MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Eng. Mechanics-Statics**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**ENMS 108**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		UGI	**Semester of Delivery**		Two
Administering Department		First Class	**College**	Civil Engineering	
Module Leader	Bayrak Shawqi Abdulsaheb		**e-mail**	11567@uotechnology.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D.
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**Version Number**		1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CEPH 103	**Semester**	One
Co-requisites module	CEMS 105	**Semester**	Three

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Introduce students to the fundamental principles and concepts of Engineering Mechanics and Statics. 2. Provide an overview of the importance of engineering mechanics in various engineering disciplines. 3. Develop students' understanding of scalar and vector quantities and their application in engineering problems. 4. Familiarize students with the representation of forces in two dimensions and the process of resolving forces into components. 5. Enable students to comprehend the concept of moments of forces and their significance in equilibrium analysis. 6. Develop students' ability to analyze and determine the resultant of force systems. 7. Introduce the concepts of equilibrium and free body diagrams and their role in analyzing static equilibrium problems. 8. Provide an understanding of different types of supports and their characteristics in structural analysis. 9. Develop students' knowledge and skills in analyzing structures in static equilibrium. 10. Familiarize students with truss analysis methods, such as the method of joints and the method of sections. 11. Introduce the concept of friction forces and their effects in engineering applications. 12. Develop students' ability to analyze systems involving frictional forces and determine their impact on equilibrium. 13. Enable students to calculate centroids for geometric shapes and composite bodies. 14. Provide an understanding of the parallel axis theorem and its application in calculating moments of inertia. 15. Develop students' skills in analyzing moments of inertia for composite bodies.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students should be able to: 1. Understand the importance of engineering mechanics in various engineering disciplines and its application in solving real-world problems. 2. Differentiate between scalar and vector quantities and apply them appropriately in engineering analysis. 3. Analyze and resolve forces into components in two-dimensional systems. 4. Calculate moments of forces and determine their impact on equilibrium. 5. Determine the resultant of force systems and apply it in the analysis of static equilibrium problems. 6. Construct free body diagrams and apply the principles of equilibrium to solve

	engineering problems. 7. Identify different types of supports and analyze structures in static equilibrium. 8. Apply truss analysis methods, such as the method of joints and the method of sections, to determine internal forces. 9. Analyze systems involving frictional forces and calculate their impact on equilibrium. 10. Calculate centroids for geometric shapes and composite bodies and understand their importance in structural analysis. 11. Apply the parallel axis theorem to determine moments of inertia for composite bodies. 12. Analyze moments of inertia and understand their significance in engineering applications.
Indicative Contents المحتويات الإرشادية	1. Introduction to Engineering Mechanics and Statics 2. Overview of engineering mechanics and its importance in engineering disciplines. 3. Scalar and vector quantities. 4. Representation of forces in two dimensions. 5. Resolving forces into components. 6. Moment of forces. 7. Resultant of forces systems 8. Concepts of equilibrium and free body diagrams. 9. Types of supports and their characteristics. 10. Analysis of structures in static equilibrium. 11. Truss analysis methods (e.g., method of joints, method of sections). 12. Friction 13. Introduction to friction forces and their effects. 14. Analysis of systems involving frictional forces. 15. Centroids and Center of Gravity 16. Determination of centroids for geometric shapes and composite bodies. 17. Moments of Inertia 18. Parallel axis theorem and its application. 19. Analysis of moments of inertia for composite bodies.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lectures and presentations: Use lectures and presentations to introduce and explain key concepts, theories, and principles related to engineering mechanics and statics. Employ visual aids, examples, and demonstrations to enhance understanding.. 2. Interactive discussions: Engage students in discussions and encourage active

	participation to promote deeper understanding of the material. Facilitate group discussions and encourage students to share their perspectives, ask questions, and engage in problem-solving activities. 3. Problem-solving sessions: Dedicate specific sessions to solving problems related to engineering mechanics and statics. Guide students through the problem-solving process, providing step-by-step explanations and encouraging students to apply their knowledge to real-world scenarios. 4. Case studies and real-world examples: Utilize case studies and real-world examples to demonstrate the application of engineering mechanics and statics in practical contexts. Discuss how theoretical concepts translate into real-world engineering problems and solutions. 5. Group projects and collaborative learning: Assign group projects or activities that require students to work together to solve complex engineering problems. Encourage collaboration, communication, and teamwork skills while applying knowledge of statics to real-life scenarios. 6. Formative assessments and feedback: Provide regular formative assessments such as quizzes, assignments, or short tests to gauge students' understanding and progress. Offer constructive feedback to guide students' learning and identify areas that require further attention 7. Self-directed learning and resources: Encourage students to engage in self-directed learning by providing additional resources such as textbooks, online materials, and reference materials. Encourage students to explore beyond the core curriculum to deepen their understanding of statics concepts. 8. Review sessions and exam preparation: Conduct review sessions before exams to consolidate learning and provide an opportunity for students to ask questions and clarify concepts. Offer exam preparation materials and practice questions to help students prepare effectively.

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	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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**	2/30 min	5/40	6, 10	
	Assignments				
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**				
	Final Exam				
Total assessment					

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Engineering Mechanics and Statics Overview of engineering mechanics and its importance in engineering disciplines Scalar and vector quantities
Week 2	Representation of forces in two dimensions Resolving forces into components
Week 3	Moment of forces
Week 4	Resultant of force systems
Week 5	Concepts of equilibrium and free body diagrams Types of supports and their characteristics Analysis of structures in static equilibrium
Week 6	Analysis of structures in static equilibrium (continuation from Week 3) Quiz 1 (30 minutes)
Week 7	Truss analysis methods (e.g., method of joints, method of sections)
Week 8	Truss analysis methods (e.g., method of joints, method of sections) (continuation from Week 6)
Week 9	Group projects and collaborative learning: Solving complex engineering problems
Week 10	Friction: Introduction to friction forces and their effects

	Analysis of systems involving frictional forces
Week 11	Analysis of systems involving frictional forces (continuation from Week 6)
Week 12	Mid-term exam (90 minutes) Centroids and Center of Gravity: Determination of centroids for geometric shapes and composite bodies
Week 13	Moments of Inertia: Parallel axis theorem and its application Analysis of moments of inertia for composite bodies
Week 14	Polar Moment of Inertia, Radius of Gyration of Areas, and Product of Inertia
Week 15	Review and reinforcement of key concepts
Week 16	Exam preparation: Review sessions and practice questions

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	"Engineering Mechanics: Statics" by J.L. Meriam and L.G. Kraige	Yes
Recommended Texts	Engineering Mechanics by Higdon, Stiles	Yes
Websites	1. Amazon (www.amazon.com): Amazon is a well-known online marketplace that offers a wide range of textbooks, both new and used. You can search for specific titles, authors, or editions, and read customer reviews to help you make informed	

	decisions. 2. EngineeringStatics.org (www.engineeringstatics.org): This website offers a collection of free resources, including lecture notes, video tutorials, and practice problems, specifically tailored to the subject of statics.

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.