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 ocean covers 71% of the Earth’s surface and therefore directly or indirectly affects most processes in the Earth System, including human activities. OCNG 252 Oceanography Laboratory will introduce students to fundamental concepts in the geosciences. Students will apply the scientific method to solve oceanography problems in a laboratory setting. Through a series of practical experiments, students will be able to describe and explain several phenomena relating to the geology, physics, chemistry, and biology of the ocean. For example, students will investigate how physical factors interact to affect the density of seawater and using this knowledge they will be able to predict how temperature and salinity changes affect seawater density, stratification, and ocean currents.

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 will employ critical thinking to successfully complete the laboratory experiments that are the foundation of this class. For example, students will use critical thinking to evaluate the quality (e.g. accuracy and precision) of the data they collect. Critical thinking and application of the scientific method will be required to interpret and use the data for the calculations, evaluations, and predictions required for answers in their lab reports. Several of the learning outcomes of OCNG 252 require students to think critically.

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

Students will develop written, visual, and verbal communication skills. Students will use written and visual communication as text and graphs to communicate the results of the laboratory experiments in their lab reports. Verbal communication is necessary to successfully complete the laboratory experiments as the students will work in pairs or small teams.

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

Empirical and quantitative skills are integrated into the learning outcomes for OCNG 252. Students will collect empirical data during the laboratory experiments. They will manipulate these data and make calculations to present and interpret their results. The manipulation of quantitative data will be required to explain the solutions to oceanographic problems and to enable the students to think critically and make predictions about how that experimental system would behave under different conditions.
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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):

Teamwork is essential to meet the learning outcomes of OCNG 252. Students will work in pairs or small groups of four students during the laboratory experiments. To successfully complete each experiment students will have to be able to collaborate, communicate, and organize with the other members of their group.

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