



Module (Course Syllabus) Catalogue 2022-2023

College	Erbil Technical Engineering College	
Department	Civil Engineering Department	
Module Name	Strength of materials- II	
Module Code	STM	
Degree	Technical Diploma <input type="checkbox"/> Bachler <input checked="" type="checkbox"/> High Diploma <input type="checkbox"/> Master <input type="checkbox"/> PhD <input type="checkbox"/>	
Semester	4	
Qualification	BSc	
Scientific Title	Engineer	
ECTS (Credits)	6	
Module type	Prerequisite <input type="checkbox"/> Core <input checked="" type="checkbox"/> Assist. <input type="checkbox"/>	
Weekly hours	4	
Weekly hours (Theory)	(4) hr Class	(160) Total hrs Workload
Weekly hours (Practical)	()hr Class	()Total hrs Workload
Number of Weeks	12	
Lecturer (Theory)	Jamy Kh. Ahmed Zina Abdulkareem Abduljaleel	
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Lecturer (Practical)		
E-Mail & Mobile NO.		
Websites		

Course Book

Course Description	<p>The subject introduces the most important topics of strength of materials. Chapter 6 begins with a review of the important concepts of bending, and how bending stress can be calculated. In Chapter 7 transverse shear is discussed, and in Chapter 8 provides a partial review of the material covered in the previous chapters, where the state of stress results from combined loadings. In Chapter 9 the concepts for transforming multi-axial states of stress are presented. In a similar manner, Chapter 10 discusses the methods for strain transformation, including the application of various theories of failure. Chapter 11 provides a means for a further summary and review of previous material by covering design applications of beams and shafts. In Chapter 12 various methods for computing deflections of beams and shafts are covered. Also included is a discussion for finding the reactions on these members if they are statically indeterminate. Chapter 13 provides a discussion of column buckling, and lastly, in Chapter 14 the problem of impact and the application of various energy methods for computing deflections are considered.</p>
Course objectives	To provide basic knowledge in mechanics of materials so that the students can solve real engineering problems and design engineering systems.
Student's obligation	<ol style="list-style-type: none">1. Attendance at lectures is required.2. Based on their real individual performance, students are graded. Students must provide evidence of their own knowledge and skills. It is not permissible to submit someone else's work, get or give unauthorized help (e. g. during tests or quizzes).
Required Learning Materials	

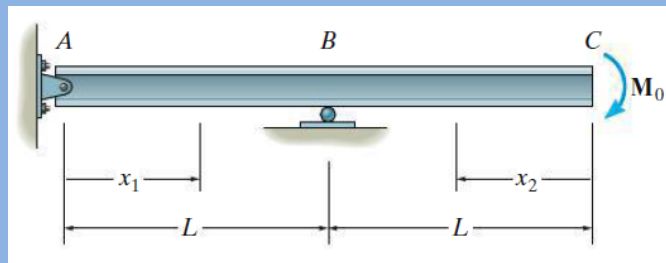
Evaluation	Task	Weight (Marks)	Due Week	Relevant Learning Outcome	
	Paper Review	N/A	N/A	N/A	
	Assignments	Homework	10%	8, 12	a, b, c
		Class Activity	2%	N/A	a, b, c, d, e
		Report	6%	12	N/A
		Seminar	10%	7	a, b, c
		Essay	N/A	N/A	N/A
		Project	N/A	N/A	N/A
	Quiz	8%	12	a, b, c, d, e	
	Lab.	N/A	N/A	N/A	
	Midterm Exam	24%	9	a, b, c	
	Final Exam	40%	12	a, b, c, d, e	
Total	100%				
Specific learning outcome:	<p>Upon successful completion of this subject, the student will be able to:</p> <ol style="list-style-type: none"> understand the concepts of bending stress, flexure formula, shear formula and shear flow. Understand the concept of stress transformation, plane stress and principal stress. Understand the concept of plane strain and strain transformation Calculate the deflection of beams with different methods. Introduce of column buckling. 				
Course References:	<ol style="list-style-type: none"> Hibbeler, R.C., “Mechanics of Materials”, 9th SI edition, Beer, Johnston & DeWolf, “Mechanics of Materials”, 8th edition. 				

Course topics (Theory)	Week	Learning Outcome
Course book, Bending deformation of a Straight members,	1	a
The flexure formula	1	a
CH7. Shear in Straight members, The shear formula	2	a
Shear flow in built up members	2	a
Shear flow in thin-walled members (Quiz 1)	3	a
CH.8 - combined loading, state of stress caused by Combined Loadings	3	a
combined loading, state of stress caused by Combined Loadings	4	a
CH.9 Stress transformation, Plane-stress transformation, General Equations of plane stress transformation	4	a, b
Principal Stresses and Maximum in-Plane shear stress (Quiz 2)	5	a, b
Mohr's Circle—Plane Stress	5	a, b
Absolute Maximum Shear Stress	6	a, b
CH.10 Plane strain, General Equations of Plane-Strain Transformation (Quizz3)	6	c
Seminar	7	A, b, c
Mid-term	8	A, b, c
CH.11 Basis for beam design	8	A, b, c
CH.12 deflection of Beams and Shafts, The elastic curve, slope and displacement by Integration	9	d
deflection of Beams and Shafts, The elastic curve, slope and displacement by Integration (Quiz4)	10	d
Method of superposition	10	d
Statically Indeterminate Beams and Shafts—Method of Integration	11	d

12.9 Statically Indeterminate Beams and shafts method of superposition	11	d
Buckling of columns	12	e
Practical Topics	Week	Learning Outcome

Questions Example Design

Determine the elastic curve in terms of the x_1 and x_2 coordinates. What is the deflection of end C of the shaft? EI is constant.



Extra notes:

External Evaluator