

MODULE DESCRIPTION FORM

MODULE INFORMATION				
Module Title	Engineering Mechanics I			Module Delivery
Module Type	Basic			☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MDER211			
ECTS Credits	7			
SWL (hr/sem)	175 H/Sem.			
Module Level	2	Semester of Delivery	1	
Administering Department	Biomedical Eng.	College	College of Engineering	
Module Leader	Duaa Mohammed Abd al omur	e-mail	Duaamohammed001@gmail.com	
Module Leader's Acad. Title	Assistant lecture.	Module Leader's Qualification	Ms.c	
Module Tutor		e-mail		
Peer Reviewer Name		e-mail	Hasnaa.Mohammad@dayen.edu.iq	
Scientific Committee Approval Date		Version Number	1.0	

RELATION WITH OTHER MODULES		
Prerequisite module	MATH110	Semester 1
Co-requisites module	None	Semester

Module Aims, Learning Outcomes and Indicative Contents	
MODULE OBJECTIVES	1. Problem-solving with principles of engineering, science, and mathematics. 2. To apply the principles of static equilibrium law's (Newton's laws). 3. 2D, 3D forces components and moments in rectangular coordinates. 4. Free-body diagrams and equilibrium analyzing. 5- To Compute Moment ,Coupling, Equilibrium, Structures (Machine), frames, Friction and Belts for various engineering applications.



MODULE LEARNING OUTCOMES	KNOWLEDGE	A2-1 Define the mechanical engineering meaning ,newton's laws of motion, forces system (two-dimensional and three dimensional), Moment ,Coupling, Equilibrium, Structures (Machine), frames, Friction and Belts. A2-2 Understand force analysis, moment, and equilibrium, A2-3 Apply Newton's laws of motion to engineering problems , force system analysis, moment and coupling equations, Equilibriums formula, and Friction law. A2-4 solve two-dimensional forces system and moments , coupling , friction by determining their components in rectangular coordinate systems. A2-5 Sketching the free-body diagram (including support reactions), the geometry of simple structures and equilibrium conditions.
	SKILLS	B.1.1 Function efficiently as an individual B.1.2 Function as a member of multidisciplinary and multicultural teams.
	ETHICS	C.1.1 Define professional and ethical responsibilities C.1.2 Demonstrate diversity in their commitment to ethical responsibilities.
INDICATIVE CONTENTS	<u>Part I – Fundamental Principles and Force Systems (25hours)</u> • Basic concepts of mechanics: scalars, vectors, and vector operations. • Application of Newton's Laws of Motion to problems of static equilibrium. • force systems and force analysis <u>Part II – Equilibrium and Structural Analysis (25hours)</u> • Equilibrium of particles and rigid bodies with corresponding free-body diagrams. • Two-force and three-force Analysis members. • Internal forces developed in structural members. • Applications to moment, coupling, and machines. <u>Part III – Friction, and farms of Inertia (10 hours)</u> • Theory of dry friction and analysis of frictional systems, including wedges, belt friction, and rolling resistance. • Determination of farms and centroid of simple and composite bodies. • Calculation of moments of inertia for areas and masses.	

LEARNING AND TEACHING STRATEGIES

STRATEGIES

- Tutorial and graphics
- Problem solving
- Brain storming
- Research and reporting

Student Workload (SWL)

Structured SWL (h/sem)	93	Structured SWL (h/w)	6
Unstructured SWL (h/sem)	82	Unstructured SWL (h/w)	5.46
Total SWL (h/sem)	175		

DELIVERY PLAN (WEEKLY SYLLABUS)

المناهج الاسبوعي النظري

	MATERIAL COVERED	LOs
Week 1	Introduction to Mechanical Engineering	A2-1
Week 2	Force system - Force system : 2D Force System diagram	A2-1 A2-2,A2-3
Week 3	Free Body Diagram (F.B.D)	A2-1,A2-2, A2-3
Week 4	Moment	A2-1,A2-2, A2-3
Week 5	Couple	A2-1,A2-2, A2-3
Week 6	Equilibrium	A2-1,A2-2, A2-3
Week 7	Force system : 3D Force System diagram -Equilibrium in 3D Force Systems	A2-1 A2-2,A2-3
Week 8	General Review And Summary	-----
Week 9	MID-TERM EXAM 1	-----
Week 10	Structures: Machine	A2-1,A2-2, A2-3
Week 11	Structures: frames	A2-1,A2-2, A2-3
Week 12	Friction	A2-1,A2-2, A2-3
Week 13	Application of friction	A2-1,A2-2, A2-3
Week 14	Belts	A2-1,A2-2, A2-3
Week 15	MID EXAM 2	-----
Week 16	Preparatory Week Before The Final Exam	-----

DELIVERY PLAN (WEEKLY LAB. SYLLABUS) (منهاج المختبر الاسبوعي)

	Material Covered
Week 1	N.A

LEARNING AND TEACHING RESOURCES (مصادر التعلم والتدريس)

	Text	Available in the Library?
Required Texts	Meriam, J. L., Kraige, L. G. & Bolton, J. N. (2008). Engineering Mechanics: Dynamics (SI). (6th ed.), Wiley.	Yes
Recommended Texts	Meriam, J. L., Kraige, L. G. & Bolton, J. N. (2017). Engineering Mechanics: Dynamics (SI). (8th ed.), Wiley. Meriam, J. L., Kraige, L. G. & Bolton, J. N. (2017). Engineering Mechanics: Statics (SI). (7th ed.), Wiley.	Online
Websites		

MODULE EVALUATION

تقييم المادة العلمية

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	6	10% (10)	During the Semester	A2-1,A2-2, A2-3
	Assignments	10	10% (10)	During the Semester	A2-1,A2-2, A2-3
	Student Attendance	10	10% (10)	During the Semester	B1-1,B1-2
	Projects / Lab.	0	10% (10)	0	----
	Report	1	10% (10)	During Weeks # 12,13,14	A2-1,A2-2, A2-3
Summative assessment	Midterm Exam	2hr	10% (10)	Week #9	-----
	Final Exam	3hr	50% (50)	Week #17	-----
Total assessment			100% (100)		

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.

