



Course Specification

(Bachelor)

Course Title: **Drawing Engineering**

Course Code: **ME2131**

Program: **Mechanical Engineering**

Department: **Mechanical Engineering**

College: **Engineering and Architecture**

Institution: **Umm Al-Qura University**

Version: **1**

Last Revision Date: **14 January 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: (3)

4. Course General 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):

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	90	100
2	E-learning		
3	Hybrid - Traditional classroom - E-learning		



No	Mode of Instruction	Contact Hours	Percentage
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	
2.	Laboratory/Studio	90
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		90

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	Explain projection theory and orthographic projection	K1	Interactive Lectures, Group Discussions, Hands-on Studio Practice	Studio Practices, Assignments, Exams
1.2	Demonstrate understanding of dimensioning, annotation, and standards in engineering graphics	K1	Case Studies, Hands-on Studio Practice	Assignments, Studio Practices, Exams
...				
2.0	Skills			
2.1	Create engineering drawings using tools and software effectively (CAD)	S2	Studio Exercises and Demonstrations	Lab Assessments
2.2	Interpret complex engineering	S3	Studio Exercises and	Lab Assessments



Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	drawings and visualize missing views		Demonstrations	
...				
3.0	Values, autonomy, and responsibility			
3.1	Collaborate effectively in teams for engineering drawing projects	V2	Group Work, Peer Reviews	Lab Assessments
3.2	Demonstrate ethical considerations in sustainable engineering design	V1	Case Studies, Group Discussions	Lab Assessments, Peer Feedback
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Engineering Graphics: Principles, Standards, Line Types, and Scales - Definition of engineering drawing - Method of use - Line types - Title blocks - Drawing scales Geometric construction - Geometric construction on lines, arcs and circles	6
2.	Multi-view projection - First and third angle projections - Projection – Views of point, line and surface - Views of solids - Lay-out of views Pictorial projection - Pictorial presentation of point, line and surface Pictorial presentation of solids	12
3.	- Isometric and sketching of solids - Oblique sketching of solids	12
4.	Dimensioning Rules and concepts	6





	- Linear dimensioning - Curved dimensioning	
5.	Intersections - Cutting planes - Intersecting of surfaces - Intersecting of solids	6
6.	Sectioning and section views from Isometric drawing - Sections and section types (Full, half and partial sections) - Special sections - Hatching	6
7.	Extracting the missing third view from given views Extracting side view from front and top views	6
8.	Extracting the isometric by knowing all views - Simple isometric from knowing views - Advanced isometric from knowing views	12
9.	Free hand sketching - Free hand sketching of lines, rings, circles and conic sections - Isometric and oblique free hand sketching of solids - Free hand sketching of views and sections	12
10.	Introduction to computer graphics Learning the basic principles of 2D sketch - Line- SP-line - circle- ellipse- arc- rectangle -fillet- chamfer- polygon – mirror - rectangular pattern- circular pattern – offset – dimensions Basic concept of 3D modeling - Revolve – extrude – hole –coil – thread –fillet Learning and creation of Drawing sheets - Views – sections - breakout view – Auxiliary view	12
Total		90

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Exercises	Weekly	40
2.	Mid-term Exam	7	20
3.	Final Exam	16	40

*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	- Geometric and Engineering Drawing, By Ken Morling, Stéphane Danjou, Routledge - Taylor & Francis, 4th Edition, 2022 - Engineering Drawing and Design; by Cecil Howard Jensen, Jay D. Helsel Glencoe McGraw Hill, 5th edition, 1997
Supportive References	- Engineering Drawing and Graphic Technology; by Thomas E. French, et al McGraw-Hill Higher Education, 14th edition, 1993. - Principles of Engineering Drawing; by Louis Gary Lamit, Kathleen L. Kitto Delmar Learning, 1st edition, 1994
Electronic Materials	
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Studio
Technology equipment (projector, smart board, software)	Data show, Smart Board
Other equipment (depending on the nature of the specialty)	Inventor software

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Faculty	Surveys, Peer Reviews
Effectiveness of Students assessment	Students, Faculty	Feedback, Analysis of CLOs
Quality of learning resources	Program Leaders	Resource Utilization Reports
The extent to which CLOs have been achieved	Program Leaders, Peers	Direct and Indirect Assessments
Other		

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

Assessment Methods (Direct, Indirect)



G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	

