GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Bachelor of Vocation (B.Voc.), 4th Semester
Branch: Solar & Renewable Energy
Subject Name: Electrical Component for Wind and Solar Lab
Subject Code: 1140706

Type of course: Core

Prerequisite: None

Rationale: The practical component of this course is meticulously designed to complement theoretical learning with hands-on experiences, fostering a comprehensive understanding of electrical component for wind and solar. These experiments collectively contribute to a robust understanding of electrical component for wind and solar, preparing students for the dynamic challenges and innovations in the field of renewable energy.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical		
L	T	P	C	ESE (E)	PA(M)	ESE (V)	PA (I)	
0	0	4	2	0	0	30	20	50

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

Contents:

Sr. No.	Practical / Hands on Exercise	Teaching Hrs.
1	Demonstration Of Wind Nacelle And It's Components.	4
2	Demonstration Of Wind Blade And It's Material.	4
3	Demonstration Of Various Sensor Use In Wind Turbine.	8
4	Speed Control Of Pitch Drive And Yaw Mechanism Using Vfd Trainer Kit.	8
5	Generation Of Electricity Throgh An Alternator.	4
6	Demonstration Of Solar Power Plant And It's Components.	4
7	To Study & Perform Pv And Vi Characteristics Of Solar Pv Cell.	4
8	Testing Of Insulation Resistance Of Cable.	8
9	Testing Of Earthing Resistance.	8
10	Demonstration Of How To Use Safety Equipments.	4
	Total	**56**

Course Outcome:

Sr. No.	CO Statement	Marks% Weightage
CO-1	Demonstrate the importance of renewable energy source and various applications of solar and wind systems.	20
CO-2	Identify the generators and power electronics converters used for wind energy systems.	30
CO-3	Identify the solar panel, inverter, charge controller and battery used for wind energy systems.	30
CO-4	Describe the issues related to the renewable energy in the electrical utility network.	20

Major Equipment:

1. Various Trainer kit.
2. Measuring instruments: Voltmeter, Ammeter, Multi-meter, Techo-meter, VFD-drive,
3. Digital Storage Oscilloscopes.

List of Open Source Software/learning website:

1. www.vlab.co.in
2. www.nptel.ac.in