	Ministry of Higher Education and Scientific Research - Iraq Al-Mustaqbal University College for engineering and technology Department of Biomedical Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Engineering Drawing and AutoCAD			**Module Delivery**	
Module Type	BASIC			**Theory** **Lecture** **Lab**	
Module Code	UOMU0102024				
ECTS Credits	**5**				
SWL (hr/sem)	150				
Module Level		2	**Semester of Delivery**		2
Administering Department		Department of Chemical Engineering and Petroleum Industries	**College**	Engineering	
Module Leader	Abrar Falah Naji		**e-mail**	Abrar.falah.naji@uomus.edu.iq	
Module Leader's Acad. Title		Asst.lecturer	**Module Leader's Qualification**		master
Module Tutor					
Peer Reviewer Name			**e-mail**		
Review Committee Approval		15/3/2026	**Version Number**		

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 Aims

أهداف المادة الدراسية

Engineering Drawing

1. The aims of the course provide a deep knowledge, wide scope and improved understanding of the engineering drawing.
2. The students should gain knowledge to apply the engineering drawing in engineering applied.

Auto CAD

3. Understand the fundamental concepts and features of Auto CAD.
4. Learn sketching and taking field dimensions.
5. Take Data and transform it into graphic drawings.
6. Learn basic engineering drawing formats.
7. Learn basic Auto CAD skills.
8. Learn how draw 2D and 3D drawings in Auto CAD.

Module Learning Outcomes

مخرجات التعلم للمادة الدراسية

Engineering Drawing

1. The students can be use Tools Drawing in draw and analyze geometric shapes.
2. Enable students to draw devices, equipment & PFD in chemical engineering Auto CAD
3. Utilize the power and precision of Auto CAD as a drafting and design tool used in chemical engineering design.
4. Apply basic CAD concepts to develop and construct accurate 2D geometry.
5. Create, manipulate and edit 2D drawings and figure.
6. Apply elements of mechanical drafting such as layers,. dimensions, drawing format
7. Create, manipulate 3D drawings and figure.

Indicative Contents

المحتويات الإرشادية

Engineering Drawing

- 1 Introduction 3 hr.
- 2 Planning of Drawing paper 3hr.
- 3 Types of line 3hr.
- 4 Engineering operation 3hr.

	❖ 5 Projections Drawing 3hr. ❖ 6 First angle projection 3hr. ❖ 7 Third angle projection 3hr. ❖ 8 Full section 3hr. ❖ 9 Half section 3hr. ❖ 10 The finding of third view 3hr. ❖ 11 Application Example 3hr. ❖ 12 Pictorial Drawing (Isometric and Oblique) 3hr. ❖ 13 Dimensions 3hr. ❖ 14 Examples of Chemical Engineering drawing and exercises. Auto CAD ❖ Introduction, drawing program screen components, Setting drawing limits, Units, Grid and snap, Zoom, Orthogonal, Osnap. 2D drafting: Cartesian system coordinate, AutoCAD drawing command (6hrs). ❖ Point, Line: line, multi-line, construction line, drawing line by using: absolute coordinate, polar coordinate, relative coordinate, Examples. ❖ Continuous line drawing: Rectangle, Polygon, Poly line with their options, Examples (6 hrs). ❖ Curves drawing: Arc, Circle, point –SP line, Ellipse with their options, Example (6 hrs). Modify command: ❖ 1-copy tool: copy, mirror, offset, array. 2- Erase tool: erase, trim, break .3-move tool: move, rotate Examples (6 hrs).4- Change tool: stretch, Lengthen, Extend, Scale, Chamfer, and Fillet .5-Explode, Examples (6 hrs). ❖ Layers: Create a new layer, rename layer, active layer, run and extinguishing layers, Freezing layers, Lock and open layers, the color, Font type, Line width, Example (6 hrs). ❖ 3D drawing methods: Surfaces drawing: box, Wedge, Pyramid, Dome, Sphere, Cone, Torus, Dish, Example (6 hrs). ❖ 3D drawing methods: Solids: box, Cylinder, Sphere, Cone, Wedge, Torus, Examples (6 hrs).
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in the delivery of this module is to encourage students to participate in the exercises, while improving and expanding their critical thinking skills at the same time. This will be achieved through classes, giving engineering designs, participating in solving them, and competing in giving ideas and skills for the solution.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL(h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	٩٣	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	٦
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	٥٧	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.8
Total SWL(h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	١٥٠		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	٤	10% (10)	3-10	LO #1, 2, 4,5,and 7
	Assignments	5	٥% (٥)	2-13	LO # 1-7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	٥% (٥)	13	LO # 1-7
Summative assessment	**Midterm Exam**	2 hr	٢0% (٢0)	6,14	LO # 1-7
	Final Exam	٣hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction and Planning of Drawing paper.
Week 2	Types of line and Engineering operation.

Week 3	Projection Drawing, first angle projection and third angle projection.
Week 4	Full section, half section, the finding of third view and application Example.
Week 5	Pictorial Drawing (Isometric and Oblique) and Application Example.
Week 6	Dimensions, examples of chemical engineering drawing and exercises.
Week 7	Final Exam.
Week 8	Introducing the AutoCAD program and interfaces and Drawing settings, preparing the drawing screen and worksheet.
Week 9	Create two-dimensional graphics (line drawing methods)(rectangle, circle).
Week 10	Create two-dimensional graphics (polygon, Arc, polyline, Ellipse).
Week 11	Modification Operations (Erase, Copy, Mirror, Offset, Move, Explode,Fillet,chamfer, Trim,).
Week 12	Modification Operations (Rotate, Scale,Extend , Array, Break, Stretch)
Week 13	Drawing with layers
Week 14	3D drawing methods: Surfaces drawing
Week 15	3D drawing methods: Solids
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Drawing rectangular using lines in absolute coordinate, polar coordinate, relative coordinate
Week 2	Lab 2: Drawing line,rectangular,circle
Week 3	Lab 3: Drawing Arc, polygon, point –SP line, Ellipse
Week 4	Lab 4: Drawing simple 2D shape and applying Modify commands such as copy, mirror, offset, array , trim, move, rotate , stretch, Lengthen, Extend, Scale, Chamfer, and Fillet

Week 5	Lab 5: Drawing a simple 2D chemical engineering drawing and applied layers.
Week 6	Lab 6:3D drawing methods: Surfaces drawing
Week 7	Lab 7: 3D drawing methods: Solids

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available
Required Texts	Engineering Drawing 1. الرسم الهندسي،تاليف (عبد الرسول الخفاف) الطبعة الثانية١٩٩٣ 2. R.P Hoelscher and C.H Springer "Engineering Drawing and Geometry AutoCAD 1-Terry T. Wohler, applying AutoCAD 2002 fundamentals, Glencoe /McGraw-Hill. 2-James A. Leach, AutoCAD 2002 Companion Essentials of AutoCAD plus Solid modeling ,2003, McGraw-Hill, Boston. 3- Terry T. Wohler, applying AutoCAD a step by step approach for AutoCAD release 13, 1996, Glencoe McGraw-Hill. 4- James A. Leach, AutoCAD 14 Companion Essentials of AutoCAD plus Solid modeling ,1999, WCB / McGraw-Hill, Boston.	no
Recommended Texts	David Byrnes and Mark Middlebrook, AutoCAD® 2007 For Dummies , Wiley Publishing, Inc.	No

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB 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.

ملاحظة: هذا النموذج تم وضعه وتقديمه من قبل مديرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي