

DEPARTMENT OF MECHANICAL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Course Title	ENGINEERING MECHANICS		
Course Code	MEPC 10	No. of Credits	03
Course Code of Pre-requisite subject(s)	-		
Session	July/ Jan. 2018	Section (if, applicable)	ECE-A
Name of Faculty	YR KISHORE	Department	MECHANICAL
Name of Course Coordinator(s) (if, applicable)	-		
E-mail	kishore@nitt.edu	Telephone No.	9963298129
Course Type	<input checked="" type="checkbox"/> Core course <input type="checkbox"/> Elective course		
Syllabus			
<p>Fundamentals Mechanics and its relevance, concepts of forces, laws of mechanics - parallelogram law, Lami's theorem, law of polygon, concept of free-body diagram, centroids, center of gravity, area moment of inertia, mass moment of inertia – simple and composite planes, Numerical.</p> <p>Friction Laws of friction, static friction, rolling friction, application of laws of friction, ladder friction, wedge friction, body on inclined planes, simple screw jack – velocity ratio, mechanical advantage, efficiency, Numerical.</p> <p>Statics Principles of statics, types of forces, concurrent and non-concurrent forces, composition of forces, forces in a plane and space, simple stresses and strains, elastic coefficients, Numerical.</p> <p>Kinematics Fundamentals of rectilinear and curvilinear motion, application of general equations, concept of relative velocity, analytical and graphical techniques, Numerical.</p> <p>Dynamics Principles of dynamics, D'Alembert's principle, conservation of momentum and energy, vibrations of simple systems, Numerical.</p>			
COURSE OBJECTIVES			
<ul style="list-style-type: none"> • To explain the importance of mechanics in the context of engineering and conservation equations. • To explain the significance of centroid, centre of gravity and moment of inertia. To introduce the techniques for analyzing the forces in the bodies. • To apply the different principles to study the motion of a body, and concept of relative velocity and acceleration. • To describe the trajectory of a particle under projectile motion. • To identify the basic elements of a mechanical system and write their constitutive equations. 			

COURSE OUTCOMES (CO)	Aligned Programme Outcomes (PO)
Course Outcomes	
1. Students will be able to solve problems dealing with forces in plane or in space and equivalent forces systems.	1,2,6
2. An ability to identify, analyse and solve problems related to rigid body mechanics involving friction.	1,2,6
3. The student will understand the fundamentals of laws of motion and their application in the area of dynamics.	1,2,6

COURSE PLAN – PART II			
COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	1-2	Mechanics and its relevance, concepts of forces, laws of mechanics - parallelogram law, Lami's theorem, law of polygon, concept of free-body diagram, Numerical	Chalk & Talk /PPT
2	3-4	Principles of statics, types of forces, concurrent and non-concurrent forces, composition of forces, forces in a plane and space, Numerical	
3	5	Simple stresses and strains, elastic coefficients, Numerical.	Chalk & Talk /PPT
4	6-7	Centroids, center of gravity, area moment of inertia, mass moment of inertia – simple and composite planes, Numerical.	
5	8-9	Fundamentals of rectilinear and curvilinear motion, application of general equations, concept of relative velocity, analytical and graphical techniques, Numerical	
6	10-11	Laws of friction, static friction, rolling friction, application of laws of friction, ladder friction, wedge friction, body on inclined planes, simple screw jack – velocity ratio, mechanical advantage, efficiency, Numerical.	Chalk & Talk /PPT
7	12-13	Principles of dynamics, D'Alembert's principle, conservation of momentum and energy, Numerical	
8	14-15	Vibrations of simple systems, Numerical.	

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle test-I	5 th Week	1 hour	20
2	Cycle test-II	11 th Week	1 hour	20
3	Google Classroom-Home work problems/Class test/Assignment	-	-	15
4	Compensation Assessment (Retest)	14 th Week	1 hour	-
5	Final Assessment	15 th Week	3 hours	45

ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc

Text Books

1. Kumar, K. L., Kumar, V. 'Engineering Mechanics', Pub.: Tata McGraw Hill, 2011.
2. Palanichamy, M. S., and Nagan, S., 'Engineering Mechanics – Statics & Dynamics', Pub.: Tata McGraw Hill, 2002.
3. Timoshenko, S. and Young, D. H., 'Engineering Mechanics', Pub.: McGraw Hill, 2006.

Reference Books

1. Popov, E. P., 'Engineering Mechanics of Solids', Pub.: Prentice Hall, 1998.
2. Shames, I. H. and Rao, G. K. M., 'Engineering Mechanics – Static and Dynamics', Pub.: Pearson Education, 2009.
3. Beer, F. P., and Johnson Jr. E. R., 'Vector Mechanics for Engineers', Pub.: McGraw Hill, Year of publication: 2009.
4. Rao, J. S. and Gupta, K., 'Introductory Course on Theory and Practice of Mechanical Vibrations', Pub.: New Age International, 1999.

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

Feedback from the students during class committee meetings.

Anonymous feedback through questionnaire and unknown formats.

COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, academic honesty and plagiarism etc.)

MODE OF CORRESPONDENCE (email/ phone etc)

All the students are advised to come to the class regularly. All the correspondence (schedule of classes/ schedule of assessment/ course material/any other information regarding this course) will be intimated in the Class only.

ATTENDANCE

Attendance will be taken by the faculty in all the contact hours. Every student should maintain minimum of 75 % physical attendance in these contact hours along with assessment criteria to attend the end semester examination.

COMPENSATION ASSESSMENT

Retest will be conducted for 20 marks.

ACADEMIC HONESTY & PLAGIARISM

1. All the students are expected to be genuine during the course work. Taking of information by means of copying simulations, assignments, looking or attempting to look at another student's paper or bringing and using study material in any form for copying during any assessments is considered as dishonest.

2. Tendering of information such as giving one's program, assignments to another student to use or copy is also considered as dishonest.
3. Preventing or hampering other students from pursuing their academic activities are also considered as academic dishonesty.
4. Any evidence of such academic dishonesty will result in the loss of marks on that assessment. Additionally, the names of those students so penalized will be reported to the class committee chairperson and HoD of the concerned department.
5. Students who honestly producing ORIGINAL and OUTSTANDING WORK will be REWARDED.

ADDITIONAL INFORMATION

- The faculty is available for consultation at times as per the intimation given by the faculty.
- Queries (if required) to the course teacher shall only be emailed to the email id specified by the teacher(kishore@nitt.edu)

FOR APPROVAL

Course Faculty Y.R. Kishore CC-Chairperson B. Marudhanji HOD [Signature] 13/4/2018