



El Camino College
COURSE OUTLINE OF RECORD – Approved

I. GENERAL COURSE INFORMATION

Subject and Number: Biology 11
Descriptive Title: Fundamentals of Zoology
Course Disciplines: Biological Sciences
Division: Natural Sciences

Catalog Description:

This course introduces major animal groups and the single-celled protozoans. Comparative studies of animal structure and physiology will illustrate principles of classification and evolution. Ecological topics include animal behavior, natural history, and relationships of animals to humans. Genetics and basic cell biology are also covered.

Conditions of Enrollment: None

Recommended Preparation: eligibility for English 1A

Course Length:	X Full Term	Other (Specify number of weeks):
Hours Lecture:	3.00 hours per week	TBA
Hours Laboratory:	3.00 hours per week	TBA
Course Units:	4.00	

Grading Method: Letter
Credit Status: Associate Degree Credit

Transfer CSU: X Effective Date: 5/19/1997
Transfer UC: X Effective Date: Fall 1997

General Education:

El Camino College:

1 – Natural Sciences

Term: Fall 2007 Other:

CSU GE:

B2 - Life Science

Term: Spring 1998 Other:

B3 - Laboratory Sciences

Term: Spring 1998 Other:

IGETC:

5B - Biological Science with a Lab

Term: Fall 1998 Other:

II. OUTCOMES AND OBJECTIVES

A. COURSE STUDENT LEARNING OUTCOMES (The course student learning outcomes are listed below, along with a representative assessment method for each. Student learning outcomes are not subject to review, revision or approval by the College Curriculum Committee)

1. The student will understand and apply principles of the scientific method and recognize an idea based on reproducible evidence.
2. The student will be able to use the compound and dissecting microscope to observe cells and microorganisms
3. The student will be able to describe key activities at each stage of mitosis.

The above SLOs were the most recent available SLOs at the time of course review. For the most current SLO statements, visit the El Camino College SLO webpage at <http://www.elcamino.edu/academics/slo/>.

B. Course Student Learning Objectives (The major learning objective for students enrolled in this course are listed below, along with a representative assessment method for each)

1. Describe the parts of compound and dissecting microscopes and develop manipulative skills in the proper use and care of them.

Quizzes

2. Demonstrate methods of dissection, inquiry, study, safety, and cooperation in laboratory studies.

Lab Reports

3. List and describe the major sub-specialty sciences of biology.

Objective Exams

4. Describe the contributions of the major scientists in the field of biology and assess the impact of their discoveries to the field.

Essay exams

5. Describe the characteristics of life shared by all living organisms as well as the increasing complexity and emergent properties of biological systems

Objective Exams

6. Examine the evolutionary relationships between animals and heterotrophic protists by comparing the events in the origin of early animals.

Objective exams

7. Describe and compare the differences in the embryonic development of the major phyla of animals

Multiple Choice

8. Construct Punnett squares and analyze the results of genetic crosses based on Mendelian principles of inheritance.

Quizzes

9. Explain the general concepts of taxonomy, or classification, using a phylogenetic approach that includes molecular and morphological evidence.

Homework Problems

10. Demonstrate the binomial system of nomenclature using genus and species names as the basis for scientific identification.

Completion

11. Describe the role and impact of animals in relation to their ecosystems.

Objective Exams

12. Discuss the fundamental patterns of animal behavior including instinctive, imprinted, learned, reproductive, and territorial.

Essay exams

13. Organize from simplest to complex, the ecological subdivisions including individual organisms, populations, communities, ecosystems, and biomes.

Completion

14. Describe the impact of humans on other animal populations in relationship to evolution, extinction, and domestication.

Written homework

- 15. Understand the theory of evolution, including microevolution mechanisms, speciation and macroevolution patterns.**

Multiple choice

- 16. Identify and compare unique characteristics of major animal phyla and interpret their phylogenetic relationships.**

Multiple choice

- 17. Understand the increasing complexity among different animal phyla, based on their body symmetry, embryonic germ layers, body cavities, segmentation and level of organization.**

Multiple choice

- 18. Describe the evolution, structure and function of the major organ systems found in animals.**

Multiple choice

III. OUTLINE OF SUBJECT MATTER (Topics are detailed enough to enable a qualified instructor to determine the major areas that should be covered as well as ensure consistency from instructor to instructor and semester to semester.)

Lecture or Lab	Approximate Hours	Topic Number	Major Topic
Lecture	1.5	I	Introduction to Biology A. Scientific Method B. Characteristics of life
Lecture	3.5	II	Chemistry of Life A. Main Biomolecules Types B. Their structure and functions in the animal body
Lecture	4	III	Cellular Biology A. Cell theory B. Cell types C. Cell structure and function

Lecture	4	IV	Cell Metabolism A. Enzymes B. Cellular respiration
Lecture	4	V	Genetics A. Mendel Patterns of inheritance
Lecture	5	VI	Evolution A. Microevolution mechanisms B. Speciation C. Systematics and Phylogenetic approach to Taxonomy
Lecture	6.5	VII	Ecology A. Population dynamics, B. Niche and community interactions C. Energy flow and chemical cycling D. Human impact on Ecosystems
Lecture	2	VIII	Animal Behavior A. Innate and learned behaviors B. Migration C. Evolution of communication D. Types of mating behaviors E. Evolution of Societies
Lecture	4	IX	Integument, Skeletal System, and Locomotion in Platyhelminthes, Nematodes, Annelids, Arthropods, and Vertebrates
Lecture	4	X	Circulation and Respiration in Annelids, Arthropods, and Vertebrates
Lecture	3	XI	Osmotic and Temperature Regulation in Platyhelminthes, Annelids, Arthropods, and Vertebrates
Lecture	3	XII	Digestion and Nutrition in Cnidaria, Annelids, and Vertebrates
Lecture	3.5	XIII	Reproduction and Development in Echinoderms and Vertebrates (Amphibia and Aves)
Lecture	1	XIV	Animal Organization A. Parazoa B. Radiata C. Protosome D. Deuterostome
Lecture	3.5	XV	Nervous and Sensory Systems in Cnidaria, Arthropods, Molluscs and Vertebrates
Lecture	1.5	XVI	Mammals Phylogeny and Classification A. Natural History B. Adaptations C. Main Orders
Lab	3.5	XVII	Microscopy and Scientific Method
Lab	3.5	XVIII	Cells and mitosis

Lab	3.5	XIX	Protozoan Phylogeny and Classification
Lab	2.5	XX	Porifera and Cnidaria Evolution and Classification: A. Natural History B. Adaptations C. Main Classes
Lab	3.5	XXI	Platyhelminthes and other small Lophotrochozoans Evolution and Classification A. Natural History B. Adaptations C. Main Classes
Lab	2.5	XXII	Nematodes and other Ecdyzoans Evolution and Classification A. Natural History B. Adaptations C. Main Classes
Lab	3.5	XXIII	Mollusc Evolution and Classification A. Natural History B. Adaptations C. Main Classes
Lab	3.5	XXIV	Annelid Evolution and Classification A. Natural History B. Adaptations C. Main Classes
Lab	6	XXV	Arthropod Evolution and Classification A. Natural History B. Adaptations C. Main Classes
Lab	2.5	XXVI	Echinoderms Evolution and Classification A. Natural History B. Adaptations C. Main Classes D. Starfish Embryonic development
Lab	3.5	XXVII	Chordate Evolution and Classification: Invertebrates and Vertebrates (Jawless fish thru Amphibians) A. Natural History B. Adaptations
Lab	3.5	XXVIII	Chordate Evolution and Classification: (Reptiles, Birds) A. Natural History B. Adaptations
Lab	3.5	XXIX	Chordate Evolution and Classification: Mammals-Humans A. Natural History B. Adaptations
Lab	3.5	XXX	Vertebrate Anatomy (Frog Dissection)
Lab	3	XXXI	Vertebrate Review: Phylogeny and classification
Lab	2.5	XXXII	Vertebrate Organ Systems Review
Total Lecture Hours		54	

Total Laboratory Hours	54
Total Hours	108

IV. PRIMARY METHOD OF EVALUATION AND SAMPLE ASSIGNMENTS

A. PRIMARY METHOD OF EVALUATION:

Problem solving demonstrations (computational or non-computational)

B. TYPICAL ASSIGNMENT USING PRIMARY METHOD OF EVALUATION:

Solve the following genetics problem involving a flower cross. Assume "R" is a red dominant gene and "r" is a white recessive gene. Do a cross of monohybrid parents (Rr X Rr) using the Punnett-Square method. List the resulting genotypic and phenotypic ratios that occur in the offspring of the cross.

C. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS:

1. Observe characteristics of a worm. Classify the worm as a member of the Platyhelminthes, Nematoda, or Annelida. Write a paragraph supporting the determination. Base the decision on the organization of muscle layers, body cavities, digestive tracts, and segmentation.
2. In a paragraph, compare and contrast open and closed blood circulatory systems. Give specific examples of organisms which possess each type. Explain which system is the most effective at delivering oxygen to body cells. Also describe how organisms with the less efficient system are able to compensate for the deficiency.

D. OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS:

Essay exams
 Performance exams
 Objective Exams
 Other exams
 Quizzes
 Written homework
 Laboratory reports
 Homework Problems
 Term or other papers
 Multiple Choice
 Completion
 Matching Items
 True/False
 Other (specify):
 Laboratory Drawings Laboratory Practical Exams

V. INSTRUCTIONAL METHODS

Demonstration
Discussion
Field trips
Group Activities
Guest Speakers
Internet Presentation/Resources
Laboratory
Lecture
Multimedia presentations
Other (please specify)

Use of preserved organisms for dissection and display; alternative meeting sites.

Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instruction delivery shall provide access, full inclusion, and effective communication for students with disabilities.

VI. WORK OUTSIDE OF CLASS

Study
Answer questions
Skill practice
Required reading
Problem solving activities
Written work
Observation of or participation in an activity related to course content

Estimated Independent Study Hours per Week: 6

VII. TEXTS AND MATERIALS

A. UP-TO-DATE REPRESENTATIVE TEXTBOOKS

Hickman, Roberts, Larson l'Anson, and Eisenhour. Integrated Principles of Zoology. 17th ed. McGraw Hill, 2017.

Hickman and Kats. Laboratory Studies in Integrated Principles of Zoology. 17th ed. McGraw Hill, 2017.

B. ALTERNATIVE TEXTBOOKS

C. REQUIRED SUPPLEMENTARY READINGS

D. OTHER REQUIRED MATERIALS

Dissection instruments (purchase optional), color pens or pencils, drawing paper, notebook paper, disposable gloves, laboratory coat or apron (optional), protective eyewear, calculator

VIII. CONDITIONS OF ENROLLMENT

A. Requisites (Course and Non-Course Prerequisites and Corequisites)

Requisites	Category and Justification
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B. Requisite Skills

Requisite Skills

C. Recommended Preparations (Course and Non-Course)

Recommended Preparation	Category and Justification
Non-Course Recommended Preparation eligibility for English 1A	Students' chance of success in Biology/Zoology is directly related to their ability to read the textbook with comprehension. Completion of English 84 provides the student with experience in reading and comprehension of a college-level textbook. Biology students are also evaluated with the use of writing assignments. Completion of English A prepares the student to write essays and topical papers similar to the assignments required in Biology.

D. Recommended Skills

Recommended Skills
<p>Students will be able to read the Biology textbook with comprehension.</p> <p>ENGL 84 - Select and employ reading strategies to interpret the content of a college-level textbook, with special focus on constructing a thesis statement and providing valid support.</p> <p>ENGL 84 - Select and employ reading strategies to interpret the content of a college-level textbook, with special focus on constructing a thesis statement and providing valid support.</p>
<p>Students will be able to write an in-class essay as part of the unit exam.</p> <p>ENGL A - Plan, write, and revise 500-word multi-paragraph expository essays including an introduction and conclusion, exhibiting coherence and unity, avoiding major grammatical and mechanical errors that interfere with meaning, and demonstrating awareness of audience, purpose, and language choice.</p> <p>ENGL A - Plan, write, and revise 500-word multi-paragraph expository essays including an introduction and conclusion, exhibiting coherence and unity, avoiding major grammatical and mechanical errors that interfere with meaning, and demonstrating awareness of audience, purpose, and language choice.</p>
<p>Students will be able to read and comprehend information found in reference books or articles, identifying main ideas and major details that are useful for their research.</p> <p>ENGL 84 - Identify an implied main idea (thesis), and support with major and minor details, from a longer text or novel.</p> <p>ENGL 84 - Identify an implied main idea (thesis), and support with major and minor details, from a longer text or novel.</p>
<p>Students will be able to write a paragraph, essay, or paper about taxonomic classifications, such as between groups of worms, or about contrasting body systems strategies in animal groups, such as those between open and closed circulatory systems.</p> <p>ENGL A - Read and apply critical thinking skills to college-level expository prose for the purposes of writing and discussion.</p>

E. Enrollment Limitations

Enrollment Limitations and Category	Enrollment Limitations Impact
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Course created by Charles Page on 01/01/1997.

BOARD APPROVAL DATE: 05/19/1997

LAST BOARD APPROVAL DATE: 12/17/2018

Last Reviewed and/or Revised by: Karla Villatoro

Date: 10/9/2018

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