

# Biology 15: Environmental Aspects of Biology

Instructor: Dr. Chih Lew  
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Fall 2009 Section: 1130

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Lecture: W 6:00 to 9:10 PM

LS 108

Text: Jay Withgott & Scott Brennan, Second Ed. Essentials Environment: The Science Behind the Stories

**Course Prerequisite:** Recommend English 84.

**Course Description:** Biology 15 is a lower division, non-major's course designed to meet part of the general education science requirements. This course is designed to introduce you to the living world around you and the ways in which you interact with it. Basic ecological and biological principles and concepts are emphasized in studying the structure and function of ecosystems. Major ecological problems such as over-population, resource depletion, and food production are related to endangered species and habitat degradation. Environmental pollution of air and water resources are considered in local areas as well as national and international situations. Students are encouraged participate in local activities addressing environmental problems and restoring and improving local habitats.

## Course Objectives and Student Learning Outcomes:

Upon completion of this course, students should be able to:

1. Define the terms and describe the concepts of ecology including species, population, community, ecosystem, niche, habitat, and biosphere.
2. List various abiotic factors, describe how they affect life, and discuss the properties of water.
3. Differentiate the structure of the major organic molecules and how they function in the body.
4. Name the cell organelles and describe how they function in the cell.
5. Contrast the roles of DNA and RNA in protein synthesis
6. Explain Darwinian evolution and natural selection concepts as well as current alternate ideas such as punctuated equilibrium.
7. Analyze the physiological processes of photosynthesis and respiration and therefore predict the seriousness of certain environmental problems.
8. Compare major biogeochemical cycles such as carbon, hydrogen, nitrogen, and phosphorous, giving sources and uses of these nutrients.
9. Assess the flow of energy through the environment via trophic levels and contrast the concept of food webs, food chains, and food pyramids.
10. The student will be able to discuss primary and secondary succession using examples in our local area.
11. Characterize the typical animals and plants of all eight major terrestrial biomes; tundra, taiga, deciduous forest, temperate rainforest, chaparral, desert, grassland, and tropical rainforest.
12. Examine the biological regulation factors of populations such as competition, predation, symbiosis, mutualism, commensalism, parasitism.
13. Identify and characterize the population biology life strategies of "r" and "K" selection.
14. Summarize current human population statistics such as total fertility rate, life expectancy, infant mortality, and total population currently with projections for the future.
15. Review human population problems and consequences in light of principles learned about other animal populations, and the limited resources on earth.
16. List the various methods of human contraception, and discuss new alternate techniques currently being developed.
17. Analyze the crisis of endangered species, why they are on the brink of extinction, and major past extinctions.

18. Categorize the reasons why some endangered species are of great value to man in the fields of medicine, food production, and fuel production.
19. Relay the concept of gene pools and genetic banks and why they are of great importance environmentally and economically.
20. Identify the water cycle and describe the water communities, both fresh and salt, that exist in the nation.
21. Summarize the sources of water for the Los Angeles area and expand on the problems we have created with this redistribution.
22. Categorize the major steps in both drinking water treatment (before use) and federally mandated primary and secondary water pollution control (after use).
23. Review historical water pollution problems with disease organisms and our present solutions that do not always exist in less well developed countries.
24. Propose the sources of organic waste in water and summarize detection and prevention techniques.
25. Identify major inorganic water contaminants and associated treatment techniques.
26. Summarize various organic pesticide disasters and relay current legislation these disasters prompted.
27. Explain historical and recent water pollution legislation.
28. List the components of clean air and describe natural atmospheric conditions and changing climates.
29. Analyze air pollution problems created by excess carbon monoxide and carbon dioxide and solutions to these problems.
30. Examine sulfur oxide pollution and nitrogen oxide pollution problems including acid rain, acid fog, acid deposition and how they change the water and soil.
31. Establish the connection between nitrogen oxides, particulates, and hydrocarbons in the production of photochemical smog.
32. Summarize the human body's response to various types of air pollution, such as particulates, and correlate the body's symptoms with the correct disease.
33. Examine current global atmospheric changes such as the greenhouse effect and ozone depletion and describe causes and predicted effects.

**Supplies Required:**

Text: Jay Withgott & Scott Brennan, Second Ed. Essentials Environment: The Science Behind the Stories

#2 pencils required on exam days

Scantron Sheets, #882E or ES(answers A – E) on the day of the exam.

**Grading:**

Your grade in this course will be calculated as a percentage of points earned on the following :

3 lecture exams	(130 pts each)	= 390 points
4 quizzes	(20 pts each)	= 80 points
1 Journal of current article clippings		= 160 points
	With description of why and how each article relates to a specific topic presented in class	
1 natural selection lab		= 25 points
1 visit to local biological sites (zoo, aquarium, tar pit, etc.)		= 25 points
Citizenship and participation points		= 50 points

The final grade scales is as follows:

100% - 90%	= A
89% - 80%	= B
79% - 70%	= C
69% - 60%	= D
59% and below	is an F

Although I follow this scale strictly, I may adjust some total exam scores when I feel it is appropriate (for example, I may add 2 points to all exams if I feel an adjustment is justified).

## IMPORTANT ADMINISTRATIVE DATES

Monday, Aug. 31	Class begins
Monday, Sept. 7	Labor Day Holiday (Campus Closed)
Friday, Sept. 11	Last day to drop with enrollment refund
Friday, Sept. 25	Last day to drop without notation on Permanent Record
Friday, Nov. 13	Veterans Day (Campus Closed)
Friday, Nov. 20	Last day to withdraw from class with a grade of "W"
Thur. to Sun., Nov. 26-29	Thanksgiving holiday (Campus Closed)
Wednesday, Dec. 16	Final Exam for Bio 15. Exams begin at 6:00 PM SHARP!!

## POLICIES, PROCEDURES, AND GUIDELINES FOR SUCCESS

READ THOROUGHLY - YOU ARE RESPONSIBLE FOR AWARENESS OF ALL INFO ON THIS PAGE!

1. PLEASE TURN YOUR CELL PHONE OFF or Put it in silent mode!! Points may be deducted for interruptions.
2. **GRADES** are EARNED, not appointed. It is up to YOU to learn the material thoroughly enough to do well on Quizzes and Tests. PLAN to spend 9-12 HOURS PER WEEK on this course IN ADDITION to time in class! Study effectively: read the texts before lecture; take good lecture notes (taping of lectures is permitted); rewrite your lecture notes; study the texts and your notes; DO ALL THE SUGGESTED PROBLEMS, repeatedly. Use FLASHCARDS to help memorize terms and formulas. **STUDY PARTNERS OR GROUPS** are especially recommended!
3. **ATTENDANCE** – Students must attend the first class. Students may be dropped if s/he does not attend the first class. Be PROMPT and regular in attendance. I will check attendance daily – please stay in your original seat. Quizzes and Tests are “lecture-based” and may include questions on material covered only in Lecture (i.e. not discussed in the texts). Consistent late arrival will result in a lower grade; MORE THAN THREE ABSENCES may result in being dropped from the class; three tardies will count as an absence. Time missed from class due to leaving early will count toward absence time.

According to the college catalogue, it is the responsibility of the student to file official withdrawals through the Admissions Office by designated deadlines to avoid being assigned a letter grade of A through F. It is possible that an instructor may have initiated the drop, but as a precaution, students should file their own paperwork. If you stop attending class and do not drop and your name appears on the grade sheet at the end of the semester, you will earn an F in the class. Friends, relatives, children, or other acquaintances may not attend class. If a class is cancelled for the day, an authorized cancellation notice and attendance sheet will be posted on the classroom door. Please sign the attendance sheet; otherwise you will be marked absent.

\*\*\* **IMPORTANT NOTE:** A grade for “excused” missing work will be assigned as determined appropriate by the Instructor, on a case by case basis. Otherwise, missed work = zero points!

4. **TESTS, QUIZZES, AND THE FINAL EXAM** - It is **your** responsibility to be present and on time for all tests, quizzes, and the Final Exam. If you are more than 30 minutes late to a test or final, you will not be allowed to take the test. CHECK THE SCHEDULE! No extra time will be allotted due to late arrival. There are NO MAKE-UP tests or quizzes. ALL quiz scores will be counted in the final point tally. Vocabulary –based questions are emphasized, along with questions which test mastery of concepts and processes presented in that particular section of the course. **If you are absent on the day of a lecture exam, you will receive a zero for the exam.**

5. **ASSIGNMENTS** - Problems from the texts are an essential part of the learning process and give you practice and reinforcement of the course material. SOME end-of-Chapter problems may be assigned, collected, and graded, at the whim of the Instructor.

Each student will be required to turn in 15 current newspaper or magazine articles relating to the topics of the class. The class is broken down into three sections, each section divided by an exam. Students must clip at least three articles relating to topics presented in each section. These articles can be printed from the computer or cut from a magazine or newspaper and pasted onto pages where they student **types** why and how each article relates to a specific topic presented in class. If the explanations for the journals are not typed, points will be deducted. This journal of articles must be organized in a binder or folder and arranged in chronological order with topics discussed earlier in the course placed toward the beginning of the journal and topics discussed later placed near the end of the journal. The journal is due Dec. 9<sup>th</sup>. Late journals will not be accepted.

Be prepared to ask questions at appropriate times during class, concerning any material or problems which you don't understand.

6. **LABORATORY** – There will be one natural selection “lab” in this class to aid students in understanding the concept of natural selection. We will look at the effect of Camouflage, Reproductive Fitness, Prey Density, and Predator Competition on Natural Selection.

\*\*\*NOTE: There is NO time allotted for “make-up” lab!

**7. Success is a matter of preparation and repetition.** The material presented is perhaps new to you, but is not difficult IF YOU SPEND THE TIME TO LEARN IT. Make use of all possible learning resources - your texts, the Instructor (in class and during Office Hours), tutors if necessary, and especially your fellow students. Always remember that everything BUILDS on what comes before, so don't let any gaps develop!

**\*KEEP UP - THERE IS TOO MUCH MATERIAL, AND NOT ENOUGH TIME, TO PLAY CATCH UP \***

**Classroom Expectations:**

1. Be courteous and on time.
2. Only water allowed in the classroom in a container with a secure lid, but you can only drink water outside the classroom during break.
3. Silence cell phones and other electronic devices. Do not answer the phone during class.
4. Use of electronic devices, including dictionaries, will not be permitted during tests; such devices will be confiscated if this rule is violated and students will not be allowed to continue with the test.

**Some Helpful Information:** Class meetings are designed to clarify and/or expand on your assigned readings. You are strongly urged to attend class; if you should miss a meeting I encourage you to obtain the notes from a classmate, as test material will be stressed during lectures. The schedule is flexible and may be changed at MY discretion!!! It is your responsibility to find out if and when exam dates have been changed from the schedule. The readings and work for this class should be taken seriously and all reading and study questions assigned are your responsibility to complete. No additional tests and quizzes will be given. You are adults, and should be responsible for your own study habits. I encourage you to review the chapter readings prior to each class meeting. If there is anything you do not understand, I want you to feel free to ask questions during lectures as discussions are welcomed (time permitting). You are also encouraged to see me during office hours (or by appointment) if you need any extra help.

**ABSOLUTELY NO EXTRA CREDIT will be offered.**

## **ECC Resources to Help You Succeed in Biology 10 (and Other Courses)**

El Camino College provides many resources and programs outside of this classroom that can help you to succeed in this class, and in other classes. Below are some of the resources that you might find especially helpful.

1. Counseling: Counselors provide students with academic, vocational, career, and personal support counseling. Academic, vocational, and career counseling through Counseling Services will help you identify and focus on goals and objectives - a significant factor in academic success is having a clearly identified goal and knowledge of what it takes to achieve that goal. Personal support counseling is provided on a short-term basis in Counseling Services, but in greater depth at the Health Center.
2. Learning Resources Center: TUTORING, and basic skills and other assistance.
3. Academic Strategies Course: 1abcd, 20ab, 22ab, 23ab, 25ab, 30ab, 31ab, 33ab, 35ab, 36ab, 40ab, 100. These courses focus on specific skills areas, such as test taking, study techniques, math anxiety, listening and note-taking, problem solving, writing, thinking skills, vocabulary, spelling, memory techniques, sentence punctuation, and learning resources skills development. Mid-term classes are available.
4. Special Resources Center: For physically-, visually-, or hearing-impaired, and learning disability students (including dyslexia, ADD and related). Special tutorials, adapted testing assistance, and other services are available to provide academic and related support to students with disabilities. They provide testing to discover possible learning disabilities, and also for determining your study/learning method strengths and weaknesses.
5. EOP&S Supervised Study: Tutoring and other assistance; only for EOP&S students.
6. Career Services and Transfer Services - Counseling Services: The Career and Transfer Center offers a wide array of services which help to motivate students and give them a clear idea of what they need to achieve goals. Services include a number of workshops on career areas and issues, transfer options, and information about specific universities.
7. Student Enhancement Program (SEP) Workshops in Counseling Services: The SEP workshops are actually a three workshop series, two hours each in duration, and are offered throughout the year. Activities in the workshops help students develop a proactive sense of responsibility for their academic performance and generate solutions to problems affecting their academic performance. Students are referred to on- and off-campus services. Workshop participants are encouraged to form “study partnerships” and study groups. Student feedback has been that workshops do make a difference in their classroom attitudes, motivation, personal confidence, and study behavior. Students discuss problems, formulate action plans, engage in exploration of resources, and report back to their group their findings and actions taken.

### **ADA STATEMENT**

El Camino College is committed to providing educational accommodations for students with disabilities upon the timely request by the student to the instructor. A student with a disability, who would like to request an academic accommodation, is responsible for identifying herself/himself to the instructor and to the Special Resources Center

## **Page 25-26 of College Catalog Cheating or Plagiarism**

Cheating violates Section I.B.1 of El Camino College's Board Policy 5138, Standards of Student Conduct.

The El Camino College faculty, staff and administrators are dedicated to maintaining an optimal learning environment and will not tolerate academic dishonesty. To uphold the academic integrity of the institution, all members of the academic community, faculty and students alike, must assume responsibility for providing an educational environment of the highest standards characterized by a spirit of academic honesty. The following statement is part of Board Policy 5138, Standards of Conduct: "Dishonesty, including but not limited to cheating, plagiarism or knowingly furnishing false information to the college." When there is evidence of cheating or plagiarism in classroom work, students may receive an F for that piece of work or may be suspended from all classes for that term and the following term if deemed appropriate.

Examples of Cheating or Plagiarism are:

Representing the words, ideas or work of another as one's own in any academic exercise (plagiarism), including the use of commercial term paper companies;

Copying or allowing another student to copy from one's paper or answer sheet during an examination, or any assignment;

Allowing another individual to assume one's identity for the purpose of enhancing one's grade in any of the following: testing, field trips or attendance;

Falsifying or attempting to falsify attendance records and/or grade rosters;

Changing answers on a previously scored test, assignment or experiment with the intent to defraud;

Inventing data for the purpose of completing a laboratory experiment or case study analysis with the intent to defraud;

Giving and/or taking information during an examination by any means such as sign language, hand signals or secret codes;

Obtaining copies of notes, exams or exam questions by any means other than distribution from the instructor. (This includes copying and removing exam questions from the classroom for any purpose.);

Using study aids such as calculators, tape recorders or notes that have been specifically prohibited by the instructor.

### **Responsibility of El Camino College Students**

It is the responsibility of each student to conduct him/herself in a manner which encourages learning and promotes honesty; and to act with fairness toward other students in the classroom. This incorporates the notion that students should not seek an unfair advantage over other students when completing an assignment, taking an examination or engaging in any other kind of academic activity.

### **Consequences for Cheating or Plagiarism**

Given alleged violation of the Standards of Conduct, any or all of the following actions may be imposed:

1 The instructor may assign a failing grade to the examination or assignment in which the alleged cheating or plagiarism occurred. This action is based on information that the instructor had.

2 The instructor may dismiss the student from the class or activity for the present and/or following class session(s) as stipulated in BP5138, section IIB5: Removal by Instructor.

3 The instructor may recommend suspension or expulsion of the student from the college as stipulated in BP5138, Section IIB6 and 8. This recommendation must be in accordance with El Camino College's Due Process and Disciplinary Procedures.

Complete the Academic Dishonesty Report Form and submit it to your Division Office for distribution.

<u>Date</u>	<u>Week</u>	<u>Lecture Syllabus</u>	<u>Chapters</u>
9/2	1	Course Introduction & Scientific Method Human population impact, human consumption, Major pollution disasters	1
9/9	2	Ecological terms and concepts Hierarchy of levels Abiotic factors, water	4
9/16	3	<b>Quiz #1</b> Environmental Systems: Chemistry, Energy, and Ecosystems Cell Organelles, DNA, RNA, photosynthesis & respiration	3 3
9/23	4	Species interactions and Community Ecology Natural Selection "Lab"	5
9/30	5	<b>Quiz #2</b> Nutrient Cycling Biomes	3 5
10/7	6	<b>Exam #1</b>	
10/14	7	Human Population (cont.)	4&6
10/21	8	Biodiversity and Conservation Biology Endangered Species	8
10/28	9	<b>Quiz #3</b> Endangered Species (cont.)	8
11/4	10	Freshwater and Marine Systems and Resources Properties of water and Hydrologic cycle	11 3
11/11	11	<b>Exam #2</b>	
11/18	12	Freshwater and Marine Systems and Resources (cont.) Water Pollution	11
11/25	13	Freshwater and Marine Systems and Resources (cont.) Atmospheric Science, Air Pollution, and Global Climate Change	11 12
12/2	14	<b>Quiz #4</b> Atmospheric Science, Air Pollution, and Global Climate Change (cont.)	12
12/9	15	Atmospheric Science, Air Pollution, and Global Climate Change (cont.)	12
12/16	16	<b>Exam #3</b>	