

Instructor: Xiaohua Li
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Lecture Time: Tu & Th 2:30 p.m.-3:50 p.m. room B190 (section .001)
Tu & Th 4:00 p.m.-5:20 p.m. room B142 (graduate)
Instructor Office Hours: Open Office Policy. MWF, 11:30 a.m.-1:30 p.m. or by appointment

Required Textbook: Principles of Sustainable Energy Systems,
Frank Kreith and Susan Krumdieck
ISBN#13:978-1-4665-5696-6, 2014, CRC Press (Taylor & Francis)

Course Description:

3 hours. This lecture & project based summer course will cover the following topics: introduction to sustainable energy, economics of energy generation and conservation Systems, wind energy, capturing solar energy through biomass, fundamentals of solar radiation, photovoltaics, and solar heating and cooling of buildings.

Prerequisite(s): MEEN 3110 Thermodynamics II and MEEN 3210 Heat Transfer

Course Learning Outcomes (CLO):

Upon successful completion of this course, students will able to:

1. Understanding the definition, scope and limitation of energy, sustainability and their measures
2. Identify various energy resources: renewable and non-renewable
3. Conduct thermodynamic analysis and energy system analysis
4. Recognize the limits of fossil fuels and fossil energy
5. Estimate the advantage and disadvantage of biomass energy, geothermal energy and hydropower
6. Analyze the potential and obstacles for utilizing solar and wind energy
7. Recognize the potential and obstacles for ocean energy and nuclear energy
8. Identify energy conservation strategies
9. Perform building energy utilization analysis using software

ABET Student Learning Outcomes (SO)

- a Ability to apply mathematics, science and engineering principles.
- b Ability to design and conduct experiments, analyze and interpret data.
- c Ability to design a system, component, or process to meet desired needs.
- d Ability to function on multidisciplinary teams.
- e Ability to identify, formulate and solve engineering problems.
- f Understanding of professional and ethical responsibility.
- g Ability to communicate effectively.
- h The broad education necessary to understand the impact of engineering solutions in a global and societal context.
- i Recognition of the need for and an ability to engage in life-long learning.
- j Knowledge of contemporary issues.
- k Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

CLO	ABET Student Outcomes (SO)										
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1	X				X			X		X	
2	X				X			X		X	
3	X				X						
4	X				X			X		X	
5	X				X			X		X	
6	X				X			X		X	
7	X				X			X		X	
8	X				X			X		X	
9	X				X						

Grades: Homework (5)	20%	≥ 90%	A
Quizzes (highest 3/5)	20%	80-89.9%	B
Exam 1	20%	70-79.9%	C
Exam 2	20%	60-69.9%	D
Project & Presentation	20%	< 60%	F
<u>Attendance (5 out of 6)</u>	5%		
Total	105%		

Homework Policy:

1. **“Homework Day”**: **Thursday**, the day new homework will be assigned (HW will be posted in Blackboard) and previous homework will be collected;
2. Homework should be turned in on the due day before the lecture starts. **NO late homework will be collected. Exceptions:** medical emergence (student and important ones), transportation/traffic emergency; religious holidays/duty, jury duty and military duty. **Documentary evidences** must be submitted.
3. Definition of **“late”**: when class is over and instructor steps outside the classroom, homework turned in thereafter will be considered as **“late”** and will not be collected
4. Solutions to Homework will be posted in Blackboard after 5:20 pm Thursday
5. Having no textbook is not a valid excuse for not doing homework. It is the student’s responsibility to acquire textbook for his/her study
6. Homework can be turned in earlier than the due day
7. Homework dropped in the instructor’s departmental mailbox will NOT be collected
8. Homework slid through the door into the instructor’s office will NOT be collected
9. Homework dropped in the “homework dropbox” in front of the department door will NOT be collected
10. Homework turned in other than the due day or outside classroom must be turned in to instructor either IN PERSON or through EMAIL.
11. If homework is turned in through email, it should be scanned (or pictured by a smart phone) and emailed to instructor before the class ends (12:50p.m. for section #1 and 11:20am for section #2)
12. Homework should be stapled. Instructor or TA will not be responsible for lost loose homework pages.

Exams and Quizzes:

- (1) **Quizzes are open book and open notes.**
- (2) **Exams are closed book and closed notes with formula sheets.**
- (3) **Using Smart phone and/or Internet during the exam is prohibited.**
- (4) Formula sheets could be maximum 5 pages **on top of** instructor's handouts, A4 or letter size, both sides
- (5) **Student is responsible for preparing his/her own formula sheets**
- (6) Formula sheets could include anything **BUT: solutions of any kind/format** (numerical or symbolic) to homework problem or lecture/textbook examples. Student who failed to follow this rule will score zero in the exam and this cheating matter will be reported to MEE department and University.
- (7) Formula sheets must be turned in with the exam papers (in the case of formula sheets were not checked by the instructor during the exam). Student who failed to follow this rule will score zero in the exam and this cheating matter will be reported to MEE department and university
- (8) **There will be NO make-up quiz. Exceptions:** medical emergence (student and important ones), transportation/traffic emergency; religious holidays/duty, jury duty and military duty. **Documentary evidences** must be submitted.
- (9) **There will be NO make-up exam. Exceptions:** medical emergence (student and important ones), transportation/traffic emergency; religious holidays/duty, jury duty and military duty. **Documentary evidences** must be submitted.
- (10) All make-up quizzes and exams should be completed within one week after the regular quizzes and exams.

Disability Accommodations: If you need academic accommodations for disability you must have document which verifies the disability and makes you eligible for accommodations, then you can schedule an appointment with the instructor to make appropriate arrangements.

Academic Dishonesty:

There is a zero tolerance policy. Cheating of whatsoever will result in an automatic 'F' in this course and the matter will be turned over to the appropriate student disciplinary committee.

IMPORTANT EXAM DATES

Exam #1 (tentative): Feb. 21st, Tuesday

Exam #2 (tentative): Apr.14th, Tuesday

Final Project reports due: 11:59 pm, Thursday, May 11, 2017

UNT Official Academic Calendar: Spring 2017

January 16, 2017	MLK Day (no classes; university closed)
January 17, 2017	First Class Day
March 13-19, 2017	Spring Break (no classes)
May 3-4, 2017	Pre-finals Days
May 4, 2017	Last Class Day
May 5, 2017	Reading Day (no classes)
May 6-11, 2017	Finals

MEEN 4110/5110 Alternative Energy Sources
Schedule Overview (Subject to change)

Week	Date	Lecture Topics
#1	Jan.16 th - Jan.20 th	Overview of syllabus Introduction to Sustainable Energy
#2	Jan.23 rd - Jan.27 th	Introduction to Sustainable Energy (cont.) Economics of Energy Generation and Conservation Systems
#3	Jan.30 th - Feb.3 rd	Economics of Energy Generation and Conservation Systems (cont.) Economics of Energy Generation and Conservation Systems (cont.) (Quiz #1)
#4	Feb.6 th - Feb.10 th	Fundamentals of Solar Radiation; Fundamentals of Solar Radiation; (cont.)
#5	Feb.13 rd - Feb.17 th	Fundamentals of Solar Radiation; (cont.) Fundamentals of Solar Radiation; (cont.) (Quiz #2)
#6	Feb.20 th - Feb.24 th	Exam #1 Feb. 23rd, Thursday, Engineering Career Fair 10am-3pm. No Class. Dress up and bring your resume
#7	Feb.27 th - Mar.3 rd	Photovoltaic Photovoltaic (cont.)
#8	Mar.6 th - Mar.10 th	Photovoltaic (cont.) Photovoltaic (cont.) (Quiz #3)
#9	Mar.13 th - Mar.17 th	Spring Break. University closed. NO Classes/Lectures
#10	Mar.20 th - Mar.24 th	Solar Heating and Cooling of Buildings Solar Heating and Cooling of Buildings (cont.) (Quiz #4)
#11	Mar.27 th - Mar.31 st	Wind Energy Wind Energy (cont.)
#12	April 3 rd - April 7 th	Wind Energy (cont.) Wind Energy (cont.)
#13	April 10 th - April 14 th	Exam #2 Capturing Solar Energy through Biomass
#14	April 17 th - April 21 st	Capturing Solar Energy through Biomass(cont.) Energy Storage
#15	April 24 th - April 28 th	Energy Storage(cont.) (Quiz #5) Student project presentation
#16	May 1 st - May 5 th	Student project presentation Student project presentation
#17	May 6 th - May 11 th	Project reports Due 11:59 pm, Thursday, May 11, 2017

Link for **Spring 2017 Final Exams - Discovery Park**
<http://registrar.unt.edu/exams/final-exam-schedule/spring>
Spring 2017 Final Exams - Discovery Park

Pre-finals days are Wednesday, May 3 - Thursday May 4.

Reading Day is May 5 and no classes will meet.

Saturday, May 6	
This class...	Has a final exam at this time...
All Saturday classes & All INET Classes with On Campus Finals	Contact Department
MWF 10:30 a.m.	8:00 a.m. - 10:00 a.m.
MWF 1:30 p.m.	10:30 a.m. - 12:30 p.m.
MWF 4:30 p.m.	1:30 p.m. - 3:30 p.m.
F 2:30 p.m. - 5:20 p.m.	1:30 p.m. - 3:30 p.m.
Monday, May 8	
This class...	Has a final exam at this time...
MWF 8:30 a.m.	8:00 a.m. - 10:00 a.m.
MWF 11:30 a.m.	10:30 a.m. - 12:30 p.m.
MWF 2:30 p.m.	1:30 p.m. - 3:30 p.m.
M 2:30 - 5:20 p.m.	1:30 p.m. - 3:30 p.m.
MW 2:30 p.m. - 3:50 p.m.	1:30 p.m. - 3:30 p.m.
Tuesday, May 9	
This class...	Has a final exam at this time...
TR 8:30 a.m.	8:00 a.m. - 10:00 a.m.
TR 11:30 a.m.	10:30 a.m. - 12:30 p.m.
TR 2:30 p.m.	1:30 p.m. - 3:30 p.m.
T 2:30 p.m. - 5:20 p.m.	1:30 p.m. - 3:30 p.m.
Wednesday, May 10	
This class...	Has a final exam at this time...
MWF 9:30 a.m.	8:00 a.m. - 10:00 a.m.
MWF 12:30 p.m.	10:30 a.m. - 12:30 p.m.
MWF 3:30 p.m.	1:30 p.m. - 3:30 p.m.
W 2:30 p.m. - 5:20 p.m.	1:30 p.m. - 3:30 p.m.
MW 4:00 p.m. - 5:20PM	1:30 p.m. - 3:30 p.m.
Thursday, May 11	
This class...	Has a final exam at this time...
TR 10:00 a.m.	8:00 a.m. - 10:00 a.m.
TR 1:00 p.m.	10:30 a.m. - 12:30 p.m.
TR 4:00 p.m.	1:30 p.m. - 3:30 p.m.
R 2:30 p.m. - 5:20 p.m.	1:30 p.m. - 3:30 p.m.

Document History: Dr. Xiaohua Li, 1/16/2017