

ENS 202 Thermodynamics

Instructor: Dr. Mehmet Yildiz

Office location: President Office -1017

Office hours: Monday between 16:00-16:35

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Course Schedule: Monday (16:40-18:30-FMAN L014), Tuesday (8:40-9:30, FENS L045)

Recitation : Thursday (8:40-10:30, FENS L045)

Course objective: To provide the scientific foundation for understanding the relations among thermodynamics properties, work, heat, entropy equilibrium and energy transfer and the application of these concepts to engineering problems at the introductory level.

TAs and LAs:

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Abdulrahman Al-Nadhari	abdulrahman@sabanciuniv.edu
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Textbook: Thermodynamics Statistical Thermodynamics and Kinetics, Fourth Edition by Thomas Engel and Philip Reid

Grading: The following grading scheme is tentative and might be subjected to changes at the discretion of the instructor.

Homework : 15 %	There would be 10 homework with eight questions in each. Four of the declared homework questions will be graded. 30 percent of the questions in the midterm exam will be chosen from the homework questions.
Project : 15 %	The project will be a group project composed of maximum three students. The content of the project will be on the interesting application of thermodynamic concepts. You will be required to prepare a white paper with maximum word count of 5000. The text of the white paper should include your own sentences and any sentence copied from internet or text book will not be accepted. Such white papers will receive a zero grade from the project.
Midterm : 30 %	The midterm will cover the entire material until the midterm date to be announced.
Final : 40 %	The final exam will be including all the content in the lecture and the text book listed in the syllabus. <u>To be able to pass the course, the students are expected score at least 50 % from the final exam to pass the course.</u>

Attendance: Class and recitation attendance is compulsory. Students missing 3-hour class more than two times will not be eligible to write the exams. The same rule applies for the recitation. Attendance will be taken regularly.

Exam Dates: To be announced

Course Content

Week 1	<i>Fundamental Concepts of Thermodynamics</i>
Week 2	<i>Heat, Work, Internal Energy, Enthalpy, and the First Law of Thermodynamics</i>
Week 3	<i>The Importance of State Functions: Internal Energy and Enthalpy</i>
Week 4	<i>Entropy and the Second and Third Laws of Thermodynamics</i>
Week 5	<i>Chemical Equilibrium</i>
Week 6	<i>The Properties of Real Gases</i>
Week 7	<i>Phase Diagrams and the Relative Stability of Solids, Liquids, and Gases</i>
Week 8	<i>Ideal and Real Solutions</i>
Week 9	<i>Electrolyte Solutions</i>
Week 10	<i>Electrochemical Cells, Batteries, and Fuel Cells</i>
Week 11	<i>Kinetic Theory of Gases</i>
Week 12	<i>Transport Phenomena</i>
Week 13	<i>Transport Phenomena continues</i>