



National Institute of Technology Meghalaya

An Institute of National Importance

CURRICULUM

Programme	Bachelor of Technology in Electrical and Electronics Engineering	Year of Regulation	2019-20
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Department	Electrical Engineering	Semester	V
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Course Code	Course Name	Pre-Requisite	Credit Structure				Marks Distribution		
			L	T	P	C	Continuous Assessment	Total	
EE 353	Power Electronics Lab	None	0	1	2	2	12 Experiments	10	120

Course Objectives	To practically study and verify different power electronics circuits		Course Outcomes	CO1	To understand and verify the characteristics of power electronic switches and trigering circuits
	To perform load test of all converters			CO2	To understand and verify different ac-dc, dc-dc, dc-ac, ac-ac ac converter circuits
	To simulate converters under different load conditions			CO3	To understand and implement power electronics circuit to obtain required power supply

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	3	1	2	0	2	0	0	0	3	0	0	0	3	3	0
2	CO2	3	1	2	0	2	0	0	0	3	0	0	0	3	3	0
3	CO3	3	1	2	0	2	0	0	0	3	0	0	0	3	3	0

SYLLABUS

No.	Content	Hours	COs
1	Study of IGBT UJT, MOSFET, SCR, TRIAC, DIAC characteristics.	03	CO1
2	Study of different SCR Triggering Circuit – DC, R, R-C, UJT		

		03	CO2	
3	Study of Synchronized Cosine control Triggering circuit.	03	CO3	
4	Study of Single Phase Half & Fully controlled Bridge Converter with R and R-L Load.	03		
5	Study of Ramp Comparator scheme of Regulating AC power using TRIAC and Opto- Isolator	03		
6	Study of Single phase AC Voltage controller	03		
7	Study of Series Resonant Inverter	03		
8	Study of Three Phase Half and Fully controlled Bridge Converter with R and R-L load	03		
9	Study of Single Phase Full Bridge Inverter Circuit.	03		
10	Study of Chopper circuits	03		
11	Study of different cyclo-converter circuits with R & R-L load.	03		
12	Simulation of Power Electronics circuits in PSIM and MATLAB.	03		
Total Hours		36		
Essential Readings				
1. M. H Rashid, "Power Electronics Circuits, Devices, and Applications", Prentice-Hall of India Pvt. Ltd, 3 rd Edition, 2014.				
2. L. Umanand, "Power Electronics Essential and Applications", Willey, 1 st Edition, 2009.				
Supplementary Readings				
1. P. S. Bimbhra, "Power Electronics", Khanna Publishers, 5 th edition, 1990.				
2. M. D. Singh and K. B. Khanchandani, "Power Electronics", Tata McGraw-Hill Publishing Co. Ltd, 2 nd Edition, 2006.				
3. M. Ned and T. M. Undeland, "Power Electronics Converters Applications and Design", John Willey Inc, 3 rd Edition, 2002.				
4. J. P. Agrawal, "Power Electronic Systems: Theory and Design", Addison Wesley Longman Pte. Ltd, 1 st Edition, 2001.				
5. V. R. Moorthi, "Power Electronics Devices, Circuits and Applications", Oxford University Press, 1 st Edition, 2005.				