

Colonnade Program Course Proposal: Explorations Category

1. What course does the department plan to offer in Explorations? Which subcategory are you proposing for this course? (Arts and Humanities; Social and Behavioral Sciences; Natural and Physical Sciences)

Physics 100 Energy

Subcategory: Natural and Physical Sciences

2. How will this course meet the specific learning objectives of the appropriate subcategory. Please address **all** of the learning outcomes listed for the appropriate subcategory.

Objective 1. Demonstrate an understanding of the methods of science inquiry

This core focus is addressed by activities integrated throughout the course. Students complete a series of activities that guide them through the methods of science inquiry.

Objective 2. Explain basic concepts and principles of Energy

Classroom activities are employed in the class that use active learning methods to guide students into confronting their own scientific misconceptions and reinforce basic concepts and principles of energy. In addition, the students are required to answer 4 questions related to energy in 3 page mini-papers. These papers require the students to research and explain basic concepts of energy.

Objective 3. Apply scientific principles to interpret and make predictions relating to Energy

This core focus is addressed by the activities integrated throughout the course. These activities teach the students to apply scientific principles and make predictions related to energy concepts.

Objective 4. Explain how scientific principles of Energy relate to issues of personal and/or public importance.

Throughout the course, students gain a comprehensive understanding of energy, and ways that scientific principles of energy relate to issues of personal and/or public importance. This core focus is addressed by the activities integrated throughout the course.

3. Syllabus statement of learning outcomes for course. NOTE: In multi-section courses, the same statement of learning outcomes must appear on every section's syllabus.

Upon completion of this course the student will:

Understand the development of scientific thought and practice.

Understand how scientific practice allows us to understand energy.

Understand the basic physics concepts and forms of energy and energy sources/production.

Understand the difference between renewable and non-renewable energy sources.

Understand what a green energy source is and how it differs from a renewable energy source.

Understand the environmental impact resulting from the production and use of different sources of energy.

4. Brief description of how the department will assess the course for these learning objectives.

Objective 1, Objective 3, Objective 4. Each class section will include a minimum of six hands on exercises. Two exercises will be targeted to assess each objective. **At the end of each academic term, the department will collect each student's average score for the laboratory exercises. The goal is to have at least 70% of the students achieve a score of 70% or better.**

Objective 2.

A set of 10 questions on the final exam will be identified as key questions to evaluate how well individual students understand and can explain basic concepts of Energy. The department will collect each student's average score for these 10 questions. The department will also collect the average score of the 4 mini-papers. These two average scores will be averaged with equal weighting. The goal is to have at least 70% of the students achieve an average score of 70% or better.

5. How many sections of this course will your department offer each semester?

1 per year

6. Please attach sample syllabus for the course.

See attached.

Please send your proposal to: robert.dietle@wku.edu

Physics 100 - Energy

Fall 2013

Instructor: Dr. Michael Carini
Office: TCCW 229
Phone: 56198
E-mail: mike.carini@wku.edu
Office Hours: By appointment

Textbook: Energy and the Environment, 2nd ed. Ristine & Kraushaar
Energy for Future Presidents: The Science Behind the Headlines, Richard A. Muller
Available on Amazon.com

Class Meets: MWF 11:30-12:25 TCCW 201

Course Web Site: <http://astro.wku.edu/energy/energy.html> I will place the power points for the day's lecture on this web site **immediately before** class.

Course Grade:

3 examinations worth 10% each.

Class attendance, participation, in class exercises, reading quizzes 15%

Homework worth 30%

Comprehensive Final Examination worth 25%.

Course Description

A one-semester survey of the concepts of energy applicable to the understanding of energy in our environment. Topics covered are the nature of energy, sources, transmission, consumption, energy and the environment, and prospects for the future. Hands on exercises will be included as part of the classroom work.

I expect regular and prompt attendance in this class. Regular attendance is critical to attaining a passing grade in this class. If you need to be absent, do what you can to inform me in advance of your absence. Do not schedule medical or other appointments during class time, unless it is absolutely necessary. For all absences involving a visit to a medical professional, please provide verification.

Colonnade Learning Goals:

Upon completion of this course the student will:

- Understand the development of scientific thought and practice.
- Understand how scientific practice allows us to understand energy.
- Understand the basic physics concepts and forms of energy and energy sources/production.
- Understand the difference between renewable and non-renewable energy sources.
- Understand what a green energy source is and how it differs from a renewable energy source.
- Understand the environmental impact resulting from the production and use of different sources of energy.

Students with disabilities: In compliance with university policy, students with disabilities who require accommodations (academic adjustments and/or auxiliary aids or services) for this course must contact the Office for Student Disability Services in DUC A-200 of the Student Success Center in Downing University Center. Please **DO NOT** request accommodations directly from the professor or instructor without a letter of accommodation from the Office for Student Disability Services.

Examinations: No makeup examinations will be given unless your absence has been pre-approved or you have a valid excuse.

NO LATE ASSIGNMENTS WILL BE ACCEPTED, except for *certain* cases where you were not in class due to an illness or other **verifiable, excused** absence.