The Hashemite University
Faculty of Engineering
Course Syllabus
Department of Mechanical Engineering

Course Title:	HVAC (2,0, 0)	**Course Number:**	110402551
Designation:	Compulsory	**Prerequisite(s):**	110402324
Instructor:	Dr. Salem Nijmeh	**email:**	**drnijmeh@hu.edu.jo**
Required Course:	2 hours lectures per week		

Course Description: Review of psychrometry. Air conditioning processes. Thermal comfort, Inside and outside design conditions. Ventilation and infiltration. Heating load calculations. Solar radiation, cooling load calculations. Water heating systems layout and design. Air systems design. Underfloor heating system design.

Textbook(s) and/or Other Supplementary Materials:

- M. Alsaad and M. Hammad, Heating and Air Conditioning for Residential Buildings, Sixth Edition, 2016.
- Heating, Ventilating and Air Conditioning: Analysis and Design by McQuiston and Parker, John Wiley and Sons, Sixth Edition.

References:
Jordanian Codes and ASHRAE Handbooks

Major Topics Covered:

Topic	# Weeks	# Contact hours*
Air conditioning processes	2	4
Thermal comfort and design conditions	2	4
Heating load calculations	2	4
Cooling load calculations	2	4
Water heating systems	2	4
Air systems	3	6
Underfloor heating systems	2	4
Total	**15**	**30**

*Contact hours include lectures, quizzes and exams

Specific Outcomes of Instruction (Course Learning Outcomes):

After completing the course, the student will be able to:

- Understand the psychrometric processes in air conditioning.(a),(e)
- Use the psychrometric chart as a practical tool for quick analysis and calculations in air conditioning. (a),(e),(k)
- Appreciate the influence of external and internal conditions on the design of air conditioning systems and comfort. (e)
- Be familiar with the different types and applications of air conditioning systems. (e)
- Carry out detailed calculations of heating and cooling loads in buildings. (a),(e),(k)
- Carry out design calculations of water and air heating systems. (a),(c),(e),(k)
- Carry out a project and present it (c),(e),(g),(k)

Grading Plan:

Mid-term Exam	(30 Points)
Project and class work	(30 Points)
Final Exam	(40 Points)

Student Outcomes (SO) Addressed by the Course:

#	Outcome Description	Contribution
General Engineering Student Outcomes		
(a)	an ability to apply knowledge of mathematics, science, and engineering	H
(b)	an ability to design and conduct experiments, as well as to analyze and interpret data	
(c)	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	H
(d)	an ability to function on multidisciplinary teams	
(e)	an ability to identify, formulate, and solve engineering problems	H
(f)	an understanding of professional and ethical responsibility	
(g)	an ability to communicate effectively	M
(h)	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i)	a recognition of the need for, and an ability to engage in life-long learning	
(j)	a knowledge of contemporary issues	
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	H
H=High, **M**= Medium, **L**=Low		

Prepared by: Dr. Salem Nijmeh **Date:** 20/9/ 2020