

METU Department of Mechanical Engineering
ME 508 Thermal Radiation
Fall 2020

Instructor : Dr. İlker Tari, E-104 (ICHMT), itari

Assistant : Sinan Uygur, A-145, sinuygur

Text : "Radiative Heat Transfer, 3th ed." by M.F. Modest, Academic Press, 2013.

Schedule : Wednesday 9:40-12:30 on-line.

Material

Reading

Problems

Fundamentals of Thermal Radiation (6 hours)	Chapter 1	
Radiative Properties (3)	Chapter 3	
View Factors (3)	Chapter 4	
Monte Carlo Methods for view factor calculations (6)	Chapter 8	
Radiative Exchange between Gray, Diffuse Surfaces (4)	Chapter 5	
Radiative Exchange between Partially-Specular, Gray Surfaces (4)	Chapter 6	
Radiative Exchange between Nonideal Surfaces (2)	Chapter 7	
The Equation of Radiative Transfer in Participating Media (6)	Chapter 10	
Exact Solutions for One-Dimensional Gray Media (3)	Chapter 14	
Approximate Solution Methods for One-Dimensional Media (5)	Chapter 15	

Homework : Assigned problems from the textbook.

Term Projects : Computational radiative transfer problems will be selected by each student in consultation with the instructor. The projects will involve literature search, programming with Matlab, Mathcad/SMATHStudio or C/C++ and a short report of findings with discussions.

Grading : There will be homework, several small exams, and term projects.

Several small exams : 40%

Homework & Attendance : 30%

Term Projects : 30%