MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	CAE Principals			**Module Delivery**	
Module Type	Support or related learning activity			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	ATU12033				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	ATU12		**College**	PMTE	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	None		**e-mail**		
Peer Reviewer Name	None		**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1	

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 الإرشادية	
Module Objectives أهداف المادة الدراسية	1. This course deals with identifying engineering drawing tools and materials, methods of using them, performing manual exercises, drawing lines, curves, and two- and three-dimensional shapes. Thus, developing the student's potential to study and apply the basics of engineering drawing. Which includes reading, disassembling and assembling geometric shapes through drawing, projection, and sections methods. In addition to how to draw engineering mechanical plans necessary to clarify design ideas. 2. Also, To learn the student the basic principles and theories of engineering drawing and how to implement different sketches by using computer programs such as (AUTOCAD).
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Knowing the tools used in engineering drawing and how to use them properly. 2. The student's ability to understand and apply the basics of engineering. 3. Reading, disassembling, and assembling geometric shapes through drawing. 4. Developing the student's skill in using tools in drawing geometric shapes. 5. Developing the student's engineering imagination through deducing the projections and sections of each geometric solid and realizing its dimensions. 6. Developing student skills using AutoCAD drawing software. 7. Conducting auxiliary exercises to apply it correctly to increase its absorption capacity of the material. 8. Communicate with the most important ideas presented by the article through the Internet. 9. Developing student skills using AutoCAD drawing software. 10. Going to implement an engineering design with all its recognized requirements in the field of work, which reflect skills through designing engineering plans that meet the details and dimensions that can be implemented. 11. Applications to various engineering processes. 12. Auxiliary exercises that the student presents by applying and delivering them as a participatory work to increase his ability to absorb the material
Indicative Contents المحتويات الإرشادية	1- Introduction to the subject: basics of engineering drawing and the difference between it and free drawing: Engineering drawing, its elements, tools and drawing methods. 2- Introducing students to paper scales and drawing boards, and Free hand drawing (lines, circles, ...etc) 3- Distribute the canvas (frame, table, etc.), Types of lines in engineering drawing, Rules for writing dimensions and measurements and recognizing symbols and their significance, Drawing scales (zoom in and zoom out) 4- Construction and engineering operations: Create and divide angles, Divide circles and draw regular shapes in them.Create connecting lines between arcs and circles.

	5- Drawing engineering perspectives, Types of engineering perspectives and its construction from projections. Perspective constructions (drawing 3D solids (isometric perspective) 6- Projection in orthogonal planes, vertical projection methods, Drop geometric shapes. 7- Distribution of projections on the drawing board, Conclusion of the third projection from two projections. 8-Inferring the isometric perspective from projections with dimensions 9- Single simple and complex geometric objects 10- Sectors in engineering drawing, their importance, Cutting, sector, and hatching levels, Types of sectors and their classification

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Planning a unit or lesson involves a number of instructional decisions. The teacher must identify the following: the content and processes to be addressed, the strengths, needs, and interests of students, the Common Essential Learnings that could be incorporated, and the most effective instructional approaches. Such decisions are critical and must be made consciously and purposefully. It begins with the student's interest in engineering tools and the drawing board. To reach the highest level of understanding in the application of all theoretical and laboratory lesson processes.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	0	0%		
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	20% (20)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction to CAE** - Characteristics of CAE and its importance. **Introduction to Modeling** - Dealing with real physical objects - Treating them as CAE models
Week 2	**Modeling of 3-Dimensional Problems** - Some examples of solid objects of real problems - Loads & boundary conditions - Utilization of symmetry to simplify problems modeling
Week 3	**Reduction to Plane Problems** - Importance & conditions of reduction to plane problems - Reduction to axi- symmetrical models - Modeling 2-D plane stress, plane strain, and fluid flow
Week 4	**Bar, Beam, Problems** - Analysis of bar, beam problems
Week 5	**Plate Problems** - Condition of reduction to plate model - Load, Symmetry
Week 6	**Meshing; 2-D** - Types of mesh - Methods of meshing
Week 7	**Meshing 3-D** - Types of mesh - Methods of meshing
Week 8	**Meshing Bar, Beam, and Plate** - Types of mesh - Methods of meshing
Week 9	**Load – Structural**

	- Types & implementation of structural loads
Week 10	**Load – Thermal** -Types & implementation of thermal loads
Week 11	**Load – Fluid** - Types & implementation of fluid- flow loads
Week 12	**Solution- Structural** - Static structural problems
Week 13	**Solution – Dynamic** - Dynamic structural problems
Week 14	**Solution – Thermal** - Heat transfer problems
Week 15	**Solution- Fluid** - Fluid flow problems
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1&2	The first chapter dealt with the topic of running the program and general concepts to get acquainted with the AutoCAD drawing area, the implementation of commands, the types of enlargements and reduction, units of measurement, and the formation of transparencies and dealing with them.
Week 2&3	
Week 4&5	Chapter 2 is to get acquainted with the drawing commands contained within the "Main" tab.Chapter 3 deals with precision drawing and drawing aids such as Grid, Command Line, Orthogonal, and Jump to Elements.
Week 6&7	Chapter 4 deals with drawing modification such as the delete, move, mirror, matrix, rinse, and stretch commands. Chapter 5 deals with adding dimensions in terms of dimension components and their signs.
Week 8&9	The sixth chapter deals with writing and publicizing, while the seventh chapter deals with blocks, descriptions, controlling their specifications, and how they are formed, included, and modified.

Week 10&11&12	Chapter 8 deals with 3D drawing. It shows how to create the new "mesh objects", use the coordinate system, divide the screen into different scenes, and use commands such as "RevSurf" "TabSurf" "rulesurfe".
Week 13&14	The ninth chapter deals with “inanimate objects,” how they are created, and the operations of addition and subtraction that are performed on them.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	[1] الرسم الهندسي، عبد الرسول عبد الحسين الخفاف، دار الكتب والوثائق العراقية، 1990.	
Recommended Texts	[2] Beginning Auto CAD, by Bob McFarlane, Elseveir, 2007	
Websites	https://www.youtube.com/watch?v=yhRDjplrl1U, https://www.youtube.com/watch?v=fQNwVo2hWU4 https://www.youtube.com/watch?v=K8fQsse68Sc	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	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.