	Ministry of Higher Education and Scientific Research – Iraq University of Warith Al-Anbiyaa College of Engineering Aircrafts Engineering Department	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Mechanical Drawing and CAD	**Module Delivery**	
Module Type	CORE	**Lab** **Practical**	
Module Code	AIE234		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	**Semester of Delivery**	3
Administering Department	Aircraft Engineering	**College**	College of Engineering
Module Leader	Dr. Aws Al-Akam	**e-mail**	aws@uowa.edu.iq
Module Leader's Acad. Title	Assist. Prof	**Module Leader's Qualification**	Ph.D.
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Review Committee Approval	01/06/2024	**Version Number**	2024

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	ENG124	**Semester**	2

Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. Educate the student in the second stage the fundamental of mechanical drawing. 2. Explore the standard element of mechanical drawing such as bolts, keys, springs, and different types of gears. 3. Draw the assembled mechanical parts and determine the mechanism or method of assembly 4. Helping to understand the map of mechanical drawing and the symbols which it contain such as welding, fit and tolerance, and surface finishing.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Identify the components and fundamentals of mechanical drawing. 2. Learn how to interpret maps in mechanical drawing. 3. Recognize and understand all symbols and standards associated with mechanical drawing. 4. Identify the various methods of mechanical drawing. 5. Learn how to select the optimal parameters for calculations to suit the drawing. 6. Identify all types of gears, such as spur gears, bevel gears, worm gears, and helical gears, and their calculations. 7. Evaluate the student's ability to illustrate the subject explained to them through drawing. 8. Establish connections between what is learned and real-world applications. 9. Complete drawings within specified time frames. 10. Develop the student's abilities to use computers and designated programs in the field of mechanical drawing, linking them to manual drawing. 11. The ability to represent mechanical parts individually, collectively and assembled.
Indicative Contents المحتويات الإرشادية	*** Mechanical Drawing [9 hrs]** **Fastening Tools and Method of Drawing Them:** - Bolts and Screws, Nuts and Washers, Stud Bolts.

	Joining by Bolts or Screws **Assembly Drawing** *** CAD [2 hrs]** **Application on computer:** Drawing of primitives: box, cylinder, cone …. etc. *** Mechanical Drawing [3 hrs]** **Rivets:** - Classifications of Rivets, Method of Drawing and Joining Rivets *** Mechanical Drawing [3 hrs]** **Keys:** - Classifications of Keys, Method of Drawing and Joining Keys. *** CAD [2 hrs]** **Application on computer:** Features : extrude , revolve, ……etc. *** Mechanical Drawing [4 hrs]** **Springs:** - Classifications of Springs, Method of Drawing Compression Spring. *** Mechanical Drawing [4 hrs]** **Welding Signs:** - Types of Welding, Representing Welding Signs on Bodies. *** CAD [2 hrs]** **Application on computer:** Boolean operation. Union , subtract and intersect. Applications of Boolean operation. *** Mechanical Drawing [3 hrs]** **Pins:** Classifications of pins **Surface Finishing:** Representing Welding Signs on Bodies *** Mechanical Drawing [4 hrs]** **Tolerances:** - Basic Size, Deviations, Limits of Size, Tolerance, Representing Deviations on Zero Line. *** CAD [2 hrs]** **Application on computer:** Basic concepts on 3D. 3D view.

	*** Mechanical Drawing [3 hrs]** **Fits:** **-** Types of Fits *** CAD [2 hrs]** **Application on computer:** Projection definition *** Mechanical Drawing [12 hrs]** **Gears:** - Classifications of Gears, Drawing of Spur Gear, Bevel Gear and worm gear, Gears Assembly Drawing *** CAD [2 hrs]** **Application on computer:** Modify of 3D solid: move, rotate, array, mirror ….. etc. UCS with applications. *** Mechanical Drawing [3 hrs]** **Detailed Drawing** *** CAD [2 hrs]** **Application on computer:** Draw welding assembly.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	- Provide the student with theoretical lectures prepared by the lecturer, explaining the subject of drawing in detail and demonstrating it in front of the students. - Bring some samples of the drawing subject to the class to confirm understanding and illustrate how it works. - Discuss some students' mistakes and how to avoid them.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.2

Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125

Module Evaluation
تقييم المادة الدراسية

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO # 1-11
	Assignments	15	15% (15)	Continuous	LO # 1-11
	Projects / Lab.	Lab. 7	10% (10)	Continuous	LO # 1-11
	Report	5	5% (5)	Continuous	LO # 1-11
Summative assessment	**Midterm Exam**	2 hrs.	10% (10)	7	LO # 1-11
	Final Exam	3 hrs.	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Fastening Tools and Method of Drawing Them:** Bolts and Screws Nuts and Washers Stud Bolts
Week 2	**Joining by Bolts or Screws** **Assembly Drawing**
Week 3	**Rivets:** Classifications of Rivets Method of Drawing and Joining Rivets **Keys:** Classifications of Keys Method of Drawing and Joining Keys
Week 4	**Springs:** Classifications of Springs Method of Drawing Compression Spring
Week 5	**Welding Signs:** Types of Welding Representing Welding Signs on Bodies
Week 6	**Pins:** Classifications of pins **Surface Finishing:** Representing Welding Signs on Bodies

Week 7	**Tolerances:** Basic Size Deviations Limits of Size Tolerance Representing Deviations on Zero Line
Week 8	**Fits:** Types of Fits
Week 9	**Gears:** Classifications of Gears **Spur Gear:** Drawing of Spur Gear
Week 10	**Spur Gears Assembly Drawing**
Week 11	**Bevel Gear:** Drawing of Bevel Gear
Week 12	**Bevel Gears Assembly Drawing**
Week 13	**Worm and Worm Wheel** Drawing of Worm and Worm Wheel
Week 14	**Detailed Drawing**
Week 15	**Exercise in Assembly Drawing**
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Application on computer:** Drawing of primitives: box, cylinder, cone …. etc.
Week 2	**Application on computer:** Features : extrude , revolve, ……etc.
Week 3	**Application on computer:** Boolean operation. Union , subtract and intersect. Applications of Boolean operation.
Week 4	**Application on computer:** Basic concepts on 3D. 3D view.
Week 5	**Application on computer:** Projection definition.
Week 6	**Application on computer:** Modify of 3D solid: move, rotate, array, mirror ….. etc. UCS with applications.
Week 7	**Application on computer:**

	Draw welding assembly.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1. K . MORLING, "Geometric and Engineering Drawing", Third Edition, ELSEVIER Publications, 2010. 2. David Martin, "Mechanical Drawing Using AutoCAD® 2016" ,1st Edition, Autodesk Publications , 2016.	Yes
Recommended Texts		No
Websites	https://me.uotechnology.edu.iq/index.php/ar/	

APPENDIX:

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.