

**The University of Jordan  
School of Engineering**



Department	Course Name	Course Number	Semester
Mechanical Engineering	Advanced Heat Transfer	0904722	

**2005 Course Catalog Description**

**Instructors**

Name	E-mail	Sec	Office Hours	Lecture Time
Prof. Hamza Duwairi				

**Text Books**

	Text book 1	Text book 2
<b>Title</b>	Heat and Mass Transfer	
<b>Author(s)</b>	A.F. Mills	
<b>Publisher, Year, Edition</b>	R.D.Irwin, 1995	

**References**

<b>Books</b>	1. Heat, Mass and Momentum Transfer, by Rohsenow and Choi, Prentice – Hall , Latest Edition. 2. A Heat Transfer Textbook, by J.H.Lienhard, Latest edition, Prentice-Hall 3. Viscous Fluid Flow, by F. White, and Edition, 1991 4. Convective Heat and Mass Transfer, by Kays and Crowford ,3rd. ed.,1993 5. Analytical Methods in Conduction Heat Transfer, by Glen E. Myers, McGraw-Hill, Latest edition. 6. Convection Heat Transfer, by Adrian Bejan, John Wiley, 1984 7. Radiation Heat Transfer, by Siegel and Howell, Mc Graw-Hill, Latest edition.
<b>Journals</b>	
<b>Internet links</b>	

**Prerequisites**

<b>Prerequisites by topic</b>	
<b>Prerequisites by course</b>	
<b>Co-requisites by course</b>	
<b>Prerequisite for</b>	

**Topics Covered**

Week	Topics	Chapter in Text	Sections
	Introduction and elementary heat transfer		
	Heat equation, steady one dimensional heat conduction		
	Multidimensional and unsteady conduction; method of separation of variables, Fourier series.		
	Convection fundamentals and correlations		
	Convection analysis, external flow and internal flow		
	Condensation, evaporation, and boiling.		
	Mass transfer; Fick's law of diffusion, mass diffusion, mass convection.		
	Selected topics in heat transfer.		

**Course Outcomes**

1.
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<b>Evaluation</b>			
<b>Assessment Tools</b>	<b>Expected Due Date</b>	<b>Weight</b>	
<b>H.W.</b>		20%	
<b>First Exam</b>		20%	
<b>Second Exam</b>		20%	
<b>Final Exam</b>		40%	
<b>Contribution of Course to Meet the Professional Components</b>			
To upgrade the level of understanding of the student to a higher level which can qualify him to handle analytical research problems in heat transfer. A unified approach to the subject matter, which emphasizes the analogy between heat, mass and momentum transfer will be adopted.			
<b>Relationship to Mechanical Engineering Program Objectives (MEPOs)</b>			
<b>MEPO1</b>	<b>MEPO2</b>	<b>MEPO3</b>	<b>MEPO4</b>
<b>Updated by ABET Committee, 2024</b>			