Forman Christian College
(A Chartered University)
Department of Mathematics
Mechanics (MATH 302)
Spring 2023
Dr. Nazish Shahid, Associate Prof.
Room No. S-352
Office hrs. Mon, Wed 1:20 PM-2:00 PM
Fri 1:00 PM-2:10 PM
Tues, Thur 1:50 PM-2:50 PM
Note: For other than office hours get an appointment.
nazishshahid@fccollege.edu.pk

Course Details:

Course Timings: Mon, Wed 12:00 Noon-1:15 PM
                   Fri 12:00 Noon-12:50 PM
Class Room: S-410
Credits: 4hrs
Prerequisite: MATH 203 (Vector Analysis)
Section: A

Recommended Book and Notes:

- **Introduction to Mechanics (Edited by Q. K. Ghori) and published by West Pak Publishing Company (PVT.) LTD., Lahore (Revised Edition)**

- **Lecture Notes (Available on Moodle)**

Reference Book:

Principles of Mechanics (3rd Edition, 1959) or any edition by John L. Synge and Byron A. Griffith, International Student Edition (McGraw-Hill), Also reproduced by the National Book Foundation and reprinted by Ali Majeed Printers in 1982.

Course Objectives:

- To be able to make composition of forces into a resultant force
- To understand laws of friction and be able to apply these laws to solve daily-life examples
- To understand the dynamics of a body without any reference to the forces acting on it
- To be able to find components of velocity and acceleration
- To understand rectilinear motion in context with constant and variable acceleration
- To be able to calculate trajectory and speed of a projectile

Course Requirements:

- Students are expected to attend all classes. **University's attendance policy** will be followed and the student whose attendance is less than 70% won't be allowed to take the final exam.
- Students must arrive in the class at time and should remain there for the entire period.
- All electronic devices including **Mobile phones should be switched off** during class, problem solving session, quizzes, midterm and final exam.
- There is no make up for missed quizzes but best 2 out of 3 will be counted. Make up for midterm and final exam is possible only under extremes cases if the student provides strong documentary evidence. In case of makeup exam there will be a 0-20% deduction in marks depending upon case-to-case basis. Medical Certificate will be acceptable if the medical officer of FCC verifies it.
- For other "Expectations" and "Breaches of Academic Integrity" please visit https://www.fccollege.edu.pk/policy-on-academic-integrity/

Course Contents:

This is a core course of Mathematics. Course contents include composition and resolution of forces, friction, kinematics and dynamics of a particle and, projectile motion.

Course Evaluation:

Course assessment will be done through the following steps:

Attendance, Behavior, Class Participation	5%
Assignments (2)	5%
Quizzes (3)	20%
Midterm	30%
Final Exam	40%

Course Outline:

Week	Topics	Assesment
1	**Course Plan: Course Introduction, Policies, Grading Criteria** **Composition of Forces: Components of a Force, Composition of Concurrent Forces**	
2	**The (λ, μ) Theorem, Equilibrium of a Particle**	
3	**Moment of a Force about a Point, Friction**	**Assignment 1**
4	**Friction, Equilibrium of a Particle on a Rough Inclined Plane and Related Applications**	
5	**Equilibrium of a Particle on a Rough Inclined Plane and related Applications (Continued)**	**Quiz-1**
6	**Kinematics: Velocity and Acceleration**	
7	**Velocity and Acceleration (Continued)**	
8	**Mid-Term Course: Topics covered in first 7 Weeks Lectures, Rectilinear Motion**	**Midterm**
9	**Rectilinear Motion (Continued)**	
10	**Problems involving 'Motion with Constant and Variable Accelerations'**	**Assignment 2**
11	**Problems involving 'Motion with Constant and Variable Accelerations' (Continued)**	

12	Dynamics of a Particle	Quiz-2
13	Dynamics of a Particle (Continued)	
14	Projectile Motion	
15	Projectile Motion (Continued)	Quiz-3

Grading Legend:

Grades	Quality Pts	Numerical Value	Meanings
A	4.00	93-100	Superior
A-	3.70	90-92	
B+	3.30	87-89	Good
B	3.00	83-86	
B-	2.70	80-82	
C+	2.30	77-79	Satisfactory
C	2.00	73-76	
C-	1.70	70-72	
D+	1.30	67-69	
D	1.00	60-66	Passing
F	0.00	59 or below	Fail