MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Drawing**			**Module Delivery**	
Module Type	**Basic**			☐ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MIET1104**				
ECTS Credits	**5**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	MIET		**College**	Alsafwa university college	
Module Leader	Maysam Abdul Wahhab Rahim		**e-mail**	maysam.abdelwahab@alsafwa.edu.iq	
Module Leader's Acad. Title	**Assistant Lecturer**		**Module Leader's Qualification**	**M.Sc.**	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee ApprovalDate	10/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Objectives اهداف المادة الدراسية	The module aims for the Basics of Engineering Drawing course are as follows: 1. To demonstrate proficiency in creating and interpreting engineering drawings: Develop the skills to create accurate and detailed engineering drawings using both manual drafting techniques and computer-aided drafting (CAD) software. Additionally, gain the ability to interpret and understand engineering drawings, including orthographic projections, sections, and assembly drawings. 2. To apply industry standards and practices: Understand and apply the relevant industry standards and practices for engineering drawing, such as dimensioning, tolerancing, and geometric dimensioning and tolerancing (GD&T). Ensure that drawings are compliant with applicable standards to facilitate effective communication and manufacturing processes. 3. To develop spatial visualization skills: Enhance your ability to visualize and mentally manipulate objects in three-dimensional space based on two dimensional drawings. Strengthen your spatial awareness and improve your understanding of complex engineering designs. 4. To demonstrate effective communication of technical information: Acquire the skills to communicate technical information clearly and accurately through annotations, notes, and drawing presentations. Enhance your ability to convey design intent, dimensions, and specifications to other stakeholders, such as engineers, manufacturers, and clients. 5. To apply critical thinking and problem-solving skills in engineering drawing: Develop the ability to analyze and solve engineering drawing problems, such as identifying and resolving dimensional conflicts, addressing design issues, and ensuring proper fit and function of components. Apply critical thinking skills to evaluate and improve the quality and accuracy of engineering drawings.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1. Develop Fundamental Skills: The aim is to develop fundamental skills in engineering drawing, including the ability to create accurate and precise technical drawings using appropriate drawing instruments and techniques. 2. Understand Drawing Standards and Conventions: The aim is to familiarize students with drawing standards and conventions used in engineering, enabling them to create drawings that adhere to industry guidelines and ensure clear communication of design intent. 3. Interpret and Create Orthographic Projections: The aim is to enable students to interpret and create orthographic projections of objects, including

	understanding the principles of multiview projection, selecting appropriate views, and accurately representing three-dimensional objects in two dimensions. 4. Apply Dimensioning and Tolerancing Principles: The aim is to develop students' ability to apply dimensioning and tolerancing principles to engineering drawings, including understanding different types of dimensions, tolerance symbols, and geometric dimensioning and tolerancing (GD&T) concepts. 5. Familiarize with Computer-Aided Design (CAD): The aim is to introduce students to computer-aided design (CAD) software and develop their proficiency in using CAD tools to create and modify technical drawings, improving efficiency and accuracy in engineering design and documentation
Indicative Contents محتويات ارشادية	1. Introduction to engineering drawing: [12 hrs] • Overview of the role and significance of engineering drawing in technical fields. • Introduction to different drawing tools and their uses. • Understanding the importance of accuracy and clarity in engineering drawings. 2. Orthographic projections and multiview drawings: [12 hrs] • Principles and techniques of orthographic projection. • Creating and interpreting multiview drawings, including front, top, and side views. • Introduction to auxiliary views and sectional views. 3. Dimensioning and tolerancing: [12 hrs] • Understanding dimensioning practices and techniques. • Introduction to geometric dimensioning and tolerancing (GD&T) symbols and concepts. • Applying tolerances to ensure proper fit and functionality of components. 4. Computer-aided drafting (CAD) software: [12 hrs] • Introduction to CAD software and its applications in engineering drawing. • Learning basic commands and tools for creating and modifying drawings. • Hands-on practice with CAD software to create technical drawings. 5. Assembly drawings and exploded views: [11 hrs] • Creation and interpretation of assembly drawings. • Understanding exploded views to visualize the relationship between parts. • Introduction to bill of materials (BOM) and part lists in assembly drawings.

Learning and Teaching Strategies	
Strategies	When it comes to learning and teaching engineering drawing using AutoCAD, there are several strategies that can be effective. Here are some recommendations: 1. Familiarize with the Software: Before diving into engineering drawing concepts, it's important to become familiar with the AutoCAD software. This includes understanding the user interface, basic tools, and commands. Start with

	introductory tutorials or online resources that cover the basics of AutoCAD. 2. Start with Fundamentals: Begin by teaching the fundamental concepts of engineering drawing, such as orthographic projection, isometric projection, dimensioning, and tolerancing. Explain the principles and techniques used in creating accurate and clear technical drawings. 3. Hands-on Practice: Engineering drawing is a practical skill, so provide ample opportunities for hands-on practice. Assign exercises and projects that require students to create different types of drawings using AutoCAD. Encourage them to explore and experiment with various tools and commands. 4. Step-by-Step Instructions: Break down complex drawing tasks into smaller, manageable steps. Provide step-by-step instructions and demonstrations using AutoCAD, showing students how to execute each step effectively. This approach helps students understand the workflow and build their confidence. 5. Visual Aids and Examples: Utilize visual aids, such as slides, diagrams, and examples, to reinforce concepts. Show real-world engineering drawings and explain how they were created using AutoCAD. Visual representations can enhance understanding and make abstract concepts more tangible. 6. Group Activities and Collaboration: Promote collaboration among students by assigning group activities or projects. This allows them to work together, share knowledge, and learn from one another. Encourage students to discuss their approaches and problem-solving techniques related to engineering drawing in AutoCAD. 7. Provide Feedback: Regularly provide constructive feedback on students' drawings. Highlight areas for improvement, suggest alternative methods, and point out common mistakes. This feedback loop is crucial for students to refine their skills and develop a deeper understanding of engineering drawing principles. 8. Stay Updated with AutoCAD Features: AutoCAD is regularly updated with new features and enhancements. Stay up to date with these changes to ensure you're teaching the latest tools and workflows. Familiarize yourself with new capabilities that can improve efficiency and accuracy in engineering drawing. 9. Online Resources and Communities: Encourage students to explore online resources, tutorials, and communities dedicated to AutoCAD and engineering drawing. There are numerous websites, forums, and YouTube channels that offer valuable content and support for learning AutoCAD. 10. Project-Based Learning: Incorporate project-based learning into the curriculum, where students can apply their engineering drawing skills to real-world scenarios. Assign projects that simulate industry-related tasks, such as creating architectural plans, mechanical assemblies, or electrical schematics using AutoCAD.

Student Workload (SWL)

Structured SWL (h/sem)	59	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	61	**Unstructured SWL (h/w)**	4.3
Total SWL (h/sem)	150		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	5, 10	LO #1, #2 and #3
	Assignments	2	10% (10)	2, 12	LO #3 and #4
	Report/project	14	10% (10)	14	ALL
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-3
	Final Exam	3 hr	50% (10)	16	ALL
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Introduction to Engineering Drawing: • Importance and applications of engineering drawing. • Drawing instruments and materials. Drawing standards and conventions.
Week 2	Lines and Lettering • Types of lines used in engineering drawing. • Line weights and line quality.

	Techniques for freehand lettering and title block.
Week 3	Geometric Construction • Basic geometric shapes and their construction methods. • Construction of angles, triangles, and polygons. Division of lines and angles.
Week 4	Orthographic Projection • Introduction to orthographic projection. • Multiview projection and views of an object. Drawing orthographic views of simple objects.
Week 5	Sectional Views • Introduction to sectional views. • Types of sectional views (full, half, offset). Drawing sectional views of objects.
Week 6	Dimensioning and Tolerancing • Introduction to dimensioning and tolerancing. • Types of dimensions (linear, angular, radial). Geometric dimensioning and tolerancing (GD&T).
Week 7	Auxiliary Views: • Introduction to auxiliary views. • Drawing auxiliary views to show true shape and size of inclined surfaces. • Solving problems using auxiliary views.
Week 8	Pictorial Drawings • Introduction to pictorial drawings (isometric, oblique, perspective). • Drawing isometric and oblique pictorial views. Creating exploded views.
Week 9	Screw Threads and Fasteners • Introduction to screw threads. • Types of screw threads and thread representation. Drawing standard fasteners (bolts, nuts, screws).

Week 10	Assembly Drawings • Introduction to assembly drawings. • Drawing exploded views and assembly details. Bill of materials (BOM) and part numbering.
Week 11	Introduction to CAD (Computer-Aided Design) • Overview of CAD software and its benefits. • Introduction to basic CAD tools and commands. Creating simple drawings using CAD software.

Week 12	Isometric Projection • Introduction to isometric projection. • Drawing isometric views of simple objects. Solving problems using isometric projection.
Week 13	Electrical and Electronic Symbols • Introduction to electrical and electronic symbols. • Drawing basic electrical and electronic circuits. Wiring diagrams and schematic symbols.
Week 14	Engineering Drawings for Manufacturing • Introduction to manufacturing drawings. • Drawing detailed views and dimensioning for manufacturing. Introduction to tolerances and fits.
Week 15	Review and Project Work • Review of course topics and concepts. • Project work involving the application of engineering drawing principles.

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	D. A. Madsen, D. P. Madsen, and J. E. Briesacher, Engineering Drawing and Design, 5th ed., Clifton Park, NY: Delmar Cengage Learning, 2011.	Yea
Recommended Texts	F. E. Giesecke, A. Mitchell, H. C. Spencer, I. L. Hill, and J. T. Dygdon, Technical Drawing with Engineering Graphics, 15th ed., Upper Saddle River, NJ: Pearson, 2016.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جداً	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.