Zarqa University
Faculty of Engineering Technology
Mechanical Engineering Department

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<tr><td rowspan="5">Course Information</td><td colspan="3">0905455 Heating Ventilation and A air Conditioning (II)</td></tr>
<tr><td>3 Credits</td><td>Compulsory</td><td>Fall 2015</td></tr>
<tr><td colspan="3">Prerequisites by Course: Heating Ventilation and Air conditioning (I)</td></tr>
<tr><td colspan="3">Co-requisites by Course: -</td></tr>
<tr><td colspan="3">Prerequisites for:</td></tr>
<tr><td>Instructor</td><td colspan="3">Schedule: Lecture, 11:00-12:30, MW, L317</td></tr>
<tr><td>Instructor</td><td colspan="3">Prof. Dr. Bassam Al-Helou</td></tr>
<tr><td>Contact Information</td><td colspan="3">heloub@zu.edu.jo, Office L240, Phone: 05-3821100-2083</td></tr>
<tr><td>Office hours</td><td colspan="3">12:30-14:00M, 12:00-13:00T, 08:30-09:30W; or by appointment</td></tr>
<tr><td>Textbook</td><td colspan="3">Heating and Air Conditioning, Mohammad Alsaad .
Principle of Heating Ventilating and Air conditioning by R Howell. Harry J., William J. Coad. ASHRAE ,6.ed 2013.</td></tr>
<tr><td>References and Resources</td><td colspan="3">1. ASHRAE Hand Books.
2. Heating, Ventilating and Air Conditioning Analysis and Design. McQuiston, Parker and Spitler. Wiley.</td></tr>
<tr><td rowspan="5">Evaluation Criteria</td><td>Activity</td><td colspan="2">Percent (%)</td></tr>
<tr><td>Quizzes and Homework</td><td colspan="2">10</td></tr>
<tr><td>First Exam</td><td colspan="2">20</td></tr>
<tr><td>Second Exam</td><td colspan="2">20</td></tr>
<tr><td>Final Exam</td><td colspan="2">50</td></tr>
<tr><td>Course Description</td><td colspan="3">The objective of this course is to help mechanical engineering students understand and use already developed design procedures for basic types of air conditioning systems for buildings. The course emphasizes the calculation of cooling loads for buildings, Solar Gainn, size and select the A/C system, including cooling coils, fans and ducts, Air Flow in Ducts and Fittings, Warm Air Conditioning Systems, Control systems. , Heat Recovery Systems.</td></tr>
<tr><td rowspan="6">Intended Learning Outcomes</td><td>Course Outcome</td><td colspan="2">[%]</td></tr>
<tr><td>Realize local and international design criteria and codes for indoor and outdoor conditions.</td><td colspan="2">10%</td></tr>
<tr><td>Calculate the cooling load.</td><td colspan="2">20%</td></tr>
<tr><td>Size the air ducts and calculate the pressure drop in the system.</td><td colspan="2">20%</td></tr>
<tr><td>Specify a complete air distribution system including fan, ductwork, and installation requirements for a typical HVAC system.</td><td colspan="2">35%</td></tr>
<tr><td>Specify a control systems, Heat Recovery Systems</td><td colspan="2">15%</td></tr>
<tr><td>Relationships to Program Outcomes</td><td colspan="3">a. Ability to apply knowledge of mathematics, science, and engineering (H)
b. Design and conduct experiments as well as analyze and interpret data
c. Design a system, components, or process to meet desired needs (H).
d. Function on multidisciplinary teams.(H)</td></tr>
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<tr><td></td><td colspan="3">e. Ability to identify, formulate, and solve mechanical engineering problems (H)
g. Communicate effectively. (L)
j. Possess knowledge of contemporary issues. (H)
k. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (H)
l. Adhere to safety rules and regulations. (H)</td></tr>
<tr><td rowspan="4">Contribution to the Professional Components</td><td colspan="2">Mathematics and Basic Sciences</td><td>-</td></tr>
<tr><td rowspan="2">Engineering Topics</td><td>Engineering Sciences</td><td>20%</td></tr>
<tr><td>Engineering Design</td><td>80%</td></tr>
<tr><td colspan="2">General Education</td><td>-</td></tr>
<tr><td rowspan="11">Course Outline</td><td colspan="2">Subject</td><td>Hours</td></tr>
<tr><td colspan="2">Cooling load calculations</td><td>8</td></tr>
<tr><td colspan="2">Solar gain.</td><td>2</td></tr>
<tr><td colspan="2">Design criteria and codes for indoor and outdoor conditions.</td><td>2</td></tr>
<tr><td colspan="2">Warm Air heating Systems.
Exam I (up to end of week 5)</td><td>10</td></tr>
<tr><td colspan="2">Duct and pipe Sizing
Exam II (up to end of week 11)</td><td>10</td></tr>
<tr><td colspan="2">HVAC Equipment</td><td>5</td></tr>
<tr><td colspan="2">Control systems.</td><td>4</td></tr>
<tr><td colspan="2">Heat Recovery Systems.</td><td>4</td></tr>
<tr><td colspan="2">Review, Final Exam</td><td>3</td></tr>
<tr><td>Policies:</td><td colspan="3">Attendance
Attendance will be checked each class. Students are expected to attend each lecture. University regulations will be strictly followed for students exceeding the maximum number of absences.

Homework
- Homework assignments are due at the beginning of class the day they are due.
- No late homework will be accepted unless prior arrangement have been made with the instructor
- No make-up allowed on homework.
- You can consult each other regarding homework solution s however each assignment must be your own solution. Verbatim or duplicates assignments will be regarded as cheating.

Class participation and behavior
- Classroom participation is a part of learning; it is only by asking questions and talking through ideas that you can come to fully understand the material
- Please do not engage in behavior which detracts from the ability of other students to learn. Such behaviors include arriving at class late, speaking or whispering while the instructor and students are discussing ideas or asking questions, reading messages newspapers in class, cell-phones ringing, etc.</td></tr>
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Week	Date	Sec	Topic	Homework	Due date
1	13/10/2014				
2	22/10/2014				
3	27/10/2014				
4	3/11/2014				
5	10/11/2014				
6	17/11/2014				
7	24/11/2014		**Exam I (up to end of week 6)**		
8	1/12/2014				
9	8/12/2014				
10	15/12/2014				
11	22/12/2014				
12	29/12/2014		**Exam II (up to end of week 12)**		
13	5/01/2015				
14	12/01/2015				
15	19/01/2015				
16	26/01/2015		Final Exam		