GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Bachelor of Vocation (B.Voc.), 3rd Semester
Branch: Solar & Renewable Energy
Subject Name: Power Electronics for Solar PV System Lab
Subject Code: 1130706

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 power electronics for solar PV applications. These experiments collectively contribute to a robust understanding of power electronics, 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 SemesterExamination; PA- Progressive Assessment

Contents:

Sr. No.	Practical / Hands on Exercise	Teaching Hrs.
1	To Perform And Plot The V-I Characteristics Of The Scr.	4
2	To Perform And Plot The V-I Characteristics Of The Mosfet.	8
3	To Perform And Plot The V-I Characteristics Of The Igbt	4
4	To Perform Various Firing Circuits Of Scr.	4
5	To Perform Gate Based Driver Circuit Of The Mosfet.	4
6	To Perform Single Phase Half Wave Controlled Rectifier With R And Rl Load.	8
7	To Perform Single Phase Full Wave Controlled Rectifier With R And Rl Load.	4
8	To Perform Step Down Chopper Using Mosfet.	4
9	To Perform The Working Of Single Phase Vsi Inverter.	4
10	To Perform The Working Of Three-Phase Vsi Inverter In 120^{o}, 180^{o} And Spwm Mode.	12
	Total	**56**

Course Outcome:

Sr. No.	CO Statement	Marks % Weightage
CO-1	Proficiency in Device Characteristics.	20
CO-2	Competence in Firing Circuit Design	15

CO-3	Practical Expertise in Rectification Techniques	25
CO-4	Mastery of Power Conversion and Inverter Operation.	40

Major Equipment:

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

List of Open Source Software/learning website:

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