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?

The objective of RENR 215 is to introduce students to the general principles, methods, and equipment for field-based investigation of the biotic and abiotic components of an ecosystem and their interactions, specifically: (1) Introduce the design and procedure of field ecological investigation, data analysis and report writing for quantitative description of ecosystems consisting of biological communities (interacting plant, animal and microbial populations) and their abiotic environment. (2) Acquaint students with the variety of ecosystems found in Texas, as well as a variety of species and some of their special adaptations to their environments.

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 introduced to (or have reinforced from previous introduction, e.g., in RENR 205) basic theories and measurement techniques in ecological science, with a focus on the use of measurements to learn about the structure and function of ecological systems. These tools are then used to build a dataset that will be analyzed and results synthesized in a final ecological report. The data for that report come from four separate lab sessions, three of which involve field data collection. Students collect their own data, must identify relevant questions to ask and assess and analyze the data collected in the context of those questions.

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

Students are asked to communicate their understanding orally and in writing throughout the course. Particular assignments meant to develop communication skills include the ecological report and a final oral presentation on an ecological topic. Each student writes their own report in phases, each phase is graded by the instructor and the student can then improve the next draft, including the final, based on feedback received. The final oral presentation is also done individually on a topic chosen by the student, in consultation with the instructor. These skills are also being developed in written assignments and through dialog encouraged in lab as methods are learned and data being collected.

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

This course is strongly empirically-based. Students begin to collect their own data early on, are introduced to analytical tools that require basic statistical assumptions, and use data analysis and graphing tools throughout the semester. In multiple sessions, student must collect data, provide summaries and graphical representations of those data, and then
Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

The course activities are all structured as group activities (with the exception of the brief introductory lectures provided to orient and provide general instruction). Students must cooperate, especially during field data collection, including shared duties like making a measurement and recording it, setting up measurement quadrats, transects, and sharing and sometimes debating the identities of the biota they are tasked with reporting on. Teamwork is essential in completing the course activities and objectives. Teamwork is evaluated throughout the course informally by the instructor providing feedback to students on data collection activities, record-keeping, and data analysis. Since all data collection is conducted in small groups and then organized and synthesized in in-class assignments, as well as in a final report, feedback and evaluation of teamwork effectiveness is also provided through written assessments of these assignments during the semester by the instructor.

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