GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Bachelor of Vocation (B.Voc.), 4th Semester
Branch: Solar & Renewable Energy
Subject Name: Introduction to Wind Energy Engineering Lab
Subject Code: 1140705

Type of course: Under Graduate

Prerequisite: None

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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	Measurement of Wind Speed and Direction using Anemometers	4
2	To Understand Wind Resource Assessment at Selected Sites	4
3	To study Wind Speed Variation Analysis: Data Logging and Spatial Mapping	8
4	To study & perform Virtual Wind Farm Design: Optimization of Campus Wind Energy Layout	4
5	To Study Grid Connection and Power Electronics Integration for Wind Farms	8
6	To Study Installation and Commissioning of Small-Scale Wind Turbine Systems	4
7	To Perform Safety Training and Tower Climbing Simulation for Wind Turbines	8
8	To Performance Testing of Campus Wind Turbine: Evaluating Efficiency and Reliability	4
9	To Perform Testing of Wind Turbine Generator: Assessing Performance and Efficiency	8
10	To Prepare Report on Global and Indian Wind Energy generation Scenario.	4
	Total	**56**

Course Outcome:

Sr.No.	CO statement	Marks% weightage
CO1	Application of Measurement Techniques in Wind Energy Assessment	35
CO2	Understanding of Wind Farm Design and Grid Integration	25
CO3	Proficiency in Installation, Commissioning, and Safety Procedures	20
CO4	Evaluation of Wind Turbine Performance and Efficiency	20

Major Equipment:

1. Anemometers
2. Data Loggers
3. Wind Turbine Simulator
4. Grid-Tie Inverters
5. Small-Scale Wind Turbines
6. Safety Equipment
7. Generator Testing Equipment
8. Computers and Software
9. Measuring Instruments
10. Laboratory Workstations