UF Herbert Wertheim College of Engineering
UNIVERSITY of FLORIDA

Dept. of Environmental Engineering Sciences

EES 3008 Energy and Environment / EES6007 Adv. Energy and Environment

INSTRUCTOR: Katherine Y Deliz Quiñones
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Preferred email: CANVAS

OFFICE HOURS: T & W 7th Period (1:55-2:45PM)

MEETING TIME: Lecture: asynchronous
Synchronous Q/A sessions: Tuesday Period 11 (6:15-7:05PM)

MEETING ROOM: *Due to the unique circumstances surrounding the covid-19 pandemic, this course will be offered via remote instruction. Please know that your course instructor has worked hard to make sure you will have an outstanding learning experience—even if online courses are not your favorite. The lecture will be asynchronous, but you will have the opportunity to attend synchronous Q&A sessions, office hours and group meetings.*

FERPA: *Aspects of this course may be recorded for students in the class to revisit. If you participate with your camera engaged or utilize a profile image, you are agreeing to have yourself/image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded, you will need to keep your mute button activated and communicate using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.*

COURSE DESCRIPTION: This course introduces and examines the fundamentals of energy sources, energy use, energy efficiency, and resulting environmental implications.

COURSE PRE-REQUISITES: Craving to learn!

REQUIRED TEXTBOOK AND SOFTWARE:
- Textbook title: Energy and the Environment, 3rd edition. Published on 2016.
- Authors: Robert A. Ristinen, Jack J. Kraushaar, and Jeffrey Brack
- Software: computer with internet access, equipped with a word processor, and power point.

COURSE FORMAT: Each week, you will participate in two types of learning activities:

- LECTURE: you will need to watch the pre-recorded lecture videos posted in CANVAS for each week. In addition, students can choose to attend "live" Q/A sessions via zoom on Thursdays from 102:50 – 1:40PM. These sessions will be used to clarify any questions participating students might have from the pre-recorded lectures, including practice problems.

- COLLABORATIVE MEETINGS: Although this class will be held online, engaging with your classmates is mandatory. You will be placed into groups of ~2-5 students within the first week of class and it will be up to you, as a group, to determine when you will meet (via zoom) each week to work on discussion-based questions and learning activities, and final project.

COURSE LEARNING OBJECTIVES: After completion of this course, you should be able to,
- Recognize the limitations of metrics used in comparing energy sources
- Explain differences in energy cost, energy intensity and environmental impacts arising from each energy source
- Understand the conflicting evidence regarding benefits of emerging alternatives compared to current energy sources
- Learn the principal ways new energy alternatives are being promoted in an effort to make our energy system more sustainable
- Design and present a persuasive argument advocating a policy, scientific study, or business initiative related to an energy source.

STUDENT RESPONSIBILITIES AND ATTENDANCE POLICY: You are expected to,
- review pre-recorded lecture videos prior to QA sessions
- attend to a minimum of 50% of the QA sessions
- complete assigned readings before the end of each unit/module
- attend weekly collaborative meetings with your assigned group members. You are permitted two absences for these meetings—no questions asked. Beyond two absences, students will receive a 2% lab grade deduction per absence. Groups are encouraged to accommodate one another's schedules as much as possible, but are not obligated to change days/times regularly to do so—unless this is the group's original arrangement (i.e., your group arranged to determine what will work for you each week rather than selecting a set day/time to commit to each week).

PERSONAL CONDUCT POLICY: Students are expected to exhibit behaviors that reflect highly upon themselves and our University:
- Read and refer to the syllabus
- Arrive to group meetings and QA sessions on time (i.e., a few minutes early)
- Use professional, courteous standards for all emails and discussions:
  - Descriptive subject line
  - Address the reader using proper title and name spelling
  - Body of the email should be concise but have sufficient detail
  - Respectful salutation (e.g., cheers, thank you, sincerely, respectfully)
- No personal conversations and social media during QA sessions/instruction times
- Adherence to the UF Student Honor Code: *https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/*
  - UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."
  - Honor code violations of any kind will not be tolerated and sanctions will be determined by the course instructor for first-time violators
  - All allegations, regardless of the severity, will be reported to the Dean of Students Office for University-level documentation and processing.
- Obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

MAKE-UP POLICY: To schedule a make-up, please fill out the make-up request form posted in the CANVAS "Start Here module" ahead of time and submit it to your course instructor via CANVAS email. Documentation will be required and should accompany your make-up request form. In case of last-minute illness or emergency, please contact the instructor via email, or phone explaining the situation. If you have a serious emergency or life event, please contact the Dean of Students Office (www.dso.ufl.edu) and they will contact all your instructors for you – which would serve as "documentation."

If you have an unexcused, missed assessments/assignments, you will earn a zero and will not be granted a make-up. While make-ups are given at the discretion of the instructor, requirements for make-up assignments are consistent with the university policies. These can be found at *https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx*.

STUDENTS REQUIRING ACCOMMODATIONS: Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, *https://www.dso.ufl.edu/drc*) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation and discussing their access needs. Students with disabilities should follow this procedure as early as possible in the semester.

COURSE EVALUATION: Students are expected to provide constructive and respectful feedback on the quality of instruction in this course by completing online evaluations via GatorEvals. Guidance on how to give professional and respectful feedback is available at *https://gatorevals.aa.ufl.edu/students/*. Students will be notified when the evaluation period opens, typically during the last two or three weeks of the semester. Summaries of the course evaluation results are available to students at *https://evaluations.ufl.edu/results/*.

COMMITMENT TO A SAFE AND INCLUSIVE LEARNING ENVIRONMENT: The Herbert Wertheim College of Engineering (HWCOE) values a diverse and inclusive community. It is integral to success in every area of our college. Therefore, the College is committed to non-discrimination with respect to all areas of human differences, including but not limited to national and ethnic origin, race, age, sex, sexual orientation, gender identity and expression, beliefs and opinions, religion and faiths, culture, socio-economic background, level of physical or mental ability, and veteran's status. This commitment applies in all areas—to students, faculty, and staff and intends to reflect the College's belief that educational and employment decisions and access to University activities should be based on an individual's abilities and qualifications.

The HWCOE values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. We aspire to educate students to become future leaders capable of creating diverse and inclusive work cultures wherever their careers may take them.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor. Those of you in engineering can also contact any of the following:
- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, *rbielling@eng.ufl.edu*
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, *taylor@eng.ufl.edu*
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, *nishida@eng.ufl.edu*

If you are not in engineering, you can contact either Director of Human Resources, Associate Dean of Student Affairs and/or Associate Dean of Academic Affairs of your College.

CAMPUS RESOURCES: UF has available resources on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

HEALTH AND WELLNESS

- **U Matter, We Care:** Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.
- **Counseling and Wellness Center:** *http://www.counseling.ufl.edu/cwc*, and 392-1575.
- **Sexual Discrimination, Harassment, Assault, or Violence:** If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the Office of Title IX Compliance, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, *title-ix@ufl.edu*
- **Sexual Assault Recovery Services (SARS):** Student Health Care Center, 392-1161.
- **University Police Department:** at 392-1111 or 9-1-1 for emergencies, or *http://www.police.ufl.edu/*.

ACADEMIC RESOURCES

- **E-learning technical support:** 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. *https://lss.at.ufl.edu/help.shtml*. Information on CANVAS tools is available via the Student Intro to ELS link at *http://lss.at.ufl.edu*.
- **Career Resource Center:** Reitz Union, 352-392-1601. Career assistance and counseling. *https://www.crc.ufl.edu/*.
- **Library Support:** *http://cms.uflib.ufl.edu/ask*. Various ways to receive assistance with respect to using the libraries or finding resources.
- **Teaching Center:** Broward Hall, 352-392-2010 or 352-392-6420. General study skills and tutoring. *https://teachingcenter.ufl.edu/*.
- **Writing Studio:** 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. *https://writing.ufl.edu/writing-studio/*.
- **Student Complaints Campus:** *https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf*.
- **On-Line Students Complaints:** *http://www.distance.ufl.edu/student-complaint-process*.

GRADING: The following tables outline the point-accruing components of both EES3008 and EES6007 course.

Assignments	% Grade EES 3008	% Grade EES 6007
End of Module Assessments (4)	40	50
In-lecture Assessments and Quizzes (8-10)	20	15
Attendance/Participation	15	5
Final Project	25	30

- **GRADING END OF MODULE ASSESSMENT:** You will take an open- notes assessment for each module covered in lecture. These assessments will be CANVAS quizzes with predominantly multiple choice, fill in the blank, matching, true/false, and short essay questions. Students should expect to APPLY what they are learning, not simply regurgitate information. The assessments will open Monday morning and close Friday evening—allowing students a fair window of time for exam scheduling. Students are not permitted to share their answers to assessment questions with classmates – all honor code violations will be reported.

- **GRADING LECTURE PARTICIPATION & AND IN-LECTURE ASSESSMENTS:** You can earn participation points each week by attending and participating in synchronous QA sessions and answering "Stop & Think" questions embedded within some lecture videos. There are 14 Q/A sessions scheduled this semester and you are expected to participate in a minimum of seven (50%), to get full credit in participation. <u>Below 50% Q/A session attendance students will get a 2% deduction on the grade</u>. While graduate students are welcome to join the QA sessions, these will not count towards the final grade. Some of the "Stop & Think" in-lecture assessments will be graded for accuracy, and count as a separate in-lecture assessment grade.

- **GRADING FINAL PROJECT:** undergraduate students will work in teams and graduate students will work independently to design and present a persuasive argument advocating a policy, scientific study, or business initiative related to an energy source. This project will be divided in two components: and oral presentation and a paper. You will have an opportunity to accrue points towards this assignment by submitting scheduled progress reports (e.g. topic, rationale, objectives, references). Progress reports will count 10% of the final project grade, the oral presentation will count 30% for undergraduates and 40% for graduate students, the paper will count 50% of the grade and the other 10% of the grade for undergraduate students will be given by your teammates based on your contribution to team work.

GRADING SCALE AND POLICY: In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit: *https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx*.

All grades will be posted in the CANVAS gradebook. Any discrepancies with points displayed in the gradebook should be pointed out to the instructor before the last day of class (prior to reading days). There is no curve for this course but grades will be rounded to the next integer (e.g. 89.5% = 90% and 89.4% = 89%).

STUDENT PRIVACY: There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: *https://registrar.ufl.edu/ferpa.html*.

Grading scale used in this course:

Percent	Grade
94 – 100	A
90 – 93	A-
86 – 89	B+
83 – 85	B
80 – 82	B-
76 – 79	C+
73 – 75	C
70 – 72	C-
66 – 69	D+
63 – 65	D
60 – 62	D-
0 – 59	E

TENTATIVE COURSE SCHEDULE

WEEK #	LECTURE TOPICS	CHAPTERS
1	▪ Course Introduction	
Module 1 : Fundamentals of Energy, Energy Use and Energy Systems Analysis		
1	▪ High Energy Society	1
2	▪ Energy Fundamentals ▪ Energy Use	1
3	▪ Energy and Heat	
4	▪ Energy Systems Analysis Methodologies	--
Module 2: Nonrenewable Energy Sources		
5-6	▪ Carbon Cycle and Fossil Fuel Resources ▪ Environmental Impacts of Fossil Fuels and Policy Issues	2
6-7	▪ Fundamentals of Nuclear Energy Environment ▪ Environmental Impacts of Nuclear Energy and Policy Issues	6

WEEK #	LECTURE TOPICS	CHAPTERS
Module 3: Renewable Energy Sources – Solar and Wind		
8-9	▪ Introduction to Renewable Energy Resources ▪ Fundamentals of Solar Energy ▪ Environmental Impacts of Solar Energy and Policy Issues	4
10	▪ Fundamentals of Wind Energy ▪ Environmental Impacts of Wind Energy and Policy Issues	4, 5.3
Module 4: Renewable Energy Sources – Water, Thermal and Biomass		
11-12	▪ Fundamentals of Hydropower, Tidal Energy, and Wave Energy ▪ Fundamentals of Geothermal, and Ocean Thermal Energy ▪ Environmental Impacts and Policy Issues	5.2, 5.3, 5.8, 5.9, 5.10
13	▪ Biofuels & the Environment ▪ Looking in to the Future: Energy Sustainability & Emerging Technologies	5.5, 5.6, 5.7
14-15	▪ **Final Project Presentation** ▪ Design and present a persuasive argument advocating a policy, scientific study, or business initiative related to an energy source.	--
Finals	▪ **Final Paper**	