

Southeast Missouri State University

Department of Biology

BI 153

Introduction to Organismal Biology

New Spring 2006

I. Catalog Description and Credit Hours of Course:

This course will provide a strong foundation in the unifying concepts and theories that best explain the origin and diversity of living organisms. Students will be introduced to ecological principles underlying natural selection and adaptation. Life processes (e.g., metabolism, growth, reproduction, etc.) will be examined in the context of natural selection. Three one-hour lectures; one two-hour lab. (4)

II. Prerequisite (s): BI 152

III. Purposes or Objective of the Course:

- A. Understand mechanisms of natural selection
- B. Understand biological and ecological organization.
- C. Understand the interplay of the environment and organisms
- D. Understand the properties of life and how they differ among various taxa.
- E. Continue to develop the concept of conjecture/refutation via active experimentation.

IV. Expectations of Students:

- A. Attend all of the lectures and labs
- B. Complete all assignments
- C. Participate in all laboratory activities
- D. Take 2 lecture exams and final

V. Course Content or Outline:

Lecture and Lab Topics	Lecture Hours	Lab Hours
A. Biological Organization <i>Lab 1: Biological Organization</i>	2	2
B. Distribution and Abundance of Organisms - relating to ecological and biogeographical topics <i>Lab 2: Ecology and Adaptation</i>	6	2
C. Natural Selection as a mechanism to explain diversity <i>Lab 3: Natural selection: Model natural selection using beans</i>	6	2
D. Population Ecology <i>Lab 4: Population Ecology</i>	2	2
E. Speciation and Extinction	2	0
F. Taxonomy and Systematics <i>Lab 5: Systematics</i>	2	2
G. Challenges of Life I: Homeostasis	3	2

<i>Lab 6: Homeostasis</i>		
H. Challenges of Life II: Organisms as an open system <i>Lab 7 Nutrient Acquisition</i> <i>Lab 8 Respiration</i> <i>Lab 9 Excretion</i>	6	6
I. Challenges of Life III: Organisms interacting with the environment <i>Lab 10: Responsiveness</i> <i>Lab 11: Movement</i>	7	4
J. Challenges of Life IV: Reproduction <i>Lab 12: Reproduction</i> <i>Lab 13: Life Cycles</i> <i>Lab 14: Development</i>	7	6
K. Exams: Two lecture exams and one final <i>Lab practical (x2)</i>	2	4
Total	45	30

VI. Textbook(s) and/or Other Required Materials or Equipment:

- A. Campbell, N. A. and J. B. Reece. *Biology* 7th ed. San Francisco: Benjamin Cummings. 2005.
- B. Lab manual (Will be created to fit the labs)

VII. Basis for Student Evaluation:

The weight of evaluation criteria may vary at the discretion of the instructor and will be indicated at the beginning of each semester.

- A. Two one-hour exams and a final
- B. Lab reports and/or Quizzes
- C. Lab Practicals
- D. Other Assignments