



**Type of course:** Under Graduate

**Prerequisite:** None.

**Rationale:** This unit covers maintenance activities on a range of mechanical equipment including gearboxes, machine tools, lifting and handling equipment, processing plant, production plant, engines, pumps, process control valves, compressors, transfer equipment etc. as per approved procedures..

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
0	0	15	15	0	0	100	100	200

Sr. No.	Topic	No. of hours	% Weightage
1.	<p><b>Maintenance activities on mechanical equipment</b></p> <ul style="list-style-type: none"> <li>• Describe various types of measurement systems</li> <li>• Interpret British and Metric systems of measurement</li> <li>• Read ‘First angle’ and ‘Third angle’ Engineering drawings</li> <li>• Explain the importance of safe working practices</li> <li>• Identify hazards associated with fitting activity</li> <li>• State the importance of safe material handling practices</li> <li>• Identify Personal Protective Equipment required for maintenance operations</li> <li>• List tools and equipment required for general fitting operation</li> <li>• Identify various measuring instruments</li> <li>• Explain method and techniques used in dismantling and assembling</li> <li>• Explain methods to produce mechanical assemblies</li> <li>• State the functions of different types of bearing and gears</li> <li>• Explain various types of maintenance activities</li> <li>• Describe various types of diagnostic techniques</li> <li>• Read manufacturer’s manual, physical layout diagrams, fault analysis chart, troubleshooting guides and machine assembly layout</li> <li>• Apply monitoring or testing procedures in fault diagnosis</li> <li>• Perform maintenance activities on various equipment</li> <li>• Apply correct method to dismantle mechanical assemblies</li> <li>• Reassemble components using suitable method</li> <li>• Perform servicing and maintenance as per the requirement</li> <li>• Replace or refit basic hydraulic or pneumatic components</li> <li>• Monitor and record measurements and observations</li> <li>• Deal with equipment malfunction and rectify faults during</li> </ul>	75	50



	<p>the breakdown</p> <ul style="list-style-type: none"><li>• servicing process as appropriate</li><li>• Identify areas of improvement in the various maintenance services and</li><li>• implement the same</li><li>• Fill up appropriate technical forms, activity logs as per the requirement</li><li>• Follow proper communication protocol</li><li>• Communicate with people in respectful manner in line with organizational policy</li><li>• Perform numerical operations, geometry and calculations</li><li>• Plan, organize and sequence work operations as per the job requirement</li><li>• Work in a team to achieve better results</li></ul>		
2.	<p><b>Health and safety</b></p> <ul style="list-style-type: none"><li>• Explain the importance of Personal Protective Equipment (PPE)</li><li>• Identify job site hazards to avoid accidents at the work place</li><li>• Explain the importance of ‘5S’ at the workplace</li></ul>	25	10
3.	<p><b>Fire safety</b></p> <ul style="list-style-type: none"><li>• Explain types of fires</li><li>• Recognise required fire extinguisher based on the type of fire</li><li>• Identify causes of accidents</li><li>• Apply PASS method to operate a fire extinguisher</li><li>• Interpret fire safety signs</li><li>• Inspect evacuation plan in case of fire</li><li>• Identify the location of assembly point, fire exit, fire alarm</li><li>• Follow reporting procedure in case of a fire</li><li>• Plan fire safety drills at the workplace</li></ul>	50	15
4.	<p><b>Emergencies, rescue and first aid procedure</b></p> <ul style="list-style-type: none"><li>• Follow electrical safety procedures</li><li>• Use approved method to rescue a person from electrocution</li><li>• State the importance of first aid</li><li>• Identify the contents of a first aid kit</li><li>• Administer first aid in case of bleeding, burns, choking, electrical shock, poisoning, etc.</li><li>• Demonstrate CPR process</li><li>• Provide first aid for minor injuries</li><li>• Explain stages of crisis and crisis management</li><li>• Prepare an Incident report as per the policy</li></ul>	25	15
5.	<p><b>Working effectively with others</b></p> <ul style="list-style-type: none"><li>• Explain the importance of team work and team dynamics</li><li>• State 4Cs of working in a team</li><li>• Explain types of communication</li></ul>	25	10



	<ul style="list-style-type: none"><li>• Apply effective communication technique</li><li>• Overcome barriers to effective communication</li><li>• Demonstrate active listening skills</li><li>• Demonstrate good customer service skills</li><li>• Explain the importance of ethical behaviour in your day-to-day work</li><li>• State the importance of discipline in life and apply the same at workplace</li></ul>		
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**Suggested Specification table with Marks  
(Practical):**

Distribution of Practical Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	20	30	10	10	10

**Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (Revised Bloom's Taxonomy)**

**Course Outcomes:**

After learning the course the students should be able to:

- Perform maintenance activities on mechanical equipment
- Apply basic health and safety practices at the workplace
- Work effectively with others

**List of Open Source Software/learning website**

1. [www.nptel.ac.in/](http://www.nptel.ac.in/)