

SYLLABUS

ENGR 2217 - Dynamics

Summer Session

Instructor: Siavash Sattar, PhD

Email: ssattar@randolphcollege.edu

Phone: 434-947-8605

Office hours: By appointment.

Course Textbook: “Engineering Mechanics: Dynamics, 9th Edition” 6th ed., by James L. Meriam, L. G. Kraige, J. N. Bolton, and other select readings posted on Moodle

Prerequisites:

- PHYS 1115 or equivalent foundational mechanics course.
- Basic knowledge of calculus and vector algebra.

Course Description

Mechanics is a physical science that deals with the behavior of matter (motion and/or deformation) under the action of forces. This course focuses on dynamics, which studies the motion of particles and rigid bodies under applied forces. Dynamics is divided into two branches:

- **Kinematics:** The study of motion without reference to forces.
- **Kinetics:** The study of forces and their relationship with motion.

The course follows the textbook *Dynamics by Meriam and Kraige* and consists of lecture materials in PPSX and PDF formats, along with notes.

Course Goals

By the end of this course, students should be able to:

- Understand the fundamental concepts of kinematics and kinetics.
- Apply Newton’s laws to analyze motion and forces in particle and rigid body systems.
- Use work-energy and impulse-momentum principles to solve dynamic problems.
- Calculate mass moments of inertia for rigid bodies.
- Solve engineering problems using principles of rotational motion and angular momentum.

Course Outline

Below is a course schedule. It may change during the session, but it should give you a general idea of how the course material will be covered.

- **Chapter 1:** Introduction
- **Chapter 2:** Kinematics of Particles
- **Chapter 3:** Kinetics of Particles
- **Chapter 5:** Plane Kinematics of Rigid Bodies

- **Chapter 6:** Plane Kinetics of Rigid Bodies

Course Policies

- **Late Work:** Homework submitted late will receive a deduction of 10% per day.
- **Academic Integrity:** Any plagiarism or cheating will result in disciplinary action.
- **Office Hours:** Students are encouraged to visit during office hours for additional help.

Grading

Grading for this class was broken down as follows:

Activities	PERCENTAGES
Assignments	35 %
Mid-term Exam and Quizzes	35 %
Final Exam	30 %

Accommodations

Randolph is committed to providing learning experiences that are accessible for all students and will make reasonable accommodations for individuals with documented disabilities. If you have a learning difference or a disability — mental health, medical, or physical impairment — contact Larvail Jones, Coordinator of Access Services at ljones@randolphcollege.edu or 947-8132 for more information.

Title IX and Sexual Misconduct

As instructors, one of our responsibilities is to help create a safe learning environment on our campus. We have a mandatory reporting responsibility as faculty members. Our goal is for you to share information about your life experiences in classroom discussions, your written work, and our one-on-one meetings. We will seek to keep the information you share private to the greatest extent possible. However, we are required to share information regarding sexual misconduct or information about a crime that may have occurred on Randolph's campus with the College's Title IX Coordinator, Jaclyn Beard (jbeard@randolphcollege.edu, 434-947-8031). We do this to ensure you get all the information and support you may need. The Health Center and Counseling Center staff are not mandated reporters (counselingcenter@randolphcollege.edu, 434-947-8130). As such, they are not required to share information about sexual misconduct and will keep your information private and confidential.

Randolph College Honor Code

Integrity is a mandatory quality for scientists and engineers and should always be cherished over grades.

To ensure honest conduct that still facilitates group collaboration, stick to these guidelines:

- Write answers in your own words
- Record who you are working with on your assignments
- In all situations, be transparent about how work was accomplished

Please let me know if you have any questions regarding the honor code. By enrolling in this course, you agree to abide by and uphold Randolph College's honor code (www.randolphcollege.edu/studenthandbook) and the following policies specific to this course.

Artificial Intelligence

You may use AI programs, e.g., ChatGPT, to help generate ideas and brainstorm. However, you should note that the material generated by these programs may be inaccurate, incomplete, or otherwise problematic. Beware that use may also stifle your own independent thinking and creativity.

You may not submit any work generated by an AI program as your own. If you include material generated by an AI program, it should be cited like any other reference material (with due consideration for the quality of the reference, which may be poor). AI may be used on assignments in this course if that use is properly documented and credited. For example, text generated using ChatGPT-3 should include a citation such as [1] ChatGPT-3. (YYYY, Month DD of query). "Text of your query." Generated using OpenAI. <https://chat.openai.com/>. Any plagiarism or other cheating will be handled under relevant Randolph College honor code policies.