Syllabus
Engineering Technology
University of North Texas
Course Title: Heat Transfer Applications
Course Prefix and Course Number:
MEET 4350
Semester: Fall 2004

The Engineering Technology Department, in cooperation with the Office of Disability Accommodation, complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request to the instructor prior to the fourth day.

SAFETY CATAGORY: 1

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COURSE NUMBER, TITLE, CREDIT HOURS:

MEET 4350, HEAT TRANSFER APPLICATIONS, 3 credit hours

PREREQUISITES:

CHEM 1420, MATH 1720 and PHYS 1710

GENERAL DESCRIPTION:

Principles of energy transfer by heat; conduction, free and forced convection, radiation, condensation and boiling heat transfer; combined heat transfer; introduction to heat exchanger; simple numerical techniques and computer applications.

JUSTIFICATION:

This course is required in degree plan for students in mechanical engineering technology program

COURSE GOALS/OBJECTIVES

On successful completion of this course, the students will,

1. Understand and identify thermal processes important to a situation, and derive expression based on the First Law of Thermodynamics relating the basic rate equations for conduction, convection, and radiation (a,b).
2. Introduce conduction heat transfer using an electrical resistance network analogy (a,b).
3. Know how to determine steady-state and transient temperatures in various solid geometries of practical importance (a,b).
4. Understand mechanisms of importance in convective heat transfer, and understand the meaning of pertinent dimensionless parameters (a,b,d).
5. Involve the solution of various correlations for a convective heat transfer process (a,b).
6. Understand the thermal design of a heat exchanger using conventional methods (a,b,c,d,e).
7. Know radiation exchange within an enclosure, and be able to calculate simple view factors (a,b,d,e).

LEARNING OUTCOMES (Course Objectives Supported)

a) Calculate heat transfer rate for typical engineering application (1,2,3,5,6)
b) Analyze conduction heat transfer mechanism (1,2,3)
c) Analyze convection (free and forced) heat transfer mechanism (1,4,5)
d) Analyze radiation heat transfer mechanism
e) Design heat exchangers (1,6)
f) Formulate solution to transient heat transfer for geometrical solids (4)
g) Evaluate cooling of electronic equipment (6,7)

COMPUTER USAGE:

Use T-K solver or equivalent software to complete your homework

ORAL COMMUNICATION USAGE:

No oral presentation is required in this course

WRITTEN COMMUNICATION USAGE:

All reports assigned as homework must be prepared professionally

LIBRARY USAGE:

Literature search will be a part of some of the assigned homework

REQUIRED TEXTBOOKS:

Heat Transfer: A Practical Approach by Yunus A. Cengel, 2nd edition McGraw Hill publishing

SUPPLEMENTAL TEXTS AND MATERIALS:

none

TEACHING METHODS:

Students will be given three hours of lecture every week

GRADING ELEMENTS AND WEIGHTS:

3 one-hour exams (100 points each)	300 points
1 final exam	150
Homework	150
Total	600 points

Scale: A (90%-100%); B (80%-89%); C (70%-79%); D (60%-69%); F (59% or less)

GRADING POLICIES:

Homework is due a week from the date assigned and no late homework is accepted.

CLASS POLICIES:

1. All rules relating to academic dishonesty will be enforced in accordance with University policies.

2. State common law and federal copyright laws protect my lectures. They are my own original expression and I record them at the same time that I deliver them in order to secure protection. Whereas you are authorized to take notes in class thereby creating a derivative work from my lecture, the authorization extends only to making one set of notes for your own personal use and no other use. You are not authorized to record my lectures, to provide your notes to anyone else or to make any commercial use of them without express prior permission from me.

3. This syllabus is subject to change at any time during the semester with changes to be announced in class.

4. Students should schedule at least one hour per lecture hour for study outside class. Students should schedule at least one hour per laboratory hour for outside work to prepare for the laboratory, use of open laboratory hours, and to complete the required laboratory documentation.

5. Grades are based in part on the student's ability to communicate. Good written English is expected in all course work and is a factor in laboratory report grades. The student’s ability to orally communicate the results of laboratory exercises and class assignments is also monitored.

6. Each student should retain graded lecture notes, pop quizzes, homework, tests, software-generated files, and laboratory reports to document errors in recorded grades.

7. Requests for review of graded work must be submitted during the lecture in which such work is returned to the students. The request should be accompanied by a written justification of the request including any supporting data.

8. The UNT Catalog procedures on cheating and plagiarism will be vigorously enforced. It is the duty of each student to protect their work so it is not available to others for submission as their efforts. This is especially true of files that are generated on the computer. Students that knowingly allow others to use their work are partners in this unethical behavior.

9. There is no limit on the use of calculators for lecture, labs, pop quizzes, formal tests, or final examination.

10. Challenges to the course grade must be presented within 60 days of receipt of grade notices mailed by the university. This will insure that instructor's records are still available to allow a review of the assigned grade. You should first discuss your complaint with the instructor. If you wish to carry it further, contact the Program Coordinator by calling (940) 565-2022. To further pursue your complaint, contact the Department Chair at (940) 565-2022, but ONLY after first discussing your concern with the previous two individuals.

11. If appropriate, Material Safety Data Sheets (MSDS) are maintained on file in the department for your review. Access to these documents may be provided by the:
    - instructor of this course,
    - Program Coordinator, or
    - Department Secretary.

    Seek initial access through the instructor or Coordinator rather than the secretary.

12. Cheating on quizzes, examinations and laboratory assignments, and plagiarism on various papers and reports are types of disciplinary misconduct for which penalties are assessed under the UNT Code of Student Conduct and Discipline. Major responsibility for implementing the University's policy on scholastic dishonesty rests with the faculty. Be advised that the instructor of this course supports and fully implements this policy. The following actions will be taken when evidence of such misconduct is observed. The student will be presented with the evidence of misconduct and given an opportunity to explain same. Based on the outcome of this private conference, the matter will be either dropped or the student will be given a grade of "F" in the course and be referred to the Dean of Students for further counseling and/or disciplinary action.

13. An I (incomplete) grade is given only for extenuating circumstances and in accordance with University and Departmental Policies.

COURSE OUTLINE:

Date	Section(s)	Homework
8/31	orientation & 1.1-1.4	
9/2	1.5-1.9	1.14, 1.29, 1.67, 1.85
9/7	2.1-2.3	
9/9	2.4-2.7	2.16, 2.24, 2.59
9/14	3.1-3.3	
9/16	3.4-3.6	3.19, 3.36, 3.71, 3.106, 3.116, 3.128
9/21	3.7	
9/23	EXAM #1	
9/28	4.1	
9/30	4.2	4.14, 4.16, 4.23
10/5	4.3-4.4	
10/7	5.1-5.3	4.34, 4.73, 4.81
10/12	5.4	
10/14	6.1-6.5	5.21, 5.40, 5.48, 5.52
10/19	6.6-6.11	
10/21	EXAM #2	
10/26	7.1-7.2	
10/28	7.3-7.4	6.39, 7.21, 7.55, 7.69
11/2	8.1-8.4	
11/4	8.5-8.6	
11/9	9.1-9.3	8.53, 8.54
11/11	9.4-9.6	
11/16	13.1-13.4	9.16, 9.31, 9.44
11/18	EXAM #3	
11/23	13.5-13.6	
11/25	11.1-11.3	13.41, 13.46, 13.55, 13.84, 13.91, 13.100
11/30	11.4-11.5	
12/2	12.1-12.2	12.8, 12.16, 12.28
12/7	12.3-12.4	
12/9	Review	

FINAL EXAM (TO BE ANNOUNCED)