

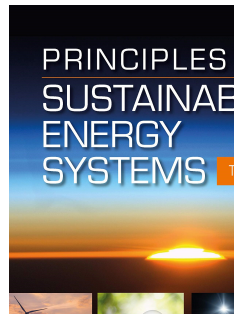
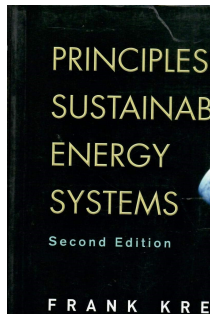
**Instructor:** Xiaohua Li  
**Phone:** 940-369-8020

**Office:** NTDP F101G  
**Email:** xiaohua.li@unt.edu

**Lecture Time:** Tu & Th 5:00 p.m.-6:20 p.m. K120

**Office Hours:** Open Office Policy; or by appointment

**Required Textbook:** Principles of Sustainable Energy Systems 3<sup>rd</sup> Edition (or 2<sup>nd</sup> Edition)  
Frank Kreith and Susan Krumdieck  
ISBN#13:978-1-4665-5696-6, 2014, CRC Press (Taylor & Francis)



**Course Description:**

3 hours. This lecture and project-based 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

<b>Grades:</b> Homework (5)	10%	≥ 90%	A
Quizzes (highest 3/5)	10%	80-89.9%	B
Exam 1 (in class)	20%	70-79.9%	C
Exam 2 (in class)	20%	60-69.9%	D
Term Project/Presentation	20%	< 60%	F
Class Attendance	20%		
<b>Total</b>	<b>100%</b>		

**Calculator Policy:**

The use of a calculator is required and allowed on all homework, exams and quizzes. Calculators with graphing capabilities will be allowed in the course for homework and quizzes. However, only calculators currently allowed in the Fundamentals of Engineering (FE) and Professional Engineering (PE) exams will be allowed in ALL EXAMS. **NO other calculators will be approved for exams.** Please refer to the National Council of Examiners for Engineering and Surveying (NCEES) calculator policy for the list of acceptable calculators.

**Casio:** All **fx-115** and **fx-991** models (Any Casio calculator must have “fx-115” or “fx-991” in its model name.)

**Hewlett Packard:** The **HP 33s** and **HP 35s** models, but no others

**Texas Instruments:** All **TI-30X** and **TI-36X** models (Any Texas Instruments calculator must have “TI-30X” or “TI-36X” in its model name.)

### **Homework Policy:**

1. “Homework Day”: **Thursday**. the day new homework will be assigned (HW assignment will be posted in Canvas) and previous homework will be collected;
2. Homework should be turned in before the deadline through **canvas** (5:00pm). **NO late homework will be collected, accepted or graded.** (Canvas window will be automatically closed)

**Exceptions:** refer to UNT Policies 06.039.

An absence may be excused for the following reasons:

- ❖ religious holy day, including travel for that purpose;
- ❖ active military service, including travel for that purpose;
- ❖ participation in an official university function;
- ❖ illness or other extenuating circumstances;
- ❖ pregnancy and parenting under Title IX; and
- ❖ when the University is officially closed.

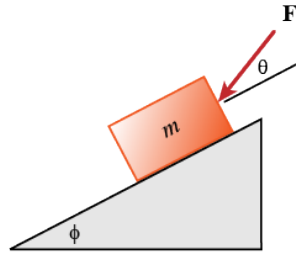
**Procedure: Please request accommodations/exceptions through UNT “Dean of Students Office”**

3. Solutions to Homework Assignments will be available in Canvas after HW has been collected.
4. 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
5. All homework assignments should be turned in through Canvas. There will be a window/link in canvas open for submitting HW.
6. Homework solutions from the students that appear to be the same or copied from a peer will not be graded. You can work with classmates if you have questions or problems, but you are responsible for your own work!

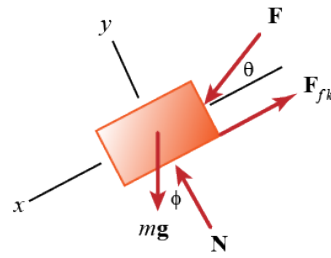
### **Format of Homework:**

- (1) Use engineering paper only (**noncompliance: 10 points off; cumulative**)
- (2) Only solve one problem per page of engineering paper (**noncompliance: 10 points off; cumulative**). You may extend that problem into another page but then should begin the next problem on a new page if you require more room. If more than one page is needed for a solution you should number each page and the first page should be marked with a “continued on next page” note on the bottom.
- (3) Done in pencil, no ink. (**noncompliance: 10 points off; cumulative**)
- (4) No cross outs, use an eraser. (**noncompliance: 10 points off; cumulative**)
- (5) **Free-body diagrams (FBD) – WHEN NECESSARY/NEEDED**, Draw a neat FBD that includes arrows with arrowheads, necessary dimensions, and parameters needed to solve the problem  
(**noncompliance: problem/HW will NOT be graded; no points will be honored**)

**Example:**



Problem Statement

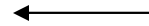


F.B.D

- (6) **Solution** – provide all the details so that anybody can easily follow your solutions and problem-solving approach. All intermediate values should be identified with the variable name and units (e.g.,  $F_1=50\text{ N}$ ;  $X_c = 2.1\text{ m}$ ). **(noncompliance: 10 points off; cumulative)**
- (7) **Answer** – the **Final Answer** at the end of the problem should be identified with the **variable name, include units, and inside a box**. Include an arrow (from the far right side of the page) pointing to each final answer. **(noncompliance: 10 points off; cumulative)**

**Example:**

$$F_1 = 50\text{ N}$$



**Exam and Quiz Policy:**

- (1) Exams and quizzes will be announced in advance; **Exams are closed book with student-prepared formula sheets (max 5 pages; A4 size; both sides).**
- (2) Calculator: **ONLY** FE exam approved calculator models allowed  
Casio: All fx-115 and fx-991 models;  
Hewlett Packard: The HP 33s and HP 35s models;  
Texas Instruments: All TI-30X and TI-36X models;
- (4) Exchanging (either borrowing or giving) ANYTHING without the approval from the proctor, including but not limited to, calculators/scratch papers/formula sheets/thermodynamics tables/writing tools during the exam between/among students is prohibited and considered as cheating.
- (6) Using cell PHONE for WHATEVER purpose during the exam is prohibited and considered as cheating.
- (7) Using Internet through any device during the exam is prohibited and considered as cheating.
- (8) Peeking, talking or discussing (either by oral/written/sign language) between/among students during the exam is prohibited and considered as cheating.
- (9) Using any type of earpiece/earbuds/earphone/Bluetooth/Stereo Headset (except with doctor's prescription/notes) during the exam is prohibited and considered as cheating.
- (10) Using any type of smart glasses (except with doctor's prescription/notes) during the exam is prohibited and considered as cheating.
- (11) Using any type of smart watches during the exam is prohibited and considered as cheating.
- (12) Cheating will result in SCORE ZERO in the exam

- (13) Cheating will be reported to the Department, College and University
- (14) There will be NO make-up exam.

**Exceptions:** refer to UNT Policies 06.039.

**Procedure for Exceptions:** Please request accommodations/exceptions through UNT “Dean of Students Office”

- (15) Makeup exam should be scheduled within one week after the regular exam date.

**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.

**Professionalism:**

One of the goals of this course is to teach students about professionalism, including the standards and expected behavior of your chosen profession. With this in mind, students are expected to demonstrate a behavior consistent with the conduct of an individual practicing in the engineering profession. Students are expected to: (1) come prepared for class; (2) respect faculty and peers; (3) demonstrate responsibility and accountability for your own actions; (4) sensitivity and appreciation for diverse cultures, backgrounds, and life experiences; (5) offer and accepts constructive criticism in a productive manner; (6) demonstrate an attitude that fosters professional behavior among peers and faculty; (7) be punctual to class meetings; (8) maintain a good work ethic and integrity; and (9) recognize the classroom as a professional workplace.

**Classroom Inclusivity Statement**

I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

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**UNT Official Academic Calendar: Spring 2024**

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<b>January 16, 2024</b>	<b>First class day</b>
<b>March 11-17, 2024</b>	<b>Spring break (no classes)</b>
<b>May 1-2, 2024</b>	<b>Pre-finals days</b>
<b>May 2, 2024</b>	<b>Last regular class meeting</b>
<b>May 4, 2024</b>	<b>Reading day (no classes)</b>
<b>May 4-10, 2024</b>	<b>Final examinations</b>

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

<b>Week</b>	<b>Date</b>	<b>Lecture Topics</b>
#1	Jan.15 - Jan.19	Overview of syllabus Introduction to Sustainable Energy
#2	Jan.22 - Jan.26	Introduction to Sustainable Energy (cont.) Economics of Energy Generation and Conservation Systems
#3	Jan.29 – Feb.2	Economics of Energy Generation and Conservation Systems (cont.) Economics of Energy Generation and Conservation Systems (cont.)
#4	Feb.5– Feb.9	Fundamentals of Solar Radiation; Fundamentals of Solar Radiation; (cont.)
#5	Feb.12– Feb.16	Fundamentals of Solar Radiation; (cont.) Fundamentals of Solar Radiation; (cont.)
#6	Feb.19– Feb.23	<b>Exam #1</b> Photovoltaic
#7	Feb.26– Mar.1	Photovoltaic (cont.) Photovoltaic (cont.)
#8	Mar. 4– Mar.8	Photovoltaic (cont.) Solar Heating and Cooling of Buildings
#9	Mar. 11– Mar.15	Spring break (no classes)
#10	Mar. 18– Mar.22	Solar Heating and Cooling of Buildings (cont.) Wind Energy
#11	Mar. 25– Mar. 29	Wind Energy (cont.) Wind Energy (cont.)
#12	Apr. 1– Apr. 5	Wind Energy (cont.) <b>Exam #2</b>
#13	Apr. 8 – Apr. 12	Capturing Solar Energy through Biomass Capturing Solar Energy through Biomass(cont.) Energy Storage
#14	Apr. 15 – Apr. 19	Energy Storage(cont.) <b>Student project presentation</b>
#15	Apr. 22– Apr. 26	<b>Student project presentation</b> <b>Student project presentation</b>
#16	Apr.29 – May 3	<b>Student project presentation</b> <b>Student project presentation</b>
#17	May 4– May 10	<b>Student project presentation</b>

**Document History:** Dr. Xiaohua Li, 1/17/2023; 1/15/2024