



CEE 598: Fundamentals of Sustainable Energy Systems

Making proper energy choices depends not only on technology, but also on a basic understanding of concepts of sustainability science, relevant analysis tools, as well as ongoing efforts in adapting energy systems. The course objective is to provide this knowledge which is achieved by: (a) presenting fundamental and foundational topics related to sustainability in general, while linking them to energy systems; (b) discussing energy consumption trends, basic growth/decay models, challenges (such as climate change and human health), and general sustainable solution pathways; (c) covering life cycle analysis and energy costing methods; (d) providing an overview of different types of energy systems and trade-off techniques such as systems modeling, uncertainty analysis and risk analysis; and (e) presenting scientific models and published work relevant to sustainability and resiliency assessments of energy production processes and systems. Engineering and science students, wishing to acquire a fundamental understanding of energy issues and systems in terms of current sustainability thinking or those intending to specialize in this subject, would benefit from this course.

Expected Learning Outcomes:

By the end of this course, students will be able to:

- Articulate general sustainability concepts
- Discuss the issues of social justice and political culture related to energy
- Explain the importance of quantitative analyses
- Perform simple quantitative evaluations of alternatives
- Describe different system resilience assessment methods: structural, performance and hybrid
- Describe studies on sustainability assessment of energy products, pathways and systems

4. Grade Policies

Grading system used: A (94-100%), A- (90-94), B+ (87-89), B (83-86), B- (80-82), C+ (76-79), C (70-75), D (60-69), E (<60), XE (failure due to academic dishonesty).

The final grade will be assigned on the basis of the following categories and indicated weights:

- Assignments (15 nos.)) AssM n mm) ue 9 e !

- Boyle J., B. Everett and J. Ramage, 2012. *Energy Systems and Sustainability: Power for a*

are expected to adhere to both the ASU Academic Integrity [Honor Code](#) and the Fulton Schools of Engineering [Honor Code](#). All academic integrity violations will be reported to the Fulton Schools of Engineering Academic Integrity Office (AIO). The AIO maintains record of all violations and has access to academic integrity violations committed in all other ASU college/schools.

Specific academic integrity rules for this class are as follows: I sanction any incidents of academic dishonesty in my courses using University guidelines. Should you have any question about whether or not something falls subject to this clause, feel free to contact me or review the university policy on academic integrity at the above link. Per ASU policy, a student may not avoid the consequences of academic dishonesty by withdrawing from a course, and may be placed back in the course in order to face sanctions resulting from academic integrity violations. You are responsible for abiding by this policy.

Copyright

Course content, including lectures, are copyrighted materials and students may not share outside the class, upload to online websites not approved by the instructor, sell, or distribute course content or notes taken during the conduct of the course (see [ACD 304-06](#), “Commercial Note Taking Services” and ABOR Policy [5-308 F.14](#) for more information).

You must refrain from uploading to any course shell, discussion

11. Harassment and Sexual Discrimination

Arizona State University is committed to providing an environment free of discrimination, harassment, or retaliation for the entire university community, including all students, faculty members, staff employees, and guests. ASU expressly prohibits discrimination, harassment, and retaliation by employees, students, contractors, or agents of the university based on any protected status: race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, and genetic information.

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <https://sexualviolenceprevention.asu.edu/faqs>.

Mandated sexual harassment reporter: As an employee of the University I am considered a mandated reporter and therefore obligated to report any information regarding alleged acts of sexual discrimination that I am informed of or have a reasonable basis to believe occurred.

ASU Counseling Services, <https://eoss.asu.edu/counseling>, is available if you wish to discuss any concerns confidentially and privately.

12. Other Items

Syllabus changes: Any information in this syllabus (other than grading and absence policies) may be subject to change with reasonable advance notice.

How Long Students Should Wait for an Absent Instructor: In the event the instructor fails to indicate a time obligation, the time obligation will be 15 minutes for class sessions lasting 90 minutes or less, and 30 minutes for class sessions lasting more than 90 minutes. Students may be directed to wait longer by someone from the academic unit if they know the instructor will arrive shortly.