

# Lassen Community College Course Outline

## BIOL 10 Natural History of Plants & Animals

4.0 Units

### I. Catalog Description

An introductory course dedicated to the study of natural environments by integrating lecture, laboratory, and field experiences. Emphasis is placed on the natural history of local forms of plants and animals, their ecological relationships, identification techniques and the integrity of nature. This course has been approved for online and hybrid delivery. Access to a computer with internet access is required.

**Recommended Preparation:** Successful completion of ENGL105 or equivalent multiple measures placement.

Transfers to both UC/CSU

CSU GE Area: B2 & B3

IGETC GE Area: 5B & 5C

General Education Area: A

51 Hours Lecture, 102 Expected Outside Class Hours, 51 Hours Lab, 204 Total Student Learning Hours

Scheduled: Fall

### II. Coding Information

Repeatability: Not Repeatable, Take 1 Time

Grading Option: Graded or Pass/No Pass

Credit Type: Credit - Degree Applicable

TOP Code: 040800

### III. Course Objectives

#### A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

Given an ecological community, using modern classification to

1. Distinguish major groups of organisms within an ecological community using modern classification methods.
2. Describe the ecological relationships between the organisms and their environment and the adaptations that made each species successful.

#### B. Course Objectives

Upon completion of this course the student will be able to:

- A. Explain basic ecological concepts and give examples to support their explanation.
- B. Describe the characteristics of life zones; give examples of particular life zones, their irregular and indicator species for California.
- C. Describe:
  1. Methods of studying local flora and trees
  2. Methods of studying birds
  3. Habitat groupings of birds
  4. Songs and calls of birds
  5. Methods of locomotion
  6. Behavior
  7. Characteristics of fish and aquatic habitats

8. Characteristics of mammals
  9. Mammalian ecology
  10. Vegetarian and carnivorous habits of mammals
  11. Locomotion in mammals
  12. Predation
- D. Describe what the study of vertebrate distribution is:
1. Its significance paleontologically, as interpreted from the fossil record (i.e. camels, bears),
  2. Theoretical implications based on the fossil record,
  3. Biogeographical realms, dispersal and barriers,
- E. Demonstrate competency in field techniques associated with studying natural environments by:
1. Utilizing dichotomous floral and faunal keys
  2. Employing binoculars and spotting scopes
  3. Compiling journals and life lists
  4. Biodiversity and density surveys.
  5. Apply collected ecological data within a real world context.
  6. Completing synoptic studies

#### **IV. Course Content**

The following may be included; however, the order of presentation, relative emphasis and the depth of treatment will depend on the preference of the instructor:

- A. Basic Ecological Concepts
1. Population, community, ecosystem levels of integration
  2. Food chains and food webs as energy pathways to reflect biological pyramids composed of producers, herbivores, carnivores, scavengers, and decomposer niches.
  3. Ecological succession - serial stages, climax communities
  4. Physical factors associated with ecological studies; steepness of slope, aspect, soil type, weather, climate.
  5. Ecotone or edge effect.
  6. Major biomes of the world with an emphasis on those found in North America.
- B. Life Zones
1. Altitude and latitude zonation
  2. Causes of life zones irregularities; isolation, exposure (aspect), steepness of slope, hot and cold air masses, physiological islands, effects of fire
  3. Zonal distribution of avian fauna in California
  4. Life zone indicator species: trees, shrubs, birds, mammals
- C. Ornithology
1. Methods of bird study; shape-silhouette, size, markings, method of flight, songs, calls, habitat
  2. Habitat groupings of birds; sea coast, open country, shores, marsh, forest
  3. Songs and calls of birds
  4. Methods of locomotion; manner of flight, walking, etc.
  5. Bird behavior, including display types
  6. Pterylography: structure, types, purposes, molting
  7. Coloration in birds; the basis of color, color polymorphism, functions of color, sexual dimorphism
  8. Migration
  9. Territorialism
- D. Mammalogy
1. Characteristics of mammals: to include hibernation, estivation and crepuscular activities

2. Species diversification
  3. Mammalian ecology: to include the concepts of niche, ecological equivalents, race, range, dispersal and relationships of mammalian forms to specific habitat types
  4. Adaptive radiation: specialization as seen in locomotion adaptations
  5. Mammalian odontology: basic tooth and dentition types, dental formulas
  6. Vegetarian and carnivorous diets in mammals: advantages, disadvantages, plant foods in various ecological formations
  7. Predation: types (chasers and stalkers), relationships to dentition, competition between predators, ecological effects
- E. Fish and other Vertebrate distribution
1. Biogeographical realms - Sclater
  2. Area of origin of a group; endemism, comparative morphological analysis, fossil series, degree of diversity
  3. Dispersal and barriers: competition, exotic species, biological and physical barriers, island fauna, rafting
- F. Field Trips
- Three to four field trips (20-24 hours) to selected locations for bird study, plant studies, ecological observations, indirect evidence evaluation, and associated activities.
- a. Dichotomous keys, binoculars and spotting scopes are used to study natural environments.
  - b. Conduct synoptic and sensory perception studies
- G. Laboratory (21 to 24 hours)
- Learn birds, fish, and mammals through utilization of live mounts and study skins in the Lassen College collection.
- a. Utilize keys and books to enhance the correlation of specimen study and field studies.
  - b. Utilize film loops on birds and mammals and cassette tapes on bird sounds.

## V. Assignments

### A. Appropriate Readings

Standard college level texts will be the primary sources of course readings. Additionally, articles and materials from other sources (i.e. Scientific American reprints, journals, magazine articles, etc.) will be used to enhance the learning process.

### B. Writing Assignments

In order to successfully complete this course, students must demonstrate understanding of course content on mixed-format (including essay) examinations. Written evaluations of field trip exercises are required for three to four local field trips plus journals, synoptic studies and sensory perception exercises. Requirements are met through written analysis.

### C. Expected Outside Assignments

Students are required to learn common species Linnaeus nomenclature. Individual field activities associated with synoptic studies and sensory perception exercises require written evaluations as do elective exercises associated with life lists, behavioral studies, etc.

### D. Specific Assignments that Demonstrate Critical Thinking

The course includes a number of things that encourage critical thinking:

1. Essay portions of all examinations
2. Laboratory exercises which require students to analyze habitat requirements and characteristics of birds and mammals

3. Field trip write-ups which encourage critical thinking in applying all phases of the course, lecture, laboratory and field trips

## **VI. Methods of Evaluation**

### **Traditional Classroom Evaluation**

The instructor will provide each student with a written course syllabus at the first class meeting indicating the evaluation procedures to be used. The formulation of a student grade will be based upon:

- A. Performance on mixed-format exams
- B. Performance on laboratory practical exams
- C. Write-ups of field trips
- D. Independent study write-ups

### **Hybrid Evaluation**

All quizzes and exams will be administered during the in person class time. Students will be expected to complete on line assignments and activities equivalent to in class assignments and activities for the online portion of the course. Electronic communication, both synchronous and asynchronous will be evaluated for participation and to maintain effective communication between instructor and students.

### **Online Evaluation**

Identical to face-to-face instruction including a variety of evaluation methods such as: research papers, asynchronous and synchronous discussions (chat/forum), exercises/assignments, online quizzes and exams, and postings to online website.

### **Correspondence Delivery Evaluation**

Identical to face-to-face with the exception of the desired use of proctored exams and exclusion of participation in classroom activities. Students will be expected to complete assignments and activities equivalent to in-class assignments and activities. Written correspondence and a minimum of six opportunities for feedback will be utilized to maintain effective communication between instructor and student.

## **VII. Methods of Delivery**

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

**Traditional Classroom Delivery**  Correspondence Delivery

Hybrid Delivery

Online Delivery

### **Traditional Classroom Delivery:**

Lecture, discussion, audio-visual media, laboratory exercises, field trips and other appropriate methods to be determined by the instructor.

### **Hybrid Delivery:**

Hybrid modality may involve face to face instruction mixed with online instruction. A minimum of 1/3 of instruction including 100 % of labs will be face to face. The remaining hours will be taught online through a technology platform as adopted by the district.

### **Online Delivery:**

Online instruction will be utilized through the technology platform adopted by the District. A mixture of asynchronous and synchronous methods will be utilized. Online delivery will consist of participation in live video meetings, forum-based discussions and posts, web links, email communications, lecture posts, exams and online lectures. Adding extra resources and other media sources as appropriate.

### **Correspondence Delivery**

Assigned readings, instructor-generated typed handouts, typed lecture materials, exercises and assignments equal to face-to-face instructional delivery. Written correspondence and a minimum of six opportunities for feedback will be utilized to maintain effective communication between instructor and student.

## **VIII. Representative Texts and Supplies**

*Required: A Natural History of California*, Schoenherr, Allan A., U.C. Press. 2<sup>nd</sup> edition 2017. ISBN: 9780520290372

*Required: In-house, Observations in Organismic Biology Laboratory Manual.*

*Recommended: The California Naturalists Handbook*, Nevers, G., Edelman, D., Merenlender A., U.C. Press. 2013. ISBN: 978597142625

## **IX. Discipline/s Assignment**

Biological Sciences

## **X. Course Status**

Current Status: Active

Original Approval Date: 1/16/1990

Revised By: Tiffany Baiocchi, Kelly Kissane

Curriculum/Academic Standards Committee Revision Date: 12/06/2022