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?

**Biology 112** is the second half of an introductory two-semester survey of contemporary biology that covers evolution, the history of life, biodiversity (including human parasites and their diseases) and form and function of organisms including human cardiopulmonary and nervous systems. Course includes a weekly laboratory that emphasizes the scientific method to reinforce and provide supplemental information related to the lecture topics.

**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):**

The scientific method is the fundamental basis of both lecture and lab. Lectures discuss knowledge obtained from interpreting results of historical scientific experiments and stresses inductive reasoning in interpreting biological patterns and processes. Lecture exams include questions to assess students' ability for critical thinking and analysis and their capacity for synthesizing cumulative information presented during the course. The laboratory component of the course includes the analysis of population-genetic data, detailed comparisons of organisms from single-celled organisms to mammals and exercises measuring cardiopulmonary and nervous-systems function. Lab assessments include weekly quizzes, two major laboratory practical exams and written homeworks and lab reports.

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

Homework assignments and lab reports require written interpretation of the results of the laboratory exercises. Labs conclude with an instructor/student interactive summary during which students orally respond to and ask questions. Both lecture and lab utilize visual communication through interpretation of data presented in graphs, tables, and figures.

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

Population genetics, cardiopulmonary and nervous system and animal diversity lab exercises involve the generation and/or manipulation and analysis of of exercise-specific data. These are then summarized in tabular and/or graphic form for homeworks, lab reports, quizzes and practical exams. Then animal diversity lab assignments requires cladistic analysis (phylogenetic reconstruction) of character-state data. Certain lecture topics, particularly in evolution/population genetics also require students to manipulate and interpret numerical data. Students' facility in these areas are specifically evaluated on lecture exams and laboratory written assignments.
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Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Laboratory exercises frequently require the students to work in groups (typically groups of four). Members of each group perform separate components of the lab exercise; the group members then interact to produce a set of group-compiled results. Each student subsequently uses the group-compiled results as the basis for his/her written lab assignment (in-class, homework or lab report). One lab assignment requires an oral 5-10 minute in-class group presentation. Teamwork is assessed by direct observation by the lab instructor and the assignment of appropriate participation points. During the interactive lab summaries students have the ability to consider different interpretations of the data and how these might yield different points of view.

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