MEMS 1052: Introduction to Heat and Mass Transfer

(Modifications to this syllabus may be required during the semester. Any changes to the syllabus will be posted on the course website and announced in class)

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Office Hours: Tuesdays, Wednesdays and Thursdays from 11:00am-1:00pm

Teaching Assistants: Anson Yu, 2017141521011@stu.scu.edu.cn
Office Hours: TBA

Lecture Times: Wednesdays from 1:50pm-4:25pm in Room 4-212

Catalog Description: 3 Credits; this course provides an in-depth treatment of the modes of heat transfer; conduction, convection and radiation. Course topics include one-dimensional steady and unsteady-state conduction, heat sink application, thermal resistance network, forced and free convection and the fundamental principles of radiation. **Prerequisites: ME 0051**

Required Text:
Fundamentals of Heat and Mass Transfer, 8th Edition, Incropera. Int. Student Edition

Course Objectives:

- Provide an understanding and appreciation of the physical mechanisms of heat transfer.
- Define and analyze conduction driven heat transfer systems.
- Identify convection heat transfer from both forced and free convection sources.
- Understand the impact of radiation heat transfer and its influence on engineering systems.
- Develop the ability to properly use the analytical and empirical descriptions of heat transfer mechanisms.
- Apply these descriptions to the analysis of thermal systems

Course Outline:

Part 1:
Introduction (Ch. 1)
Conduction Heat Transfer (Ch. 2)
1-D Steady State Conduction (Ch. 3)
2-D Steady State Conduction (Ch. 4)
Transient Conduction (Ch. 5)
Part 2:
Convection Heat Transfer (Ch. 6)
External Flow (Ch. 7)
Internal Flow (Ch. 8)
Free Convection (Ch. 9)
Part 3:
Radiation Heat Transfer (Ch. 12)
Applied Topics (Ch. 10 &11)

Examination Schedule:

Exam 1 Thursday October 29th
Exam 2 Thursday December 10th
Final Exam Date: January 7th (tentative)

Course Grading:

In Class Studios	20%
Homework	10%
Exam 1	20%
Exam 2	20%
Final Exam	30%

Grading Scale: The official SCU/SCUPI grading scale will be used when determining final grades and numerical scores based on a student's course average. An additional curve may be applied, as determined by the overall final grade distribution of the class. Grades of A-, B+, B-, etc. will be determined at the instructor's discretion.

Week 1	September 2nd
	No Class
Week 2	September 9th
	Course Introduction, Ch.1, Ch. 2
Week 3	September 16th
	Ch. 2, Ch. 3
Week 4	September 23rd
	Ch. 3, Ch. 4
Week 5	September 30th
	Ch. 4
Week 6	October 7th
	No Class/Holiday
Week 7	October 14th
	Ch. 5
Week 8	October 21st
	Ch. 5/Test 1 Review
Week 9	October 29th
	Test 1
Week 10	November 4th
	Ch. 6
Week 11	November 11th
	Ch. 7
Week 12	November 18th
	Ch. 8
Week 13	November 25th
	Ch. 9
Week 14	December 2nd
	Test 2 Review
Week 15	December 10th
	Test 2
Week 16	December 16th
	Ch. 12

Week 17	December 23rd
	Ch. 12
Week 18	December 30th
	Ch. 10/Ch. 11/Final Review
Week 19	January 7th
	Final Exam
Week 20	January 13th
	Final Grades Posted on BB
Week 21	January 20th
	End of Semester

Class Policies: Regular class attendance is expected and encouraged. Each student is responsible for all of the material presented in class and in the reading assignments. Exams will emphasize treatment of material covered in lectures. In general, no late assignments will be accepted or makeup exams given. Exceptions will be made for a valid excuse consistent with University Policy. If you cannot attend an exam or meet a due date, you must contact the instructor prior to the exam or due date. Arrangements will be made for students on a case by case basis. (Failure to contact the instructor prior to the exam or assignment due date will result in a zero on that exam/assignment.)

Academic Integrity Policy: "Violations of academic integrity include, but are not limited to, cheating, plagiarism, or misrepresentation in oral or written form. Such violations will be dealt with severely, in accordance with University policy. Plagiarism means representing someone else's idea or writing as if it were your own. If you use someone else's ideas or writing, be sure the source is clearly designated." It is expected that students adhere to the academic integrity policy that is presented in the Student's Honor Code of Conduct / Student Handbook.