## BA141- Mechanics (1)

**Hour:** Lecture: 2 Hrs. Tutorial: 2 Hrs. Credit: 3.
**Coordinator:** Eltantawy Fared
**Text Book:**

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

**Specific course information:**

a. 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.
b. Prerequisite: none
c. Designation: Required

**Specific goals for the course:**

- An ability to apply knowledge of mathematics, science, and engineering.
- An ability to identify, formulate, and solve engineering problems.

**Course instruction outcomes:**

- The students will be able to treat only rigid-body mechanics, since it forms a suitable basis for the design and analysis of many types of structural, mechanical or electrical devices encountered in engineering.

**Student outcomes:**

A, E

**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.

| Course / credit hours | Math & Basic Sciences | Engineering Topics | General Education |
|---|---|---|---|
| Mechanics1 (BA141)/3 | 0.5 | 2.5 | |