



GE202 Dynamics (Required Course)

Code and Name: GE202 Dynamics

Credit Hours: 3 (Lecture: 3, Tutorial: 1)

Textbook:

- Mechanics for Engineers: Dynamics, R.C. Hibbler and K.B. Yap, 13th Edition, Pearson-Prentice Hall, 2013.

Other References:

- Engineering Mechanics – Dynamics, Meriam, and Kraige, 7th Edition, Wiley & Sons, 2012.

- Engineering Mechanics - Dynamics, Andrew Pytel, and Jaan Kiusalaas, 3rd Edition, Cengage Learning, 2010.

Course Description:

Kinematics and kinetics of particles including Newton's second law, energy-work principles, and impulse-momentum methods. Planar kinematics and planar kinetics of rigid bodies: translation, rotation about a fixed axis, and general plane motion. Introduction to three-dimensional dynamics of rigid bodies.

Pre-requisites: GE201 Statics.

Co-requisites: None

Course Learning Outcomes:

With relation to ABET Student Outcomes (SOs: 1-7)

1. Understand the concept of motion of a particle and a rigid body. (1)
2. Write and convert expressions for position, velocity, and acceleration using graphical and or vector methods. (1)
3. Recognize the logical differences between linear and rotational dynamics (1)
4. Comprehend the dynamics of particles and rigid bodies by applying these principles: the work & energy, the impulse & momentum, the Newton's second law and the dynamics equilibrium. (1)
5. Develop student's ability to think conceptually, critically and systematically. (1)
6. Develop the student's ability to formulate the problems and solved them correctly. (1)
7. Improve the student's ability to transform the problems into mathematical form. (1)
8. Share ideas with others. (3)
9. Use self-learning in the field of dynamics of a particle and a rigid body. (1)
10. Complete and submit assignments on the due date. (3)
11. Operate computational tools to organize process and to analyze data. (1, 2, 6)

Topics to be covered:

- Kinematics of a Particle
- Kinetics of a Particle: Force and Acceleration; Work and Energy
- Kinetics of a Particle: Impulse and Momentum
- Planar Kinematics of a Rigid Body
- Planar Kinetics of a Rigid Body: Force and Acceleration; Work and Energy; Impulse and Momentum.
- Three-Dimensional Kinematics of a Rigid Body
- Three-Dimensional Kinetics of a Rigid Body.

Grading Policy:

The grading for the course are 60% coursework and 40% Final Exam. The course work consists of two Midterm Exams, where each midterm exam is worth 20%. It also includes quizzes, homework, and projects for the remaining 20% that is modified by the course instructor.

