



Jordan University of Science and Technology
 Faculty of Engineering
 Aeronautical Engineering Department

Course name and number:

AE452 Heat Transfer

Credit, contact hours and categorization:

Credit and contact hours	Contact hours	Categorization
3 Credit Hours	Sunday-Tuesday-Thursday 1-hour lecture Or Monday-Wednesday 1.5-hours lecture	Engineering Topic

Instructor's or course coordinator's name:

Name	Dr. Muath Bani-Hani
Office location	N1-L2
Email address	mabanihani@just.edu.jo

Textbook and other supplemental materials:

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

Course information:

Course Catalogue		
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, Thermal Stresses.		
Course type : This course is required to fulfill the program.		
Prerequisites or co-requisites		
Line Number	Course Name	Prerequisite Type
714050	AE405 Numerical Methods For Engineers	Prerequisite /Study
714430	AE443 Gas Dynamics	Prerequisite /Study



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Specific goals of the course:

Specific outcomes of instruction and the student outcomes (SO) mapping		
Outcomes	SO Mapping	Course Outcome Weight (Out of 100%)
The students should have an understanding of the physical processes governing heat transfer.	2SO 2, 1SO 4, 1SO 5, 1SO 7, 10SO1	15%
Be able to analyze and solve convection, and radiation transfer problems by appropriate methods.	2SO 2, 3SO 7, 5SO1	55%
Be able to analyze and design common heat transfer equipment and devices including extended surfaces and heat exchangers.	2SO 2, 1SO 6, 2SO 7, 25SO1	30%

Brief list of topics to be covered:

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1	Introduction to Heat Transfer, Conduction	From Textbook
Week 2	Introduction to Conduction	From Textbook
Weeks 3,4	One-Dimensional, Steady State Conduction	From Textbook
Weeks 5	Two-Dimensional, Steady State Conduction	From Textbook
Weeks 6,7	Transient Conduction	From Textbook
Weeks 8	Introduction to Convection	From Textbook
Weeks 9,10	Forced Convection - External Flow	From Textbook
Weeks 11,12	Forced Convection - Internal Flow	From Textbook
Weeks 13	Free Convection	From Textbook
Weeks 14	Heat Exchanger	From Textbook
Weeks 15	Radiation: Processes and Properties	From Textbook
Weeks 16	Introduction to Thermal stresses	From Textbook