



Northern Technical University
College of Oil & Gas Techniques
Engineering/Kirkuk
Department of Renewable Energy Techniques
Engineering



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Mechanics Engineering /static		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	RETE 100		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	
Administering Department	RETE	College	College of Oil & Gas Techniques Engineering/Kirkuk
Module Leader	Afrah Turki Awad	e-mail	afrah.turki@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	PhD
Module Tutor		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	None	Semester	
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> 1. To develop problem solving skills and understanding of mechanic's theory through the application of techniques. 2. To understand Force, Moment and Couple from a given machine. 3. Covers the fundamentals of mechanics and mechanical machine components. 4. To understand friction and equilibrium problems. 5. To calculate centroids and moments of inertia.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. Explain the principles of static equilibrium. 2. Recognize how mechanics work in mechanical machines. 3. Describe force, moment, and couple. 4. Solve problems related to the forces in truss members using the method of joints and the method of sections. 5. Identify types of forces. 6. Define types of friction. 7. Use Free Body Diagrams to solve static problems involving components and pulley systems. 8. Explain the concept of equilibrium used in problem-solving. 9. Solve problems related to work and equilibrium.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <ul style="list-style-type: none"> • Mechanics: is the physical science that deals with the effects of forces on objects. • Branches of Mechanics: Statics, Dynamics, Strength of Materials. • Statics: is the study of rigid bodies that are in equilibrium. • Two kinds of quantities are used in engineering mechanics: A scalar quantity has only magnitude (mass, time, temperature, etc.). A vector quantity has both magnitude and direction (force, velocity, etc.). • Rigid Body: a body is considered rigid when the changes in distance between any two of its points are negligible under any condition. • External Force: When a force is applied to a body, it is called an external force. • Internal Force: the resistance to deformation or change of shape exerted by the material of a body is called an internal force. • Collinear Forces: forces whose lines of action pass through a common point are called concurrent forces. • Concurrent Forces: forces whose lines of action pass through a common point are called concurrent forces. • Resultant: a single force that can replace two or more forces and produce the same effect on the body as all the forces combined. The resultant of these two forces can be determined analytically or graphically.



	<ul style="list-style-type: none"> When a body moves or tends to move over another body, a force opposing the motion develops at the contact surfaces. This force, which opposes the movement or the tendency of movement, is called Frictional Force or Friction.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<ul style="list-style-type: none"> Clearly define the learning objectives for the unit. Students should understand what they are expected to learn and achieve by the end of the unit. Promote active learning by engaging students in hands-on activities, problem-solving exercises, and group discussions. This helps students actively participate in the learning process and enhances their understanding of mathematical concepts. Support Learning: Build the unit in a way that builds on previously learned concepts. Start with foundational topics and gradually progress to more complex ideas. Provide clear explanations and examples to support students' understanding at each stage. Link mathematical concepts to real-life applications to demonstrate their relevance and practicality. Show students how mathematics is used in various fields and professions, which will enhance their appreciation of the subject. Utilize technology tools and resources to enhance the teaching and learning experience. Interactive software, online simulations, graphing calculators, and educational apps can help students visualize and explore mathematical concepts.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		



Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	20% (20)	2, 4, 7, 9, 11	LO #1, 2, 5 and 6
	Assignments	2	20% (20)	5, 13	LO # 2, 4, 5 and 6
Summative assessment	Midterm Exam	2hr	10% (10)	11	LO # 1-8
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Core concepts: Concepts of weight, force, moments, Units, Centre of gravity, Vector Algebra
Week 2	Vector quantities and scalar quantities .2D resolve force
Week 3-4	Force Systems: Component forces and Resultant forces.
Week 5	Resultant Forces examples and Dot product
Week 5	Moment
Week 6	Couple
Week 7-8	Equilibrium: System Isolation, Free Body Diagram, 2-D and 3-D equilibrium equations
Week 9-10	Friction
Week 11	Exam
Week 12	Centers of Mass and Centroids: Centre of Mass, Centroids of Lines, Areas and Volumes
Week 13	Area Centroid under curve
Week 14	Wight Centroid
Week 15	Preparatory week before the final Exam
Week 16	The week of final Exam



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Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	ENGENIRING MECHANICS STATICS, J.L. MERIAM, L. G. KRAIGE, J. N. BOLTON, SI Version	Yes
Recommended Texts	ENGENIRING MECHANICS STATICS, R. C. Hibbeler, Plarson	yes
Websites		

Grading Scheme

مخطط الدرجات



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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.