

# Ecology Syllabus

## Bio 366, Spring 2010

Stuart R. Borrett

### Course Description and Goals

BIO 366 introduces the fundamental principles of ecological science and is one of the five core courses of the biology and marine biology B.S. at UNCW.

Through your experiences in BIO 366, you will have the opportunity to achieve the following **course goals**:

- Develop a “Sense of Wonder” (R. Carson) for the natural world;
- Understand the principles of ecological science and their applications;
- Use and interpret data to evaluate ecological hypotheses;
- Develop your critical thinking, analytical, and quantitative skills;
- Practice professional behavior; and
- Become more effective, self-assessing, and self-directed learners.

### What are your personal goals for this course?

- What do you want to know and be able to do by the end of this course?
- Do you feel prepared to achieve these goals?
- How will you attempt to achieve these goals?

### Faculty Goals

My goals for this course are best stated by Ebert–May and Tsao (2007) as follows:

- As a facilitator I will encourage and create a learning environment in which all students are actively engaged in the process of scientific thought and reasoning.
- I will guide your development toward higher-order thinking and reasoning skills so you can successfully explore and demonstrate achievement of each of the goals above.

### Course Time and Location

This class is scheduled to meet from *5:00 pm–6:15 pm* on *Mondays and Wednesdays* in Dobo 134.

## Contact Information

### Stuart R. Borrett

Office: Friday Hall 1057  
Office Phone: 910.962.2411  
Email\*: borretts@uncw.edu  
Office Hours: Open or by appointment

\* I will respond to email as soon as possible, but please allow 24 hours for a response. If you require a faster response you may call my office phone. Also, please include *bio366* in the subject line. Failure to do so may result in substantially longer response times.

## Materials and Readings

### Clickers

For this course you will need a TurningPoint audience *ResponseCard RF Keypad*, which are available from the bookstore (\$40 new; \$30 used; Figure 1). This tool will be an essential component of our class meetings as we will use them for polling and daily quizzes that are part of your course participation. We will begin using these the Audience Response System (ARS) next on Monday,



Figure 1: Turning Point audience ResponseCard RF Keypad

January 11. Before class, you will need to purchase your Response Card and register the card on through the TurningPoint website <http://student.turningtechnologies.com/>. To register the clicker, you will need to know the Device ID number (on the back of the clicker) and my email address (borretts@uncw.edu). For full credit, you will need to register the clicker by 4 pm on Jan. 11.

### Texts

Our primary textbook for this course is Smith and Smith's **Elements of Ecology** (2009, 7<sup>th</sup> Ed.). This text sells for \$99.50 new at Amazon.com and the used books start at \$85.007.80. This edition

has been noticeably revised since the 6th edition.

## Website

Additional readings for the course will be made available electronically through the course website at <http://people.uncw.edu/borretts/teaching.html>. You will need to choose the BIO 366 tab. Most PDFs will be password protected; the password is bio366.

## About the Course

In class meetings there will be lectures, readings, story-telling, student presentations, discussions, problem-solving, and more. I expect you to work cooperatively in our meetings as well as study together outside of class. I will strive to make the class as active and cooperative as possible. Through this process, we will uncover much about ecology, earth system science, and biological science.

I expected you to read assignments *ahead* of the class meeting scheduled to address the topic. In class, we will often discuss only parts of a chapter or advanced topics that build upon the reading. Thus, we may not review all of the reading in class, but you remain responsible for this material for quizzes and exams. If you don't read prior to class and laboratory you should not be surprised if you become lost during the discussions and activities. This is your course and I expect you to accept responsibility for your own learning.

## Schedule and Assignments

Mtg#	Day	Date	Topic	Readings*
<b>I. Introduction</b>				
1	W	6-Jan	Introductions & Nature of Ecology	Ch1, syllabus
<b>II. Organisms and their Physical-Chemical Environment</b>				
2	M	11-Jan	Earth System and the Physical World	Ch 2
3	W	13-Jan	Niche, Conditions, and Resources	Begon et al. pp 30-31 and pp. 86-88.; Chan et al 2008
	M	18-Jan	MLK Holiday	
4	W	20-Jan	Physiological Ecology of Plants	Ch 6
5	M	25-Jan	Physiological Ecology of Animals	Ch 7
6	W	27-Jan	Life History Patterns	Ch 8
7	M	1-Feb	TBD : Catch-up or special topic based on class interest	
8	W	3-Feb	<b>EXAM I</b>	
<b>III. Populations and Interactions</b>				
9	M	8-Feb	Population Properties	Ch 9
10	W	10-Feb	Population Growth	Ch 10
11	M	15-Feb	Population Regulation and Intraspecific Competition	Ch 11
12	W	17-Feb	Interspecific Competition	Ch 13
13	M	22-Feb	Predation	Ch 13
14	W	24-Feb	Parasitism, Mutualisms, Symbioses, Coevolution	Ch 13
15	M	1-Mar	TBD : Catch-up or special topic based on class interest	Ch 15
16	W	3-Mar	<b>EXAM II</b>	
	M	8-Mar	Spring Break	
	W	10-Mar	Spring Break	
<b>IV. Communities</b>				
17	M	15-Mar	Community Attributes, Structure, and Biodiversity	Ch 16
18	W	17-Mar	Factors Influencing Community Structure	Ch 17
19	M	22-Mar	Community Dynamics and Succession	Ch 18
<b>V. Ecosystems</b>				
20	W	24-Mar	Energetics and Organization	Ch 20
21	M	29-Mar	Energetics and Organization	Ch 20
22	W	31-Mar	<b>EXAM III</b>	
23	M	5-Apr	Decomposition and Nutrient Cycling	Ch 21
24	W	7-Apr	Biogeochemical Cycling :: Carbon and Climate Change	Ch 22 (22.1-22.7); Beedlow et al. 2004
25	M	12-Apr	Biogeochemical Cycling :: Other Macro Nutrients	Ch 22 (22.8-22.13)
<b>VI. Large Scale Ecology</b>				
26	W	14-Apr	Bomes	Ricklefs 2007, Ch 5
27	M	19-Apr	Large Scale Biodiversity & Species Invasions	Ch 26; Vitousek et al. 1996
28	W	21-Apr	TBD : Catch-up or special topic based on class interest	
29	M	26-Apr	Summary: 10 Fundamental Principles of Ecology	Review Notes
30		3-May	<b>EXAM IV</b> , 3-6 pm	
		8-May	Commencement	

\* Readings are from your textbook unless otherwise indicated and are to be completed by the date assigned.

\*\* TBD means To Be Determined

## Evaluation

This course is built around three evaluation elements—Participation, Species Resume, and Exams—that are weighted as shown in Table 1.

### Participation

The first element is class participation. As this will be a highly active class, participation is a significant part of your evaluation. It is also part of professional behavior. I will assess your participation through periodic in-class quizzes and assignments, many of which will be accomplished with the TurningPoint audience response system (ARS).

Each day's participation will be equally weighted throughout the semester, regardless of the number of questions I ask or assignments. I expect there to be 25 participation days (excluding exam days). With the ARS I will ask two types of questions. Some questions will have correct answers. These questions will be drawn from lecture material and readings. You will receive 1 participation point for responding and 1 additional point for answering correctly. The second type of questions will not have a correct answer. For these, you will receive 1 point for responding.

I strongly support the [Academic Honor Code](#) and will not tolerate academic dishonesty of any type. With respect to the ARS, I will collect the students' response cards for anyone found cheating. The students involved will receive a 0 on their course participation. I will return the response cards at the end of the semester. Simply avoid this temptation.

### Exams

Exams comprise the second course element. There are four exams in this class, which will all be comprehensive. My expectation is that you will be present for all four exams, as they are teaching tools as well as assessment tools. If you have a planned absence that is part of official university business, please let me know immediately so that we can schedule a time for you to take the exam early. Otherwise, *there will be no make up exams*.

If life gets in the way and you must miss one exam, you may write a 10 page research paper (not including figures, tables, or references) on a topic to be chosen with me. I will then substitute your grade on the paper for the exam you missed.

Table 1: Bio 366 Evaluation

Course Component	Percent Contribution
Participation, Homework, Quizzes*	10%
Exam 1	15%
Exam 2	20%
Exam 3	25%
Exam 4 (Final)	30%
Total	100%

Your final course grade will be determined following the scheme in Table 2.

Table 2: Course Grading Scheme

<b>% of Course Points</b>	<b>Grade</b>
> 93	A
90–93	A-
88–89	B+
83–87	B
80–82	B-
78–79	C+
73–77	C
70–72	C-
68–69	D+
63–67	D
60–62	D-
< 60	F

## University Policies of Concern

### Disabilities

If you are a person with a disability and anticipate needing accommodations of any type for this course, you must first notify Disability Services (Westside Hall #1033, 962.7555), provide the necessary documentation of the disability, and arrange for the appropriate authorized accommodations. Once these accommodations are approved, please identify yourself to me in order that we can implement these accommodations.

### Violence and Harassment

UNCW practices a zero-tolerance policy for violence and harassment of any kind. For emergencies, contact UNCW CARE at 910.962.2273, Campus Police at 910.962.3184, or the Wilmington Police at 911. For University or community resources visit <http://www.uncw.edu/wrc/crisis.html>.

### Academic Honor Code

The Department of Biology and Marine Biology and I strongly support the Academic Honor Code as stated in the “Student Handbook and Code of Student Life,” and we will not tolerate academic dishonesty of any type.

## Parting Thought

STAR-NEWS | SATURDAY, DECEMBER 15, 2007

### All-nighters may result in lower GPA

**ALBANY, N.Y.** | Students who rely on all-nighters to bring up their grades might want to sleep on that strategy: A new survey says those who never study all night have slightly higher GPAs than those who do.

A survey of 120 students at St. Lawrence University, a small liberal arts college in northern New York, found that students who have never pulled an all-nighter have average GPAs of 3.2, compared with 2.95 for those who have. The study, by assistant professor of psychology Pamela Thacher, is to be included in the January issue of *Behavioral Sleep Medicine*.

"It's not a big difference, but it's pretty striking," Thacher said. "I am primarily a sleep researcher, and I know nobody thinks clearly at 4 in the morning. You think you do, but you can't."

A second study by Thacher, a clinical psychologist, had "extremely similar" results showing lower grades among the sleep skippers.

— Associated Press