



THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE

Department of Mechanical Engineering

MEE 207 – Applied Mechanics

COURSE PARTICULARS

Course Code: MEE 207

Course Title: Applied Mechanics

No. of Units: 3

Course Duration: Two hours of theory and one hour of practical per week for 15 weeks.

Status: Compulsory

Course Email Address:

Course Webpage: <http://www.mee.futa.edu.ng/courseschedule.php?coursecode=MEE%306>

Prerequisite:

COURSE INSTRUCTOR

Engr. (Dr.) P. K. Oke

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COURSE DESCRIPTION

This course is designed primarily for all engineering students and students of engineering related courses. It provides a comprehensive knowledge and insight into the study of Mechanics. Topics to be covered include: Vectors, operations with forces, resultants of coplanar force systems. Resultant of spatial force systems. Equilibrium and coplanar force systems. Center of gravity and center of mass. Newton's laws of motion and their applications, Friction and its applications. Impulse and momentum; Kinetic energy. Kinematics of a particle, composition and resolution of velocities and accelerations, relative velocity and acceleration, representation by vectors.

Plane Kinematics of rigid body, angular velocity diagrams applied to simple mechanisms. Gyroscope. Instantaneous center of rotation. Equations of motion, linear momentum and moment of momentum. moment of inertia. Free vibrations of systems with one and two degrees of freedom including damping. Torsional vibration.

COURSE OBJECTIVES

The objectives of this course are to:

- Introduce students to basic engineering mechanics
- Provide students with opportunities to develop their knowledge of applied Mechanics.

COURSE LEARNING OUTCOMES / COMPETENCIES

Upon successful completion of this course, the student will be able to:

- Differentiate between Scalar and Vector Quantities
- Carry out simple calculations on the laws of motion

GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

Practical	20%
Test(s) and Assignments	20%
<u>Final Examination</u>	<u>60%</u>
<u>TOTAL</u>	<u>100%</u>

GENERAL INSTRUCTIONS

Attendance: It is expected that every student will be in class for lectures and also participate in all practical exercises. Attendance records will be kept and used to determine each person's qualification to sit for the final examination. In case of illness or other unavoidable cause of absence, the student must communicate as soon as possible with any of the instructors, indicating the reason for the absence.

Academic Integrity: Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances are prohibited. You are not allowed to make copies of another person's work and submit it as your own; that is plagiarism. All cases of academic dishonesty will be reported to the University Management for appropriate sanctions in accordance with the guidelines for handling students' misconduct as spelt out in the Students' Handbook.

Assignments and Group Work: Students are expected to submit assignments as scheduled. Failure to submit an assignment as at when due will earn you zero for that assignment. Only under justifying circumstances, for which a student has notified any of the instructors in advance, will late submission of assignments be permitted.

Code of Conduct in Lecture Rooms and Workshop: Students should turn off their cell phones during lectures. Students are prohibited from engaging in other activities (such as texting, chatting on phone, watching videos, *etc.*) during lectures. Food and drinks are not permitted in the workshop.

READING LIST

COURSE OUTLINE

Week	Topic	Remarks
1 & 2	Introduction and Course Overview	During this first class, the expectation of the students from the course will also be documented.
3 & 4	Vectors, operations with forces, resultants of coplanar force systems. Resultant of spatial force systems. Equilibrium and coplanar force systems.	
5 & 6	Center of gravity and center of mass. Newton's laws of motion and their applications, Friction and its applications.	
7 - 8	Impulse and momentum; Kinetic energy. Kinematics of a particle, composition and resolution of velocities and accelerations, relative velocity and acceleration, representation by vectors.	
9	Plane Kinematics of rigid body, angular velocity diagrams applied to simple mechanisms.	
10	MID-SEMESTER TEST	
11 - 12	Gyroscope. Instantaneous center of rotation. Equations of motion, linear momentum and moment of momentum.	
13 - 14	Moment of inertia. Free vibrations of systems with one and two degrees of freedom including damping. Torsional vibration.	
15	REVISION	This is the week preceding the final examination. At this time, evaluation will be done to assess how far the students' expectations for the course have been met.