



**GUJARAT TECHNOLOGICAL UNIVERSITY**

**Syllabus for Bachelor of Vocation (B.Voc), 5<sup>th</sup> Semester**

**Branch: Solar and Renewable Energy**

**Subject Name: Operation & Maintenance Mechanical  
Technician-Wind Power Plant**

**Subject Code: 1150708**

**Type of course:** Under Graduate

**Prerequisite:** None

**Rationale:** Overview of wind energy sector, working principles of wind energy power plan and identify its key components

**Teaching and Examination Scheme:**

Teaching Scheme			Credit	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

**Content:**

Sr. No.	Topic	No. of hours	% Weightage
1.	<b>Introduction to Wind Power Sector</b> Identify different types of Wind technology and overview of Wind energy sector in India. Understand key insights in the sector through various market research reports and magazines.	10	05
2.	<b>Concept of Wind Power Plant:</b> Identify different types of wind power plant, its components and working principles. Understand basics of electrical concepts like voltage, current, power, energy, etc. Explain the benefits of wind energy over conventional sources of energy.	20	10
3.	<b>Different component in Wind Power Plant</b> Describe the typical specifications, functioning, operating principle, maintenance requirements, warranties, and safe operating & handling procedures of different Wind power plant components like Blades, towers, motors, monitoring system and other components. Identify various ways to optimise material, energy/electricity consumption across processes and follow specified process for waste disposal.	30	15
4.	<b>Carry out operation of mechanical components of wind power plant:</b> Identify the operation manuals of all mechanical components for inspection. Explain how to prepare site and equipment for inspection. Discuss how to carry out inspections of WTG, blade and associated mechanical components as per schedule. Explain how to monitor working efficiency of WTG and associated	40	20



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	<p>components. Explain to identify the location of the conduit, cables, pipes &amp; other undergoing devices prior to performing maintenance work</p>		
<b>5.</b>	<p><b>Carry out maintenance of mechanical components of wind power plant</b> Identify required approvals and permit to work (PTW) from the concerned authority. Discuss to ensure that the system is shut down prior to carrying out work. Explain to carry out maintenance activities for mechanical components of WTG as per standard operating procedures  Explain how to carry out testing of WTG and associated components on universal testing machine (UTM), compression testing machine (CTM)</p>	40	20
<b>6.</b>	<p><b>Inspection and maintenance of power distribution system:</b> List tools, tackles and safety gadgets required during inspection and maintenance activities in power distribution substation.</p>	20	10
<b>7.</b>	<p><b>Workplace health and safety practices</b> State the importance of working in clean and safe environment. Identify potential health and safety risks and hazards in the work environment and their possible causes.  Identify various causes of fire, such as heating of metal, spontaneous ignition, sparking, electrical heating, loose fires, smoking, welding, chemical fires, etc. Describe the different methods of extinguishing a fire</p>	40	20
<b>8.</b>	<b>Total</b>	200	

**Course Outcomes:**

Sr No.	CO statement	Marks % weightage
CO1	Understand the basic concept of Wind Power Plant	20
CO2	Use of different Equipment and material in Wind Power Plant	30



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CO3	Perform operation and maintenance of Wind Power Plant	30
CO4	To Understand health and safety practices on work place	20

**Reference:**

1. Renewable Energy Source & Emerging Technology: D. P. Kothari, PHI Publication
2. Elements of Power Systems Analysis: W. D. Stevenson Jr., McGraw Hill Education.
3. <https://nsdcindia.org>