

PHYSICS 12
ENERGY AND THE ENVIRONMENT
SPRING 2011

Instructor: Kim Griest
Lecture: MWF 2-2:50pm, YORK 2622
Discussion: Wed 4-4:50pm, CSB 002

Griest Office: 337 SERF, 534-8914
Griest Office Hours: Monday: 11am-12pm (337 SERF)

T.A.: Joe Salamon: jsalamon@ucsd.edu
T.A. Office hours: Friday 3pm, Meyer Hall Annex tutorial center: MHA
2702

Text: Energy and the Environment, Ristinen and Kraushaar
(2nd Edition)

Midterm: Mon May 9 (in class)

Final: Friday, June 10, 3pm-6pm (YORK 2622)
[NOTE: NO LATE OR EARLY FINAL; CHECK YOUR SCHEDULE NOW!]

OUTLINE OF TOPICS

This is a physics class on energy and the environment. Our modern world is possible in large part because we supplement our human muscle energy with energy from fossil fuels, etc. Our future lifestyles and environment will be shaped by decisions made now on energy usage. While there are many economic, political, and philosophical issues involved, in this class we will focus on the scientific issues that underlie everything else. We will discuss the current state of energy in the U.S. and the world, how much is there, in what forms, and how long can we continue current usage patterns. We will be calculating things and getting quantitative. We will also discuss the economic and environmental costs of various current energy usage patterns as well future options. The goal is for you to be able to understand the technical issues involved and do simple numerical calculations to answer questions that come up. This is a good course for anyone wanting to seriously take part in the debate over energy that will probably continue throughout our lifetimes.

TOPICS: Energy Use, Fossil Fuels, Heat Engines, Solar and other

Renewables,
Nuclear Energy, Conservation, Transportation, Ozone Depletion and
Global Warming

GRADING POLICY

Homework: 20%
Midterm: 30% (or as little as 23%)
Final: 50% (or as little as 43%)

Optional class participation credit: up to 7% as judged by your being present in class on days when participation questions are turned in. This is an optional part of the grade, applying only to your worst exam. For example, if you bomb the midterm and have 90% participation credit by the end, the midterm will only count 30% - $.9 * 7\% = 23.7\%$, the other 6.3% of your final grade coming from participation credit. You must be present in class to obtain participation credit.

Homework will be assigned weekly and will involve physics problem solving. It will be due in class on Mondays and no late homework will be accepted. A grade of 0, 1, 2, or 3 will be given to each question and problem set depending upon the AMOUNT and QUALITY of work submitted. There will be spot checks of the homework, but no detailed grading. Answers will be posted online. You will want to do all the homework correctly because around 80% of all questions on the midterm and final will be taken DIRECTLY from the homework questions and multiple choice.

There will be some class handouts, and up to 20% of the midterm and final questions may be taken from these or from other things discussed only in class. If you turn in all the homeworks, and after studying, you can do them all on your own quickly, then you will get a good grade in this class.

We will be using ABCD cards in class so I can ask questions and get your responses.