Jordan University of Science and Technology

Faculty of Engineering

Chemical Engineering Department

CHE345 Heat Transfer - JNQF Level: 7
Second Semester 2023-2024

Course Catalog
3 Credit Hours. Nature and modes of heat transfer, steady-state heat conduction, unsteady-state heat conduction (lumped analysis), principles of convection, empirical relations for natural and forced convection, introduction to boiling & condensation, heat exchangers.
Teaching Method: On Campus

Text Book	
Title	Heat and Mass Transfer: Fundamentals and Applications
Author(s)	Cengel, Y. and Ghajar, A.,
Edition	6th Edition
Short Name	Textbook
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #1	Heat Transfer	Holman, J. P.	9th Edition	
Ref #2	Fundamentals of Heat and Mass Transfer	Incropera, F. P.and Dewitt, D. P.,	5th Edition	
Ref #3	Conduction of Heat in Solids	Carslaw , H.S., and Jaeger, J.C.,	2nd Edition	

Instructor	
Name	**Prof. Rami Jumah**
Office Location	CH1 L2

Office Hours	
Email	ramij@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Tue, Thu : 12:30 - 13:30 Room: القاعة الذكية

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
222440	CHE244 Fluid Mechanics For Chemical Engineers	Prerequisite / Pass

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Introduction and basic concepts	From **Textbook**
Weeks 2, 3	Heat conduction equation	From **Textbook**
Weeks 4, 5, 6	Steady heat conduction	From **Textbook**
Week 7	Transient heat conduction	**Chapter 4** From **Textbook**
Week 8	Fundamentals of convection	**Chapter 6** From **Textbook**
Weeks 9, 10	External forced convection	**Chapter 7** From **Textbook**
Weeks 11, 12	Internal forced convection	**Chapter 8** From **Textbook**
Week 13	Natural convection	**Chapter 9** From **Textbook**
Weeks 14, 15	Heat Exchangers	**Chapter 11** From **Textbook**

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Explain the basic mechanisms and modes of heat transfer [1SO1] [1L7K1]	20%	
Solve steady-state and transient one-dimensional heat conduction problems [1SO1] [1L7K1]	30%	
Solve forced and free convection heat transfer problems [1SO1] [1L7K1]	30%	
Design double pipe, shell and tube, and cross-flow heat exchangers [1SO2] [1L7S3]	20%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
80	20					

Relationship to NQF Outcomes (Out of 100%)	
L7K1	L7S3
80	20

Evaluation	
Assessment Tool	**Weight**
1st	25%
2nd	25%
Quizzes and Assignments	10%
Final	40%

Policy	
Attendance	Attendance will be checked at the beginning of class. University regulations will be followed for students exceeding the maximum number of absences.
Quizzes	Quizzes will be part of this course. No make-up quizzes will be conducted except in the case of a documented emergency.
Student Conduct	It is the responsibility of each student to adhere to the principles of academic integrity. Academic integrity means that a student is honest with him/herself, fellow students, instructors, and the University in matters concerning his or her educational endeavors. Cheating will not be tolerated in this course. University regulations will be pursued and enforced on any cheating student.

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