



Stony Brook University

**Department of Technology & Society
EST 592 (#90870), Sustainable Energy**

Prerequisites: Undergraduate major in science or engineering strongly preferred

Meeting Time: Wednesday 7-8:30pm

Meeting Location: 1310 Old Computer Science

Instructor: Gang He
Email: gang.he@stonybrook.edu
Website: www.ganghe.net

Office Hours: 2-4pm, Friday
Office Location: 1420 Old Computer Science

Course Description: The ample supply and appropriate use of energy is critical to the well-being of human society. Energy plays an enormous role in environmental degradation, national insecurity, international conflict, and in solutions to these problems. This course aims to introduce the major energy issues to students in engineering, business, and public policy areas. It discusses the energy choices to meet regional and global energy needs. Major renewable and conventional energy sources, energy supply technologies, and end-use efficiency options will be assessed in the context of political, social, economic, and environmental goals.

Learning Objectives:

- Develop comprehensive understanding of energy systems, i.e. the interaction of technological, social, economic, and regulatory forces that shaping energy production, conversion, and consumption.
- Gain an understanding of main data sources and key methods used to analyze energy systems and their strengths and weaknesses.
- Develop basic understanding and analytical skills to the complexity and importance of global transition to sustainable energy.

Class Readings:

- Masters, Gilbert M. 2013. Renewable and Efficient Electric Power Systems. 2 edition. Hobo-ken, New Jersey: Wiley.
- Dunlap, Richard A. 2014. Sustainable Energy, SI Edition. Cengage Learning.
- MacKay, David JC. 2008. Sustainable Energy without the Hot Air. UIT Cambridge Ltd.

Grading: Participation (10%), Homework (40%), Final paper proposal (10%), Presentation (20%), Final paper (20%). Late submission: One point is subtracted for each 24-hour submitted late (rounded up to the nearest integer). One free late day is allowed of your choice. Laptop or other electronic devices for class purpose only. A (93-100); A- (90-92); B+ (87-89); B (83-86); B- (80-82); C+ (77-79); C (73-76); C-(70-72); D+ (67-69); D (63-66); D- (60-62); F (59 or lower). Decimal will be rounded to the nearest integer. We do NOT offer extra credit or bump up grade. Please do your work to bump up your grade. No grade bump requests will be responded.

Semester Schedule:

Week	Date	Lecture	Assignment
1	8/28	Introduction	
2	9/4	Make sense of energy units, numbers, and fundamentals	1
3	9/11	Energy systems overview	
4	9/18	The economics of energy systems	2
5	9/25	Energy sources	
6	10/2	Energy demand, energy and economy	
7	10/9	Energy, environment, and health	3
8	10/16	Energy and climate change	
9	10/23	Life cycle analysis, and energy systems modeling	Proposal due
10	10/30	Energy transition	
11	11/6	Human behavior, culture, and sustainable energy consumption	
12	11/13	Energy poverty/access	4
13	11/20	Big data and AI for sustainable energy	
14	11/27	No class – Thanksgiving	
15	12/4	Presentations	
16	12/15		Paper due

Student Accessibility Support Center Statement

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Student Accessibility Support Center, 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. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Student Accessibility Support Center. For procedures and information go to the following website:

<http://www.stonybrook.edu/ehs/fire/disabilities>.

Academy 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 is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

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 University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.