Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2016 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.

The proposed course must contain all elements of the Foundational Component Area. How does the proposed course specifically address the Foundational Component Area definition above?

GEOLOGY 101 focuses on the principles that govern the formation and evolution of the solid Earth, and its interactions with water, the atmosphere, life and other bodies in the solar system. This course covers the growth of the field of geology through the application of the scientific method. Geology is an inherently integrative science, involving physical, chemical and biological principles. Particular focus is given to the development of the unifying theory of plate tectonics, and the way it integrates and explains a large variety of data. The relevance to societal problems is stressed through discussion of geological hazards and the use and conservation of natural mineral and groundwater resources.

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.

The proposed course is required to contain each element of the Core Objective.

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

In-class activities (e.g., supplementary text Lecture Tutorials for Introductory Geoscience (Kortz and Smay, 2012) ) focus on team-based problem solving that that encourages students to confront concepts that are often difficult to grasp. Excercises require students to apply fundamental principles to solve real world problems. In-class excercises are complemented by homework problems that interpret real data sets, geologic maps and three-dimensional drawings of the subsurface.

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

Problem sets and some in-class activities will involve written communication of concepts. In-class collaborative activities and sharing of each team’s solution necessitates oral communication. Visualization is a critical part of the geologic sciences. Lectures, problems sets and in-class activities all require students to learn to visualize Earth structures and materials in two-and three-dimensions, as well as the how they move and deform through time. Student will be required to visually communicate three-dimensional objects in two-dimensional planes (maps).

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

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Students will work with real data sets (provided by the instructor or available from web-based sources) to solve problems that require quantitative analysis, graphing of data and interpretation of graphs to quantify and understand geological processes.

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

In-class activities (e.g. from Kortz and Smay, 2012) are designed as team-based problems. Students will collaborate in small groups to problem solve, requiring them to communicate (oral, written and visual communication), learn from each other’s knowledge, and consider different perspectives in order to reach consensus on conclusions.

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