

YILDIZ TECHNICAL UNIVERSITY
MECHANICAL ENGINEERING DEPARTMENT

RADIATIVE HEAT TRANSFER – MAK5552 (PhD Course)

Spring 2023-2024

Instructor: Assoc. Prof. Dr. Zafer GEMİCİ, zgemici@yildiz.edu.tr, zafergemici@gmail.com
Mechanical Engineering Faculty E1-Block, Room No: E1-22, Yıldız, Beşiktaş, İstanbul

Week 1	19.02.2024	Chapter 1 - Fundamentals of Thermal Radiation
Week 2	26.02.2024	Chapter 1 - Fundamentals of Thermal Radiation
Week 3	04.03.2024	Chapter 3 - Radiative Properties of Real Surfaces
Week 4	11.03.2024	Chapter 4 - View Factors
		Quiz 1
Week 5	18.03.2024	Chapter 5 - Radiative Exchange between Gray, Diffuse Surfaces
Week 6	25.03.2024	Chapter 6 - Radiative Exchange between Partially-Specular, Gray Surfaces
Week 7	01.04.2024	Chapter 8 - The Monte Carlo Method for Surface Exchange
Week 8	08.04.2024	Chapter 9 - Surface Radiative Exchange in the Presence of Cond. and Conv.
Week 9	15.04.2024	Midterm Exam
Week 10	22.04.2024	Chapter 10 - The Radiative Transfer Equation in Participating Media (RTE)
Week 11	29.04.2024	Chapter 10 - The Radiative Transfer Equation in Participating Media (RTE)
Week 12	06.05.2024	Exact Solutions for One-Dimensional Gray Media
		Quiz 2
Week 13	13.05.2024	Gas, Particle and Flame Radiation
Week 14	20.05.2024	Gas, Particle and Flame Radiation

Final Examination

<i>Textbook:</i>	“Radiative Heat Transfer, 4th ed.” by M. F. Modest, S. Mazumder, Academic Press, 2021 “Thermal Radiation Heat Transfer, 6th ed.” By John R. Howell, M. Pinar Mengüç, Robert Siegel, CRC Press, 2016
<i>Grading:</i>	30% Midterm Examination 15% Quiz 1 15% Quiz 2 40% Final Examination
<i>Notes:</i>	<ul style="list-style-type: none">• Textbook is required and the course is prepared from the textbook, which is mandatory.• In the midterm and final exams, only textbook can be used.• Most examination questions will come (possibly with some modifications) from the end-of-chapter problems of the textbook. Students are encouraged to solve as many of those problems as possible.• Students are also suggested to study the upcoming topic before the lecture and solve a few questions after the lecture. The course has abstract topics and is difficult to understand. Strong mathematical and programming background is required.• Cheating, plagiarism, and any other misrepresentations are strictly prohibited. Students violating these rules receive severe sanctions including a failing grade in the course and, depending on the circumstances, possible expulsion from the school.