

William Paterson University
Department of Biology

1. TITLE OF COURSE AND NUMBER: BIO 342-01 CREDITS: 4

2. DEPARTMENT AND SECRETARY'S TELEPHONE NUMBER AND E-MAIL ADDRESS
Biology Department phone #: (973) 720-2245
Secretary phone #: (973) 720-2245
email: malban@wpunj.edu

3. SEMESTER OFFERED: Spring, 2005 TIME & ROOM: TR 11-12:15 S516, Lab: F 8-10:45 S303

4. FACULTY MEMBERS' NAME, OFFICE HOURS, TELEPHONE NUMBER AND E-MAIL

Instructors:	Dr. Stephen Vail	Dr. Michael Peek
Office Hours:	S451	S501A
Telephone:	(973) 720-2487	(973) 720-3452
email:	vails@wpunj.edu	peekm@wpunj.edu

5. REQUIRED TEXTS, SUGGESTED READING, AND OTHER MATERIALS FOR STUDY

Required Texts:

Smith, Robert Leo and Smith, Thomas M. 2001. Ecology and Field Biology, Sixth Edition. Benjamin Cummings, New York.

Gotelli, Nicholas J. 2001. A Primer of Ecology, Third Edition. Sinauer Associates, Massachusetts..

6. COURSE OBJECTIVES

To develop understanding of the theory and practice of ecology at the level of the individual organism and the single-species population. To explore the role of physiological constraints on the ability of organisms to adapt to their environments. To investigate the role of behavior in adapting organisms to their environments and the role of natural selection in shaping behavioral adaptations. To become familiar with various theoretical approaches to the understanding of adaptation including optimization and game theory. To become familiar with the characteristic phenomena of populations including population density, structure (age, genetic, spatial), and dynamics. To practice methods of estimating population size in natural populations. To develop theory of population growth and regulation and apply it to the understanding, management, and conservation of natural populations. To begin the study of interactions between species populations. To establish a foundation for further study of ecological phenomena at the levels of community, ecosystem, and biosphere.

7. STUDENT LEARNING OUTCOMES

At the end of this course a student should be able to:

 - a. Critically analyze biological information
 - b. Organize and synthesize biological information into a logical sequence.
 - c. Communicate clearly and in an organized fashion in writing
 - d. Use graphs, charts, tables and other visual media to summarize and clarify information and data for oral and/or written presentation.
 - e. Use information systems in the library to locate biological source material.
 - f. Use computer programs for word processing and elementary data analysis
 - g. gather and analyze field data

8. TOPICAL OUTLINE OF THE COURSE CONTENT

LECTURE CONTENT

Date	Topic	Text	Lab
Jan 18, 20	Introduction	S1-5	field walk
25, 27	Physiological Ecology	S6, 7	leaf shape I assignment due
Feb 1, 3	Physiological Ecology	S8	leaf shape II
8, 10	Population Ecology: properties of pop'ns	S9	data analysis
15, 17	Population Ecology: pop'n growth	S10, G1	population sampling leaf reports due
22	TUESDAY CLASSES REPLACED BY MONDAY CLASSES		
24	Population Ecology: pop'n regulation	S11, G2	computer models
Mar 1, 3	Population Ecology: species interactions	S14-18, G5-6	computer models
8, 10	FIRST LECTURE EXAM 3/10		proposal development model reports due
15, 17	SPRING BREAK		
22, 24	Population Ecology: age structure	S9, S10, G3	(no lab) proposals due 3/24
29, 31	Population Ecology: life histories	S12	project setup
Apr 5, 7	Behavioral Ecology: introduction		data collection
12, 14	Behavioral Ecology: foraging theory	S15	data collection
19, 21	Behavioral Ecology: sexual selection	S12	data analysis
26, 28	Behavioral Ecology: sociobiology	S12	presentations
May 3, 5	Wrap up		Fri starts exam week projects due 3/5
<u>FINAL EXAMINATION: TUESDAY 5/10/05 11:00-1:30</u>			

LABORATORY CONTENT.

Week	Date	Topic
1	Jan 21	Field walk (general concepts, hypothesis testing, project ideas)
2	28	Leaf aerodynamics I (first assignment due) model construction & testing; experimental design
3	Feb 4	Leaf aerodynamics II data collection & data analysis
4	11	Data analysis (statistics, interpretation, report writing)
5	18	Population sampling (leaf reports due)
6	25	Computer modeling
7	Mar 4	Computer modeling
8	11	Project proposal development (modeling reports due)
9	18	SPRING BREAK
10	25	University Closed (project proposals due 3/24)
11	Apr 1	Project setup
12	8	Project data collection
13	15	Project data collection
14	22	Project data analysis
15	29	Student project presentations (papers due following week)

Always bring a calculator to lab.

PREPAREDNESS FOR OUTDOOR WORK: Be sure to check the syllabus for dates on which we are going outside and dress appropriately. Do not assume that rain or snow will prevent us from going outside. Wear sturdy footwear with good traction and clothes that you don't mind getting somewhat muddy. The occurrence of ticks infected with LYME DISEASE is a concern in this area and the following precautions are advised when working outdoors: 1) Wear light-colored clothing (so ticks can be easily seen). 2) Wear long sleeves, long pants, and socks pulled up over the cuffs. Tick/insect repellent may help as well. 3) Inspect yourself carefully for ticks when you return.

9. TEACHING METHODS

Lecture, class discussion, and field/laboratory experiences

10. COURSE EXPECTATIONS

Reading assignments: As prescribed under #8 above.

Tentative time line for submission of written assignments or other work: See #8 above.

Attendance: Attendance at all class meetings is expected, but not required.

Participation in out-of-class activities: Optional.

Examinations: As scheduled under #8 above.

- a. Dates of examinations are tentative except for the final exam.
- b. Examinations may include multiple choice, short-answer, and essay questions.
BRING A #2 PENCIL TO ALL EXAMINATIONS. SHOW UP ON TIME...no one will be admitted to the examination after the first person has left the room. You will be responsible for material covered in reading assignments and in laboratory and lecture. You are responsible for knowing the WPC policy on academic integrity and for strictly adhering to it. If you have any questions about the policy, consult Dr. Vail.
- c. Makeup examinations will be provided at the instructor's discretion if there is a valid, documented excuse and if notification is provided within 24 hours of the scheduled examination. The makeup examination must be taken within 48 hours of the scheduled examination. The makeup examination will generally consist entirely of essay questions.

Class participation: Participation in class discussions and all laboratory activities is expected.

11. GRADING AND OTHER METHODS FOR ASSESSING STUDENT ACADEMIC PERFORMANCE

Course Grade: Lecture (65%) + Laboratory (35%). **YOU MUST PASS BOTH LECTURE AND LABORATORY TO PASS THE COURSE!**

Lecture Grade: Exam #1 = 50%
 Exam #2 = 50%

Laboratory Grade: Reports = 50% (three @ 10, 20, 20 pts)
 Project = 50% (proposal, presentation, paper @ 10, 20, 20 pts)

12. ADDITIONAL INFORMATION

- a. Tutorial assistance and materials for study for this course are available in the Science Enrichment Center, Science Hall Room 421. Students are strongly advised to take advantage of these resources.
- b. Laboratory exercises sometimes involve field work. Students should wear sturdy clothing and footwear for such work. Students should inform themselves about the potential for acquiring tick-borne infections (including Lyme disease) and take appropriate precautions. Consult your instructor for advice.
- c. The University policy on academic integrity will be strictly enforced. Students are responsible for knowing the policy and adhering to all of its provisions. If a student is uncertain about the permissibility of group work, use of calculators or reference materials in an exam, the definition of plagiarism, or any other matter related to academic integrity, it is the student's responsibility to clarify the matter with the instructor.