

ME 302 – ENGINEERING HEAT TRANSFER- SPRING 2014

CATALOG

DESCRIPTION: Fundamentals of heat transfer by conduction, convection and radiation. Applications of theory to engineering systems.

PREREQUISITES: ME 300, ME 370 A and MATH 305.

INSTRUCTOR: Dr. Emmanuel C. Nsofor
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Office Hours: TR 2.30 p.m. to 5.30 p.m. (or by appointment).

TEACHING ASST. Chigozie Opara
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TEXTBOOK: Heat and Mass Transfer: Fundamentals & Applications by Y. A. Cengel and A. J. Ghajar, 4th edition, McGraw Hill Publishing Company 2011, ISBN: 978-0-07-339812-9. Information on the price can be obtained online through SIUC webpage – SalukiNet, University Bookstore or 536-3321.

CLASSROOM: Engineering A 207 TIME: TR 9.35 a.m. to 10.50 a.m.

COURSE OBJECTIVES

The major objective of this course is to provide the students with adequate instructions, sufficient information and practice so that they:

1. Will acquire knowledge and physical understanding of basic concepts in engineering heat transfer.
2. Can apply the principles of heat transfer to simple engineering applications.
3. Will develop problem-solving skills and acquire the ability for solving related engineering problems by identifying the problem, formulating the solution and applying the relevant mathematics for the solution.
4. Will acquire related foundation for advanced courses in thermal sciences and engineering.

COURSE WEB ADDRESS:

Can be accessed from <https://online.siu.edu/>

ADMINISTRATION

OF THE COURSE: Attendance will be taken for the classes. Homework assignments are to be turned in at the beginning of class on due dates. Slipping your homework under my door or the TA's door or dropping it in the mailbox is unacceptable. For the Tests and Homework assignments, you should take note of the following:

- (a) Unless otherwise indicated, the problems must be solved following the step-by-step method described in one of the class handouts. This is a summary from pages 35-36 of the textbook. The book uses this step-by-step method in the solution of example problems.
- (b) Put name, date, course number and page number on every sheet and staple all pages together.
- (c) Use one side of the paper only.
- (d) Neat diagrams should be drawn as needed.
- (e) Show how you solved the problem by using text and descriptions throughout the steps in the solution.
- (f) Use appropriate units.
- (g) Highlight your final answer with a box or underline and give the appropriate units.

Academic dishonesty will not be tolerated. You are studying to enter a respected profession and the highest ethical standard is expected of you. Your work should be your own. For the homework assignments, you are encouraged to consult other students, the TA or the instructor if you run into problems. **Consulting is allowed but not copying.**

Also, your homework, tests, exams, reports etc are viewed as exercises in technical communication. Hence, correct procedure and effective presentations are important. As practicing engineers, your work will be read by other engineers. It should be easy to do so.

The overall course grade will be based on scores obtained as shown below:

Homework	20%
Design Type and/or Essay Type Problems	10%
Tests (2 tests)	45%
Final Examination	25%

<u>GRADES:</u>	A	90 – 100%
	B	80 – Less than 90%
	C	70 – Less than 80%
	D	60 – Less than 70%
	F	Less than 60%

OUTLINE OF THE TOPICS TO BE COVERED

1. Basics of Heat Transfer
2. The Heat Conduction Equation
3. Steady Heat Conduction in One Dimension
4. Steady Heat Conduction in Two-Dimensions and Introduction to Numerical Methods
5. Fundamentals of Convection
6. External Forced Convection
7. Internal Forced Convection
8. Natural Convection
9. Heat Exchangers
10. Radiation Heat Transfer

TEST SCHEDULE/DATES

Due dates for the homework and design problems will be given when they are assigned. Take note of these dates as you schedule any appointments or engagements during the semester.

Test #1	Thursday, February 13	9.35 a.m.
Test #2	Thursday, March 27	9.35 a.m.
*Final Examination	Thursday, May 8	10.10 a.m.

*Will be confirmed on the last day of class as it is subject to change

Note: The Instructor reserves the right to make any necessary changes in this course program as the need arises.

SIUC EMERGENCY PROCEDURES

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT's website at www.bert.siu.edu, Department of Public Safety's website www.dps.siu.edu (disaster drop down) and in the Emergency Response Guidelines pamphlet. Know how to respond to each type of emergency.

Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. **It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.** The Building Emergency Response Team (BERT) will provide assistance to your instructor in evacuating the building or sheltering within the facility.