ECOLOGY AND EVOLUTION (BI OL 3250) -- Spring Semester 2013

Instructor: Dr. Brad Bergstrom, Offc. 1107 (- 5770) bergstrm@valdosta.edu
Biol. Dept. - 5759
Office Hours: M 11, W 3:30; other times by appointment.

Texts : Smith, R.L., and T.M. Smith. 2001. Ecology and field biology. 6th ed.
Benjamin Cummings, San Francisco, CA. 771 pp.
Hall, B.K., and B. Hallgrimsson. 2008. Strickberger's Evolution. 4th ed.
Jones and Bartlett, Boston, MA. 762 pp.
**STUDENTS ARE RESPONSIBLE ON EXAMS FOR ALL ASSIGNED READINGS.

Lecture: ca. 67% of grade from 100- pt. lecture exams.
*Tentative Exam Dates: Feb 8, March 15, April 12, May 3 (Fri, 8- 10 am)

Lab = ca. 33% of course grade, from writeups of field/laboratory exercises;
including original investigations and computer simulations.

LECTURE SCHEDULE

Week #	Topic	Chapters in: Evolution (V), otherwise Ecology
1	Introduction to Ecology	1
1	History and Fundamentals of Evolutionary Theory	V1- 3
2	The Nature of Variation	Skim V9 - 10
2 - 3	Species and Phylogenies	V11, Skim V12
3	"Evo- Devo"	V13
4 - 5	Population Genetics and the Mechanisms of Microevolution	V21- 23
	Patterns of Macroevolution	V24
6 - 7	Physical and Physiological Ecology	5 ,6,8
	Conditions and Resources	Skim 4,7,9
	Nutrient/Mineral Cycles	2,27
	Niche Concepts	Skim 25,26
		pp. 253- 62;383- 84
8 - 9	Population Ecology: Demography, Dynamics, & Density- dependence	10,11, skim 12
10- 11	Reproductive Ecology & Life Histories	13
11- 12	Interspecific Competition	14
13	Foraging Ecology, Predator- Prey	15,16

Tentative Laboratory/Field Schedule			**Assignment (pts.)**
Week 1 --	Intro to Inland Coastal Plain Ecosystems. (***READ Ecol. pp. 12- 17; Skim Ch. 28- 31 + Appendix A for ideas***)	Hypotheses (10)	
2 –-	Phylogenenetic Rules and Reconstruction (also, set up Bacterial Selection experiment)		Assignment (15)
3 --	Population Genetics Computer Simulations	Assignment/Paper	(15)
4 –-	TBA		
5 --	Bacterial Selection	Assignment (15)	
6 - —	Ecological Transect sampling I		TBA
7 --	Human Demography	Life Table (20)	
8 --	Mark- Recapture and Pop. Estimation Simulation	Report	(20)

Weeks 8/9:
**FIELDTRIP TO SAPELO ISLAND (Fri- Sun, either March 1- 3 or March 8- 10) (25)

9 –-	No labs this week		
10 - –	Community Ecology Field Experiment I		
11 --	Analysis of Sapelo experimental data		Scientific Paper 8 (35)

Ecology (BIOL 3250) – Spring 2011 Expectations of Students

1. The text chapters will serve as your introduction and background to the lecture topics. Therefore, read them carefully, preferably before the lecture; otherwise, you may find that you are lost! Success in this course demands that you attend every day and come to class prepared.

2. On weeks that I inform you we will be in the field, be prepared to leave for the field promptly at lab time--this includes APPROPRIATE ATTIRE. We will be encountering briars, chiggers, fire

5. If you should have any kind of question, problem, comment, complaint, crisis, etc., involving this course, I'm the appropriate person for you to talk to. Please come by and see me about it immediately; that's what I'm here for. Feel free to stop by anytime (but try office hours first).

6. STUDENTS WITH DISABILITIES: Students requiring classroom or testing accomodations because of documented disabilities should discuss their needs with the instructor at the beginning of the quarter. To register with the Access Office, go to Farber Hall or call 245-2498 (voice) or 219-1348 (tty).

COURSE GOALS AND LEARNING OUTCOMES:

This course is designed to give the Biology Major a basic understanding of the modern theories and principles of biological evolution, the unifying principle of biology explaining the history of life on Earth and the mechanisms by which descendants become modified from their ancestors; and of the several subfields of ecology, which is the study of the individual organism in the context of its physical and biotic environment, as well as the study of populations, communities and ecosystems in their respective environments and interactions among these. We will also explore human influences on these ecological systems and processes. The laboratory experience in the ecology portion of the course will be largely field-based and will give the student a familiarity with several of the predominant ecosystems of the coastal plain of the southeastern United States. During field (and laboratory) exercises, students will put to practice scientific methodology in posing hypotheses, designing experiments and collecting and analyzing data, and finally conveying the results of those investigations in scientifically written reports.

With reference to the Educational Outcomes for the B.S. Degree in Biology (see p. 108 of 2008-2009 VSU Undergraduate Catalog) and as explained above, BIOL 3250 is particularly designed to give the student extensive background in Outcomes #1 and #5.

With reference to the VSU General Education Outcomes[1], BIOL 3250 will significantly address the following: #3) Students will use computer and information technology when appropriate; #4) Students will express themselves clearly, logically. and precisely in writing and in speaking, and they will demonstrate competence in reading and listening; #5) Students will demonstrate knowledge of scientific and mathematical principles and proficiency in laboratory practices; #7) Students will demonstrate the ability to analyze, to evaluate, and to make inferences from oral, written, and visual materials.

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[1]http://www.valdosta.edu/academic/VSUGeneralEducationOutcomes.shtml