**PHY 231 - Physics for Future Presidents**

INSTRUCTOR: DR. CHARLES JOSEPH NAÏM

Co-Instructors\*\*: Dr. Jaydeep Datta

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

**Scientific Objective:**

* To understand the fundamental science of energy, energy usage in the world, and the human impact on the global climate
* To learn, through process of discovery, how science formulates questions, and addresses them with evidence-based reasoning
* 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 strong physics content such as satellites, space, quantum devices, nuclear energy in the context of weapons, global threats due to terrorism, etc.
* We will take on all issues that a potential conscientious leader of a world, country, government agency, public or private company, a citizen's representative may have to take on to make good decisions. We will learn how to address issues even when one is not the world expert in all issues.

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

* Look at complex issues and identify (break them down in to) basic science questions and correlate them to the impact on and is impacted by the political, social, economic, and ethical dimensions
* Understand the limits of scientific knowledge
* Critically evaluate scientific arguments in the context of societal impact
* Ask good questions
* Find information using various resources, and evaluate their veracity
* Communicate scientific ideas clearly
* Relate to science in various personal situations

**TEXT (to be roughly followed): *Physics and Technology for Future Presidents by Richard Muller***

**Clickers: Turning Point Technologies (or equivalent suggested by the University)**

**Class When:**Tuesday & Thursday 2:00-3:20 PM

**Where:**Humanities 3017

**Remote/In-Person:**This class will be held **in-person.**

**Attendance Policy:**Attendance is **required**. This will be an interactive class, with in-class group activities and responses. Your attendance is critical to your success and of this class. Participation in the class is part of your grade. Attendance will be based on a sign-up sheet in class or/and the responses to the Turning Point questions for the day.

**Reading:**There will be reading assignments to be completed before the class, and some times short assignment (short answer to a single question) related to the reading. There will be discussions related to the reading in the class, so be sure to read! You may be asked about it.

**Homework:**Two components to the homework. 1) Approximately, every alternate week you will find a link relevant and submit a link related to the media coverage of topic of discussion that you find interesting/compelling and related to our class: you should be ready to discuss this in the class. **H**[**ere is a link**](http://www.andrew.cmu.edu/course/33-115/resources.html) to a large number of interesting sources compiled by a professor at Carnegie Mellon University. 2) Other homework will be assigned as we go through the course, at approximate frequency of once every two weeks. Late homework will not be accepted.

**Project/Presentations:**There will be one group project presentation (by a group of ~5 students) in early October, and another one project/presentation by the same group in a topic that interests you most, due early December.

**Extra Help and Office Hours:**I will be available to discuss things at the end of each lecture for additional half an hour. If you need more, we will make appointments as needed.

\*\* Co-instructors are research physicists at Stony Brook, who will step in place of Dr. Naïm, should he have to travel during the semester.