

Module Information					
معلومات المادة الدراسية					
Module Title	Strength of Materials 2		Module Delivery		
Module Type	Core		<div><input checked="" type="checkbox"/> Theory</div> <div><input checked="" type="checkbox"/> Lecture</div> <div><input type="checkbox"/> Lab</div> <div><input checked="" type="checkbox"/> Tutorial</div> <div><input type="checkbox"/> Practical</div> <div><input type="checkbox"/> Seminar</div>		
Module Code	UOMU023041				
ECTS Credits	4				
SWL (hr/sem)	120				
Module Level		UGII	Semester of Delivery		4
Administering Department		Technical building and Construction	College	Al-Mustaqbal university	
Module Leader	Mayadah W. Falah		e-mail	mayadah.waheed@uomus.edu.iq	
Module Leader's Acad. Title		Assist.Prof.Dr.	Module Leader's Qualification		
Module Tutor	Raghda Ali Naser		e-mail	raghda.ali.naser@uomus.edu.iq	
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date			Version Number		1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Strength of Materials 1	Semester	L 2 S1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims	1. To understand effect of forces and loads on materials. 2. To understand how materials deforms due to external forces 3. to understand the safest way in using material in engineering applications and construction purposes 4. to understand how beams deforms due to loads and what type of stresses occur 5. to understand composite material and its behavior and deformation 6. to realize the meaning of compound stresses on material and to compute it.
Module Learning Outcomes	At the end of this course: 1. Solve engineering problems relating to stress and strain analysis. 2. Develop the student's ability to deal with normal force, shear force and bending moment in statically determinate beam assemblies with

	<p>internal hinges.</p> <ol style="list-style-type: none"> 3. An ability to calculate stresses and deformations of object under external forces 4. An ability to analyze a given problem in a simple manner. 5. An ability to apply the knowledge of strength of material on engineering application and design problems. 6. An ability to communicate effectively 7. Understanding the impact of engineering solutions on global and societal context 8. Using the techniques, skills, and modern tools necessary for engineering practice 9. Designing concepts and applications in engineering mechanics of material . 10. Critical Thinking 11. Analytical methods in solving problems
Indicative Contents	<p>Stresses in Beams: Derivation of flexure formulas, Economic sections, Unsymmetrical beams, Analysis of flexure action, Formula for horizontal shear stress. [8 hrs.]</p> <p>Beams Deflections: Theorem of area-moment method, Double integration method. [8 hrs.]</p> <p>Stresses: Combined axial & flexural loads , Kern of a section , Loads applied off axes of symmetry , Stress at a point , Mohr's circle , Transformation of strain components. [8 hrs.]</p> <p>Columns: Critical loads , Long columns by Euler's formula , Intermediate columns , Empirical formulas. [8 hrs.]</p>

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>Assessment is based on</p> <ol style="list-style-type: none"> 1. Exams. 2. Student feedback.

Student Workload (SWL) الحمل الدراسي للطلاب			
Structured SWL (h/sem)	73	Structured SWL (h/w)	5
Unstructured SWL (h/sem)	47	Unstructured SWL (h/w)	3

Total SWL (h/sem)	120
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Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (20)	3,5,6,10	
	Assignments	2	10% (10)	7, 8	
	Seminar	1	10% (10)	11	
Summative assessment	Midterm Exam	2 hr	10% (10)	12	
	Final Exam	3hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد	
	Material Covered
Week 1	Stresses in Beams: Derivation of flexure formulas, Economic sections, Unsymmetrical beams, Analysis of flexure action, Formula for horizontal shear stress.
Week 2	Stresses in Beams: Derivation of flexure formulas, Economic sections, Unsymmetrical beams, Analysis of flexure action, Formula for horizontal shear stress.
Week 3	Stresses in Beams: Derivation of flexure formulas, Economic sections, Unsymmetrical beams, Analysis of flexure action, Formula for horizontal shear stress.
Week 4	Stresses in Beams: Derivation of flexure formulas, Economic sections, Unsymmetrical beams, Analysis of flexure action, Formula for horizontal shear stress.
Week 5	Beams Deflections: Theorem of area-moment method, Double integration method.
Week 6	Beams Deflections: Theorem of area-moment method, Double integration method.
Week 7	Beams Deflections: Theorem of area-moment method, Double integration method.
Week 8	Beams Deflections: Theorem of area-moment method, Double integration method.
Week 9	Combined Stresses: Combined axial & flexural loads , Kern of a section , Loads applied off

	axes of symmetry , Stress at a point , Mohr's circle , Transformation of strain components.
Week 10	Combined Stresses: Combined axial & flexural loads , Kern of a section , Loads applied off axes of symmetry , Stress at a point , Mohr's circle , Transformation of strain components.
Week 11	Combined Stresses: Combined axial & flexural loads , Kern of a section , Loads applied off axes of symmetry , Stress at a point , Mohr's circle , Transformation of strain components.
Week 12	Columns: Critical loads , Long columns by Euler's formula , Intermediate columns , Empirical formulas.
Week 13	Columns: Critical loads , Long columns by Euler's formula , Intermediate columns , Empirical formulas.
Week 14	Columns: Critical loads , Long columns by Euler's formula , Intermediate columns , Empirical formulas.
Week 15	Preparing for the final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1. Strength of Materials / Ferdinand L. Singer & Andrew Pytel. 2. Strength of Materials / R. S. Khurmi. 3. Mechanics of Materials" R.C. Hibbeler	
Recommended Texts		
Websites		

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.