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Recommended Citation
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ENME 3771 – Heat Transfer  
(Required Course, Fall 2015)

Catalog Data
ENME 3771  Heat Transfer  
Prerequisite: MATH 2221, CSCI1201 or 1205, ENME2770, and ENME 3720. Steady and unsteady conduction; natural and forced convection; radiation; heat exchangers; introduction to two-phase heat transfer. Computer-aided solutions to heat transfer problems.

Class Hours: 11:00 -11:50 am, MWF, EN320

Instructor: Professor Ting Wang (EN932 or CERM137, 504-280-7183, twang@uno.edu)

Office Hours: Monday through Friday – 12:30 pm – 2:00 p.m. (EN932)

Grade Policy:  
Homework: 25%  
Three Tests 45%  
Final 30%  

Final grade assignments will be curved, based on the total cumulative points earned during the semester. The class average will serve as the reference for grade C.

Textbook

Reference

Objective: This course is designed to give junior-senior students in mechanical engineering the ability to analyze and design thermal energy systems and concepts in their courses as well as in their future work in industry.

Course Contents by Topics:

1. Steady state one dimensional conduction  
2. Multidimensional systems and unsteady state conduction  
3. Convection (forced and natural)  
4. Heat exchangers  
5. Radiation  
6. Two-phase heat transfer (boiling and condensation)  
7. Tests

Course Outcomes  
After successfully completing this course each student will be able to:
1. Identify thermophysical properties of solids and fluids.  
2. Derive the fundamental heat diffusion equation and understand its physical meaning.  
3. Solve problems involving steady-state heat conduction in plane walls, cylinders, and spheres.
4. Apply the thermal circuit analogy to one-dimensional heat conduction problems in plane walls, cylinders, and spheres.
5. Formulate and solve problems involving transient heat conduction in lumped and distributed systems.
6. Formulate and solve problems involving external and internal forced convection.
7. Formulate and solve problems involving heat exchangers, including design and selection.
8. Formulate and solve problems involving radiation in an enclosure and of multiple exchange surfaces

Class Policies:

First, turn off your cell phones!
Students are not allowed to use cell phones in the classroom; this includes reading and sending messages. Each violation will result in a reduction of one final accumulated point and the violators will be requested to leave the classroom immediately.

1. The prerequisites for this course are MATH 2221, Elementary Differential Equations, CSCI 1201 Introduction to Programming in Fortran or 1205 in C++, ENME 2770 Engineering Thermodynamics, and ENME 3720 Fluid Mechanics. This course is a prerequisite to ENME 3711 Thermal Science Laboratory, and ENME4777 Thermo/Fluid Design, ENME4771 Intermediate Heat Transfer, and ENME4773 Energy Management.

2. Students must have Internet access to www.uno.edu and Moodle. Most of my communications will be through Moodle and e-mail. Students are responsible for maintaining their corresponding UNO e-mail boxes so that it is functioning and not overflowing. Help with Moodle can be accessed at http/instruction.uno.edu.

3. Students must have Internet access to www.uno.edu and Moodle. Most of the communications will be done through Moodle. Students are responsible for all e-mail communications from the instructor to their UNO e-mail drop box. Help with Moodle can be accessed at http/instruction.uno.edu.

4. No laptops or e-book reading devices are allowed during regular classes without special permission from the instructor.

5. Rules regarding exams:
   - The assigned textbook in the correct edition will be used for assigning homework and citations of equations and page numbers. Students using different textbooks or editions must be responsible for obtaining correct information. No excuses will be granted when wrong information, equations, or figures are obtained from wrong books in homework or exams.
   - The exam has two parts. Part 1 is closed books and notes. Calculators, laptops, tablets, smart phones, Apple watches, e-books readers, and Google glasses are NOT allowed.
   - Part 2 is open notes, books, and solutions. Calculators are needed, but other electronics (laptops, tablets, smart phones, e-book readers, etc.) are NOT allowed (i.e. only hard-copy books and notes can be used.)
• In the beginning of the test, both parts are given to students, so the students can look over Part 2 to decide how long they plan to stay in Part 1. The recommended time printed on the exam paper is only a reference. The students can stay as long as they want in Part 1. Students need to turn in Part 1 before they can start to do Part 2. Once Part 1 is turned in, it is irrevocable.

• No calculators, notes, or books can be shared or exchanged during the exam. Violators will be requested to turn in the exam questionnaire and leave the classroom immediately.

6. If the instructor does not show up for class in twenty minutes, please call the instructor's office. If the instructor cannot be reached and no advanced arrangements have been made, you are authorized to leave.

7. Late homework papers are given half credit if they are received before grading begins. After grading begins, no papers will be accepted.

8. Students are welcome to consult with the instructor for help with any difficulties. However, try to make a worthy attempt to solve problems before asking for help.

9. Those who miss the class without "excusable" reasons are responsible for the consequences themselves. For a student who has incurred five inexcusable absences, 10 points will be taken off his/her final total cumulative score.

10. Students are encouraged to discuss homework with peers but are prohibited from copying other people's work. If caught, both the copied and the original work will be assigned zeros.

11. Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the Student Code of Conduct for further information. The Code is available online at http://www.studentaffairs.uno.edu.

12. It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities should contact the Office of Disability Services as well as their instructors to discuss their individual needs for accommodations. For more information, please go to http://www.ods.uno.edu.

13. The approximate date for each test is listed below. The exact date will be announced a week before each test.

   Test #1: Friday, September 18, 2015
   Test #2: Wednesday, October 21, 2015
   Test #3: Wednesday, November 18, 2015
   Final: 10:00 am– 12:00 Noon, Wednesday, December 9, 2015 (Can't be changed.)