Course Specifications of: Air Conditioning Systems and Equipment MEP 503

Program(s) on which the course is given: Diploma in Power Engineering (**Refrigeration and Air Conditioning Technology**)
Compulsory or Elective element of program: Compulsory
Department offering the program: Mechanical Engineering/ Power
Academic year / Level: year/ 2014/2015
Date of specification approval: 2012

A. Basic Information

Title: Air Conditioning Systems and Equipment **Code: MEP 503**
Credit Hours: 3 **Lecture: 3**
Tutorial: **Practical:** **Total: 3**

B- Professional Information

1- Overall aims of course:
This course introduces students to:

1 - Classify the different air conditioning systems and its equipment.
2 - Designate the different air conditioning systems and equipment.
3 - Practice the components of automatic control and measurement systems used in RAC systems.

2- Intended learning outcomes of course (ILOs)
By completion of the course, the student should be able to:

a- Knowledge and understanding

a.1 Recognize theories and specialized knowledge in the area of air conditioning technology study and categorize sciences related to the professional practice.(2.1.1)
a.2 List principles of professional practice in the area of air conditioning technology. (2.1.2)
a.3 discuss the effect of professional practice on the environment and work towards its conservation and maintenance. (2.1.4)
a.4 Analysis, design and operation of HVAC systems..(2.1.5)

b- Intellectual skills
b.1 Analyze the problems in the area of air conditioning and categorize them according to their priority.(2.2.1)
b.2 Solve theoretical and practical (design and installation) problems in air conditioning. (2.2.2)
b.3 Make professional decisions in the light of available information.(2.2.5)

c- Professional and practical skills
c.1 Apply professional skills to solve problems in the field of air conditioning systems.(2.3.1)
c.2 Prepare professional reports. (2.3.2)

d- General and transferable skills

d.1 Communicate effectively using different means.(2.4.1)
d.2 Assess him/her self and identify his/her own personal learning needs.(2.4.3)
d.3 Lead a team in familiar professional contexts. (2.4.6)

3. Contents

Topic No.	Topic	No. of weeks	Total no. of hours
1	Design of air conditioning systems	1	3
2	DX air conditioners	1	3
3	All air systems, all water systems, secondary fluid air conditioning systems	1	3
4	Window, split air conditioner	1	3
5	Packed air conditioning unit	1	3
6	Central air conditioning systems	1	3
7	Heating and cooling coils	2	6
8	Humidifiers	1	3
9	Filters	1	3
10	Air condensers	1	3
11	Water condensers and cooling towers	1	3
12	Air conditioning for aircraft, hospitals, and factories	2	6
13	Exam	1	3
	Total	15	45

4- Course Matrix

ILO's code number	Teaching/learning methods and strategies	Assessment methods and strategies
2.1.1 2.1.2 2.1.4 2.1.5	Formal lectures	Individual coursework assignments, quizzes, oral discussions and reports. Mid year and /or final written examination is given.
2.2.1 2.2.2 2.2.5	Analysis and problem, solving skills are developed through tutorial/problem sheets and small group exercises. Research skills are developed through a small subject oriented research project.	Analysis and problem-solving skills are assessed through oral and written examinations. Design and research skills are assessed through project write-ups, coursework and project reports.
2.3.1 2.3.2	Experiments demonstrations, practical work, laboratory visits.	Practical skills are assessed through laboratory experimental write-ups, coursework exercises

		and reports, project reports and presentations.
2.4.1 2.4.3 2.4.6	Those skills are not explicitly taught; however, along the course of study the student will acquire those skills to be able to perform his obligations. Attendance of seminars, workshops or conferences will help the student in developing those skills. Presentation by students (either group or individual) will train students for those skills.	Project presentation

5- Assessment schedule

Assessment 1	Assignments	on weeks	1, 3, 6
Assessment 2	Quizzes	on weeks	2, 4, 9, 13
Assessment 3	Mid-term exam	on weeks	8
Assessment 3	Oral exam	on week	14
Assessment 4	Final exam	on week	15

6- Weighting of assessments

20% (60 marks) Home assignments, Quizzes, and reports
20% (60 marks) Mid-term examination and Oral examination
60% (180 marks) Final-term examination
100% (300 marks) Total

7- List of References

7.1 Essential books (Text books)

Handbook of HEATING, VENTILATION, and AIR CONDITIONING Ed. Jan F. Kreider Boca Raton, CRC Press LLC. 2001

7.2 Recommended books; Periodicals & Websites.

ASHRAE 2000 HVAC Systems and Equipment Handbook
ASHRAE 2005 Fundamentals Handbook

8- Facilities required for teaching and learning

Lecture room equipped with overhead projector
Presentation board, computer and data show
Laboratory

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Head of department: Prof. Dr. Osama Ezzat Abdellatif

Matrix of course content and ILO's

Course Title: **Air Conditioning Systems and Equipment** **Code: MEP 503**
Lecture: 3 . **Tutorial**: ---- **Practical**: ---- **Total:** 3
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Course content	ILO's A	ILO's B	ILO's C	ILO's D
Design of air conditioning systems	a1	a3	b2	
DX air conditioners	a2	b1	c1	
All air systems, all water systems, secondary fluid air conditioning systems	a3	b1	c2	d1
Window, split air conditioner	a1	b1	b2	
Packed air conditioning unit	a2	c2		
Central air conditioning systems	a1	b2		
Heating and cooling coils	a4	b3	c2	
Humidifiers	a2	b1	c1	d1
Filters	a1	b3		
Air condensers	a2	b2	c2	
Water condensers and cooling towers	a3	b1		
Air conditioning for planes, hospitals, and factories	a4	b3	c1	d1,d3

Matrix of course aims and ILO's

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Course aims	ILO's A	ILO's B	ILO's C	ILO's D
1- List the different air conditioning systems and its equipment.	a1,a2	b2	c2	
2 - Describe the different air conditioning systems and equipment.		b2	c1	d2
3 - Describe the components of automatic control and measurement systems used in RAC systems	a2	b2	c1	d1,d3