

BIOLOGY 124 : Principles III: Spring 2009

John R. Thomlinson

Tue-Thu, 11:30 – 12:45 am, NSM C-213. Corequisite: BIO 125 Prerequisite: BIO 122

Text: Campbell, N.A. and J. B. Reece. Biology, 8th edition. Pearson.

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Office Hours: Tu 1:30 – 3:30 pm, W 9:00 – 11:00 am

This course will give the student an overview of the principles of evolution and ecology and how these two concepts are inextricably intertwined. It will cover Darwinian evolution, phylogeny and systematics, biogeography, biodiversity, genomics, biomes, autecology, coevolution, population, community, ecosystem, landscape, and behavioral ecology, among other topics. We will also discuss the role of ecology and evolution science in society. Some of the material presented in the course will be from the text. Other material will be from other sources.

Attendance is required for each class session, because I firmly believe that education works best when everyone participates. I will allow three unexcused absences: after that, any absences must be approved by me in advance. Each additional unapproved absence will carry a charge of 1 percentage point. I encourage questions in class, and from time to time we will have discussion sessions on an assigned journal article. **READ** all assigned chapters before coming to class. There will be quizzes on the material at the beginning of class, from time to time. I know that all of you have very full schedules, but you will gain much more from the class sessions if you have some background knowledge of the topics to be covered, and you will, I hope, have questions about specific areas. All assignments will be due one week from the day announced. I do not allow make-up work unless there are compelling reasons (medical emergency, etc).

Grades will be assigned on a standard scale:

94 - 100: A	73 - 76: C
90 - 93: A-	70 - 72: C-
87 - 89: B+	67 - 69: D+
83 - 86: B	60 - 66: D
80 - 82: B-	0 - 59: F
77 - 79: C+	

Points will be awarded as follows:

Exam I:	30%
Exam II:	30%
Lecture assignments:	20%
Journal	10%
Quizzes:	10%

Academic Integrity: Cheating or plagiarism is subject to discipline as provided in Title 5, California Code of Regulations. See the University Catalog under Academic Integrity for further information. In particular, it is important to cite all your sources on assignments. We will cover this in the lab. Students should recognize that academic misconduct hurts the reputation of the university, and thus the value of their degree. All students are urged to report any cases of academic misconduct to me, anonymously if desired, and I will take the appropriate steps to ensure that the rigor of our program is maintained. No cellphone use of any kind is allowed during exams. Cellphones will be turned off and secured in your bookbag, which will be placed on the floor for the duration of the exam.

CSUDH adheres to the Americans with Disabilities Act with respect to providing reasonable accommodations for students with temporary and permanent disabilities. To receive accommodation, students with disabilities must register with campus Disabled Student Services. For further information, access the University Catalog, Campus Services, Disabled Student Services.

Course Learning Objectives

At the successful completion of the class, the student will be able to:

- Describe the process of organic evolution
- Describe the background to the theory of evolution
- Compare the different causes of biological diversification
- Describe the genetic basis of evolution
- Describe the process of natural selection and speciation
- Critique different forms of evidence for biological adaptations
- State the difference between genotype and phenotype
- Discriminate between genetic and environmental effects on the phenotype
- Compare the roles of individuals as units of natural selection and populations as units of evolution
- Describe the evolution of cooperative behavior
- Describe coevolution
- Critique the debate over evolution versus non-scientific explanations of life
- Predict the effects of changing environmental conditions on individuals
- Describe the flow of energy and nutrients through ecosystems
- Predict life forms that would be found in different biomes
- Calculate population sizes under different scenarios
- Contrast intra- and inter-species interactions
- Describe bottom-up and top-down regulation of populations
- Describe the effects of landscape structure on ecological communities
- Calculate energy flow through ecosystems
- Classify major terrestrial biomes and aquatic life zones
- Critique human impacts on the environment in the context of economic development

CLASS SCHEDULE

Date	Lecture	Topics	Readings *
Jan 27	1	Evolutionary Biology	Chapter 22
Jan 29	2	Earth History	Chapter 25
Feb 3	3	Natural Selection	Chapter 22
Feb 5	4	Evolutionary Genetics	Chapter 23
Feb 10	5	Adaptation	
Feb 12	6	Sexual Selection	Chapter 25
Feb 17	7	Evolution of Social Behavior	Chapter 51
Feb 19	8	Life Histories	Chapter 53.2
Feb 24	9	Coevolution	
Feb 26	10	Species and Speciation	Chapter 24
Mar 3	11	Biogeography	Chapter 54.4
Mar 5	12	Evolution and Development	Chapter 21.6
Mar 10	13	Evolution and Society	
Mar 12		Time to finish unfinished lectures	
Mar 17		Review and discussion	
Mar 19		Exam I – Evolution	
Mar 24	14	Introduction to Ecology	Chapter 52
Mar 26	15	Terrestrial Ecosystems	
Mar 31		Spring Break	
Apr 2		Spring Break	
Apr 7		The Predictive Power of Evolution	
Apr 9	16	Plant Adaptations	Chapters 36, 37
Apr 14	17	Animal Adaptations	Chapters 40, 44
Apr 16	18	Population Ecology	Chapter 53
Apr 21	19	Species Interactions	Chapter 54.1
Apr 23	20	Community Structure	Chapter 54.2
Apr 28	21	Community Dynamics	Chapter 54.3
Apr 30	22	Ecosystem Energetics	Chapter 55.1-55.3
May 5	23	Decomposition and Nutrient Cycling	Chapter 55.4-55.5
May 7	24	Aquatic Ecosystems	
May 12	25	Conservation and Global Ecology	Chapter 56
May 14		Review and discussion	
May 21		Exam II – Ecology plus Evolution Recap	11:30 am – 1:30pm

* These **must** be read **prior** to coming to class

The instructor reserves the right to change the syllabus as necessary.