July 2, 2013

1. College: **Arthur Temple College of Forestry and Agriculture**
2. Department: **Environmental Science**
3. Course status: **existing; requires modification**
4. Course prefix and number: **ENV 110**
5. Course title: **Introduction to Environmental Science**
6. Course catalog description: **Introduction to the multidisciplinary study of the environment using the scientific method**
7. Number of semester credit hours: **3**
8. Estimated total course enrollment per year: **125**
9. Course prerequisites and/or required qualifications for enrolling in the class: **None**
10. Course **is not/will not be** available online.
11. Foundational Component Area: **Life and Physical Sciences**
12. Explain why this course fits into this foundation component area: **It is an integrated lecture and laboratory course designed to investigate the role of humans in the environment and the interactions among human systems and those found in nature. It examines issues and problems associated with the environment including air, water, and soil pollution, climate change, species extinction, and resource depletion. Specifically, the course looks at the impact of technology and population growth on extraction of natural resources, use of renewable and non-renewable energy sources for power generation; environmental challenges associated with urbanization and continued development in developing nations; and how the changes in natural systems and supply of natural resources affect humans. Emphasis is placed on the science and students are shown how to make informed choices based on their own assessments. Scientific principles are reinforced through class discussions, environmental surveys, and laboratory experimentation using the scientific method.**
13. Core Objectives
    - Critical Thinking - Students will be trained to think critically about various environmental issues from the technical and scientific perspective. Critical thinking skills will be developed by teaching students how to analyze graphs/charts, measure their own environmental impacts, perform simple calculations, and use simple quantitative estimates to think quickly about scientific claims. Instructions will be provided through lectures, specifically during the discussion of ecological footprint in the "Introduction to Environmental Science" lecture. Students will demonstrate their critical thinking skills in embedded questions. Six essay questions on global climate change, population, and pollution will be used as assessment instruments and will be administered electronically. Questions will include scientific data and will challenge the students to think critically and develop an analytical understanding of the issues.
    - Communication Skills - Written communication skill will be developed by integrating writing in the laboratory portion of the course. Students will be required to write laboratory reports that follow the standard scientific format;

demonstrate coherence and organization; use proper grammar, spelling, punctuation, and correct technical terms; and are appropriate for the target audience. Handouts on how to write a scientific report and present data in both tabular and graphical forms will be provided to and discussed with the students during the first lab meeting. The first laboratory exercise on "Introduction to Microsoft Excel" will also provide hands-on training on how to properly present their data in graphs and tables. The laboratory report on "Water Quality Assessment" will be used in the written communication assessment. Students will develop oral and visual communication skills through the completion of a group assignment on sustainability, participation in discussions of lab exercises, and completion of a group research project. In the group assignment on sustainability, the students will be required to prepare and deliver a PowerPoint presentation. Handouts on how to prepare and deliver an effective PowerPoint presentation will be provided in the first lecture session and will be discussed during the second laboratory session. In some of the laboratory exercises (i.e. Photosynthesis and respiration, Toxicity, Population, and Renewable Energy), random students will be asked to draw graphs of data or diagrams of setups and discuss their results in class. In the group research project, students will work in teams of four to five students to work on a special topic. All groups are required to have five group sessions that will be conducted in the lab. During these sessions, students will be asked to fill out a questionnaire and record their activities in a journal. They will present their project orally with the aid of PowerPoint. The group research project will be used in the assessment of oral and visual communication skills. Segments of the students' presentations will be recorded and uploaded on D2L.

- Empirical and Quantitative Skills - Empirical and quantitative skills will be developed through quantitative interpretation of data. Students will be able to develop and apply their empirical and quantitative skills by incorporating data interpretation exercises in lecture materials (i.e. Introduction to Environmental Science, Economics, Toxicology, Human Population, Renewable Energy, and Global Climate Change). Instructions on empirical and quantitative skills will be provided through lectures, specifically during the discussion of ecological footprint in the "Introduction to Environmental Science" topic. Their empirical and quantitative skills will be enhanced further in the laboratory experiments since all of the exercises require data collection. Additional instructions on how to interpret data will be provided in the lab on "Introduction to Microsoft Excel"; this is noted in the laboratory schedule. Laboratory exercises on "Photosynthesis and Cellular Respiration" and "Population Dynamics" will also be used to enhance the students' empirical and quantitative skills. Specifically, the laboratory exercise on "Population Dynamics" will be used for the evidence of quantitative interpretation skill. In this exercise, students will collect mortality data from either a local cemetery or online. They will produce graphical representation of mortality rate differences between two periods in history and interpret the relationship between variables, identify trends, and interpret changes in the mortality rates.
- Teamwork - Development of teamwork skills will become an important element in the design of laboratory experiments and completion of a research project.

Instructions on how to build an effective team and the responsibilities of each member will be provided as a handout and discussed in the first laboratory meeting. Teams will be formed in the second laboratory meeting; these are the same teams for the laboratory exercises and group project. Students will be able to demonstrate their teamwork skills while performing the laboratory exercises since all data collections are done in teams, and also in preparing their lab reports. Students are allowed to work on the data presentation and analysis with the other members of their group but individual laboratory reports are still required. In addition to the laboratory exercises, students will also be required to work on a group research project. In this group research project, the same teams will choose their research topics that will involve data collection either by doing actual experiments in the laboratory or gathering data from printed and online sources. To assess teamwork, part of the laboratory period will be used for five mandatory group project discussions. In these group discussions, students will be required to fill out a questionnaire and record their activities in a journal. This journal will be used in every group discussions inside and outside of class and will be submitted at the end of the semester. The questionnaires and journal will be used in the assessment of teamwork skills.

Contact person for questions about this submission:

a. Sheryll Jerez
b. 936-468-6614
c. jerezs@sfasu.edu