



# STEPHEN F. AUSTIN STATE UNIVERSITY

## **Arthur Temple College of Forestry and Agriculture**

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## **ENV 110.001, ENV 110.020, ENV 110.021, ENV 110.022**

### **INTRODUCTION TO ENVIRONMENTAL SCIENCE**

#### **Syllabus and Policy Statements**

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**TERM:** Fall 2014

**LECTURE:**

**LABORATORY:**

**CREDIT:** 3 semester hours

**TEXTBOOK:**

**INSTRUCTOR:**

**OFFICE:**

**OFFICE HOURS:**

**PHONE:**

**EMAIL:**

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**LECTURE MATERIALS AND GRADES:** You can download all lecture materials (and other pertinent documents) from Desire2Learn (or D2L; available at <https://d2l.sfasu.edu/>) at least two days before the scheduled lecture. It is your responsibility to print lecture materials before coming to class. Your grades for quizzes, laboratory reports, exams, and other requirements will all be available at the D2L website as well.

**COURSE DESCRIPTION:** Introduction to the multidisciplinary study of the environment using the scientific method.

**PROGRAM LEARNING OUTCOMES:** ENV 110 is a general education core curriculum course and no specific program learning outcomes for this major are addressed in this course.

#### **GENERAL EDUCATION CORE CURRICULUM OBJECTIVES/OUTCOMES:**

1. Critical Thinking Skills: to include creative thinking, innovation, inquiry, and analysis, evaluation, and synthesis of information;
2. Communication Skills: to include effective development, interpretation and expression of ideas through written, oral, and visual communications;
3. Empirical and Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions; and
4. Teamwork Skills: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

#### **STUDENT LEARNING OUTCOMES:**

Upon successfully completing this course, students should be able to:

1. describe and discuss major environmental issues such as global climate change, ozone depletion, overpopulation, air and water pollution, loss of biodiversity, waste disposal, and the search for alternative energy resources;

2. demonstrate scientific critical thinking skills by examining sources, assumptions, data, and arguments about major environmental issues;
3. exhibit the ability to communicate information related to environmental issues in written, oral, and visual forms appropriate to a scientific audience;
4. demonstrate the ability to summarize and present data in both tabular and graphical forms, and interpret the data to form informed conclusions;
5. use instruments and observation techniques, and apply appropriate data management skills in performing laboratory activities; and
6. participate in team settings and work effectively in team activities.

### COURSE EVALUATION AND GRADING:

Three exams (100 points each)	300 points
Final Exam	150 points
Lab Reports & Field trips	200 points
Group Project	175 points
Daily Lecture Quizzes + Group Assignment	175 points
<b>Total Number of Points</b>	<b>1000 points</b>

#### LETTER GRADES:

900 – 1000 points = A	600 – 699 points = D
800 – 899 points = B	599 points or less = F
700 – 799 points = C	

**Quizzes and Group Assignment.** There will be daily lecture quizzes and at least four electronic quizzes that will be administered through D2L. The electronic quizzes should be taken individually and must be submitted by 12 midnight of the same days they were assigned. Specifically, these electronic quizzes **(Core Assignment, Critical Thinking)** consist of six essay-type questions and will be over discussions on pollution, population, and global climate change. There is one group assignment which is about sustainability on campuses around the world. In this group assignment, you will visit the website of the campus of your choice and summarize their activities that are related to sustainability. A PowerPoint file is due on \_\_\_\_\_ and oral presentation on this assignment will commence on \_\_\_\_\_. Please refer to the separate handout on “Group Assignment on Sustainability” for specifics on this assignment. A handout on “Delivering an Effective PowerPoint Presentation” is also provided separately.

**Laboratory Reports.** Lab reports are due a week after the lab experiment was completed. Hard copies of reports must be submitted for all lab exercises **except** for two: **Water Quality Assessment (Core Assignment, Communication-Written)** and **Population Dynamics (Core Assignment, Empirical and Quantitative)**, which must be submitted electronically thru D2L or a similar platform. In the **Water Quality Assessment**, students will collect water samples from two sites on campus and analyze and compare their water quality using various tools in the laboratory. Students will submit three to four pages of formal laboratory reports on this assignment, which will be used for the assessment of the written communication skill. The **Population Dynamics** exercise will require the students to visit a local cemetery (or an online resource during inclement weather) and collect mortality data from two periods in history: Prior to 1920 and in recent times. They will utilize Microsoft Excel to generate survival curves and interpret their data by answering a series of questions. The laboratory report submitted by the students will be informal (i.e. consisting of data and answers to questions only). The report on **Population Dynamics** will be used in the assessment of the empirical and quantitative skills. Instructions on how to submit the electronic report will be provided prior to the performance of

the two aforementioned labs. Submitting identical laboratory reports are unacceptable and considered plagiarism. All students submitting identical laboratory reports (in whole or in part) will be given a grade of zero for that lab report. Please see the handout on “Preparing a Scientific Report” for information about the content and instructions on how to present your data in a tabular or graphical form.

**Group Research Project (Core Assignment, Communication-Oral & Visual, Teamwork).** Groups consisting of four to five students will be working on a research project of their choosing. Example topics are provided in a separate handout but your topic of choice is not limited to that list. Your project will involve data collection that can be done either by doing actual experiments in the laboratory or gathering data from print and electronic sources. Five group discussions are required. In these group discussions, you will formulate your plans and provide constant updates to the group on your individual progress. At the end of each group discussion, you will be asked to fill out a questionnaire that assesses your group’s performance. In addition, your group will maintain a journal of your activities and evaluations; this journal is due on \_\_\_\_\_. Your group project has to be presented orally using PowerPoint and your presentation file must be submitted electronically at least 24 hours before your assigned presentation. Presentation of all group members is mandatory. Your presentation grade will be based on your individual performance and the overall performance of the group. Details on the group project requirements are given in a separate handout.

#### **COURSE POLICIES ON:**

**PLAGIARISM AND CHEATING:** Cheating and plagiarism will not be tolerated. According to the Student Handbook, “dishonesty of any kind with respect to examinations, written assignments [completed] in and out of class, alteration of records, or illegal possession of current examinations or keys to examinations shall be considered cheating...the offering of materials assembled or collected by others in the form of projects or collections without acknowledgment is also considered plagiarism. Any student who fails to give credit for ideas or materials taken from another is guilty of plagiarism.” Cheating and/or plagiarizing could result in failure of the course (grade of F). Refer to the online Student Handbook for details.

**LATE ASSIGNMENTS:** Make-up exams will only be given if arrangements are made with me before missing the scheduled exam. If there is an emergency and prior arrangements cannot be made, the student should contact me as soon as possible. *Make up exams must be taken within a week after the student returned to class.* Missing exams will be counted as zeroes in the overall grade computation. **Late lab report is penalized 25% of the grade per day.**

**ATTENDANCE:** All lectures and laboratories are mandatory. Lectures and labs will start promptly at their assigned time. Tardiness will not be tolerated and may result in your being left behind on lab field trips. Lab reports from individuals that did not attend the lab session will not be accepted. If lectures or labs are missed because of a university recognized excused absence, it will be the responsibility of the student to notify me in advance of the absence AND provide appropriate documentation before assistance is provided on missed information. If it is an emergency and early notification is not possible, the student must contact me within a week of his/her absence before assistance is provided.

**USE OF CELL PHONE, MP3 PLAYER, AND OTHER SIMILAR TECHNOLOGY:** Using cell phones (including for text messaging), listening to music, or using your device for matters unrelated to the course will not be allowed in the classroom during the lecture and laboratory sessions. If a cell phone rings or I observe use of any device, 10 points will be deducted from the offending student’s total points for each offense.

**USE OF LAPTOP, NETBOOK, IPAD, TOUCHPAD, AND OTHER SIMILAR TECHNOLOGY:** Using a laptop and other similar device is acceptable during the lecture as long as they are used solely for reading lecture notes

and/or note taking. Ten (10) points per offense will be deducted from the student's total points if he/she is caught using it for gaming, accessing the internet, and other activities not related to the course.

**ACCEPTABLE STUDENT BEHAVIOR:** Classroom behavior should not interfere with the instructor's ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

**COURSE EVALUATIONS:** Course evaluations should be completed online. It is the student's responsibility to log on to mySFA and complete the evaluation. Failure to complete the evaluation may result in a 20-point deduction from the overall grade.

### **ACADEMIC INTEGRITY (A-9.1)**

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

#### **Definition of Academic Dishonesty**

Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at [http://www.sfasu.edu/policies/academic\\_integrity.asp](http://www.sfasu.edu/policies/academic_integrity.asp)

### **WITHHELD GRADES SEMESTER GRADES POLICY (A-54)**

Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

**STUDENTS WITH DISABILITIES:** To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to <http://www.sfasu.edu/disabilityservices/>.

**This part is provided for review by the Core Curriculum Advisory Committee and is not part of the actual syllabus.**

**Critical Thinking Questions (Relevant tables and figures were excluded)**

**Pollution**

1. The graph below shows two curves, labeled (a) and (b) that represent marginal cost of pollution abatement. In this hypothetical situation, technological innovations were developed between 2003 and 2006 that lowered the abatement cost. Which curve corresponds to 2003 and which to 2006? Explain your answer.
2. Shown below are the organisms sampled in the Long Island salt marsh study of DDT. (a) If DDT is sprayed on land to control insects, how does it get into the bodies of aquatic species? (b) Why does the Atlantic needlefish contain more DDT in its body than the American eel?

**Population**

3. As shown in the table below, China's one-child policy implemented in 1979 brought about the most rapid and drastic reduction in total fertility rate in the world from 5.8 in 1972 to 1.5 in 2011. Since 1980, China has undergone rapid industrialization too; it now has the world's second largest economy. Along this economic growth comes a rising middle class. (a) Discuss at least three environmental problems associated with the economic growth in China. Please use the figure below (ecological footprint comparison) in your discussion. (b) Do you think that the problems resulting from China's one-child policy outweigh the problems of overpopulation that likely would have resulted without some sort of regulation of population growth in China? (c) Can you think of at least another way in which China could try to regulate its population growth? Explain.

**Global Climate Change**

4. The graphs below show a computer simulation by the U.S. National Climate Assessment. In (a), the level of atmospheric CO<sub>2</sub> is projected for the 21<sup>st</sup> century. In (b), we can see the change in coral reef calcification (relative to 1990). Use both figures to explain why the rising CO<sub>2</sub> levels in the atmosphere could be catastrophic to corals and other shell-forming organisms?
5. Shown in the table below are the average atmospheric temperature and CO<sub>2</sub> levels in 1880 and every 10 years since 1957. Explain the relationship between the temperature and CO<sub>2</sub> levels.
6. Some atmospheric air pollutants, known as sulfur particles, tend to cool the atmosphere. These sulfur particles come from the same smokestacks that emit CO<sub>2</sub>. Volcanic eruptions also emit sulfur particles into the atmosphere. Use the figure below to explain the effects of volcanic eruption on the average temperature of the atmosphere. Also, discuss at least three reasons why releasing more sulfur particles into the atmosphere to combat global warming is not a viable solution.

WEEK #	LECTURE TOPIC	CORE OBJECTIVE INSTRUCTIONS/APPLICATIONS			Teamwork (TEAM)
		Critical Thinking (CT)	Communication (COM_W, COM_V, COM_O)	Empirical & Quantitative (E&Q)	
1	Syllabus				
2	Introduction to Environmental Science <b>Instructions on Critical Thinking</b> <b>Instructions on Empirical &amp; Quantitative</b> Envi' Laws, Economic, & Ethics	X  X		X  X X	
3	Ecosystems & Energy Chap 3 cont'd, Ecosystems & Physical Env't				
4	Chap 4 cont'd (6 pts) <b>GROUP ASSIGNMENT IS DUE</b> Major Ecosystems of the World		X - COM_V, COM_O		
5	<b>TEST 1</b> Chap 6 cont'd, Human Health & Env'l Toxicology				
6	Human Health & Env'l Toxicology <b>Electronic Quiz 1 on Pollution - CT</b> The Human Population	X  X		X  X	
7	<b>Electronic Quiz 2 on Population - CT</b> The Urban Environment				
8	Chaps 9 cont'd <b>TEST 2</b> Chap 13 & 21 combined				
9	Chaps 13, & 21 continued Energy Consumption				
10	Chap 10 continued, Fossil Fuels Chap 11 continued				
11	Renewable Energy & Nuclear Energy Chap 12 continued			X	
12	<b>TEST 3</b> Air Pollution			X	
13	Chap 19 continued				
14	Global Climate Change <b>Electronic Quiz 3 on Global Climate Change - CT</b> Chap 20 continued <b>Electronic Quiz 4 on Global Climate Change - CT</b> <b>PROJECT JOURNAL IS DUE - Core, TEAM</b>	X  X		X	X
15	Chap 20 continued				
	<b>FINAL EXAM</b>				

**THE INSTRUCTOR RESERVES THE RIGHT TO MODIFY THE SCHEDULE OF LECTURES, LABS, AND EXAMS AS NEEDED.**

WEEK #	LAB #	LAB TOPIC	CORE OBJECTIVE INSTRUCTIONS/APPLICATIONS			
			Critical Thinking (CT)	Communication (COM_W, COM_V, COM_O)	Empirical & Quantitative (E&Q)	Teamwork (TEAM)
1		Instructions on Teamwork and Group Project Instructions on Written, Visual, and Oral Communications Instructions on Empirical & Quantitative		X	X	X
2	1	Introduction to Microsoft Excel Team Assignment (TEAM)		X - COM_V	X	X
	2A	Oral and Visual Communication Discussion Application of Scientific Method		X - COM_V, COM_O		
3		Group Project Discussion 1 (TEAM)				X
	2B	Application of Scientific Method Cont'd				
4		Group Project Discussion 2 (TEAM)				X
	3	Photosynthesis and Respiration		X - COM_V, COM_O	X	
5	4	Reflectivity				
6	5	Toxicity Group Project Discussion 3 (TEAM)				X
7	6	Population Dynamics (Core) Electronic Lab Report - E&Q		X - COM_V, COM_O	X	
8	7	Field trip 1				
9	8A	Water Quality Assessment (Core)		X - COM_W		
10	8B	Water Quality Assessment (Core) Electronic Lab Report - COM_Written		X - COM_W		
11	9	Renewable Energy		X - COM_V, COM_O		
12	10	Air Pollution Group Project Discussion 4 (TEAM)				X
13	11	Field Trip				
14		Group Project Discussion 5 (TEAM)				X
15		PRESENTATIONS Video of presentation - COM_Visual, COM_Oral		X - COM_V, COM_O		

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