Ministry of Higher Education and
Scientific Research - Iraq

University of Warith Al_Anbiyaa....
civil Department

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	STRENGTH OF MATERIALS I		**Module Delivery**
Module Type	CORE		
Module Code	CIV033		
ECTS Credits	5		
SWL (hr/sem)	125		

Module Level	UGII	**Semester of Delivery**	3
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Dr. Wail Asim Mohammad	**e-mail**	wael.essam@uowa.edu.iq
Module Leader's Acad. Title	Asst. Prof.	**Module Leader's Qualification**	
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Review Committee Approval	15/9/2024	**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

Module Aims أهداف المادة الدراسية	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.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	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.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Fundamental Principles of Mechanic: - 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: - Governing differential equation for deflection of elastic beam, Double Integration method, Moment area method. Columns: - Natural of the beam column problem, Euler buckling load

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

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.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	63	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

		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
	Online Assignments	2	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	2hr	50% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	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) المنهاج الاسبوعي للمختبر	
	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	1- 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. 4- Mechanics of materials by: Ferdinand Beer et al. 5- Mechanics of Materials by: Manua Gere. 6- Strength of Materials, J. P. Den Hartog	Yes
Websites		

APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
NB 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.				