Unit Description Form

Course Description Form

Faculty of Engineering / Department of

Unit Information

Course Information

Unit Title	**Engineering Mechanics**	**Unit delivery**	
Unit Type	**fundamental**	☒ نظريه ☒ حاضر ☒ المختبر ☐ تعليمي ☐ عملي ☐ Seminar	
Unit Code	WBM-22-03		
ECTS Credits	**8**		
SWL (ساعة / SEM)	**125**		
Unit level	3	**Delivery Semester**	1
Department of Administration	Biomedical Engineering	**College**	College of Engineering
Unit Commander	Hussein Amir Muhammad Aljawad	**E-mail Address**	hussein.aljawad@uowa.edu.iq
Title of Unit Commander	teacher	**Unit Commander Qualifications**	doctor
Unit Teacher		**E-mail Address**	
Peer Reviewer Name	name	**E-mail Address**	E-mail Address
Date of accreditation of the Scientific Committee	26/9/2024	**Version number**	1.0

Relationship with other units

Relationship with other subjects

Prerequisites Unit	No	**Semester**	
Common Requirements Unit	No	**Semester**	

Unit objectives, learning outcomes and how-to contents Course objectives, learning outcomes and instructional contents	
Objectives of the Unit Course Objectives	Objectives of the Engineering Mechanics Unit: Introduce students to the basic concepts of geometric mechanics and understand Newton's laws of motion. Enable students to analyze mechanical systems using the principles of equilibrium and forces. Enhance the ability to solve problems related to moments, stresses and flexibility. Train students to apply engineering concepts in the design and analysis of machines and structures. Develop critical thinking and analytical skills in the study and analysis of mechanical systems. • Qualify students to understand the practical applications of engineering mechanics in engineering and science.
Unit Learning Outcomes Learning outcomes of the course	Engineering Mechanics Unit Learning Outcomes: Understanding basic concepts: The student will be able to grasp the basic concepts and laws of engineering mechanics, including Newton's laws and mechanical analysis. Analysis of forces and equilibrium: The student becomes able to analyze the forces acting on different systems and apply the conditions of equilibrium. Calculation of moments and stresses: The student can calculate moments and stresses in different materials and structures. Application of engineering principles: The student applies engineering concepts in the design and analysis of machines and structures. Mechanical problem solving: The student acquires the ability to solve problems using methods Analytical and mathematical modeling. Technical communication: The student can prepare technical reports and present the results of engineering analysis effectively. • Critical thinking: The student develops critical and creative thinking skills in dealing with the challenges of engineering mechanics.
Indicative Contents Indicative Contents	Define the basic concepts of geomechanics and Newton's laws. Analysis of forces and equilibrium in different engineering systems. Calculate moments and centers of gravity in composite objects. The study of stress and strain in materials and structures. Analysis of mechanical structures such as bridges and frame Practical applications of engineering mechanics in the design and analysis of machines.

Learning and Teaching Strategies Learning and Teaching Strategies	
Strategies	The learning and teaching strategy of the Engineering Mechanics Unit includes theoretical lectures to explain basic concepts, and solving practical exercises to enhance applied understanding. Interactive discussions and group projects are used to develop analytical and problem-solving skills. In addition, technology and simulation software are employed to illustrate engineering concepts and their applications.

Student Workload (SWL) The student's academic load is calculated for 15 weeks			
SWL منظم (h / sem) Regular academic load of the student during the semester	64	**SWL regulator(h/s)** Regular student load per week	4
SWL غير منظم (h / sem) Irregular academic load of the student during the semester	61	**Unregulated SWL (h/s)** Irregular student academic load per week	4
SWL إجمالى (h / sem) The student's total academic load during the semester	125		

Unit Evaluation Course Evaluation					
	As	**Time/Number**	**Weight (tags)**	**Week due**	**Related learning outcomes**
Formative Assessment	**Contests**	2	10% (10)	5, 10	LO #1 , 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO #3 , 4, 6 and 7
	Projects /Laboratory.	1	10% (10)	continuous	every
	report	1	10% (10)	13	LO #5 , 8 and 10
Final Assessment	**Midterm Exam**	2 hr	10% (10)	7	LO #1-7
	Final Exam	2 hours	50% (50)	16	every
	Overall Rating		100% (100 degree)		

Delivery Plan (Weekly Curriculum) Theoretical Weekly Curriculum	
week	**Covered Material**
Week 1	Basic concepts
Week 2	Shear Force Diagrams (S.F.) and bending torque (B.M.) Using the section method.
Week 3	Shear Force Diagrams (S.F.) and bending torque (B.M.) Using the section method.
Week 4	Drawing Shear Force (S.F.) Diagramsand bending torque (B.M.) Using the graphical method.
Week 5	Drawing Shear Force (S.F.) Diagramsand bending torque (B.M.) Using the graphical method.
Week 6	Stresses in the beams
Week 7	Composite beams
Week 8	Transposed section method (alternative method – equivalent area)
Week 9	Shear stresses in beams

Week 10	Shear stresses in beams

Learning and Teaching Resources Learning and Teaching Resources		
	text	**Available in the library?**
Required texts	Strength of Materials Third and Fourth Edition . • Ferdinand and L.Singer Andrew Pytel	Yes
Recommended texts		Yes
Websites		

Grading chart Grading chart				
group	**degree**	Appreciation	**Tags (%)**	**definition**
An-Najah Group (50 - 100)	**A** - Excellent	privilege	90 - 100	Outstanding Performance
	B - Very Good	Very good	80 - 89	Above average with some errors
	C - Good	Good	70 - 79	Proper work with noticeable errors
	D - Satisfactory	medium	60 - 69	Fair but with significant shortcomings
	E - sufficient	Acceptable	50 - 59	The work meets the minimum standards
Group failure (0 – 49)	**FX** - Failed	Deposit (in (processing	(45-49)	More work required but credit granted
	F - Failed	Failure	(0-44)	Large amount of work required

Note: Signs that are more than 0.5 decimal places greater than or below the full mark will be rounded higher or lower (for example, a score of 54.5 will be rounded to 55, while a mark of 54.4 will be rounded to 54. The university has a policy of not tolerating "imminent traffic failure", so the only modification to the marks granted by the original mark(s) will be the automatic rounding described above.