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?

Forensic Science and its many applications rely upon collection, processing, analysis and interpretation of physical and biological evidence to explain natural phenomena and the case specific contexts in which debate is posed. The foundation is development and testing of sound hypotheses, experimental design, data collection, analysis, and interpretation in an iterative process of the scientific method. Forensic topics and case studies provide a venue to examine the fundamental processes of science, assess how scientific discoveries explain natural phenomena and observe how findings are adapted for use in explaining occurrences in the physical and human worlds.

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):

Utilizing a series of activities including review of scientific articles, analyses of crime scene scenarios, examination of evidentiary samples, and case file crime scene reports, students will reconstruct incident scenes/scenarios and establish cause and effect relationships. Students will be required to synthesize facts known from scientific testing and crime scene information to critically analyze and interpret results, and create convincing arguments or logical subsequent inquiries, lines of investigation, or bases for disputing and questioning evidence. Students learning will be evaluated by assessing student abilities to cull qualitative information and quantitative data through examination of an incident scene or scenario, reason logically and analyze the data, and articulate their findings using verbal, written, or illustrative means of communication for which they will receive a grade.

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

Students will write crime scene reports to include type of evidence taken, data records, and observations on standard crime scene report forms for multiple case examinations, write a scientific paper on glass reconstruction using the scientific method (a 5 part document), perform and record numerous calculations for review (e.g. light wave lengths, blood alcohol content, blood stain geometry), write team reports, and produce power point presentations summarizing probative evidence from crime scene cases. Student learning will be evaluated by assessing student abilities to analyze and interpret data; make determinations based on their analyses, and communicate those determinations using verbal, written, or illustrative presentations and discussion within the context of graded group projects.

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 use mathematical equations and spatial measurements to assess light wavelengths, fingerprint analyses, radial fracture analyses, blood alcohol content analyses, and blood splatter analyses. Each case requires data analysis and interpretation with respect to known and observed facts. Student learning will be evaluated through graded exercises that require students to make investigative determinations based on their abilities to properly assess data using cognitive-instrumental reasoning, mathematical calculations, and elementary statistical analyses.

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

There are 4 team assignments (see Core Objective Mapping Attachment) that will require students to take different roles and thus critically assess information and analyses from different points of view. For example, analysis of a crime scene with the team consisting of a Forensic Investigator, Forensic Scientist, and Forensic Reviewer requires each member view the case and the work of other team members with different perspectives and expectations. Conflicts in interpretations are expected in these assignments and the use of peer review and resolution of disagreements is included as part of written and oral products produced by teams in each assignment. Student learning will be evaluated through graded projects where success relies on the team concept of interdependent roles and effective small group communication and debate.

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