Engineering Program

Specialty	**Common**
Course Number	**20207121**
Course Title	**Mechanics**
Credit Hours	**3**
Theoretical Hours	**3**
Practical Hours	**0**

Brief Course Description:
General principles, Force vector, Equilibrium of a particle, Force system resultant Equilibrium of rigid body, Analysis of structures, Internal forces, Dry friction, Centroid and Moment of Inertia, Kinematics of a particle, Kinetics of a particle(Forces and acceleration), Kinetics of a particle (impulse and momentum).

Detailed Course Description:

Unit	subject
1	General principles: Mechanics, Fundamental concept, Units, SI System.
2	Force vector: Scalars and Vectors, Vector operations, Vector addition of forces, Cartesian vectors, position vector, Force vector directed along a line, Dot product. .
3	Equilibrium of a particle: Equilibrium condition, Free body diagram, Coplanar force system.
4	Force system resultant: Cross product, Moment of a force, Principle of moment, Moment of a force about a specified axis, Couple, Reduction of a simple distributed load.
5	Equilibrium of rigid body: Conditions of rigid body Equilibrium, Equilibrium in two dimensions.
6	Analysis of structures: Simple trusses, The method of joints, Zero force members, The method of section, frame.
7	Internal forces: Internal forces in structural members.
8	Dry friction: Characteristics of dry friction, Rules of dry friction, Angle of friction, Problems involving dry friction.
9	Centroid and Moment of Inertia: Centroid and Moment of Inertia for particle and body, composite bodies, parallel – axis theorem for an area, Moment of Inertia for mass.
10	Kinematics of a particle : continuous motion, graphical solution, general curvilinear motion(rectangular components),motion of a projectile
11	Kinetics of a particle (Forces and acceleration): equation of motion, equation of motion for a system of particles (rectangular components).
12	Kinetics of a particle (impulse and momentum): principle of linear impulse and momentum, principle of linear impulse and momentum for a system of particles, impact.

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homeworks and quizzes		10%	

Text Book:

- Engineering Mechanics- Statics & Dynamics ,By Hibbeler, 10th edition.

References:

- Vector Mechanics for Engineering - Statics & Dynamics ,By Beer and Johnston, 6th edition, McGraw Hall.