

Lesson Plan

Discipline: ETC		Semester-4th Summer-2026	Name of the Teaching Faculty: Devipuja Mohapatra(Guest Faculty ETC Engg.)
Sl. No.	Subject-Th.5 FUNDAMENTALS OF POWER ELECTRONICS	No. Of Days/Week class alloted:03	Semester From date:-22.12.2025 To date: 18.04.2026 (No of weeks: 15)
	Weeks/Months	Class Day	Topic
1	4Th week 22nd dec To 31th dec	1st	1.1 Power Electronic Devices
		2nd	1.2 Power transistor
		3rd	1.2.1 construction and working principle
2	1st week 1st jan To 09th jan	1st	1.2.2 V-I characteristics and uses
		2nd	1.3 IGBT
		3rd	1.3.1 Construction and working principle
3	2nd week 12th jan To 17th jan	1st	1.3.2 V-I characteristics and uses
		2nd	1.4 Concept of single electron transistor (SET)
		3rd	1.5 Aspects of Nano- technology
4	3rd week 19th jan To 22th jan	1st	2.1 Thyristor Family Devices (SCR)
		2nd	2.1.1 Construction of SCR
		3rd	2.1.2 Two transistor analogy of SCR
5	4th week 27th jan To 31th jan	1st	2.1.3 Types, working and characteristics
		2nd	2.1.4 SCR mounting and cooling
		3rd	2.2 Types of Thyristors: SCR, LASCR, SCS, GTO, UJT, PUT, DIAC and TRIAC
6	1st week 2nd feb To 07th feb	1st	2.3 Thyristor family devices
		2nd	2.3.1 Symbol and construction
		3rd	2.3.2 Operating principle
7	2nd week 9th feb To 13th feb	1st	2.3.3 V-I characteristics
		2nd	2.4 Protection circuits
		3rd	2.4.1 Over-voltage
8	3rd week 16th feb To 21th feb	1st	2.4.2 Over-current
		2nd	2.4.3 Snubber
		3rd	2.4.4 Crowbar
9	4th week 23th feb To 27th feb	1st	3.1 SCR Turn-On methods
		2nd	3.1.1 High Voltage thermal triggering
		3rd	3.1.2 Illumination triggering
10	1st week 2nd march To 07th march	1st	3.1.3 dv/dt triggering
		2nd	3.1.4 Gate triggering
		3rd	3.2 Gate trigger circuits
11	2nd week 9th march To 13th march	1st	3.2.1 Resistance and Resistance-Capacitance circuits
		2nd	3.3 SCR triggering using UJT
		3rd	3.4 PUT: Relaxation Oscillator and Synchronized UJT circuit
12	3rd week 16th march To 20th march	1st	3.5 Pulse transformer and opto-coupler based triggering a. Smart Home
		2nd	3.6 SCR Turn-Off methods
		3rd	3.4 PUT: Relaxation Oscillator and Synchronized UJT circuit
13	4th week 23th march To 31st march	1st	4.1 Phase Controlled Rectifiers
		2nd	4.2 Single phase half controlled, full controlled and midpoint-
		3rd	4.2.1 Circuit diagram, working, input- output waveforms
14	1st week 2nd april To 10th april	1st	4.2.2 Equations for DC output and effect of freewheeling diode
		2nd	4.3 Different configurations of bridge controlled rectifiers Interfacing of 8051
		3rd	5.1 Industrial Control Circuits (Applications)
15	2nd week 13th april To 18th april	1st	5.2 SMPS features 8031/8051/8751.
		2nd	5.3 UPS: Offline and Online
		3rd	5.4 SCR based AC and DC circuit breakers.

Devipuja Mohapatra
Signature of the Teacher

9/2/2025