Core Curriculum Management

Date Submitted: 11/02/17 3:52 pm

Viewing: PHYS 123-GE ~~123~~: Physics for Future Presidents

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Changes proposed by: skessler

Contact(s)

Name	E-mail	Phone
Sherree Kessler	skessler@tamu.edu	979-458-5948

Course Prefix	PHYS	Course Number	123
Academic Level	UG		
Complete Course Title	Physics for Future Presidents		
Abbreviated Course Title	PHYSICS FOR FUTURE PRESIDENTS		
Crosslisted With			
Semester Credit Hour(s)	3		

Proposal for:
Core Curriculum Addition/Edit

How frequently will the class be offered?	**Each fall and spring semester**
Number of class sections per semester	**3**
Number of students per semester	**450**

Historic annual enrollment for the last three years

Last year:	Previous year:	Year before:

Recertify for Core Curriculum?	No

In Workflow

1. **PHYS Department Head**
2. **SC College Dean UG**
3. **CCC Preparer**
4. CCC Chair
5. Faculty Senate Preparer
6. Faculty Senate
7. Provost II
8. President
9. Curricular Services

Approval Path

1. 11/02/17 3:57 pm Lewis Ford (a-ford): Approved for PHYS Department Head
2. 11/02/17 4:00 pm Lucas Macri (lmacri): Approved for SC College Dean UG

Core curriculum

Foundational Component Area	**Core Life/Physical Sci (KLPS)**
TCCN prefix/number	**PHYS 1310**

Foundational Component Area: Life/Physical Sci

How does the proposed course specifically address the Foundational Component Area definition above?

The purpose of this course is to provide an understanding of a broad range of physics concepts and the scientific method. Students will use the scientific method to understand and describe physics concepts such as energy, power, heat, electricity, light, and nuclear processes. They will use these concepts to think critically about and explain many problems in the world and in modern technology. Students will be able to predict the outcomes of situations in nature and to understand when other predictions are unsound. Application of these principles also will allow students to think critically about many important problems facing society.

Students will be informed of the core objectives being addressed in this core curriculum course as follows: the core objectives will be described in the course syllabus and discussed on the first day of class. Throughout the semester, instructors will highlight how learning opportunities specifically address the core objectives during lectures and class activities.

Core Objectives:

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

Students will learn many fundamental principles of physics (see course topics in syllabus). Students will be taught the scientific method and the limits of scientific knowledge. They will think about what it means when scientific investigations tell us things. Students will think critically about problems and situations relevant to society by applying those principles and evaluating their correctness. This will require the students to determine which of the fundamental principles of physics are relevant to given problems. Students will then have to organize these thoughts and principles in order to synthesize an effective argument, which they will communicate to the instructor and other students.

Individual student progress is assessed regularly throughout the semester using metrics that include homework, in-class participation via polling, graded student homework, and written responses to questions embedded in exams.

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

Each week students will find and read an article on physics or technology. These should be articles written for the general population, not scholarly research articles, but they must be serious. Students will write a brief discussion of the physics involved and explain it, in their own words, as if they were science advisor to a policy maker.

Furthermore, students will develop presentations on topics in physics. These presentations will include graphs or other visual presentation of data. Presentations will focus on the science involved in the topic and will include quantitative as well as qualitative arguments. Each student will lead at least one short discussion during the semester.

Individual student progress is assessed regularly throughout the semester using metrics that include presentations by students in the classroom, weekly application of physics principles in written form, in-class participation, and written responses to exam questions.

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

Students will learn the important and essential skill of manipulating basic facts. From an understanding of physical principles, students will be able to understand or refute arguments with a few numbers. Some examples would be: How large would a solar farm have to be to power the whole United States? If half our energy were generated by nuclear power, how much more nuclear waste would be created? How much less carbon dioxide would be released, and how would that compare with the rest of the world? Why can't we launch radioactive waste into the sun? Could a massive earthquake sink California into the Pacific Ocean? Could an eruption of the Yellowstone Caldera render the United States uninhabitable? Each of these questions comes up in rational discourse, and each is easily settled with a few basic facts and simple arithmetic. Being able and willing to tell when a simple quantitative argument is right or wrong based on empirical facts is a focus of this class.

Individual student progress is assessed regularly throughout the semester using metrics that include graded quizzes, carefully chosen exam questions, presentations by students in the classroom, and weekly application of physics principles in written form, in-class participation.

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

Students will work in teams to develop presentations on physical topics. Presentations will focus on the science involved in the topic. Presentations should include quantitative as well as qualitative arguments. Each student will lead at least one short discussion him or herself during the semester, with the team serving as backup. Students will learn to support each other when needed, and to politely allow other team members to take the lead when it is their turn.

Individual student progress is assessed regularly throughout the semester based on these presentations.

Please ensure that the attached course syllabus sufficiently and specifically details the appropriate core objectives.

Attach Course Syllabus	**PHYS 123 - syllabus.pdf**
Reviewer Comments	**Barbara West (barbwest) (11/02/17 3:16 pm):** Rollback: Rolled back per request of Dr. Welch for needed updates.

Key: 353