Course Title	Course Code	Credit Hours
Engineering Mechanics II: Dynamics	AE-251	3-0

Textbooks:

- Russell C. Hibbeler, "Engineering Mechanics: Statics & Dynamics", Pearson Education

Reference Books/Materials:

- Stephen Timoshenko, and Donovan Harold Young, "Engineering Mechanics-Dynamics", McGraw-Hill
- EASA Part-66 Category B1 Maintenance License Module 2- Physics

Course Objectives:

This course aims to help students understand the concept and applications of the motion of particles and rigid bodies, without the influence of the forces (Kinematics) and under the influence of the force (Kinetics).

Course Outline:

- Kinematics of Particles:
  - Rectilinear Kinematics
  - General Curvilinear Motion
  - Rectangular Components
  - Motion of a Projectile
- Curvilinear Motion: Cylindrical, Normal and Tangential Components.
- Kinetics of a Particle-Force and Acceleration:
  - Newton's Laws of Motion
  - Equation of Motion for a System of Particles
- Equation of Motion in Rectangular, Cylindrical and Tangential Coordinates
- Central-Force Motion and Space Mechanics
- Kinetics of a Particle-Work and Energy: Work of a Force, Principle of Work and Energy for a System of Particles
- Utilize Work-Energy Principles to Find Relationships between Velocity and

Position

- Power and Efficiency
- Conservative Forces and Energy
- Impact, Angular Momentum and Angular Momentum of a System of Particles
- Utilize the Impulse-Momentum Principles in Cases of Impact to Find Approximate Solutions Immediately after Impact.
- Kinematics of a Rigid Body: Rigid Body Motion, Translation and Rotation about a Fixed Axis
- Planar Kinetics Equations of Motion:
    - Translation
    - Rotation about a Fixed Axis
    - General Plane Motion