

# Physics 23 I

Physics for Future Presidents  
Professor Peter Stephens  
Fall 2017



**Course Description:** The aim of this course is for you to learn how science addresses the most important societal issues facing our civilization.

**Specific objectives are:**

- To apply concepts and tools of physics in order to understand the impact of science and technology on our society.
- To synthesize quantitative and/or technical information and qualitative information to make informed judgments about the reciprocal relationships among science, technology, and society, especially from the standpoint of government.
- To understand the fundamental science of energy and energy usage in the world, and the human impact on the global climate.
- To learn, through the process of discovery, how science formulates questions and addresses them with reasoning, evidence, and argumentation.
- To develop an awareness of the difference between reliable and unreliable sources of information about science and technology.
- To address specific questions which must be asked and answered in order to understand the important societal questions of energy usage and environmental impact.
- To learn about other issues with a strong physics content such as satellites, space, nuclear energy, and quantum devices.

At the completion of the course, you should have improved ability to:

- Look at complex questions and identify the science in the question and how it impacts and is impacted by political, social, economic, and ethical dimensions.
- Understand the limits of scientific knowledge.
- Critically evaluate science arguments.
- Ask good questions.
- Find information using various sources and evaluate the veracity of the information.
- Communicate scientific ideas effectively.
- Relate science to a personal situation.

**Text: *Physics and Technology for Future Presidents*: Richard Muller.** This is required.

**Classes:** Lecture: Tu-Th 1:00-2:20 pm in Frey Hall Room 313.

**Attendance:** This class will be interactive, with in-class group activities and discussion. Your attendance is critical to your success. Participation in class discussions will be part of your grade.

**Reading:** There will be reading assignments to be completed *before* each class, and sometimes a short assignment (typically a short answer to a single question) related to the reading. There will be discussion related to the reading in class, so be sure to do your reading – you may be asked about it!

**Homework:** There will be two components to the homework. Each week you will find and submit a link to a relevant recent article in the media. Be prepared to summarize and discuss in class. You will submit this assignment [HERE](#). This is due each Wednesday by 8:00 PM.

Here is a link to a large number of interesting sources compiled by a Carnegie Mellon professor who taught a similar course: <https://www.andrew.cmu.edu/course/33-115/resources.html> Some of these items nominally require a subscription, but you can get them through the Stony Brook Library site.

Other homework will be assigned approximately every other week. Homework handed in late will not be accepted, except for the major projects, that will have late penalties.

**Project:** There will be one group project and one term project for the semester. The term project will be an opportunity for you to go into a subject that interests you that is related to the course, and do some research and analysis. More details will be announced later.

### Important Dates:

First class	August 29	
Breaks	Sep. 5, Nov. 23	
Midterm exam 1	October 3	<i>Subject to change</i>
Midterm exam 2	November 14	<i>Subject to change</i>
Last class	December 7	
Final exam	December 18	5:30-8:00pm

If you have a reason why you cannot attend class (religious holiday, official University business), see me before the exam! Only medical emergencies will be considered as excuses after the exams. If you miss an exam with a valid excuse, a makeup exam will be given.

**Office Hours:** Scheduled office hours are Tuesdays 11:30 - 1:00, and Thursdays 2:30 to 4:00, in room B-134 of the Physics Building. Other times available by appointment, and I am often available for drop in – best to email me first. I have another office in Melville Library room E3320; outside of my scheduled office hours, you should email or phone (x2-8156) to confirm where I am. Please seek help at the first sign of difficulties or confusion.

**Grading:** Your grade will be based on the following:

Midterms	15% each
Term paper	15%
Homework (Weekly news submissions)	10%
Homework (Problems)	10%
Class participation (Including discussion of news)	15%
Final exam	20%

Don't ask for extra credit assignments near the end of the semester; they are not allowed. Stony Brook University regulations are quite clear that grades may only be based on work expected of all students, as described in the course syllabus.

**Academic Integrity:** You will be graded on the work that you turn in and your participation in class. You are welcome to work with classmates on the assignments, but what you submit with homework must be what you yourself have written. Whenever you use published data, or information obtained on the web, you should cite its source.

**Disabilities:** If you have a documented disability, please contact me as soon as possible to discuss accommodations.

### **Helpful Tips:**

- 1) **Read the assignments** *before* class and refresh yourself after.
- 2) **Do the homework.** There will be approximately 7 written homework assignments, as well as a weekly news report. You may collaborate on homework assignments, but you will be responsible for producing your own work.
- 3) **Attend class.** Classes will be interactive with a mix of lecture, group activities, demonstrations, and discussion.
- 4) **Bring a laptop or tablet to class** if you have one. It is to be used for researching material being discussed in class; not for entertainment, shopping, etc.
- 5) **Talk to your classmates.** Trying to explain something to someone else is often the best way for you to fully understand the concept.
- 6) **Ask questions in class.** The only stupid questions are the ones that nobody asks.

### **DISABILITY SUPPORT SERVICES (DSS) STATEMENT:**

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, room 128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

### **ACADEMIC INTEGRITY STATEMENT:**

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at <http://www.stonybrook.edu/uaa/academicjudiciary/>

### **CRITICAL INCIDENT MANAGEMENT**

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn.