Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Students in ESSM 309 (Forest Ecology) are shown how the scientific method is used by scientists to address the issues facing forest ecosystems throughout the world. In the beginning of the course, we discuss inductive vs. deductive scientific reasoning and how ecology is often relying on an inductive scientific approach to test hypotheses. We discuss how this scientific approach is a natural extension of dealing with open systems. This discussion serves as the basis for future lessons on ecological systems as a manifestation of the interaction between biotic and abiotic components of the ecosystem and how this interaction can be shaped by stochastic events and evolutionary change.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Students are asked to construct a presentation on a particular threat or positive benefit to a forested ecosystem with the material derived from the scientific literature. They pose a hypothetical issue facing this forest type (climate change), make a prediction on how some aspect of the forest’s function will change, and then describe the things that will be monitored to test their hypothesis.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

- Online discussion of assigned reading material
- Problem presentation during class with associated writing assignment

Written communication: In the online discussion, students provide written original interpretations of assigned reading material, relate information from the larger world, pose questions to the instructor or larger group, or comment on the interpretation(s) of others. In addition, the students will each write a report on their topic selected as a ‘problem presentation’ with individuals within a group providing a different emphasis on one part of the overall topic.

Assessment: Instructor provides a grade (1-5) for the quality of the online discussion. Discussion topics are posted weekly. The written reports on an ‘ecological problem’ are graded by the instructor and by another student (randomly assigned) in the class. Reports are graded based on the effectiveness of the problem statement, description of the ecosystem, clarity in writing and overall style.

Visual Presentation and oral communication: Students are asked to present, as a group of 2-3, their ecosystem and associated problem during class as a powerpoint presentation. These are graded by another group and by
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the instructor using a scoring rubric. Active listening is encouraged by the instructor and subjectively assessed. Students other than the ‘gracers’ who are viewing another presentation are encouraged to participate and ask questions.

Assessment: Students are graded on the oral presentation’s clarity and content, the use of graphs and scientific information in the presentation, and to a lesser degree individual presentation style (pacing, eye contact, adherence to time constraints). Another group that is assigned to grade the presenting group is given a grade to ensure they turn in their assessment forms. They are also specifically encouraged to engage the group they are grading in the form of questions.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):

Primary literature graphics are needed in their presentation and need to be presented as forming the basis for either the opportunity or problem (or the solution) facing their forested ecosystem. Quantitative work is primarily restricted to exams, where the students are expected to estimate residence times and turnover rates of different elements in forested ecosystems.

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Both the group presentation and the writing assignment are meant to have the students interact with one another and discuss the assignments. In addition “weekly online discussion assignment are used to have the students discuss the material in the book with peers beyond those in their immediate group for the presentation assignment.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.