



Course Specification

(Bachelor)

Course Title: environmental control system

Course Code: APAR13

Program: Architectural Engineering Technology

Department: NOT AVAILABLE

College: Applied College

Institution: Umm Al-Qura University

Version: 1

Last Revision Date: Pick Revision Date.



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A. General information about the course:

1. Course Identification

1. Credit hours: (2)

2. Course type

A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: (1st year 2nd semester)

4. Course General Description:

This course studies the interaction between buildings and climate considering natural and man- made effects in order to create a climatically comfortable and controlled environment for building users. Furthermore, this course discusses examples of passive design in hot-humid and hot-arid climates.

5. Pre-requirements for this course (if any):

6. Co-requisites for this course (if any):

7. Course Main Objective(s):

The course aims at the students to: Demonstrate an understanding of the mutual integration between human and the environment. Demonstrate adequate understanding of the means to achieve an environmentally sustainable built environment. Make design decisions considering user requirements and various environmental impacts. Apply various means to achieve sustainable built environment. Work collaboratively and constructively, and lead diverse teams to perform a wide range of tasks with responsibility.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	2	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	2x14





2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		28

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Demonstrate an understanding of the mutual integration between human and the environment.	K1	- Lecture - Presentation	- Short quiz - written exam
1.2	Demonstrate adequate understanding of the means to achieve an environmentally sustainable built environment.	K2	- Lecture - Presentation	- Short quiz - written exam
2.0	Skills			
2.1	Make design decisions considering user requirements and various environmental impacts.	S2	- Lecture - Presentation	- Short quiz - written exam
2.2	Apply various means to achieve sustainable built environment.	S4	- Lecture - Presentation	- Short quiz - written exam
3.0	Values, autonomy, and responsibility			
3.1	Work collaboratively and constructively, and lead diverse teams to perform a wide range of tasks with responsibility.	V1	- Presentation	- Short quiz - written exam

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to human, building and climate	2
2.	Climatic factors and human comfort	2
3.	Climatic zones, micro and macro climate, and climate effects on buildings	2
4.	Sun path diagram and solar control	4
5.	Thermal transfer control	4
6.	Wind effects and air flow patterns	4
7.	Prevailing wind: control methods	2
8.	Daylight	4





9.	Passive design in hot-humid climate	2
10.	Passive design in hot-arid climate	2
Total		28

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz 1	3	10%
2.	Midterm exam	7th week	10%
3.	Research report	9	20%
4.	Final written exam	16	60%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	<p>Raof, S. et al. (2009). Adapting Buildings and Cities for Climate Change. Elsevier.</p> <p>Kwok, A. (2021). Environmental Control Systems Case Studies. Lulucom.</p> <p>Moore, F. (1992). Environmental Control Systems: Heating, Cooling, Lighting. McGraw-Hill.</p> <p>Phillips, D. (2004). Daylighting: Natural Light in Architecture. Architectural Press.</p>
Supportive References	
Electronic Materials	Websites on the internet that are relevant to the topics of the course.
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	(Classrooms, laboratories, demonstration rooms/labs, etc.) Class room
Technology equipment (projector, smart board, software)	software Data show
Other equipment (depending on the nature of the specialty)	



F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Questioner of course quality
Effectiveness of Students assessment	Peer reviewers	Random grading report Test Completion report for test Standards
Quality of learning resources	Students	E-Survey of sufficiency of learning resources
The extent to which CLOs have been achieved	Program leaders	Results of quizzes, mid-term and final exams- Presentation and discussion.
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851141114462/190372
DATE	22/11/1446 هـ

