

Instructor: Xiaohua Li
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Lecture Time: Tu & Th 10:30 p.m.-12:20 p.m. room D215
Office Hours: MTWTH: 3:00 p.m.-5:00 p.m. plus open office policy

Required Textbook: Introduction to Heat Transfer, 6th edition
Incropera, DeWitt, Berman, & Lavine
ISBN-13: 978-0-470-50196-2

Course Description:

3 hours. A basic course covers the fundamentals of heat transfer by conduction, convection and radiation, together with applications to typical engineering systems. Topics include one- and Two-dimensional steady state heat conduction, transient heat conduction, internal convection, external convection, and natural convection

Pre-requisites: MEEN 3120 Fluid Mechanics.

Course Learning Outcomes (CLO):

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

1. Apply conservation of mass, momentum, and energy to heat transfer problems.
2. Understand the concepts of one-dimensional steady-state heat conduction.
3. Understand the concepts of multi-dimensional steady-state heat conduction.
4. Understand the concepts of transient heat conduction.
5. Use thermal Ohm's law (thermal circuits) to solve heat transfer problems.
6. Understand the concepts of internal forced convection for both laminar and turbulent flows.
7. Understand the concepts of external forced convection for both laminar and turbulent flows.
8. Understand the concepts of natural convection.
9. Understand the basic theory behind radiation heat transfer.

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						
2	X				X						
3	X				X						
4	X				X						
5	X				X						
6	X				X						
7	X				X						
8	X				X						
9	X				X						

Grades: Homework (10)	10%	$\geq 90\%$	A
Quizzes (highest 3/4)	10%	80-89.9%	B
Exam 1(Ch 1, 2, 3)	25%	70-79.9%	C
Exam 2 (Ch 4, 5, 6)	25%	60-69.9%	D
Exam 3 (Ch 7, 8, 9)	25%	< 60%	F
<u>Attendance (5/6)</u>	<u>5%</u>		
Total	100%		

Homework Policy:

1. Homework should be turned in on the due day before the lecture starts. **NO late homework will be collected, NO EXCEPTIONS**
2. 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
3. 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
4. Homework can be turned in earlier than the due day
5. Homework dropped in the instructor’s departmental mailbox will NOT be collected
6. Homework slid through the door into the instructor’s office will NOT be collected
7. Homework dropped in the “homework dropbox” in front of the department door will NOT be collected
8. Homework turned in other than the due day or outside classroom must be turned in to instructor either IN PERSON or through EMAIL.
9. If homework is turned in through email, it should be scanned (or a picture by smart phone) and emailed to instructor before the class ends (3:50p.m.)
10. Homework should be stapled, instructor or TA will not be responsible for lost loose homework
11. Exceptions (late homework will be collected): medical emergence (student and important ones), transportation/traffic emergency; religious holidays/duty, jury duty and military duty. **Documentary evidences** must be submitted.

Exams and Quizzes:

- (1) Quizzes are open book and open notes
- (2) **Exams are closed book and closed notes with formula sheets.**
- (3) Formula sheets could be maximum 5 pages on top of instructor's handouts, A4 or letter size, both sides
- (4) Each student is responsible for preparing his/her own formula sheet
- (5) Formula sheets could include anything BUT: solutions to homework or 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.
- (6) 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
- (7) **There will be NO make-up quiz, NO EXCEPTIONS**
- (8) **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.

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; depends on when chapter 3 is finished; Covers Ch 1, 2 & 3):

July 7th, 2015, Tuesday, 10:30 p.m.-12:20 p.m. room D215

Exam #2 (tentative; depends on when chapter 6 is finished; Covers Ch 4, 5 & 6):

July 28th, 2015, Tuesday, 10:30 p.m.-12:20 p.m. room D215

Exam #3 (UNT official final exam schedule, Covers Ch 7, 8 & 9):

August 14th, 2015, Friday, 10:30 p.m.-12:20 p.m. room D215

UNT Official Academic Calendar: Summer 2015 - 10W Term

Date	Event
June 8, 2015	First Class Day
July 4, 2015	Independence Day (no classes: university closed)
August 13, 2015	Last Class Day
August 14, 2015	Finals

Summer 2015 Final Exams

<i>This session...</i>	<i>Has final exams on this date...</i>
3W1	June 4, 2015
8W1	July 10, 2015
SUM	August 14, 2015
5W1	July 10, 2015
10W	August 14, 2015
8W2	July 31, 2015
5W2	August 14, 2015

Exams will meet at the same time and location assigned to the class unless other arrangements have been made.

MEEN 3210.001 Heat Transfer Schedule Overview (subject to change)

Week	Lecture Dates	Lecture Topics
#1	Jun. 9 Jun. 11	Overview of syllabus; Ch.1: introduction Ch.1: introduction to heat transfer: three modes of heat transfer
#2	Jun. 16 Jun. 18	Ch.1: introduction to heat transfer: Thermodynamics & Heat Transfer Ch 2: introduction to conduction: Thermal Conductivities
#3	Jun. 23 Jun. 25	Ch 2: introduction to conduction: The Heat Equation; Quiz#1 (Ch1 & 2) Ch 3: One Dimensional, Steady-State Conduction: Plain Wall and Thermal Resistance Concept
#4	Jun. 30 Jul. 2	Ch 3: One Dimensional, Steady-State Conduction: Thermal Circuit Method; Quiz#2(Thermal circuit method) Ch 3: One Dimensional, Steady-State Conduction: Extended Surface
#5	Jul. 7 Jul. 9	Exam #1: covers Ch 1,2 and 3 (0701/2014 Tuesday) Ch 4: Two-dimensional Steady State Conduction: Analytical Method
#6	Jul. 14 Jul. 16	Ch 4: Two-dimensional Steady State Conduction: Finite Difference Method Ch 5: Transient conduction: LCM method
#7	Jul. 21 Jul. 23	Ch 5: Transient conduction: Exact Solution & one term approximation Quiz#3(Ch 4 & 5) Ch 6: Introduction to convection: Convection Boundary Layers
#8	Jul. 28 Jul. 30	Exam #2: covers Ch 4, 5 and 6 (07/22/2014 Tuesday) Ch 7: External Flow: Flat Plate in Parallel Flow
#9	Aug. 4 Aug. 6	Ch 7: External Flow: Cylinder & Sphere in Cross Flow Ch 8: Internal Flow : Hydrodynamic & thermal considerations
#10	Aug. 11 Aug. 13	Ch 8: Internal Flow : Energy Balance Quiz#4 (Ch7 & 8) Ch 9: Free convection
	Aug. 14	Exam #3 (Final): covers Ch 7, 8, 9

Document History:

Dr. Xiaohua Li, last updated on 5/28/2015