

NorthWest Arkansas Community College
Division of Science and Mathematics

Discipline Code

MEEG

Course Number

2013

Course Title

Dynamics

Catalog Description

Kinematics and kinetics of particle and of rigid bodies; work and energy; impulse and momentum, and special topics. Class will meet 4 hours a week, drill included.

Prerequisites

MEEG 2003 Statics

Credit hours

3 credit hours

Contact hours

40 Lecture hours and 25 Drill hours

Load hours

3.67 load hours

Semesters Offered

Fall, Spring

ACTS Equivalent

MEEG 2013. Dynamics

Grade Mode

A-F

General Education Outcomes Supported

- Students develop higher order thinking skills.
- Students develop information literacy.

Student Learning Outcomes

Students successfully completing this course will possess an understanding of fundamental engineering concepts and will:

- Develop an understanding of laws of Motion.
- Solve problems regarding the kinematic motion of a particle.
- Relate the concepts of force and acceleration and their relationships as described by the equations of motion.
- Solve problems involving work and energy and their relationship to conservative forces,
- Describe principle of linear impulse and its relation to linear and angular momenta.
- Analyze the kinematics of a rigid body as compared to a particle in terms of rotation, relative velocity and absolute motion.
- Describe the kinematics of a rigid body as compared to a particle in terms of work and energy relationships.
- Solve problems involving the kinematics of a rigid body in three dimensions.
- Describe and analyze undamped and damped harmonics motion
- Apply problem solving techniques to problems in Dynamics,

Standard Practices: Topics List

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

Learning activities

- Courses must, at a minimum, cover the core learning outcomes for each topic. Faculty may add to these outcomes, but may not omit any of them.
- Since developing student higher order thinking skills and information literacy are essential outcomes of this course, all instructors should include learning activities that develop these outcomes in their courses and identify them in course syllabi. Instructors should describe how these activities will be evaluated in their course syllabi and/or reflected in their gradebooks.

Forms of Assessment

- Each instructor will include a set of departmental questions on each exam and on the final exam. These questions will be in direct support of the Student Learning Outcomes. The questions will compose at least 10% of the students' overall grade in the course and will be graded according to a standard grading rubric. The results of these questions and overall student performance will be reported when final grades are turned in.

Grading guidelines

- In class quizzes: Each instructor will give students in class quizzes on regular basis. The questions in the quizzes will support students' learning outcomes. Quizzes will constitute 5% of the students overall grade.
- Three proctored exams will constitute at least 80% of the students' final grade.
- Homework assignments comprise the remaining grade.