



JORDAN UNIVERSITY OF SCIENCE & TECHNOLOGY
MECHANICAL ENGINEERING DEPARTMENT
ME 581A HVAC Systems
Semester

Catalog Data- 2013 : 3 Credit hours (3 h lectures). An integrated approach to the application of engineering principles to HVAC systems. Topics include: Moist air Properties, Air Psychrometric, Indoor Air Quality, inside and outside design conditions, HVAC systems, Heating and Cooling Load Calculations.

Text Book(s): Heating, Ventilating, and Air Conditioning, McQuiston, et al., the 6th Edition, John Wiley & Sons, Inc., 2005.

References: Distributed Lecture Notes
ASHRA Hand Books.
Jordan's Heating Code and Jordan's insulation material Code

Instructor: _____

Class Schedule: _____

Office Hours: _____

Pre/Co-Requisites: ME 331 Fluid Mechanics I
ME 341 Thermodynamics I
ME 441 Heat Transfer I

Objectives:

- 1-Deepen the student's understanding of the basics and concepts involved in HVAC applications.
- 2-Develop the student's ability to obtain the moist air properties using the equations, correlations and tables, and the Psychrometric Charts.
- 3-Develop the student's ability to do heating load and cooling load calculations using different methods.
- 4-Extend the student's capabilities to design a complete HVAC system including the ducting and piping systems and equipment selection.

Topics Covered:

1. Introduction
2. Moist Air Properties & Psychrometric Chart
3. Air Conditioning Processes
4. Indoor and outdoor design conditions
5. Comfort Conditions and Indoor Air Quality
6. Heating and Cooling Load Calculations
7. Piping Design
8. Duct Design

Computer Usage: Student will be asked to use HVAC load Explorer to solve some of problems
Student will be trained to use the software coming with the text book
Student will be advised to use other cooling load softwares.

Design Activities/Project(s): Student will be asked to solve a practical design problems for actual building and do all calculations, including heating load and cooling load plus determining the design

conditions and the specifications of AC units.

Lab. Experiment(s): Student will be asked to attend the AC unit experiment available at the Thermo-Fluid Lab.

Scientific Visit(s): At least one visit to be arranged to one of the HVAC systems manufacturer.

Evaluation:	Hw +Quizzes	10%
	Project	10%
	First Exam	20%
	Second Exam	20%
	Final Exam	40%

Relationship of the Course to ME Outcomes:

ABET a – k	√	Mechanical eng. Program Outcomes
a	√	a. Apply knowledge of mathematics, science, and engineering in practice.
b	√	b. Design and conduct experiments as well as analyze and interpret data.
c	√	c. Design a system, components, or process to meet desired needs.
d	√	d. Function on multidisciplinary teams.
e	√	e. Identify, governing math models, and solve engineering problems.
f		f. Understanding of professional and ethical responsibility of an engineer.
g	√	g. Communicate effectively.
h		h. Broad education to understand the impact of engineering solutions in global and societal context.
i		i. Recognition of the need for, and possess the ability to engage in, lifelong learning.
j	√	j. Possess knowledge of contemporary issues.
k	√	k. Use the techniques, skills, and modern engineering tools necessary for engineering practice.
	√	l. Adhere to safety rules and regulations.

ABET Category:

Engineering Science	1	Credits
Engineering Design	2	Credits

Prepared By: _____ **Date:** _____
Revised By _____ **Date** _____