

DEPARTMENT OF MECHANICAL ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Course Title	DYNAMICS LABORATORY		
Course Code	MELR15	No. of Credits	2
Course Code of Pre-requisite subject(s)	MEPC23		
Session	2020	Section (if, applicable)	V-A & B
Name of Faculty	Dr M Vignesh Kumar	Department	Mechanical
Email	mvignesh@nitt.edu	Phone No.	9566850888
Name of Course Coordinator(s) (if, applicable)	-----		
Course Type	Lab course		
Syllabus (approved in BoS)			
Measurement of moment of inertia of rigid bodies. Gyroscope. Linear vibration. Torsional vibration. Balancing. Geared system			
COURSE OBJECTIVES			
1. To equip students with understanding of the fundamental principles of dynamics. 2. To develop a model of a mechanical system using a free body diagram. 3. To develop equations of motion for translational and rotational mechanical systems.			
COURSE OUTCOMES (CO)			
Course Outcomes At the end of the course student will	Aligned Programme Outcomes (PO)		
1. Compute the moment of inertia of rigid bodies	1,3,4,5,8,12		
2. Demonstrate the working principles of gyroscope	1,3,4,5,8,12		
3. Experiment with vibrations and balancing.	1,3,4,5,8,12		
COURSE PLAN – PART II			
COURSE OVERVIEW			
<p>The objective of this lab is to impart practical knowledge on design and analysis of mechanisms in the machine tools and automobiles. In Machine Dynamics Lab, the students are doing the experiments related to their theory subjects like Engineering Mechanics, Machines and Mechanisms and Fundamentals of Vibration and Noise. Various equipment like governors, gyroscopes, balancing machines and universal vibration testing facilities are available to understand machine dynamics. The working models of simple mechanisms like gears, cams and followers are very much useful to understand Basic Mechanical Engineering subject. The vibration equipment are well established in dynamics lab.</p>			

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week	Topic	Mode of Delivery
1	1 st Week	Introduction of moment of inertia of rigid bodies	Interaction with suitable experiments
2	2 nd Week	Introduction to Linear and Torsional Vibration	Interaction with suitable experiments
3	3 rd Week	Dynamic analysis of Gyroscope.	Interaction with suitable experiments
4	4 th Week	Free vibration of helical spring.	Interaction with suitable experiments
5	5 th Week	Free & forced vibration of equivalent spring mass system.	Interaction with suitable experiments
6	6 th Week	Transverse vibration of beams.	Interaction with suitable experiments
7	7 th Week	Torsional vibration of single rotor system with viscous damping.	Interaction with suitable experiments
8	8 th Week	Dynamic balancing of rotating masses.	Interaction with suitable experiments
9	9 th Week	Dynamic balancing of reciprocating masses.	Interaction with suitable experiments
10	10 th Week	Dynamic analysis of Epi-cyclic gear train	Interaction with suitable experiments
11	11 th Week	Whirling of shafts. Transmissibility ratio in vibrating systems.	Interaction with suitable experiments
12	12 th Week	End semester laboratory exam	-----

COURSE ASSESSMENT METHODS

Sl.no.	Mode of Assesement	Week	Duration	% Weightage
1	Continuous Evaluation (Observation&Record)	10 Weeks	3 hours/week	70
2	End examination	12 Week	3 hours	30

COURSE EXIT SURVEY

- 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 laboratory session without fail. All the correspondence (lab exercise details/ compensation class/lab reports, etc.,) will be intimated in the google classroom only.

ATTENDANCE

- At least 75% attendance in each course is mandatory.
- A maximum of 10% shall be allowed under On Duty (OD) category.

- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

COMPENSATION ASSESSMENT

- Compensation lab will be conducted before end of the course.

ACADEMIC HONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

The above policy against academic dishonesty shall be applicable for all the programmes.

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(mvignesh@nitt.edu)

FOR APPROVAL

Course Faculty

CC-Chairperson

HOD