

**The University of Jordan
School of Engineering**



Department	Course Name	Course Number	Semester
Mechanical Engineering	Heat Transfer Laboratory	0904446	

2005 Course Catalog Description

Conduction heat transfer, One-dimensional conduction, Transient conduction, Convection heat transfer, External flow, Internal flow, Natural convection, Boiling and condensation, Heat exchangers and Thermal radiation.

Instructors

Name	E-mail	Sec	Office Hours		Lecture Time	

Text Books

	Text book 1	Text book 2
Title	Lab Manual and Lecture Notes	(Handouts)
Author(s)		
Publisher, Year, Edition		

References

Books	<ol style="list-style-type: none"> 1. Fundamentals of Heat and Mass Transfer, Incropera F., Dewitt D., Bergman T. and Lavine A., John Wiley & Sons, 2007, 7th Edition . 2. Cengel Y. and Ghagar Afshin J., Heat and Mass Transfer, Fundamentals and Applications, 4th Edition, McGraw-Hill.
Journals	1. International Journal of Heat and Mass Transfer, www.elsevier.com
Internet links	http://nptel.ac.in/courses/112104121/

Prerequisites

Prerequisites by topic	-
Prerequisites by course	Heat Transfer I (0904441)
Co-requisites by course	-
Prerequisite for	-

Topics Covered

Week	Topics	Chapter in Text	Sections
1	Forced convection heat transfer.		
2	Film and drop wise condensation.		
3	Cross flow over bank of tubes.		
4	Shell and tube heat exchanger (parallel flow).		
5	Natural convection and radiation.		
6	Velocity and temperature profiles of air..		
7	Thermal conductivity of metals.		
8	Shell and tube heat exchanger (counter flow).		

Mapping of Course Outcomes to ABET Student Outcomes

SOs	Course Outcomes
5	1. Ability to work effectively in a team in conducting experiments, collecting data, discussing results, and writing reports.
6	2. Ability to measure temperatures, thermal conductivity, velocity flow profile, and flow rate. 3. Ability to measure the quantity of heat transfer between fluids and solid boundaries, amount of heat exchanged between two fluids and amount of radiative heat transfer.

Evaluation

Assessment Tools	Expected Due Date	Weight
Quizzes		10%
Midterm Exam		30%
Reports		20%
Final Exam		40 %

Contribution of Course to Meet the Professional Components

The course contributes to building the fundamental basic concepts of heat transfer and lay out basic principles of heat systems design.

Relationship to Student Outcomes

SOs	1	2	3	4	5	6	7
Availability					X	X	

Relationship to Mechanical Engineering Program Objectives (MEPOs)

MEPO1	MEPO2	MEPO3	MEPO4	MEPO5

ABET Student Outcomes (SOs)

1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3	An ability to communicate effectively with a range of audiences
4	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Updated by ABET Committee, 2019