

BIOLOGY 125 : Principles III Laboratory: Fall 2008
John R. Thomlinson

Corequisite: BIO 124

Prerequisite: BIO 122

Sec 01: Wednesday, 1:00 – 3:45 pm, NSM C-121.

Sec 02: Thursday, 1:00 – 3:45 pm, NSM C-121.

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

This course will give the student hands-on experience to reinforce the concepts of the BIO 124 course. Students will learn to reconcile the stratigraphic and phylogenetic context of fossils. They will calculate Mendelian gene frequencies and, through simulations, see how frequencies can change under differing selective pressures. The ecological component of the lab will start by learning basic field measurement techniques and experimental design. Students will simulate population and community dynamics, and they will gain experience in conservation reserve design. We will also visit selected local ecosystems to see how organisms are adapted to their environment. A major component of the laboratory experience will be conducting a research project, from formulating the problem to presenting the results. Each student will participate as part of a group.

Attendance is required for each lab session, because I firmly believe that education works best when everyone participates. I will allow one unexcused absence: after that, any absences must be approved by me in advance. Labs work best if they are interactive, so I encourage questions and discussion. 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:

Lab Reports: 50%

Project – written part: 25%

Project – oral presentation: 25%

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 class.

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 major events of evolutionary history
- Interpret phylogenetic trees
- Calculate allele frequencies in a population
- Predict selective pressures in contrasting environments
- Measure basic field parameters
- Predict population dynamics
- Interpret food webs
- Formulate a hypothesis
- Design an experiment to test the hypothesis
- Conduct literature research
- Analyze the results of an experiment
- Determine statistical significance
- Present the results of a project to peers

LAB SCHEDULE

Date	Class	Topics
Jan 28, 29		No lab the first week of classes
Feb 4, 5	1	Introduction to laboratory Earth history
Feb 11, 12	2	Phylogenetics. <u>Simulation</u> : Flowers and Trees
Feb 18, 19	3	Mendelian genetics, statistics <u>Simulation</u> : Sickle Cell Alleles
Feb 25, 26	4	Measuring ecological parameters I Field Trip – Dominguez Hills Nature Preserve
Mar 4, 5	5	Measuring ecological parameters II <u>Simulation</u> : Prairie Sampling
Mar 11, 12	6	Experimental simulation lab
Mar 18, 19	7	Discuss projects
Mar 25, 26	8	Field Trip – Royal Palms County Park, Palos Verdes.
Apr 1, 2		Spring Break – no labs
Apr 8, 9	9	Field Trip – Gardena Willows Wetland Preserve
Apr 15, 16	10	Conservation. <u>Simulation</u> : Corridors, Stepping Stones, and Butterflies
Apr 22, 23	11	Population ecology. <u>Simulation</u> : Isle Royale
Apr 29, 30	12	Food webs. <u>Simulation</u> : Keystone Predator 101
May 6, 7	13	Work on projects

May 13, 14 14 Presentations