

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

 x Transfer Course x A.A. Degree applicable course
(check all that apply)

COURSE NUMBER AND TITLE: Biology 114 – Ecosystem Biology (Lecture)

UNIT VALUE: 3

MINIMUM NUMBER OF SEMESTER HOURS: 48 (three hours lecture)

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills

ENTRANCE REQUIREMENTS

PREREQUISITE:

COREQUISITE:

RECOMMENDED PREPARATION:

SCOPE OF COURSE:

Basic principles of general biology as they relate to exemplary ecosystems (also see Biology 114L). CSU;UC

SPECIFIC COURSE OBJECTIVES:

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

1. analyze how science is done and how scientific reasoning differs from non-scientific reasoning;
2. analyze properties of inorganic and organic molecules and their importance in biology and ecosystems;
3. compare prokaryotic and eukaryotic cells and the major biological processes of each;
4. apply principles of Mendelian inheritance by solving genetics problems;
5. analyze the structure of nucleic acids and their role in replication, protein synthesis, mutation, and gene expression;
6. analyze the flow of energy in nature through the study of photosynthesis, the cellular oxidation of glucose, and food chains (webs);
7. analyze the mechanisms of evolution and speciation, and the adaptations of specific organisms to their ecosystem;
8. analyze phylogenetic trends among the prokaryotes, protists, fungi, plants, and animals;
9. analyze the major global ecosystems, and those specific to ecosystems under study;
10. analyze human population dynamics, and human impact on nature.

- I. Synergism
- J. Biological threshold
- K. Biological magnification
- L. Populations
 - 1. Characteristics of population
 - a. Growth curves
 - b. Carrying capacity
 - c. Limiting factors
 - 2. Density dependent
 - 3. Density independent
 - 4. Human population
 - a. Statistical measures - BR, DR, TFR, AMA, age structure diagrams, APGR, net migration
 - b. Current and historical trends
 - c. Population and societies
 - d. Methods and ethics of human population control
 - e. Case study: China
- M. Human impact on ecosystems
 - 1. Ozone depletion
 - 2. Global warming
 - 3. Species introductions to new habitats
 - 4. Other current topics
- N. Wildlife
 - 1. Nature of wildlife
 - 2. Value of wildlife
 - 3. Endangered species act
 - 4. Process for listing as threatened or endangered
 - 5. Population, habitat destruction, and extinction
- V. Evolutionary principle
 - A. DNA - the nature of genes
 - 1. Nucleic acid structure contrasting DNA with RNA
 - 2. Replication
 - 3. Protein synthesis
 - 4. Mutation
 - 5. Mitosis/meiosis
 - B. Inheritance - Mendelian genetics
 - 1. Autosomal inheritance
 - 2. Sex-linked inheritance
 - C. Origin of life vs. origin of species
 - D. Historical background
 - E. Evolutionary forces
 - 1. Natural selection
 - 2. Genetic change, e.g., mutation, and it's causes
 - 3. Other factors, e.g., genetic drift, etc.
 - F. Speciation - allopatric, sympatric, parapatric
- VI. Organismal survey - characteristics, classification, and selected life histories
 - A. Bacteria (Eubacteria)
 - B. Archea (Archeabacteria)

- C. Eukarya
1. Protista
 2. Fungi
 3. Plantae
 4. Animalia

REQUIRED READING:

Campbell, N., L. Mitchell, & J. Reese. Biology Concepts and Connections. 3rd Edition. Menlo Park: Benjamin Cummings Publishing Company, 2001.

SUGGESTED READING:

Selected articles and handouts prepared by the instructor.

REQUIRED WRITING:

During each unit of study, each student will answer a number of essay questions designed to promote critical thinking and to integrate concepts. Each student also completes genetics problems designed to use principles of genetics and problem solving skills. The responses typically range from one to several paragraphs. A minimum of ten pages will be written.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

- lecture
 laboratory
 lecture-laboratory combination
 directed study

DISTANCE LEARNING:

This course may be offered as a distance learning course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.

Yes No

If yes, check all that apply:

- Television Course (Video one-way, e.g. ITV, video cassette, etc.)
 Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
 Two-Way Video Conferencing (Two-way interactive video and audio)
 One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
 Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

Evaluation of students may include quizzes, examinations, oral or written reports, and other assignments. At least 70% of the grade shall be derived from quizzes and examinations, with up to 30% coming from other assignments.

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

Yes ____ No x Number of times course may be taken for credit: ____

If yes, identify specific provision of Title 5 Division 2 section(s), 55761-55763 and 58161 which qualifies course as repeatable:

Contact Person: Daniel Sourbeer

SIGNATURES ON FILE