



Arab Academy for Science, Technology & Maritime Transport
College of Engineering & Technology
Mechanical Engineering (Mechatronics) Program

University/Academy: Arab Academy for Science, Technology & Maritime Transport
Faculty/Institute: College of Engineering & Technology
Program: B.Sc. Mechanical Engineering

Form no. (12)
Course Specification

1- Course Data

Course Code: ME 431	Course Title: Heat transfer	Academic Year/Level: 4th year / 7th semester
Specialization: Mechanical	No. of Instructional Units 3 credits	Lecture 2 hrs.
		Practical 2 hrs.

2- Course Aim

This course presents on elementary treatment of the principles of heat transfer

3- Intended Learning Outcomes

u- Knowledge and Understanding	<p>Through knowledge and understanding, students will be able to:</p> <p>K1) Concepts and theories of mathematics and sciences, appropriate to the discipline.</p> <p>K3) Characteristics of engineering materials related to the discipline.</p> <p>K4) Principles of design including elements design, process and/or a system related to specific disciplines.</p> <p>K5) Methodologies of solving engineering problems, data collection and interpretation</p> <p>K10) Technical language and report writing</p>
v- Intellectual Skills	<p>Through intellectual skills, students will be able to:</p> <p>I2) Select appropriate solutions for engineering problems based on analytical thinking.</p> <p>I3) Think in a creative and innovative way in problem solving and design.</p> <p>I4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.</p> <p>I5) Assess and evaluate the characteristics and performance of components, systems and processes.</p> <p>I7) Solve engineering problems, often on the basis of limited and possibly contradicting information.</p>
w- Professional Skills	<p>Through professional and practical skills, students will be able to:</p> <p>P1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.</p> <p>P2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.</p> <p>P3) Create and/or re-design a process, component or system, and carry out specialized</p>

	<p>engineering designs.</p> <p>P5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.</p> <p>P12) Prepare and present technical reports.</p>
x- General Skills	<p>Through general and transferable skills, students will be able to:</p> <p>G3) Communicate effectively.</p> <p>G6) Effectively manage tasks, time, and resources.</p> <p>G7) Search for information and engage in life-long self learning discipline.</p> <p>G9) Refer to relevant literatures.</p>

4- Course Content

Week No.1	Review of Heat Transfer
Week No.2	Steady State Conduction in One Dimension
Week No.3	General Conduction Equations – External Surfaces
Week No.4	General Conduction Equations – External Surfaces
Week No.5	Steady State Conduction in Two Dimensions
Week No.6	Steady State Conduction in Two Dimensions
Week No.7	Principles of connections / 7th week evaluation
Week No.8	Principles of connections
Week No.9	Empirical Relations for Forced Connection
Week No.10	Empirical Relations for Forced Connection
Week No.11	Empirical Relations for Forced Connection
Week No.12	Natural Convection Systems / 12 th week evaluation
Week No.13	Radiation Heat Transfer.
Week No.14	Design of surface heat exchangers
Week No.15	Design of compact heat exchangers
Week No.16	Final Examination

5- Teaching and Learning Methods

- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

6-Teaching and Learning Methods for Students with Special Needs

- Lectures
 - Tutorials
 - Reports & sheets
 - Laboratories
 - Seminars
- Academic Support:**
- The general academic advisor appoints an academic supervisor for handicapped students.
 - Continuous follow ups are made for handicapped students after each assessment to evaluate their academic level of achievement

7- Student Assessment

a-Procedures used	1-Written Examinations to assess The Intended Learning Outcomes.	
	2-Class Activities (Reports, Discussions, -----) to assess The Intellectual Skills.	
b- Schedule:	Assessment 1	7 th Week Assessment
	Assessment 2	12 th Week Assessment
	Assessment 3	Continuous Assessments
	Assessment 4	16 th Week Final Written Exam
c- Weighing of Assessment	7 th Week Evaluation	30 %
	12 th Week Evaluation	20 %
	Final-term Examination	40 %
	Oral Examination	00 %
	Practical Examination	00 %
	Semester Work	10 %
	Total	100%

8- List of References:

a- Course Notes	N/A
b- Required Books (Textbooks)	• J.P. Holman, “Heat Transfer”, McGraw – Hill
c- Recommended Books	• V.P Mikhenks “Heat Transfer” • Kern Donald “Process Heat Transfer” McGraw Hill • Fogiel M “ The Essentials of Heat Transfer” Vol 1 &2 Research and Education Association
d- Periodicals, Web Sites, etc.	N/A

Course coordinator:

Program Manager: