Physics for future Physics for future Presidents

Fall 2021Presidents

Fall 2021

Instructor: Professor Abhay Deshpande

Co-Instructors: Prof. Barak Schmookler & Prof. Ross Corliss

**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: *Physics and Technology for Future Presidents by Richard Muller***

**Clickers: Turning Point Technologies (only if meeting in person)**

**Class When:** Tuesday & Thursday 1:15-2:35 PM

**Where: Social and Behavioral Science Building Room: S228**

**Attendance Policy:** Attendance **required**. This will be an interactive class, with in-class group activities and responses. Your attendance is critical to your success and this class. Participation in the class is part of your grade. Everyone participating in this class, must wear a mask/face covering at all times. Any student not in compliance with this will be asked to leave the class.

**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 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.google.com/url?q=http%3A%2F%2Fwww.andrew.cmu.edu%2Fcourse%2F33-115%2Fresources.html&sa=D&sntz=1&usg=AFQjCNF1k6x0NwuK1pK8XqeHGFKUBz2WkQ) 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 (by a group of ~5 students) due early October, and one term project to be performed individually 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.

**Grading:**

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|  Group Presentation 1 | 10% |
| Midterm Exam(two exams equal weight) | 30% |
| Final Presentation 2 | 10%  |
| Attendance | 10%  |
| Final Exam | 40%  |

Everyone participating in this class, must wear a mask/face covering at all times. Any student not in compliance with this will be asked to leave the class.

**Disabilities:** If you have a documented disability and wish to discuss accommodations, please come see me.

DISABILITY SUPPORT SERVICES (DSS) STATEMENT:

If you have a physical, psychological, medical or learning disability, that may impact your course work, please contact DSS, Educational Communications Center (ECC) Building, Room 128 or call (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 responsible and 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 Academic Judiciary. For more comprehensive information on academic integrity, including categories of dishonesty, please refer to the academic judiciary website at http://www.stonybrook.edu/acdemicjudiciary/

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, compromise the safety of the learning environment, or inhibit student's ability to learn.

**Important Dates**:

First Class on: August 24, 2021

Midterm Exam 1: Early October, 2021

Midterm Exam 2: Early November 2021

Thanks Giving: November 25, 2021 (**no class**)

Last Class: December November 30, 2021

Final Examination **in-class-time:** December 7, 2021

Final Presentation: Dates: (detailed to be decided later)

If you cannot attend a class due to any reason (religious holiday or official university business) please let me know before the 1st midterm. Only medical emergencies can be accommodated without penalty, and I will need a note from the SBU Clinic or your physician. If you miss an exam because of a valid reason, a make-up exam will be offered.

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| 8/24/21 | 0 | Introduction  | Intro pdf file, Lecture 1 | overview of this class and its contents |
| 8/26/21 | 2 |  | Lecture Link |  |
| 8/31/21 | 3 |  |  |  |
| 9/2/21 | 4 |  |  |  |
| 9/7/21 | 5 |  |  |  |
| 9/9/21 | 6 |  |  |  |
| 9/14/21 | 7 |  |  |  |
| 9/16/21 | 8 |  |  |  |
| 9/21/21 | 9 |  |  |  |
| 9/23/21 | 10 |  |  |  |
| 9/28/21 | 11 |  |  |  |
| 9/30/21 | 12 |  |  |  |
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