



El Camino College

COURSE OUTLINE OF RECORD - Official

I. GENERAL COURSE INFORMATION

Subject and Number: Biology 12
Descriptive Title: Field Zoology

Course Disciplines: Biological Sciences

Division: Natural Sciences

Catalog Description: This course is a survey of invertebrate and vertebrate animals involving general principles of biology, taxonomy, physiology, and ecology with an emphasis on California. Major invertebrate phyla will be introduced in the classroom and through field trip experiences. The taxonomy, anatomy, and natural history of all major vertebrate animal classes will be explored through classroom lecture and demonstration and field assessment. Field experience will include both optional and required trips to museums, aquariums, and field locations.

Conditions of Enrollment: Recommended Preparation

English 84

Course Length: Full Term Other (Specify number of weeks):
Hours Lecture: 2.00 hours per week TBA
Hours Laboratory: 6.00 hours per week TBA
Course Units: 4.00

Grading Method: Letter
Credit Status: Associate Degree Credit

Transfer CSU: Effective Date: Prior to July 1992
Transfer UC: Effective Date: October 2004

General Education:

El Camino College: 1 – Natural Sciences

Term:

Other:

CSU GE:

IGETC:

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 be able to use the compound and dissecting microscope to observe cells and microorganisms.
2. The student will understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence.
Students will use basic energy principles to explain the flow of energy in living systems, such as those that occur in the cellular metabolic pathways of photosynthesis and cell respiration, or the relationships observed between autotrophs and heterotrophs in ecosystems.
- 3.

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. Develop competency with laboratory microscopes, including dissecting and compound scopes.
Objective Exams
2. Describe the concepts of ecology, Darwinian evolution, and natural selection using the Scientific Method.
Objective Exams
3. Identify and compare features of the diversity of non-animal eukaryotic life; recognize cell parts and compare nutrition acquisition to compare with larger, multicellular animals.
Objective Exams
4. Describe the major macromolecules of life and how they are created or used in photosynthesis and cellular respiration.
Objective Exams
5. Describe the major biogeochemical cycles and relate them to energy flow in food chains, food webs, and food pyramids.
Embedded questions
6. Compare biomes, their flora and related fauna which occur in California and describe typical ecological successional examples.
Completion
7. Identify population regulation techniques, limiting factors, and categorize species using r and K selection concepts.
Completion
8. Identify selected invertebrate species of the Cnidaria, Mollusca, Arthropoda, and Echinodermata.
Laboratory reports
9. Differentiate between the three existing classes of fish, Agnatha, Chondrichthyes, and Osteichthyes, and categorize local California examples.
Other exams

10. Differentiate between major groups of amphibians and reptiles identifying selected California species.

Other exams

11. Identify a minimum of 80 species of local California birds on sight and describe how they have adapted to flight.

Quizzes

12. Describe major types of mammals and identify local California species.

Matching Items

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	2	I	Introduction to California Ecosystems A. Introduction B. Concepts of ecology population C. Community, niche, habitat, and ecosystem
Lecture	2	II	Energy Relations A. Organic molecules B. Cell anatomy C. Photosynthesis D. Cellular respiration
Lecture	2	III	Trophic Structure A. Food chains B. Food webs C. Food pyramids D. Diversity and stability E. Biogeochemical cycles 1. Carbon cycle 2. Oxygen cycle 3. Nitrogen cycle 4. Phosphorus cycle
Lecture	2	IV	Life Associations A. Predation B. Competition C. Symbiosis D. Mutualism E. Commensalism F. Parasitism
Lecture	2	V	Classifications A. Evolution B. Scientific method C. Taxonomy and classification D. Phylogeny E. Dichotomous keying
Lecture	2	VI	Major Biomes A. Fauna B. Flora C. Ecological succession 1. Primary 2. Secondary

Lecture	2	VII	Aquatic Habitats and Characteristics A. Lakes B. Ponds C. Rivers D. Streams E. Vernal pools F. Ocean and its regions G. Protozoa phyla 1. Characteristics 2. Representative species
Lecture	2	VIII	Phylum A. Cnidaria 1. characteristics 2. classes B. Mollusca 1. characteristics 2. classes
Lecture	3	IX	Phylum Arthropoda A. Crustacea B. Arachnida C. Insecta D. Dichotomous Keying
Lecture	2	X	Phylum Echinodermata A. Class review B. Description
Lecture	2	XI	Early Vertebrate Evolution A. Agnatha B. Chondrichthyes C. Natural history and identification of several local species
Lecture	2	XII	Contrasts of Life Histories A. Chondrichthyes and Osteichthyes
Lecture	2	XIII	Amphibians A. Survey of classes B. Transition to land
Lecture	2	XIV	Reptiles and Dinosaurs A. Evolution into birds and mammals B. Living reptile characteristics, and live specimens C. Survey of California species
Lecture	3	XV	Ornithology A. Major anatomical adaptations B. Physiological adaptations C. Evolution of flight
Lecture	2	XVI	Mammalogy A. Major orders of mammals B. Major anatomical developments C. Distinguishing characteristics
Lecture	2	XVII	Mammal survey of California.
Lab	3	XVIII	Microscope Laboratory
Lab	3	XIX	Ecology Laboratory
Lab	3	XX	Interspecific Relations lab
Lab	6	XXI	Classification lab

Lab	3	XXII	Protozoa lab
Lab	6	XXIII	Cnidaria lab
Lab	6	XXIV	Mollusca lab
Lab	12	XXV	Arthropoda lab
Lab	6	XXVI	Echinodermata lab
Lab	12	XXVII	Fish lab including Agnatha, Chondrichthyes and Osteichthyes
Lab	12	XXVIII	Amphibians lab
Lab	12	XXIX	Reptiles lab
Lab	12	XXX	Birds lab
Lab	12	XXXI	Mammals lab
Total Lecture Hours		36	
Total Laboratory Hours		108	
Total Hours		144	

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:

Using bird specimens in El Camino's Bird Collection, give two examples for each feeding type listed. For each of your examples, provide a brief description of how the body is modified to procure the preferred food:

fish eaters _____

nectar eaters _____

seed eaters _____

scavengers _____

raptors _____

insectivores _____

C. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS:

1. Use the mammal teeth formula to account for specialized teeth that relate to food acquisition, defense, or other roles. Provide justification for the feeding strategies that you determine based on the dental pattern. Examples include contrasting a dolphin with a deer, a cat, and a human.
2. In a short essay, by referring to unlabeled nutrient cycle images, identify two of the main cycles of matter. Identify two abiotic and two biotic components within

each cycle. Explain how living organisms, including producers (plants) and consumers (animals) solve the problems of nutrient acquisition, such as carbohydrate energy molecules, or maintain equilibrium of their internal environment, such as water balance.

D. OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS:

Essay exams

Objective Exams

Other exams

Embedded questions

Quizzes

Reading reports

Written homework

Laboratory reports

Field work

Homework Problems

Multiple Choice

Completion

Matching Items

True/False

Other (specify):

Diagrams, practical exams of fish, reptile, bird, and mammal recognition.

Dichotomous key methodology used to separate and identify related groups of animals.

V. INSTRUCTIONAL METHODS

Demonstration

Discussion

Field trips

Group Activities

Guest Speakers

Internet Presentation/Resources

Laboratory

Lecture

Multimedia presentations

Other (please specify)

Occasional guest lectures by invited speakers or groups that come to show the students wildlife.

For example, one regular group is the South Bay Wildlife Rehabilitation group that brings raptors that cannot be released but are otherwise healthy: owls, hawks, falcons

Alternate class meeting sites include:

L.A. Co. Natural History Museum, with a behind the scenes tour of mammal, bird and insect collections with curators

Cabrillo Aquarium tour

Marine Mammal Care Center tour

Oiled Bird Recovery Center tour

Bird watching at Madrona Marsh and Alondra Park Island

Optional weekend field trips:

Bird banding in the Santa Monica Mountains at Zuma Canyon

Small mammal trapping at UCR's Deep Canyon Preserve

Marine Biology trip to Morro Bay State Park

James Reserve

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

Required reading

Problem solving activities

Written work

Observation of or participation in an activity related to course content

Other (specify)

Field trips for observing birds and mammals.

Estimated Independent Study Hours per Week: 4

VII. TEXTS AND MATERIALS

A. UP-TO-DATE REPRESENTATIVE TEXTBOOKS

Allan A. Schoenherr. A Natural History of California. 2nd ed. University of California Press, 2017.

Qualifier Text: Discipline Standard,

Hickman, Roberts, Keen, Larson, Eisenhour. Animal Diversity. 7th ed. McGraw-Hill, 2015.

B. ALTERNATIVE TEXTBOOKS

C. REQUIRED SUPPLEMENTARY READINGS

D. OTHER REQUIRED MATERIALS

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
Course Recommended Preparation English-84	

D. Recommended Skills

Recommended Skills
Students have sufficient assignments that they should read and write at a college level. ENGL A - Read and apply critical thinking skills to college-level expository prose for the purposes of writing and discussion. ENGL 84 - Compare and contrast college-level texts to evaluate content.

E. Enrollment Limitations

Enrollment Limitations and Category	Enrollment Limitations Impact
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Course created by R. Brown, C. Lambert, C. Lugar and R. Stephens on 11/01/1973.

BOARD APPROVAL DATE:

LAST BOARD APPROVAL DATE: 12/18/2017

Last Reviewed and/or Revised by Bryan Carey on 09/12/2017