



National Institute of Technology Meghalaya
An Institute of National Importance

CURRICULUM

Programme	Bachelor of Technology in Electronics and Communication Engineering	Year of Regulation	2018-19
Department	Electronics and Communication Engineering	Semester	VII

Course Code	Course Name	Credit Structure				Marks Distribution				
		L	T	P	C	INT	MID	END	Total	
EC 475	Basics of VLSI	2	0	0	2	50	50	100	200	
Course Objectives	Preliminaries on MOS device	Course Outcomes	CO1	Able to understand basics of MOS.						
	Fundamentals of Digital Circuits.		CO2	Able to learn basic Digital circuits.						
	Basic analysis of CMOS inverter		CO3	Able to design CMOS inverter.						
	CMOS combinational circuit design		CO4	Able to design CMOS combinational circuits.						

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	3	-	1	-	-	-	-	2	-	-	-	3	-	3
2	CO2	3	3	-	1	-	-	-	-	2	-	-	-	2	-	2
3	CO3	2	3	3	1	2	-	-	-	-	-	-	-	2	3	2
4	CO4	2	2	3	-	2	2	3	-	2	-	-	1	2	3	2
5	CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SYLLABUS

No.	Content	Hours	COs
I	INTRODUCTION TO MOS DEVICE: First Glance at the MOS device MOS Transistor under static conditions, threshold voltage, channel length modulation.	4	CO1
II	DIGITAL LOGIC DESIGN Logic Gates, Boolean functions, AOI logic, Full adder design, Decoder, Multiplexer.	8	CO2
III	INVERTER DESIGN: Static CMOS inverter, performance of CMOS inverter, propagation delay sizing inverter for performance.	04	CO2, CO3
IV	CMOS COMBINATIONAL LOGIC DESIGN: Static CMOS designs, complementary CMOS design, power consumption in CMOS logic gates, design techniques to reduce switching activity, pass transistor logic, differential pass transistor logic, dynamic CMOS design, Domino CMOS logic, NPCMOS-logic style.	8	CO3, CO4
Total Hours		24	

Essential Readings

1. R. Jan, Chandrakasan, and A. Nikolic, Digital Integrated Circuits: A Design Perspective , Pearson Education 2nd edition 2016.

Supplementary Readings

1. S-M. Kang and Y. Leblebici, CMOS Digital Integrated Circuits: Analysis And Design, Tata McGraw-Hill, 3 rd edition 2002.