

COURSE PLAN

Subject : Power Electronics
 Branch: ECE Semester: VI Year: III
 Course Code: EC 308 L-T-P-C: 3-0-1-4 w.e.f. 29.12.2009

Sr. No.	Topic	Contact Hours (Lectures)
1.	Power Semiconductor Devices and Characteristics: Role of power electronics	1
2.	Review of construction and characteristics of power diode, types of power diodes, series and parallel operation of diodes	1
3.	Power transistor, BJT, MOSFET	1
4.	SCR, DIAC, Triac	1
5.	GTO & IGBT.	1
6.	Silicon Controlled Rectifier (SCR): Construction and modes of operation	2
7.	Transistor analogy	1
8.	Switching characteristics, Ratings and protections, series and parallel connections	1
9.	R, RC and UJT firing circuit, firing circuits based on ICs and microprocessors	3
10.	Turn-off characteristics, commutation techniques, condition for commutation, performance of SCR with different loads.	4
11.	Converters: Principle of phase control, fully and half controlled converters	2
12.	Load voltage waveforms, output voltage equation, continuous and discontinuous modes of operation, input power factor of converter, reactive power demand, effect of source inductance	2
13.	Introduction to four quadrant / dual converter	1
14.	Power factor improvement techniques, forced commutated converter, MOSFET and transistor based converters.	1
15.	Inverters: Basic circuit, classification of inverters and process of inversion	1
16.	Commutation processes, performance parameters of inverters	1
17.	Half bridge and full bridge inverters	2
18.	Brief description of parallel and series inverters,	1
19.	Three phase inverters	1
20.	Pulse width modulated inverters, transistor and MOSFET based inverters.	1

21.	Choppers: Chopper classification and configuration	1
22.	Output voltage control techniques, one, two, and four quadrant choppers	2
23.	Step up and step down choppers	1
24.	Voltage and current commutated choppers, MOSFET and transistor based choppers.	1
25.	Cycloconverters: Basic principle of frequency conversion, types of cycloconverter	2
26.	Features of cycloconverters, load commutation of cycloconverters.	3
27.	Power Electronics Drives: Introduction to electric drives, comparison between DC and AC drives, choice between DC and AC drives.	2
Total		41