FUTURE UNIVERSITY IN EGYPT
جامعة المستقبل

Faculty of Engineering & Technology

Mechanics 1

Information :

Course Code :	MEC 121	**Level :**	Undergraduate	**Course Hours :**	2.00- Hours

Department : Faculty of Engineering & Technology

Instructor Information :

Title	Name	Office hours
Lecturer	Mohamed Mahmoud Mohamed Attia Karim	19
Lecturer	Amr Mohamed Metwally Ismaiel	4
Assistant Lecturer	Youssef Ahmed Elsayed Kamaleldin Ahmed Awad	38
Teaching Assistant	Mohamed Mousa Ali Abdullah Khedr	6
Teaching Assistant	Ahmed Muhammed Elmasbahy Abdel Samed	6
Teaching Assistant	Ahmed Muhammed Elmasbahy Abdel Samed	6
Teaching Assistant	Mohamed Mousa Ali Abdullah Khedr	6
Teaching Assistant	Osama Mohamed Abdelrahman Ahmed Zaid	1

Area Of Study :

The main aim of this first course in mechanics is to develop in the engineering student the ability to analyze any problem in a simple and logical manner and to apply to its solution a few, well understood, basic principals. On successful completion of this course the student will be able to:
1- Know and understand vector analysis in two and three dimensions.
2- Apply vector mechanics to solve and analyze static problems.
3- Identify the reaction supports and draw the free body diagram.
4- Solve practical engineering applications in static involving the equilibrium of particles and rigid bodies under general force systems.

Description :

Applications on space vectors, Resultant of forces, Moment of a force, Equivalent couples, Equivalent systems, Equations of equilibrium of a rigid body, Types of supports, Equilibrium of plane systems (Trusses and frames), Equilibrium of space systems acting on rigid bodies, The mass center of a system of particles and laminas of different shapes, The mass moment of inertia of system of particles and laminas.

Course outcomes :

a.Knowledge and Understanding: :

1 -	Identify vector and scalar quantities in statics.
2 -	Perform all vector analysis operations.
3 -	Solve practical engineering problems of particles in static equilibrium.
4 -	Solve practical engineering problems of rigid bodies in static equilibrium.

b.Intellectual Skills: :	
1 -	Deal with static problems.
2 -	Think logically and creatively.
c.Professional and Practical Skills: :	
1 -	To gain skills in identifying and using all kinds of static principles and
2 -	To gain skills in applying all concepts of engineering mechanics.
3 -	To gain skills in constructing and using free-body diagrams to solve
d.General and Transferable Skills: :	
1 -	- Gain the principle of quality of learning.
2 -	Develop skills related to creative thinking, problem solving, oral and

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to mechanics	4	2	2
Statics of particles: forces in a plane.	4	2	2
Statics of particles: forces in a space.	4	2	2
Rigid bodies: external &internal forces, principle of transmissibility, vector product, moment of a force about a point, Varignon's theorem, rectangular components of the	4	2	2
Rigid bodies: scalar product of two vectors, mixed triple product of three vectors, moment of a force about a given axis.	4	2	2
1st Exam			
Rigid bodies: moment of a couple, equivalent couples, addition of couples, resolution of a given force into a force and a couple.	4	2	2
Rigid bodies: reduction of a system of forces to one force and one couple, equivalent systems of forces, equivalent systems of vectors.	4	2	2
Equilibrium of rigid bodies: free-body diagram, equilibrium in two dimensions	4	2	2
Equilibrium of rigid bodies: equilibrium in three dimension	4	2	2
2nd Exam			
Analysis of structures: analysis of trusses by method of joints	4	2	2
Analysis of structures: analysis of trusses by method of sections	4	2	2
Analysis of structures: frames, machines	4	2	2
Friction: dry friction	4	2	2
Final Exam			

Teaching And Learning Methodologies :

Lectures.
Tutorials.
Assignments and homework.

Discussions.

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
11th week evaluation	25.00	11	5.1- Oral discussion to asses the ability of following the lecture.
6th week evaluation (First exam + quiz)	15.00	6	5.1- Oral discussion to asses the ability of following the lecture.
Final-term examination	40.00	16	5.1- Oral discussion to asses the ability of following the lecture.
Semester performance(attendance +Assignment+quizzes)	20.00	1	5.1- Oral discussion to asses the ability of following the lecture.

Books :

Book	Author	Publisher
Vector Mechanics for Engineers: Statics and Dynamics (Connect codes)	Ferdinand Beer	McGraw Hill

Course Notes :

Course and instructor notes.

Recommended books :

Hibbeler, R.C., "ENGINEERING MECHANICS: PRINCIPLES OF STATICS AND DYNAMICS" Pearson Prentice Hall, 2006

Periodicals :

www.mhhe.com/beer johnston7
www.prenhall.com/onekey

Web Sites :

www.mhhe.com/beer johnston7
www.prenhall.com/onekey