

Veer Surendra Sai University of Technology, Odisha, Burla, India

Department of Electrical Engineering

SECOND SEMESTER, MTech (PECD)

POWER ELECTRONIC DEVICES-II (3-1-0)

(For Electrical Engineering Students)

Module	Broad Topic	Lecture Number	Topics	Remarks If Any
Module I	Converters for Static Compensation	1	Standard Modulation strategies.	
		2	Multi-pulse converters and interface magnetics.	
		3	Multilevel inverters of Diode Clamped type and Flying capacitor type.	
		4	Modulation strategies-Space Vector Modulation	
		5	Current regulated Inverter and Current regulated PWM VSI.	
	Methods of current control	6	Hysteresis Control	
		7	Variable band hysteresis control	
		8	Fixed switching frequency current control methods.	
		9	Switching Frequency Vs accuracy of Current regulation.	
		10	Areas of applications of current regulated VSI.	
Module II	Switch mode rectifier	11	Operation of Single/Three phase bridges in rectifier mode.	
		12	Control of DC side voltage.	
		13	Voltage control loop.	
		14	The inner current control loop.	
	Special Inverter Topologies	15	Current Source Inverter.	
		16	Ideal single phase CSI operation.	
		17	Analysis of Single phase capacitor commutated CSI.	
		18	Analysis of series Inverters.	
		19	Modified Series Inverters.	
		20	Three phase series Inverter.	
	Buck, Boost	21	Buck converter- basic operation, waveforms output voltage ripple	

Module III	Buck-Boost SMPS topologies, Push-Pull and Forward Converters	22	Boost converter-basic operation, waveforms.	
		23	Buck-Boost converter-modes of operation, waveforms.	
		24	Push-Pull converter-basic operation and waveforms.	
		25	Forward Converter-basic operation and waveforms. Voltage mode control	
	Half and Full Bridge Converters, Fly back converter	26	Half bridge converter-basic operation and waveforms	
		27	Full bridge converter-basic operation and waveforms.	
		28	Fly back converter-Introduction	
		29	Discontinuous mode of operation, waveforms, control	
		30	Continuous mode of operation.	
	Module IV	Resonant Converters	31	Introduction to Resonant converters.
32			Classification of Resonant converters.	
33			Basic resonant circuit concept.	
34			Load resonant converter.	
35			Resonant switch converter.	
36			Zero voltage switching clamped Voltage topologies.	
37			Resonant DC link inverter with ZVS.	
High frequency link integral half cycle converter.		38	High frequency link integral half cycle converter	
		39	Revision	
		40	Revision	

REFERENCES

- [1]. Ned Mohan et.al: Power Electronics John Wiley and Sons.
- [2]. Rashid: Power Electronics Prentice Hall India
- [3]. G.K. Dubey et.al: Thyristorised Power Controllers, Wiley Eastern Ltd.