SRI VIDYA COLLEGE OF ENGINEERING & TECHNOLOGY

COURSE PLAN (THEORY)

ACADEMIC YEAR: 2018-2019

Subject Code	**ME 6012**	**L**	**P**	**T**	**C**
Subject Title	**Maintenance Engineering**	3	0	0	3
Year / Dept / Sem	IV / Mechanical Engineering / VII	Regulation Year	2013		
Faculty Name/Desg/Dept	Mr.D.Thanga ganesh / Assistant Professor / Mechanical Engineering				
Course Prerequisite	Basic knowledge about the maintenance practices in industry.				

Attach the copy of syllabus

Course Objectives (CO)	CO1: To enable the student to understand the principles, functions and practices adapted in industry for the successful management of maintenance activities. CO2: To explain the different maintenance categories like Preventive maintenance, condition monitoring and repair of machine elements. CO3: To illustrate some of the simple instruments used for condition monitoring in industry.
Expected Course Outcomes (ECO)	At the end of the course, the students should be able to: ECO1: Implement the maintenance function and different practices in industries for the successful management of maintenance activities ECO2: Identify the different maintenance categories like Preventive maintenance, condition monitoring and repair of machine elements.

Mapping of CO & PO(Specify the PO's) - ***(Fill the col.s with the legend given below)***

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	B,E	B,E										
CO2	B,E	B,E										
CO3	B,E	B,E								H		

Bridging the Curriculum Gap (Additional Topics beyond syllabus / Seminars / Assignments)	BCG1: Maintenance Policies in Industries BCG2: Roles and Responsibilities of Maintenance engineer BCG3: Maintenance practices for Automobiles / Industrial Equipments
Related Website URLs	W1: http://nptel.ac.in/courses/112101096/ W2: http://nptel.ac.in/courses/112104114/ W3: http://nptel.ac.in/downloads/112101096/
Related Video Course Materials (min. 3 no.s)	V1: https://www.youtube.com/watch?v=U6pjGzbCvSg V2: https://www.youtube.com/watch?v=mYu6kwwiaIg V3: https://www.youtube.com/watch?v=KktdoY66vms V4: https://www.youtube.com/watch?v=5Q9RJPENXyw
Text books	1. Srivastava S.K., "Industrial Maintenance Management", S. Chand and Co., 1981 2. Venkataraman .K "Maintancence Engineering and Management", PHI Learning, Pvt. Ltd., 2007
Reference Books	1. Bhattacharya S.N., "Installation, Servicing and Maintenance", S. Chand and Co., 1995 2. White E.N., "Maintenance Planning", I Documentation, Gower Press, 1979.

	2. Garg M.R., "Industrial Maintenance", S. Chand & Co., 1986. 3. Higgins L.R., "Maintenance Engineering Hand book", 5th Edition, McGraw Hill, 1988. 4. Armstrong, "Condition Monitoring", BSIRSA, 1988. 5. Davies, "Handbook of Condition Monitoring", Chapman & Hall, 1996. 6. "Advances in Plant Engineering and Management", Seminar Proceedings - IIPE, 1996.

S.No	Topic Name	Book	Page No	Mode of delivery	No of hrs	Cumulative hrs
UNIT I PRINCIPLES AND PRACTICES OF MAINTENANCE PLANNING 9						
1.	Basic Principles of maintenance planning	**T1**	**1.1-1.6**	**C & BB**	**1**	1
2.	Objectives and principles of planned maintenance activity	**T1**	**1.6.1.10**	**LCD**	**1**	**2**
3.	Importance and benefits of sound Maintenance systems	**T1**	**1.11**	**LCD**	**1**	**3**
4.	Reliability and machine availability	**T1**	**1.12-1.22**	**LCD**	**1**	**4**
5.	MTBF, MTTR and MWT – Factors of availability	**T1**	**1.23-1.28**	**LCD**	**3**	**7**
6.	Maintenance organization	**T1**	**1.31-1.40**	**LCD**	**1**	**8**
7.	Maintenance economics.	**T1**	**1.40-1.45**	**LCD**	**1**	**9**
UNIT II MAINTENANCE POLICIES – PREVENTIVE MAINTENANCE 9						
8.	Maintenance categories	**T1**	**2.1-2.6**	**C & BB**	**1**	**10**
9.	Preventive maintenance, maintenance schedules,	**T1**	**2.6-2.8**	**LCD**	**2**	**12**
10.	repair cycle	**T1**	**2.37-2.39**	**LCD**	**2**	**14**
11.	Principles and methods of lubrication	**T1**	**2.39-2.45**	**LCD**	**1**	**15**
12.	TPM	**T1**	**2.8-2.31**	**LCD**	**3**	**18**
UNIT III CONDITION MONITORING 9						
13.	Condition Monitoring – Cost comparison with and without CM	**T1**	**3.1-3.15**	**C & BB**	**2**	**20**
14.	On-load testing and offload testing	**T1**	**3.16-3.18**	**LCD**	**2**	**22**
15.	Methods and instruments for CM	**T1**	**3.18-3.48**	**LCD**	**2**	**24**
16.	Temperature sensitive tapes – Pistol thermometers	**T1**	**3.49-3.70**	**LCD**	**1**	**25**
17.	wear-debris analysis	**T1**	**3.71-3.98**	**LCD**	**2**	**27**
UNIT IV REPAIR METHODS FOR BASIC MACHINE ELEMENTS 9						
18.	Repair methods for beds, slide ways, spindles,	**T1**	**4.30-4.36**	**C & BB**	**2**	**29**
19.	Repair methods for gears, lead screws and bearings	**T1**	**4.21-4.29**	**LCD**	**3**	**32**
20.	Failure analysis – Failures and their development - Logical fault location methods	**T1**	**4.10-4.21**	**LCD**	**3**	**35**
21.	Sequential fault location	**T1**	**4.16-4.17**	**LCD**	**1**	**36**
UNIT V REPAIR METHODS FOR MATERIAL HANDLING EQUIPMENT 9						
22.	Repair methods for Material handling equipment	**T1**	**5.1-5.26**	**C & BB**	**2**	**38**
23.	Equipment records	**T1**	**5.27-5.29**	**LCD**	**2**	**40**

24.	Job order systems	**T1**	**5.26-5.27**	**LCD**	**2**	**42**
25.	Use of computers in maintenance.	**T1**	**5.28-5.31**	**LCD**	**3**	**45**

	Prepared by	***Approved by***
Signature		
Name	Mr.D.Thanga ganesh	Dr. G. Baskaran
Designation	Assistant Professor / Mech	Professor & Head (Mech)
Signed date	22.06.2018	22.06.2018

LEGEND:

METHODOLOGY TO MAP OBJECTIVE WITH OUTCOME

Course outcomes are achieved through

A	Suitable Analogies.	E	Weekly, monthly and model exams.
B	Class room teaching.	F	Brain storming.
C	Assignments.	G	Group discussion and role play.
D	Tutorials	H	Seminars