

Mechanics of Materials

Basic Course Specification					
Course Title	Course Code	Program on which the course is given			
Mechanics of Materials	ME375T	Bachelor			
Academic Year	Specialization (hr/week)	Pre-Requisites			
2020 – 2021	<ul style="list-style-type: none"> • Theoretical (1) • App. (2) • Credit (2Cr.) 	ME274T			
Overall Course Objectives					
<p>This syllabus covers the requirements of the STCW-78, as amended. In particular Chapter III, Section A-III/2 for the function “Marine Engineering at the Management Level”, STCW-78, as amended. The syllabus is so designed with the guide of IMO Model course 7.02, version 2014, function 1. At the end of the course student will be able to calculate and sketch normal force, shearing force and bending moment diagrams, and to determine stresses and strains in beams and simple structural members subjected to various types of loading.</p>					
Course Learning Outcomes. By successful completion of the course each student will be able to:					
Topic	Linking to PLOs	7th Week Assessment	12th Week Assessment	Class Activities	Final Exam
1) explain Units, statics—concept of stress, Axial Loading; Normal Stress, Shearing Stress, Bearing Stress in Connections.	C,d			x	
2) Use Stress and strain axial loading, Normal Strain under Axial Loading, Stress-Strain Diagram, True Stress and True Strain, Hooke’s Law and Modulus of Elasticity.	A,e	x	x	x	x
3) Design of Prismatic Beams for Bending	D,k, h			x	x
4) apply Shear on the Horizontal Face of a Beam Element, Determination of the Shearing Stresses in a Beam and Shearing Stresses in Common Types of Beams	C, f		x	x	x
Course Content					
Lec./ Week #	Topic	Hrs. #	Theoretical	App.	
1	- Review of units, statics—concept of stress, Axial Loading; Normal Stress, Shearing Stress, Bearing Stress in Connections.	3	1	2	
2	- Stress on an Oblique Plane under Axial Loading. - Stress on an Oblique Plane under Axial Loading engineering	3	1	2	
3	- Stress and strain—axial loading, Normal Strain under Axial Loading, Stress-Strain Diagram, True Stress and True Strain , Hooke’s Law and Modulus of Elasticity.	3	1	2	
4	- Statically Indeterminate axial members involving temperatures changes.	3	1	2	

Course Content				
Lec./ Week #	Topic	Hrs. #	Theoretical	App.
5	- Preliminary Discussion of the Stresses in a Shaft, Deformations in a Circular Shaft, Stresses in the Elastic Range.	3	1	2
6	- Angle of Twist in the Elastic Range, Statically Indeterminate Shafts and Design of Transmission Shafts.	3	1	2
7	7th Week Exam	3	1	2
8	- Symmetric Member in Pure Bending, - Deformations in a Symmetric Member in Pure Bending, Stresses and Deformations in the Elastic Range. - Conventional representation (keys and pins) and assembly drawing applications	3	1	2
9	- Stresses and Deformations in a Transverse Cross Section in the elastic range.	3	1	2
10	- Shearing force and Bending Moment Diagrams.	3	1	2
11	- Relations among Load, Shearing force, and Bending Moment	3	1	2
12	- 12th exam. - Revision-Solution of 12th week exam	3	1	2
13	Design of Prismatic Beams for Bending	3	1	2
14	Shear on the Horizontal Face of a Beam Element, Determination of the Shearing Stresses in a Beam and Shearing Stresses in Common Types of Beams.	3	1	2
15	Stresses in Thin-Walled Pressure Vessels	3	1	2
16	Final Assessment			
Total Hours		45	15	30

Teaching & Learning Methods		Facilities Required for Teaching & Learning Methods	
<ul style="list-style-type: none"> Lectures Tutorials Reports & sheets 		<ul style="list-style-type: none"> White board and data show Videos Calculator 	
Students Assessment Methods			
Assessment Schedule			
Assessment#1		Week 7	
Assessment#2		Week 12	
Assessment#3		Week 16	
Grading Method			
7th Week Assessment	Written Exam	30%	
12 th week Assessment	Written Exam	20%	
Class Activities	Participation and Quiz	10%	
Final Exam	Written Exam	40%	
Total		100 %	
Assessment criteria meets the standards of the STCW 78 convention "as amended" and in the light of the related IMO model courses.			

Staff Requirements	
Marine Chief Engineer/ Ph.D.	
List of References	
Course Notes	Essential Books
None	"Mechanics of materials, 9789814595247 "Beer, Ferdinand "mcgraw-hill, 7ED. 2015"
Recommended Books	Periodicals and Publications
None	None
Others (websites, e-books...etc)	
N/A	

Accreditation Bodies
<ul style="list-style-type: none"> *Egyptian Authority for Maritime Safety (EAMS) *European Commission (EC) *ISO (9001 – 2015) DNV-GL *Central Evaluation and Accreditation Agency Hanover, Germany (ZEVA) *Ministry of Education (KSA) *Ministry of Higher Education (Greece) *Ministry of Higher Education (Oman) *Commission for Academic Accreditation (CAA), Ministry of higher Education (UAE) *University of Plymouth, United Kingdom (dual degree)

Prepared by: Course Coordinator

A.A. Swidan

Reviewed by: Head of Department

Nasr Abdelrahman

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