

BA141- Mechanics (1)

CREDIT HOURS

3 Hours

CONTACT HOURS (Hours/week)

Lecture: 2; Tutorial: 2

COURSE COORDINATOR

Dr El Tantawy Farid

TEXT BOOK:

R.C. Hibbeler, *Engineering Mechanics: Statics*, Macmillan USA, latest edition .

COURSE DESCRIPTION:

Introduction to mechanics. Plane and space force analysis, projection and synthesis. Moments. Couples and wrenches. Static equilibrium. Technique of free body diagrams. Applications of static equilibrium of machines, Method of virtual work and its application to solution of problems of static equilibrium.

PREQUISITE:

None

RELATION OF COURSE TO PROGRAM:

Required

COURSE INSTRUCTION OUTCOMES:

The student gains knowledge on rigid-body mechanics, forming a suitable base for the design and analysis of many types of structural, mechanical or electrical devices encountered in engineering.

TOPICS COVERED:

Rectangular components of a force - Parallelogram law - Equilibrium of particle – springs and cables - Moment of force - Free body diagram - Equilibrium of rigid body - Trusses “joint method – zero – force members” - Trusses “method of section” – Frames – Friction - Mass Moment of Inertia - Virtual work.

CONTRIBUTION OF COURSE TO MEET THE REQUIREMENTS OF CRITERION 5:

Professional Component Content			
Math and Basic Sciences	Engineering Topics	General Education	Engineering Design
√	√		

RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:

Student Outcomes		Course Outcomes
a.	An ability to apply knowledge of mathematics, science, and engineering.	√
b.	An ability to design and conduct experiments, analyze and interpret data.	
c.	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	
d.	An ability to function on multi-disciplinary teams.	
e.	An ability to identify, formulate, and solve engineering problems.	
f.	An understanding of professional and ethical responsibility.	
g.	An ability to communicate effectively.	
h.	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal content	
i.	A recognition of the need for, and an ability to engage in life-long learning.	
j.	A knowledge of contemporary issues within and outside the electrical engineering profession.	
k.	An ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.	