SCHEME OFCOURSE WORK

CourseDetails:

CourseTitle	**EngineeringMechanics**		
CourseCode	**15ME1101**	**L T P C**	**3 1 0 4**
Program:	**B.Tech.**		
Specialization:	**MechanicalEngineering**		
Semester	**I**		
Prerequisites	**Trigonometry,Differentialand Integralcalculus**		
Coursestowhichitis a prerequisite	**MechanicsofSolids,KinematicsofMechanisms**		

CourseOutcomes(COs):

At the end of the course the student will be able to:

CO1	Convert a given physical problem (by drawing the Free body Diagrams) into a suitable force system and find i) the resultant force (if any) or, ii) the unknown reactions.
CO2	Solve problems involving static and kinetic friction.
CO3	Locate the centroid of a given plane area and find its area moment of inertia
CO4	Compute the mass moment of inertia of a body, Calculate the displacement, velocity and acceleration of a particle subjected to rectilinear or curvilinear translation.
CO5	Compute the motion of and torques on a body subjected to fixed axis rotation; Apply work-energy principles to particles and connected systems.

Program Outcomes(POs):

A graduate of Electrical & Electronics engineering will be able to

1	Apply the knowledge of basic sciences and electrical and electronics engineering fundamentals to solve the problems of power systems and drives.
2	Analyze power systems that efficiently generate, transmit and distribute electrical power in the context of present Information and Communications Technology.
3	Design and develop electrical machines and associated controls with due considerations to societal and environmental issues.
4	Design and conduct experiments, analyze and interpret experimental data for performance analysis.
5	Apply appropriate simulation tools for modeling and evaluation of electrical systems.
6	Apply the electrical engineering knowledge to assess the health and safety issues and their consequences.
7	Demonstrate electrical engineering principles for creating solutions for sustainable development.
8	Develop a techno ethical personality that help to serve the people in general and Electrical and Electronics Engineering in particular.
9	Develop leadership skills and work effectively in a team to achieve project objectives.
10	Communicate effectively in both verbal and written form.
11	Understand the principles of management and finance to manage project in multi disciplinary environments.
12	Pursue life-long learning as a means of enhancing the knowledge and skills.

Course Outcome Versus Program Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	M		S									
CO-2			M									
CO-3			S									
CO-4	M		M									
CO-5	M		S									

S-Stronglycorrelated, *M-Moderately*correlated,*Blank-Nocorrelation*

AssessmentMethods:	Assignment/Seminar/ Mid-Test/EndExam

Teaching-Learningand Evaluation

Week	TOPIC/CONTENTS	CO	Samplequestions	TEACHING-LEARNING STRATEGY	Assessment Method&Schedule
1	Parallelogramlaw,forcesandcomponents,resultantofcoplanarconcurrentforces	CO1	Findthemagnitudeanddirectionofthefourforcesshowninfig.	i. Lecture ii. Discussion iii. Problemsolving	
2	componentsofforcesinspace, momentofforce, principleofmoments,coplanarapplications,couples,resultantifanyforcesystem(coplanarconcurrentcasesonly)	CO1	Resolvethegivenforceinto3componentsalongthedirectionsshown. Findthemomentofalltheforcesshownaboutthegivenmoment-center	i. Lecture ii. Discussion iii. Problemsolving	
3	Equilibriumofforcesystems:Freebodydiagram,equationsofequilibrium,equilibriumofplanarsystems,	CO1	Determinethesupportreactionsonthebodyshown	i. Lecture ii. Discussion iii. Problemsolving	
4	Analysisofstructures-methodofjoints,methodofsections	CO1	Determinetheinternalforceinallthemembersofthegiventruss	i. Lecture ii. Discussion iii. Problemsolving	
5	Theoryoffriction,angleoffriction,lawsoffriction,staticfriction,kineticfriction	CO2	Statethelawsoffriction.Differentiatebetweenstaticandkineticcoefficientsoffriction	i. Lecture ii. Discussion iii. Problemsolving	
6	frictioninbodiesmovingupordownonanincli nedplane	CO2	Determinethe forcesinatierodconnectingtwobodiesonroughplanewhenmotioni	i. Lecture ii. Discussion iii. Problemsolving	
7	wedgefriction	CO2	Determinetheforcesdevelopedinawedge-blocksystem	i. Lecture ii. Discussion iii. Problemsolving	Assignment 1
8	Centerofgravityofflatplate, centroidsofareasandlines,importanceofcentroidsofareasandlines,importanceofcentroidsandmomentsofarea	CO3	Calculatethecoordinatesofthecentroidofthegivenplanearea	i. Lecture ii. Discussion iii. Problemsolving	
9	centroidsdeterminedbyintegration,centroidsofcompositefigures,theoremofPappus,centerofgravityofbodies	CO3	ApplyPappusTheoremstocalculatethesurfaceareaandvolumeofthesolidofrevolutionshown	i. Lecture ii. Discussion iii. Problemsolving	Quiz1
10	Definitionofmomentofinertia,polarmomentofinertia,radiusofgyration,parallelaxistheorem,momentsofinertiabyintegration,momentsofinertiaforcompositeareas	CO3	Determinetheareamomentofinertiaoftheplaneareaaboutthegivenx-, y-,andpolaraxes	i. Lecture ii. Discussion iii. Problemsolving	
11	**MID-IExamination**				

12	Introduction,radiusofgyration,parallelaxistheorem,massmomentsofinertiabyintegration,momentsofinertiaofcompositebodies	CO4	Determinethemassmomentofinertiaofthegivenbodyaboutthegivenx-, y-,andpolaraxes	i. Lecture ii. Discussion iii. Problemsolving	
13	Motionofaparticle,rectilinearmotion,rectangularcomponentsofcurvilinearmotion,normalandtangentialcomponentsofacceleration	CO4	Determinethevelocityandaccelerationafter5secondsforaparticlemovingoncurveshown	i. Lecture ii. Discussion iii. Problemsolving	
14	Radialandtransversecomponents,cylindricalcoordinates,translation-analysis asa particle,furtherdiscussion ofparticlekinematics	CO4	Determinethevelocityandacceleration ofarocketforthegivendata	i. Lecture ii. Discussion iii. Problemsolving	Assignment 2
15	Typesofrigid-bodymotion,angularmotion-fixedaxisrotation,applicationofkinematicequations,kineticsoffixedaxisrotation.	CO5	Determinetheangularvelocityanddisplacementofamotorofgivendimensionsanddensitysubjectedtoagiventorque	i. Lecture ii. Discussion iii. Problemsolving	
16	Work-energyequationfortranslation,interpretationandcomputationofwork,work-energyappliedtoparticlemotion,power,efficienc	CO5	Findthevelocityofthefallingweighthangingfromastringwoundaroundapulleyasshown	i. Lecture ii. Discussion iii. Problemsolving	Quiz
17	WorkEnergyappliedtofixed-axisrotation,work-energyappliedtoconnected	CO5	Fortheconnectedsystemofbodies, determinetheforcesinallstrings5secondsaftermotionstarts	i. Lecture ii. Discussion iii. Problemsolving	
18	**MID-IIExamination**				