

	<p>Ministry of Higher Education and Scientific Research - Iraq</p> <p>University of Warith Al-Anbiyaa College of Engineering Civil Engineering Department</p>	
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MODULE DESCRIPTOR FORM

Module Information			
Module Title	STRENGTH OF MATERIALS I		Module Delivery
Module Type	Core	Theory Lecture	
Module Code	CIV033		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	3	Semester of Delivery	1
Administering Department	Civil Engineering	College	Engineering
Module Leader	Wail Asim Mohammad	e-mail	wael.essam@uowa.edu.iq
Module Leader's Acad. Title	Asst. Prof.	Module Leader's Qualification	PHD
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2024/9/26	Version Number	1

Relation With Other Modules			
Prerequisite module	Engineering Mechanics	Semester	2
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

<p>Module Aims</p>	<ol style="list-style-type: none"> 1. To develop problem solving skills and understanding of materials theory through the application of techniques. 2. To understand the relation between the forces and the stresses. 3. This course deals with the basic concept of stresses and strains. 4. This is the basic subject for all types of determinate structures. 5. To understand the methods of solving stresses, strains, and deflections problems.
<p>Module Learning Outcomes</p>	<ol style="list-style-type: none"> 1. Recognize how determinate structures works under various types of loading. 2. List the various loading associated with determinate structures. 3. Summarize what is meant by a stresses and strains. 4. Describe the stress, the strains and the deflection. 5. Define Hook's law. 6. Identify the basic structural elements and their applications. 7. Discuss the various properties of beams, columns.
<p>Indicative Contents</p>	<p>Indicative content includes the following Fundamental Principles of Mechanic:</p> <ul style="list-style-type: none"> - Concept of force, units of force (SI units), Moment of force, conditions of equilibrium - Forces and Moments: Differential equilibrium relationship, Shear force and bending moment diagrams. Stresses. - Concept of stresses, Stresses due to axial stress, Average shearing stress. Stresses in beams. - Bending stresses, Shearing stresses, Compound stresses Strains. - Definition, Hook,s Low, Poisson,s ratio, Thermal strain, Stress-strain diagram, Linear relation between E,G and V. Transformation of stress and strain. - Equation for the transportation of plane stress, Principal stress, Mohr, s Circle of stress, Equations for transportation of plane strain Mohr,s Circle of stress. Torsion. - The torsion formula for solid circular shaft, Design of circular members in torsion, Angle of twist of circular members in torsion, Thin- walled hollow members, Solid non circular sections. Deflection of Beams.

	<ul style="list-style-type: none"> - Governing differential equation for deflection of elastic beam, Double Integration method, Moment area method. Columns. - Natural of the beam column problem, Euler buckling load
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Learning and Teaching Strategies

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials that are interesting to the students.
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Student Workload (SWL)

Structured SWL (hr/sem)	63	Structured SWL (h/w)	4
Unstructured SWL (hr/sem)	62	Unstructured SWL (h/w)	4
Total SWL (h/sem)	125		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	All	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Fundamental principles of mechanic: - Concept of force, units of force (SI units).
Week 2	Fundamental principles of mechanic: - Moment of force, conditions of equilibrium.
Week 3	Forces and moments: - Differential equilibrium relationship.
Week 4	Forces and moments: Shear force and bending moment diagrams
Week 5	Forces and moments: Shear force and bending moment diagrams
Week 6	Forces and moments: Shear force and bending moment diagrams
Week 7	Torsion: - The torsion formula for solid circular shaft, Design of circular members in torsion
Week 8	Torsion: - Angle of twist of circular members in torsion.
Week 9	Torsion: - Thin- walled hollow members, Solid non-circular
Week 10	Stresses: - Concept of stresses, Stresses due to axial stress.
Week 11	Stresses: - Stresses due to axial stress.
Week 12	Stresses: - Average shearing stress, Thin-walled pressure vessels.
Week 13	Stresses in beam: - Bending stresses
Week 14	Stresses in beam: - Shearing stresses.
Week 15	Stresses in beam: - Compound stresses.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	
Week 2	

Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Strength of Materials, by: Singer.	Yes
Recommended Texts	1- Introduction to Mechanics of Solid, by: E. Popov. 2- Elements of Strength of Materials, by: Timoshenko 3- Mechanics of Materials by: Russell C. Hibbeler. 3- Mechanics of materials by: Ferdinand Beer et al. 4- Mechanics of Materials by: Manua Gere. 6- Strength of Materials, J. P. Den Hartog	yes
Websites		

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Appendix :

Grading Scheme				
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
<p>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.</p>				

