

## Basic and Applied Science Courses (BA)

Basic and Applied Science Courses Group

### BA 142 – Engineering Mechanics 2

#### COURSE INFORMATION

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Course Title: Engineering Mechanics 2

Code: BA 142

Hours: Lecture – 2 Hrs.                      Tutorial – 2 Hrs.                      Credit –3.

Prerequisite: BA 141

#### GRADING

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Class Performance/Attendance: 10%

Midterm # 1/Assignments – (7<sup>th</sup> Week): 30%

Midterm # 2/Assignments – (12<sup>th</sup> Week): 20%

Final Exam: 40%

#### COURSE DESCRIPTION

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Kinematics of a particle – Rectilinear Kinematics. Curvilinear motion : Rectangular components, projectile motion. Force and acceleration (Kinetics), Newton's laws. Work and energy of a particle (kinetics). Rotation of a rigid body about a fixed axis. General plane motion. Relative motion: velocity. Relative motion: acceleration. Planar Kinetics of a rigid body: Equation of translational motion. Equation of rotational motion. Equation of General plane motion. Work and Energy

#### TEXT BOOK & REFERENCES

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Vector mechanics for engineers – Dynamics by Bear/ Johnstone

Engineering Mechanics dynamics by R.C. Hibbeler

#### COURSE AIM

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The aim of the course is to provide a clear and thorough presentation of the theory and applications of engineering mechanics.

## APPENDIX A-28

### SPECIFIC OUTCOMES OF INSTRUCTION

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The students will learn the geometry of motion (Kinematics) as well as the relationship between the motion of a body and the forces and the moments acting on it (Kinetics).

### COURSE OUTLINE

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- Week Number 1:* Kinematics of a particle – Rectilinear Kinematics.
- Week Number 2:* Curvilinear motion : Rectangular components, projectile motion.
- Week Number 3:* Force and acceleration (Kinetics), Newton's laws.
- Week Number 4-5:* Work and energy of a particle (kinetics)
- Week Number 6:* Rotation of a rigid body about a fixed axis.
- Week Number 7-8:* General plane motion.
- Week Number 9:* Relative motion: velocity.
- Week Number 10:* Relative motion: acceleration.
- Week Number 11:* Planar Kinetics of a rigid body: Equation of translational motion
- Week Number 12:* Equation of rotational motion.
- Week Number 13:* Equation of General plane motion.
- Week Number 14:* Work and Energy
- Week Number 15:* Review
- Week Number 16:* Final Exam.

### COURSE COORDINATOR AND DEMAND

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*Course Coordinator:* Dr.Moustafa Abdeen.

*Course Demand:* *Required*