FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

Faculty of Engineering & Technology

Stress Analysis

Information :

Course Code :	MAN 232	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Department of Mechanical Engineering

Instructor Information :

Title	Name	Office hours
Professor	MOHAMED TAREK IBRAHIM MOHAMED ALY ELWAKAD	2
Teaching Assistant	Ahmed Ibrahim Sadek Mostafa Elgindy	

Area Of Study :

Develop the students' ability to analyze a given mechanical parts under different types of stresses.
Train Students to solve problems of stress analysis in a simple and logical manner using well-understood principles of stress analysis.

Description :

Equilibrium, Continuity, Material mechanical behavior, Normal force, Shearing force, Bending and twisting moment diagrams, Stresses in simply loaded elastic bars: axial loading, bending and torsion, deformation, stiffness, strain Energy, Stresses in elastic and elasto-plastic bars, Residual stresses. Combined loading, Eccentric normal load, Oblique bending: combined bending and torsion, Two-dimensional stresses, Principal stresses, Maximum shear stress, Allowable stresses, Mohr's circle representation, Applica-tion to some simple frames, Thin-vessels, Springs, Load and displacement measurement.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Define the principles of normal and shear stresses of for mechanical parts.
2 -	Identify the concept of combined stresses and theories of elastic failure.
b.Intellectual Skills: :	
1 -	Outlines basics of normal, shear and bending moment diagrams.
2 -	Apply analytical and graphical methods for obtaining stress distribution diagrams.
3 -	Analyze the initial data of part loading to obtain maximum stress element.
c.Professional and Practical Skills: :	
1 -	Apply knowledge of science, information technology to distinguish different types of stresses
2 -	Practice the stress analysis methods to solve engineering problems.
d.General and Transferable Skills: :	
1 -	Demonstrate efficient IT capabilities.
2 -	Efficiently manage tasks, time and resources.

Course Topic And Contents :			
Topic	**No. of hours**	**Lecture**	**Tutorial / Practical**
Bending Moment Diagram, Normal Stress	12	6	6
Shear stress & Torsional Stress	10	6	4
Combined stress	8	4	4
Principal stresses, Allowable stresses	4	2	2
Maximum shear stress	8	4	4
Reactions & Normal force diagram, Shear force diagram	10	6	4
Mohr's circle representation	4	2	2
Project follow -up.	4	2	2

Teaching And Learning Methodologies :
Interactive Lecturing
Problem solving
Discussion

Course Assessment :			
Methods of assessment	**Relative weight %**	**Week No**	**Assess What**
Assignment	5.00		
Final Exam	40.00		
Mid- Exam 1I	15.00		
Mid- Exam I	15.00		
Participation	10.00		
Quizzes	10.00		

Course Notes :
2. Lecture notes on the E-Learning Program (MOODLE), FUE Academic Advisor System.