



# Course Specification

## DIPLOMA

**Course Title:** Engineering Drawing

**Course Code:** APRT1205

**Program:** Renewable energy technologies

**Department:** Diploma Department

**College:** The Applied College

**Institution:** Umm Al-Qura University

**Version:** 1

**Last Revision Date:** 10 February 2025

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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: (1<sup>st</sup> Level/ 1<sup>st</sup> Year)

#### 4. Course General Description:

##### 1. Course Description

The course provides the undergraduate engineering student with a background in descriptive geometry, orthographic projection, engineering drawing standards and annotation, and computer-aided engineering graphics. Point line and plane relationships in projection; multi-view engineering drawings; auxiliary and section views; basic dimensioning and annotation.

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

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

#### 7. Course Main Objective(s):

##### Course Main Objective

On successful completion of this course, students will be able to use the engineering drawing manual tools in addition to the free hand sketching, draw all views and the isometric view, extract the missed views and sections, and have a brief idea on using the engineering drawing software.

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	5	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> <li>Traditional classroom</li> <li>E-learning</li> </ul>		
4	Distance learning		



### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	15
2.	Laboratory/ <u>Studio</u>	60
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		75

### 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	A good understanding of engineering drawing principles	K1	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam
2.0	Skills			
2.1	Using the engineering drawing tools	S1	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam
2.2	Drawing and reading engineering drawings	S2	Lectures, tutorials and independent study assignments	Homework, Quizzes, Midterm and Exam
3.0	Values, autonomy, and responsibility			



Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods

### C. Course Content

No	List of Topics	Contact Hours
1. 1	<b>Engineering drawing principles and introduction</b> <ul style="list-style-type: none"> <li>Definition of engineering drawing</li> <li>Method of use                             <ul style="list-style-type: none"> <li>Line types</li> <li>Title blocks</li> <li>Drawing scales</li> </ul> </li> </ul> <b>Geometric construction</b> Geometric construction on lines, arcs and circles	2
2. 2	<b>Multi-view projection</b> <ul style="list-style-type: none"> <li>First and third angle projections</li> <li>Projection – Views of point, line and surface</li> <li>Views of solids</li> <li>Lay-out of views</li> </ul> <b>Pictorial projection</b> <ul style="list-style-type: none"> <li>Pictorial presentation of point, line and surface</li> </ul> Pictorial presentation of solids	3
3	<b>1. Isometric and oblique sketching of solids</b> <b>2. Dimensioning</b> <ul style="list-style-type: none"> <li>Oblique sketching of solid</li> </ul> Isometric sketching of solid	2
4	<b>Dimensioning</b> <ul style="list-style-type: none"> <li>Rules and concepts</li> </ul>	2





	<ul style="list-style-type: none"> <li>Linear dimensioning</li> </ul>	
	Curved dimensioning	
5	<b>Intersections</b> <ul style="list-style-type: none"> <li>Cutting planes</li> <li>Intersecting of surfaces and solids</li> </ul>	1
	Intersecting of solids	
6	<b>Sectioning and section views from Isometric drawing</b> <ul style="list-style-type: none"> <li>Sections and section types</li> <li>Full, half and partial sections</li> <li>Special sections</li> </ul>	1
	Hatching	
7	<b>Extracting the missing third view from given views</b>	1
	Extracting side view from front and top views	
8	<b>Extracting the isometric by knowing all views</b> <ul style="list-style-type: none"> <li>Simple isometric from knowing views</li> </ul>	1
	Advanced isometric from knowing views	
9	<b>Free hand sketching</b> <ul style="list-style-type: none"> <li>Free hand sketching of lines, rings, circles and conic sections</li> <li>Isometric and oblique free hand sketching of solids</li> </ul>	1
	Free hand sketching of views and sections	
10	<b>Introduction to computer graphics</b>	
	<b>Learning the basic principles of 2D sketch</b> <ul style="list-style-type: none"> <li>Line- SP-line - circle- ellipse- arc- rectangle -fillet- chamfer- polygon – mirror - rectangular pattern- circular pattern –offset – dimensions</li> </ul>	
	<b>Basic concept of 3D modeling</b> <ul style="list-style-type: none"> <li>Revolve – extrude – hole –coil – thread –fillet</li> </ul>	1
	<b>Learning and creation of Drawing sheets</b> <ul style="list-style-type: none"> <li>Views – sections - breakout view – Auxiliary view</li> </ul>	
7	<i>Studio Work</i>	60
<b>Total</b>		<b>75</b>

#### D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1. 1	Quizzes and Exercise	3-8	%10
2. 2	Report & Presentation	3-8	%20
3. 3	Mid-term	9	%20





No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
4	Final exam	17/18	50%

\*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	<ul style="list-style-type: none"> <li>Engineering Drawing and Design; by Cecil Howard Jensen, Jay D. Helsel Glencoe McGraw Hill, 5th edition, 1997.</li> <li>Engineering Drawing and Graphic Technology; by Thomas E. French, et al McGraw-Hill Higher Education, 14th edition, 1993.</li> </ul>
Supportive References	Principles of Engineering Drawing; by Louis Gary Lamit, Kathleen L. Kitto Delmar Learning, 1st edition, 1994.
Electronic Materials	All the lecture notes
Other Learning Materials	

### 2. Required Facilities and equipment

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

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Faculty	Direct (project, HW, Quiz, midterm and final exam)
Effectiveness of Students assessment	Students	Indirect (Student Survey)
Quality of learning resources	Program Coordinator	Direct analysis
The extent to which CLOs have been achieved	Program Coordinator	Direct analysis
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.	851141114462/190394
DATE	22/11/1446

