectives

**LO-3**

**LO-4**

**LO-5**

Readings

Rockwood, Ch. 6

Week 5 Lesson

Assignments

Forum #5

Worksheet 4

### **Week 6: Part II. Interspecific Interactions Interspecific competition Mutualism Host-parasite**

## **interactions**

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Course Objectives

**LO-3**

**LO-4**

**LO-5**

Readings

Rockwood, Ch. 7, 8, and 9

Week 6 Lesson

Assignments

Forum #6

Worksheet #5

### **Week 7: Predator-Prey interactions**

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Course Objectives

**LO-3**

**LO-4**

**LO-5**

**LO-6**

Readings

Rockwood, Ch. 10

Week 7 Lesson

Assignments

Forum #7

Wildlife Mgt Plan Review DUE

### **Week 8: Plant-herbivore interactions**

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Course Objectives

**LO 1 - 6**

Readings

Rockwood, Ch. 11

Week 8 Lesson

Assignments

Forum #8

Final Assessment

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## Evaluation

Grades for this course will be based upon 5 graded worksheets, eight forums, a research paper, and a mid-term and final assessment. Effective communication is an essential tool for the student and professional; therefore you are expected to strive for excellence in all of your work for this course.

The grading value for each of the evaluation tools is provided below.

### Forum:

Weekly Forums – 8 40%

### Homework Assignments:

5 Worksheets 15%

### Wildlife Management Plan

Evaluation Paper/Project 15%

### Cumulative Assessments

Midterm Assessment 15%

Final Assessment 15%

### Grading:

Name	Grade %
Forums	40.00 %
Introductory Forum & Forum 1	5.00 %
Forum 2	5.00 %
Forum 3	5.00 %
Forum 4	5.00 %
Forum 5	5.00 %
Forum 6	5.00 %
Forum 7	5.00 %
Forum 8	5.00 %
Worksheets	15.00 %
Assignment 1: Worksheet 1	3.00 %
Assignment 2: Worksheet 2	3.00 %
Assignment 3: Worksheet 3	3.00 %
Assignment 4: Worksheet 4	3.00 %
Assignment 5: Worksheet 5	3.00 %
Final Project	15.00 %
Final Project: Wildlife Management Plan	13.64 %
Proposal - Wildlife Management Plan	1.36 %

Assessments	30.00 %
Final Assessment (Wk 8)	16.19 %
Midterm Assessment	13.81 %

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## Materials

**Book Title:** Introduction to Population Ecology 2nd Ed-E-book available in the APUS Online Library

**Author:** Rockwood, Larry L.

**Publication Info:** Wiley Lib

**ISBN:** 9781118947579

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**Book Title:** To find the library e-book(s) req'd for your course, please visit <http://apus.libguides.com/er.php> to locate the eReserve by course #. You must be logged in to eCampus first to access the links.

**Author:** N/A

**Publication Info:** N/A

**ISBN:** N/A

Bradford, M.A. et al. 2002. Impacts of soil faunal community composition on model grassland ecosystems. *Science* 298: 615-618.

Clarke, J., Dietze, M. et al. 2007. Resolving the biodiversity paradox. *Ecological Letters* 10(8): 647-59.

Crowder, LB, Crouse, DT, Heppell, SS, and Martin, TH. 1994. Predicting the impact of turtle excluder devices on loggerhead sea turtle populations. *Ecological Applications* 4: 437-445.

Coley, P.D., M.L. Bateman and T.A. Kursar. 2006. The effects of plant quality on caterpillar growth and defense against natural enemies. *Oikos* 115:219-228.

Drake, J.M. 2005. Density dependent demographic variation determines extinction rate of experimental populations. *PLoS Biology* 3:1300-1304.

Duffy, M.A. 2007. Selective predation, parasitism, and trophic cascades in a bluegill-*Daphnia*-parasite system. *Oecologia*.

Estes, JA, Tinker, MT, Williams, TM, Doak, DF. 1998. Killer whale predation on sea otters linking oceanic and nearshore ecosystems. *Science* 282: 473-476.

Hanski, I, Saastamoinen, M, and Ovaskainen, O. 2006. Dispersal-related life-history trade-offs in a butterfly metapopulation. *Journal of Animal Ecology* 75: 91-100.

Hudson, P.J. & Greenman, J.V. (1998) Parasite mediated competition. Biological and theoretical progress. *Trends in Ecology & Evolution* 13, 387-390.

Krebs, C, Boutin, S, Boonstra, R, Sinclair, A, Smith, J, Dale, M, Martin, K, and Turkington, R. 1995. Impact of food and predation on snowshoe hare cycles. *Science* 269: 1112-1115.

Lambers, JHR, Clar, JS, Beckage, B. 2002. Density-dependent mortality and the latitudinal gradient

in species diversity. *Nature* 417:732-735.

Power, ME, Tilman, D, Estes, JA, Menge, B, Bond, W, et al. 1996. Challenges in the Quest for Keystones. *BioScience* 46(8):609-620

Purvis, A and Hector, A. 2000. Getting the measure of biodiversity. *Nature* 405: 212-219.

Sax, D.F., Gaines, S.D. and Brown, J.H. (2002) Species invasions exceed extinctions on islands worldwide: a comparative study of plants and birds. *American Naturalist* 160:766-783.

Sibly, RM, Barker, D, Denham, MC, Hone, J, Pagel, M. 2005. On the regulation of populations of mammals, birds, fish and insects. *Science* 309: 607-610.

Tilman, D. 2000. Causes, consequences and ethics of biodiversity. *Nature* 405:208-211.

Tilman, D. 1994. Competition and biodiversity in spatially structured habitats. *Ecology* 75:2-16.

Tilman, D. May, RM, Lehman, CL, and Nowak, MA. 2002. Habitat destruction and the extinction debt. *Nature* 371:65-66.

Wiens, J.J. 2007 Global Patterns of Diversification and Species Richness in Amphibians *American Naturalist* 170: S86–S106.

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## Course Guidelines

### Citation and Reference Style

- Attention Please: Students will follow the APA Format as the sole citation and reference style used in written work submitted as part of coursework to the University. Assignments completed in a narrative essay or composition format must follow the citation style cited in the APA Format.

### Tutoring

- [Tutor.com](https://www.tutor.com) offers online homework help and learning resources by connecting students to certified tutors for one-on-one help. AMU and APU students are eligible for 10 free hours\* of tutoring provided by APUS. Tutors are available 24/7 unless otherwise noted. Tutor.com also has a SkillCenter Resource Library offering educational resources, worksheets, videos, websites and career help. Accessing these resources does not count against tutoring hours and is also available 24/7. Please visit the APUS Library and search for 'Tutor' to create an account.

### Late Assignments

- Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. The due date for each assignment is listed under each Assignment.
- Generally speaking, late work may result in a deduction up to 20% of the grade for each day late, not to exceed 5 days.
- As a working adult I know your time is limited and often out of your control. Faculty may be more flexible if they know ahead of time of any potential late assignments.

### Turn It In

- Faculty may require assignments be submitted to Turnitin.com. Turnitin.com will analyze a paper and report instances of potential plagiarism for the student to edit before submitting it for a grade. In some cases professors may require students to use Turnitin.com. This is automatically processed through the Assignments area of the course.

### Academic Dishonesty

- Academic Dishonesty incorporates more than plagiarism, which is using the work of others without citation. Academic dishonesty includes any use of content purchased or retrieved from web services such as CourseHero.com. Additionally, allowing your work to be placed on such web services is academic dishonesty, as it is enabling the dishonesty of others. The copy and pasting of content from any web page, without citation as a direct quote, is academic dishonesty. When in doubt, do not copy/paste, and always cite.

### Submission Guidelines

- Some assignments may have very specific requirements for formatting (such as font, margins, etc) and submission file type (such as .docx, .pdf, etc) See the assignment instructions for details. In general, standard file types such as those associated with Microsoft Office are preferred, unless otherwise specified.

### Disclaimer Statement

- Course content may vary from the outline to meet the needs of this particular group.

### Communicating on the Forum

- Forums are the heart of the interaction in this course. The more engaged and lively the exchanges, the more interesting and fun the course will be. Only substantive comments will receive credit. Although there is a final posting time after which the instructor will grade comments, it is not sufficient to wait until the last day to contribute your comments/questions on the forum. The purpose of the forums is to actively participate in an on-going discussion about the assigned content.
- “Substantive” means comments that contribute something new and hopefully important to the discussion. Thus a message that simply says “I agree” is not substantive. A substantive comment contributes a new idea or perspective, a good follow-up question to a point made, offers a response to a question, provides an example or illustration of a key point, points out an inconsistency in an argument, etc.
- As a class, if we run into conflicting view points, we must respect each individual's own opinion. Hateful and hurtful comments towards other individuals, students, groups, peoples, and/or societies will not be tolerated.

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## University Policies

### [Student Handbook](#)

- [Drop/Withdrawal policy](#)
- [Extension Requests](#)
- [Academic Probation](#)
- [Appeals](#)
- [Disability Accommodations](#)

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