ME 3345 Syllabus

Heat Transfer, Sections D and QUP, 3 Credits

Summer 2026

Pre- &/or Co-Requisites

Prerequisites: MATH 2403 Differential Equations (C or better), ME 3322

Thermodynamics, and ME 3340 Fluid Mechanics

Instructor Information

Instructor: S. Mostafa Ghiaasiaan

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General Course Information

Description

This course is an introduction to the broad topic of heat transfer. It covers material that is essential for all engineers, in particular for those who plan to work in energy-related industries. The course starts with the discussion of thermophysical properties and fundamental processes that underly the transfer of heat. It follows with the discussion of methods for calculating heat transfer rates, and techniques for enhancing/reducing heat transfer in various applications.

Course Learning Outcomes

Outcome 1: Students will learn, and demonstrate, the basic principles of conduction, radiation, and convection heat transfer.

Outcome 2: Students will learn, and demonstrate an understanding of, the basic principle of conservation of energy as it applies to systems that involve conduction, radiation, and heat transfer.

Outcome 3: Students will learn and demonstrate the skill to identify, formulate, and solve engineering problems involving conduction heat transfer. Students will demonstrate the ability to formulate practical conduction heat transfer problems by transforming a physical system into a mathematical model, selecting an appropriate solution technique, and evaluating the significance of results.

Outcome 4: Students will learn and demonstrate the skill to identify, formulate, and solve engineering problems involving radiation heat transfer among black surfaces and among diffuse and gray surfaces. Students will demonstrate the ability to formulate practical radiation heat transfer problems by transforming a physical system into a mathematical model, selecting an appropriate solution technique, and evaluating the significance of results.

Outcome 5: Students will learn and demonstrate the skill to identify, formulate, and solve engineering problems involving forced convection heat transfer, free convection heat transfer, and heat exchangers. Students will demonstrate the ability to formulate practical forced and free convection heat transfer problems by transforming a physical system into a mathematical model, selecting an appropriate solution technique, and evaluating the significance of results.

Required Course Materials

Textbook: Bergman, T.L., and Lavine, A.S. Fundamentals of Heat and Mass Transfer, 8th Ed., Wiley, 2017.

Class Lecture Notes (will be posted on CANVAS during the term)

Grading Policy

Grades will be based on students' performance with respect to homework assignments, three quizzes, and the final exam.

There will three 50 – minute quizzes and a 2 ½ hour-long final exam.

Assignments

There will be a total of eight homework assignments. Homework solutions should be submitted through CANVAS on or before due dates. You will receive one point for each homework problem for which you have a complete solution even if the solution is incorrect, ½ point if the solution is incomplete, and zero if your solution is completely irrelevant. Sample solutions for every homework set will be available on Canvas soon after the due date.

Description of Graded Components

Homework (15%); Quizzes 45% (15% each); Final Exam 40%.

Course Policies

Attendance and/or Participation

Although attendance during lectures is not required, the students are urged to attend lectures. Past experience proves that students who skip class, hoping that they can learn the material by reading the textbook or class notes, pay a heavy price in the quizzes and exams.

Attendance of quizzes and the final exam is of course required.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Core IMPACTS

Core IMPACTS is the University System of Georgia's General Education curriculum. If you are teaching a course that counts towards Core IMPACTS, you should include a syllabus statement about the Core area and associated career competencies. This resource developed by the Center for Excellence in Teaching and Learning and Online Education at Georgia State University includes template syllabus statements for each of the Core IMPACTS areas that you may adapt for your course.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and

cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Honorlock (For QUP Section Only) will proctor your exams this semester, if you are in the QUP Section. You DO NOT need to create an account, download software or schedule an appointment in advance. Honorlock is available 24/7 and all that is needed is a computer, a working webcam, and a stable Internet connection. To get started, you will need Google Chrome and to download the Honorlock Chrome

Extension. You can download the extension at www.honorlock.com/extension/install. When you are ready to test, log into Canvas, go to your course, and click on your exam. The examinations in the course will be delivered using the Quiz function in Canvas. Clicking "Launch Proctoring" will begin the

Honorlock authentication process, where you will take a picture of yourself, show your ID, and complete a scan of your room. If your webcam is mounted on a desktop computer that can't be moved, please hold up a mirror to your webcam to show the room surroundings.

Honorlock will be recording your exam session by webcam as well as recording your screen.

Honorlock also has an integrity algorithm that can detect search-engine use, so please do not attempt to search for answers. There will be enough time in the exams to accommodate this start up procedure.

Honorlock support is available 24/7/365. If you encounter any issues, you may contact them via live chat.

Please view this video to understand the HonorLock process:

https://honorlock.kb.help/-students-starting-exam/how-to-use-honorlock-student/

Here are HonorLock FAQs:

https://honorlock.kb.help/-students-starting-exam/honorlock-student-faq/