Module Information معلومات المادة الدراسية					
Module Title	**Strength of Materials 2**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOMU023042				
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

	internal hinges. 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	Stresses in Beams: Derivation of flexure formulas, Economic sections, Unsymmetrical beams, Analysis of flexure action, Formula for horizontal shear stress. [8 hrs.] Beams Deflections: Theorem of area-moment method, Double integration method. [8 hrs.] 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.] Columns: Critical loads , Long columns by Euler's formula , Intermediate columns , Empirical formulas. [8 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Assessment is based on 1. Exams. 2. Student feedback.

Student Workload (SWL) الحمل الدراسي للطالب			
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

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.