

Course Number and Name												
BEE502 & Power Electronics												
Credits and Contact Hours												
3&45												
Course Coordinator's Name												
Mrs.Sherine												
Text Books and References												
Text Books:												
1. P.S. Bhimbra "Power Electronics", Khanna publishers												
2. Singh, "Power Electronics", TMH New Delhi.												
3. Rashid M.H. "Power Electronics circuits, Devices and application" Prentice Hall International 1995.												
References:												
1. Sen P.C. "Power Electronics". TMH, New Delhi.												
2. Lander. W, "Power Electronics", McGraw Hill.												
3. http://www.ni.com/tutorial/14674/en/												
Course Description												
To enable the students to gain a fair knowledge on characteristics and applications of power electronic devices and circuits												
Prerequisites						Co-requisites						
Electron Devices						Nil						
required, elective, or selected elective (as per Table 5-1)												
Required												
Course Outcomes (COs)												
CO1: To learn the characteristics of different types of power electronic devices												
CO2: To understand the operation of controlled rectifiers												
CO3: To understand the operation of choppers & its types												
CO4: To understand the operation of inverters & its types												
CO5: To learn the operation of control circuits and applications of power electronics Circuits												
Student Outcomes (SOs) from Criterion 3 covered by this Course												
COs/SOs	a	b	c	d	e	f	g	h	i	j	k	l
CO1	H				M	L						
CO2	H				M	L						
CO3	H				M	L						
CO4	H				M	L						
CO5	H				M	L						

List of Topics Covered

UNIT I	POWER SEMICONDUCTOR DEVICES	9
Construction, Principle of operation Power diodes , power transistors SCR, TRIAC, GTO, MOSFET, IGBT – driver circuit, turn – on method – commutation series and parallel connections		
UNIT II	PHASE CONTROLLED CONVERTERS	9
Converter inverters operation – Single phase and three phase controlled rectifiers(half and full converters) with R,RL and RLE load effect of source inductance and firing circuits – Dual converters – single phase & three phase dual converters		
UNIT III	DC TO DC CHOPPER	9
Voltage, current load commutated chopper – step-up chopper and firing circuits – one, two and four quadrant chopper application to DC driving control		
UNIT IV	INVERTERS	9
Series inverter – parallel inverter – current source inverter – voltage source inverter - Modified McMurray, auto sequential inverter– PWM inverter – UPS.		
UNIT V	AC CHOPPER,CYCLOCONVERTER&VOLTAGE CONTROLER	9
Single phase AC chopper, multistage sequence control – step up and step down cyclo-converter – three phase to single phase and single phase to three phase cyclo-converter – triggering circuit based on micro controller – single phase AC voltage controller with R, RL, RLE.		