

Request for Courses in the Core Curriculum

Originating Department or College: Engineering, Mathematics, and Physics/ College of Arts and Sciences

Person Making Request: Dr. Qingwen Ni

Telephone: (956)326-2409

E-mail: qni@tamiu.edu

Course Number and Title: PHYS 1370 – Survey of Physical Science

Please attach in separate documents:

Completed Catalog Add/Change Form

* Syllabus

List the student learning outcomes for the course (Statements of what students will know and/or be able to do as a result of taking this course. See appended hints for constructing these statements.)

Upon successful completion of this course, the students will be able to:

1. Describe Newton's three laws of motion and apply them to solve the physics problems.
2. Explain mechanical energy and law of energy conservation and apply them to solve physics problems.
3. State the heat equation, first and second laws of thermodynamics, and apply them to physics problems.
4. Outline the wave equation and apply it to solve physics problems.
5. State ohm's law and apply it to solve physics problems.
6. Describe light and the dual nature of light and show how they relate to modern physics.
7. Work in teams on a research project and submit a written report that clearly describes the problem and findings.

Component Area for which the course is being proposed (check one):

Communication

Mathematics

Language, Philosophy, & Culture

Creative Arts

* Life & Physical Sciences

American History

Government/Political Science

Social & Behavioral Science

Component Area Option

Competency areas addressed by the course (refer to the appended chart for competencies that are required and optional in each component area):

* Critical Thinking

* Communication Skills

* Written Communication

Oral Communication

Visual Communication

* Empirical & Quantitative Skills

* Teamwork

Personal Responsibility

Social Responsibility

Because we will be assessing student learning outcomes across multiple core courses, assessment assigned in your course must include assessment of the core competencies. For each competency checked above, indicate the specific course assignment(s) which, when completed by students, will provide evidence of the competency. Provide detailed information, such as copies of the paper or project assignment, copies of individual test items, etc. A single assignment may be used to provide data for multiple competencies.

Critical Thinking:

This course is designed to enhance students' critical thinking through solving problems that involve alternative solutions, analysis, and evaluation of data (SLOs 1, 2, 3, 4, 5 and 6). There will be regular homework assignments that provide students opportunities to apply the theories learned in class. Students will also work in teams on a "research project" and submit a final written report that describes the problem and their findings (SLO 7). This report will be used to demonstrate students' achievement of critical thinking abilities. The critical thinking rubric that is being developed by a subcommittee of the University Core Curriculum Committee, or a modified version, will be used by the instructor or the Department Assessment Committee to evaluate the performance of students.

Communication Skills:

Students will work in teams on a "research project" and submit a final written report (SLO 7). This report will be used to demonstrate students' written communication abilities. The instructor will evaluate the report for organizations, focus, style, and grammar using the existing WIN-course rubric or a modified version.

Empirical & Quantitative Skills:

This course includes exercises and homework assignments that help students apply theories learned in class (SLOs 1, 2, 3, 4 and 5). Throughout the semester, students will have opportunities to demonstrate their ability to identify different solutions, perform calculations, manipulate numerical data, analyze results, and evaluate alternatives. The final exam will include a set of problems that will be used to allow students to demonstrate their empirical and quantitative abilities. The rubric that is being developed by a subcommittee of the University Core Curriculum Committee, or a modified version, will be used by the instructor or the Department Assessment Committee to evaluate students' performance.

Teamwork:

In the "Research Project" assignment, students work in groups of four to carry out a variety of tasks, including researching information, collecting data, applying physical science concepts, considering alternatives, performing analysis, and evaluating their findings (SLO 7). Throughout this process, students will demonstrate their skills by considering different points of view and working effectively with others to support a shared goal. Students will also complete a survey to assess and evaluate their own contribution as well as the contribution of other team members. The rubric that is being developed by a subcommittee of the University Core Curriculum Committee, or a modified version, will be used by the instructor or the Department Assessment Committee to evaluate the teamwork skills of each group.

Will the syllabus vary across multiple sections of the course? Yes * No

If yes, list the assignments that will be constant across the sections:

Inclusion in the core is contingent upon the course being offered and taught at least once every other academic year. Courses will be reviewed for renewal every five (5) years.

The department understands that instructors will be expected to provide student work and to participate in university-wide assessments of student work. This could include, but may not be limited to, designing instruments such as rubrics, and scoring work by students in this or other courses. In addition, instructors of core courses may be asked to include brief assessment activities in their courses.

Reviewed and approved by the Core Curriculum Committee on February 22, 2013.