

## Faculty of Engineering & Technology

### Mechanics 2

**Information :**

**Course Code :** MEC 122      **Level :** Undergraduate      **Course Hours :** 2.00- Hours

**Department :** Faculty of Engineering & Technology

**Instructor Information :**

Title	Name	Office hours
Lecturer	Hamada Galal Taha Mohamed Askar	5
Lecturer	Hamada Galal Taha Mohamed Askar	5
Lecturer	Hamada Galal Taha Mohamed Askar	5
Assistant Lecturer	SHEROUK SOBHI ABDELSALAM FOU DA	
Teaching Assistant	Ahmed Abdelfattah Abdelaziz Abdelfattah	
Teaching Assistant	Ahmed Muhammed Elmasbahy Abdel Samed	7
Teaching Assistant	Ahmed Abdelfattah Abdelaziz Abdelfattah	
Teaching Assistant	Ahmed Mohamed Abdelnaby Ali Shafay	

**Area Of Study :**

Displacement, Velocity and Acceleration of a particle, Use of Cartesian coordinates to describe particle motion, Projectiles, Particle motion on straight paths, Trajectory equations, Rectangular and polar axes , Relative motion of two particles. Newton's law of motion, Resistive media, Rocket motion as an application on variable mass particles, Simple harmonic motion of a particle, Motion on circular path, Principle of work and Kinetic energy, Conservative forces, Principle of conservation of mechanical energy, Principle of impulse and momentum.

**Description :**

Displacement, Velocity and Acceleration of a particle, Use of Cartesian coordinates to describe particle motion, Projectiles, Particle motion on straight paths, Trajectory equations, Rectangular and polar axes , Relative motion of two particles. Newton's law of motion, Resistive media, Rocket motion as an application on variable mass particles, Simple harmonic motion of a particle, Motion on circular path, Principle of work and Kinetic energy, Conservative forces, Principle of conservation of mechanical energy, Principle of impulse and momentum.

**Course outcomes :**

**a. Knowledge and Understanding: :**

1 -	Define the fundamental quantities for describing the kinematics of the particle.
2 -	Define the concept of kinetics which relating the forces and accelerations.

3 -	Distinguish between motion of particle in case of rectilinear and curvilinear motion.
4 -	Write equations of motion of a particle.
5 -	Define different types of energy.
<b>b.Intellectual Skills: :</b>	
1 -	Calculate the Velocity and Acceleration of a particle.
2 -	Discriminate between different System of units.
3 -	Find linear momentum of a particle and its rate of change.
<b>c. Professional and Practical Skills: :</b>	
1 -	Use Kinematics of particles to formulate equations of motions.
2 -	Fix the knowledge of Equations of Motion to solve particles problems.
<b>d. General and Transferable Skills: :</b>	
1 -	Work effectively in a team.
2 -	Develop the skills related to creative thinking, problem solver, and teamwork in different fields.

**Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
Displacement, Velocity and acceleration of a particle	4	1	1
Use of Cartesian coordinates to describe particle motion, Particle motion on straight paths	4	1	1
Projectiles, Trajectory equations	4	1	1
Rectangular coordinates	4	1	1
Polar coordinates	4	1	1
Relative motion of two particles	4	1	1
Simple harmonic motion of a particle	4	1	1
Newton's law of motion	4	1	1
Principle of work and kinetic energy	4	1	1
Conservative forces	4	1	1
Resistive media, Rocket motion as an application on variable mass particles	4	1	1
Motion on circular path	4	1	1
Principle of conservation of mechanical energy	4	1	1
Principle of impulse	4	1	1
Principle momentum	4	1	1

**Teaching And Learning Methodologies :**

Interactive Lecture
Discussion
Problem-based Learning

**Course Assessment :**

Methods of assessment	Relative weight %	Week No	Assess What
Final Exam	40.00		
Mid- Exam 1I	25.00		
Mid- Exam I	15.00		
Performance	10.00		
Quizzes+Assignment	10.00		

**Course Notes :**

**Recommended books :**

**Periodicals :**

**Web Sites :**