Phys 0087 Science and Society

Instructor:
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Practical Information:
Tuesday and Thursday 2:30 - 3:45 102 Thaw Hall

office hours: I will not post hours for now; come by any time, or to be safe, send me an email and set up a meeting time.

grading policy: the best of

(i) 10% assignments + 15% group tasks + 30% max(midterm 1, midterm2) + 45% final
(ii) 10% assignments + 15% group tasks + 20% midterm 1 + 20% midterm2 + 35% final
(iii) 10% assignments + 15% group tasks + 75% final

course text: Science and Society. Available at the bookstore or at Amazon, or directly from Springer.

Course Description
This course examines the conceptual foundations of modern science with the goal of understanding how science affects our daily lives and our impact on the environment.

Course Objectives
Upon successful completion of this course the student will understand the genesis of the modern scientific worldview, be able to assess the quality of scientific studies, will be able to read and understand graphs, will understand the metric system, will understand the electromagnetic spectrum, will understand types of nuclear radiation and their health effects.

Course Content

Topics covered include
1 What is Science?
2 Doing Science (understanding medical studies)
3 Pseudoscience (bad science and how to recognize it)
4 Energy and Entropy (an introduction to the central idea of energy)
5 Electricity, Magnetism, and Light
6 Atom and Light (how light interacts with matter)
7 Climate
8 Nuclear Energy and Radiation
9 A Finite Planet (resource management)
10 Outlook (space travel and predictions)

We will discuss climate change, energy use, water management, population growth, and other topical issues. Case studies of good and bad science will be made. Specific physics principles covered will include, units, graphing, exponential growth, the atomic paradigm, energy, conservation laws, properties of light, and principles of quantum mechanics. No mathematics beyond multiplication and division will be required.

Readings and Assignments
Assignments will be disseminated to the class via blackboard, along with lectures, and other course information.

Disability Statement
If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services, 216 William Pitt Union, (412) 648-7890/(412) 383-7355 (TTY), as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course. A comprehensive description of the services of that office can be obtained at www.drs.pitt.edu.