Jordan University of Science and Technology

Faculty of Engineering

Aeronautical Engineering Department

AE452 Heat Transfer
Summer Semester 2023-2024

Course Catalog
3 Credit Hours. Principles of Heat Transfer, Steady-state and transient conduction in different coordinates, extended surfaces, Convective heat transfer, Analysis and empirical relations for forced and natural convection, Radiation heat transfer, radiation exchange between black and gray surfaces, Heat Exchangers.
Teaching Method: Blended

Text Book	
Title	Fundamentals of Heat and Mass Transfer
Author(s)	F P. Incropera, D. P. DeWitt, T. L. Bergman, A. S. Lavine
Edition	6th Edition
Short Name	Textbook
Other Information	

Class Schedule & Room

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
714050	AE405 Numerical Methods For Engineers	Prerequisite / Study
714430	AE443 Gas Dynamics	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Introduction to Heat Transfer, Conduction	**Chapter 1** From **Textbook**

Week 2	Introduction to Conduction	**Chapter 2** From **Textbook**
Weeks 3, 4	One-Dimensional, Steady State Conduction	**Chapter 3** From **Textbook**
Week 5	Two-Dimensional, Steady State Conduction	**Chapter 4** From **Textbook**
Weeks 6, 7	Transient Conduction	**Chapter 5** From **Textbook**
Week 8	Introduction to Convection	**Chapter 6** From **Textbook**
Weeks 9, 10	Forced Convection - External Flow	**Chapter 7** From **Textbook**
Weeks 11, 12	Forced Convection - Internal Flow	**Chapter 8** From **Textbook**
Week 13	Free Convection	**Chapter 9** From **Textbook**
Week 14	Heat Exchanger	**Chapter 11** From **Textbook**
Weeks 15, 16	Radiation: Processes and Properties	**Chapter 12** From **Textbook**

Mapping of Course Outcomes to Program Outcomes	**Course Outcome Weight (Out of 100%)**	**Assessment method**
The students should have an understanding of the physical processes governing heat transfer. [1, 2, 4, 5, 7]	15%	
Be able to analyze and solve convection, and radiation transfer problems by appropriate methods. [1, 2, 7]	55%	
Be able to analyze and design common heat transfer equipment and devices including extended surfaces and heat exchangers. [1, 2, 6, 7]	30%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7

Evaluation	
Assessment Tool	**Weight**
Exam 1	30%
Final Exam	40%
Exam 2	30%

Policy

Course Policy	Attendance The student is required to attend all the registered courses. The instructor shall register student attendance or absence electronically. JUST policy requires the faculty member to assign ZERO grade (35) if a student misses 20% of the classes. If you miss a class, it is your responsibility to find out about any announcements or assignments you may have missed Exam/Homework Makeup exam should not be given unless there is a valid excuse according to JUST policies. Arrangements to take an exam at a time other than the one scheduled MUST be made prior to the scheduled exam time. Cheating or copying from a neighbor on exam, quiz, or homework is an illegal and unethical activity. The standard JUST policy will be applied. All assignments must be your own work (your own words) Students are responsible for all the information provided in the lecture. Information presented in class supersedes any information posted elsewhere.

Date Printed: 2024-07-15