College of San Mateo
Official Course Outline

1. **COURSE ID:** BIOL 210 **TITLE:** General Zoology **C-ID:** BIOL 210+220 = BIOL 130S; BIOL 210+220+230 = BIOL 135S
   Units: 5.0 units **Hours/Semester:** 48.0-54.0 Lecture hours; 96.0-108.0 Lab hours; and 96.0-108.0 Homework hours
   Method of Grading: Letter Grade Only
   Prerequisite: MATH 120
   Recommended Preparation:
   Any READ 400 level course. Successful completion of a college biology course with lab and a college chemistry course with lab.

2. **COURSE DESIGNATION:**
   Degree Credit
   Transfer credit: CSU; UC
   AA/AS Degree Requirements:
   CSM - COMPETENCY REQUIREMENTS: C1 Math/Quantitative Reasoning Basic Competency
   CSM - GENERAL EDUCATION REQUIREMENTS: E5a. Natural Science
   CSU GE:
   CSU GE Area B: SCIENTIFIC INQUIRY AND QUANTITATIVE REASONING: B2 - Life Science
   CSU GE Area B: SCIENTIFIC INQUIRY AND QUANTITATIVE REASONING: B3 - Laboratory Activity
   IGETC:
   IGETC Area 5: PHYSICAL AND BIOLOGICAL SCIENCES: B: Biological Science
   IGETC Area 5: PHYSICAL AND BIOLOGICAL SCIENCES: C: Science Laboratory

3. **COURSE DESCRIPTIONS:**
   Catalog Description:
   Introduction to principles of animal biology Includes molecular basis of life, structure, function and behavior as seen in invertebrates and vertebrates; ecology; zoogeography and animal evolution. One or more field trips may be required. Extra supplies may be required.

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**
   Upon successful completion of this course, a student will meet the following outcomes:
   1. Explain the importance of animal diversity.
   2. Explain the importance of ecological, scientific, economic, cultural, and social importance of the interrelationships between animals, humans, and the environment.
   3. Apply the scientific method.
   4. Explain the significance of the relationship between structure and function, evolution, genetics, ecology in the organization, survival, and diversity of animals.

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**
   Upon successful completion of this course, a student will be able to:
   1. Appreciate the environmental and ecological importance of animals
   2. Recognize members of the major phyla and classes of animals
   3. Understand mitosis and meiosis within the context of animal life cycles
   4. Appreciate the principles of evolution as demonstrated by animals
   5. Perform, document and analyze laboratory methods and experiments
   6. Apply reasoning and critical thinking to explain laboratory results
   7. Appreciate the continuum of structure from molecular to cellular to organismal organization of animals
   8. Appreciate the roles of aerobic and anaerobic metabolism in animals
   9. Relate patterns of development in animals to their evolutionary potential
   10. Appreciate the contribution to subsequent evolution of the development of such features as collagen, chitin, keratin, the coelom, metamerism, tagmatization, vertebrae, amniote eggs, and homeothermy, among others
   11. Demonstrate proficiency in the use of the Compound Microscope to examine animal tissues
   12. Demonstrate proficiency in the solution of genetics problems
   13. Distinguish the impact on evolutionary processes of mutation, natural selection, genetic drift, gene flow

and non-random mating
14. Use a key to identify common animal groups

6. **COURSE CONTENT:**

Lecture Content:

1. Ecological principles
2. Cells, tissues, organs, and organ systems of animals
3. Cell division and inheritance
4. Evolution: history, evidence, gene frequencies
5. Animal classification, phylogeny, and organization
6. Animal-like protists
7. Multicellular and tissue levels of organization
8. Parazoa: sponges and other "simple" phyla
9. Diploblastic animals: radiate animals
10. Triploblasitc protostomic animals
11. Triploblastic deuterostomic animals
12. Veterbrate animals
13. Tetrapod vertebrate animals
14. Protection, suppoort, and movement
15. Nutrition and digestion
16. Communication: nervous and endocrine systems
17. Circulations and gas exhange
18. Reproduction and development
19. Animal behavior

Lab Content:

1. Flour beetle population growth experiment
2. Ecological simulations: food webs and survivorship
3. Mocroscopy
4. Cell structure and division
5. Gametogenesis and embryology
6. Tissue structure and function
7. Mendelian genetics
8. Natural selection simulation
9. Phylogenies and classification
10. Protozoan groups
11. Phylum Porifera (sponges)
12. Phylum Cnidaria and ctenophora
13. Platyhelminthes (flatworms)
14. Minor protostomic phyla
15. Phylum Mollusca
16. Phylum Annelida
17. Arhtopoda: Chaleicerata, Criustacea, Myriapoda, Hexapoda
18. Phylum Echinodermata
19. Phylum Chordata: fishes, amphibians, reptiles and birds, mammals
20. Mammalian organ systems dissection (fetal pig): skeletal, muscular, digestive, urogenital, circulatory, nervous, respiratory
21. Animal behavior

7. **REPRESENTATIVE METHODS OF INSTRUCTION:**

Typical methods of instruction may include:

A. Lecture
B. Lab
C. Activity
D. Discussion
E. Experiments
F. Field Trips
G. Observation and Demonstration
H. Other (Specify): Lecture accompanied by computerized demonstrations and presentation materials, transparencies, and other supplementary visual material, some laboratory content are presented online (web-assisted) • Laboratory work with fresh and preserved animal material, prepared slides, and

experiments • Discussions • Videos • Field Trips to local aquaria, tidepools and other natural settings suitable for the observation of animals • Field Trip written reports • Individual and group laboratory reports • Simulation of the breeding of virtual fruit flies to identify the inheritance modes and genotypes of computer-generated "field captures" • Simulation and manipulation of the evolutionary forces of natural selection, genetic drift, gene flow, and non-random mating.

8. **REPRESENTATIVE ASSIGNMENTS**

Representative assignments in this course may include, but are not limited to the following:

Writing Assignments:

- Lab reports
- Group presentation of solutions to computerized genetics problems
- Field trip reports
- Lecture and laboratory tests
- Poster and term paper
- Weekly quizzes

Reading Assignments:

- Course textbook for lecture
- Primary and secondary sources (textbooks, scientific journal or magazine articles, websites) for assignments such as classroom discussions, online discussions, online quizzes, or short papers relating readings to course material

Other Outside Assignments:

- Online videos and quizzes
- Field trip report
- Computer simulations on selected topics in zoology

9. **REPRESENTATIVE METHODS OF EVALUATION**

Representative methods of evaluation may include:

A. Class Participation
B. Class Performance
C. Class Work
D. Exams/Tests
E. Field Trips
F. Group Projects
G. Homework
H. Lab Activities
I. Oral Presentation
J. Projects
K. Quizzes
L. Simulation
M. Written examination
N. • 4 lecture exams consisting of multiple-choice questions, fill-in questions, matching, and short answer essay questions. • 4 lab practical examinations • poster or electronic/oral presentation on selected topics in animal evolutionary such as animal behavior, systematics, and technological advances in evolutionary research • individual field trip reports • individual lab reports

10. **REPRESENTATIVE TEXT(S):**

Possible textbooks include:

A. Miller, S. A. & J. P. Harley. *Zoology*, 8th ed. McGraw-Hill, 2010
B. Hickman, C. P., L. B. Kats & S. L. Keen. *Laboratory Studies in Integrated Principles of Zoology* , 15th ed. McGraw-Hill, 2011

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Course Originator: Huy Tran