



National Institute of Technology Meghalaya
An Institute of National Importance

CURRICULUM

Programme	Bachelor of Technology in Electronics and Communication Engineering	Year of Regulation	2018-2019
Department	Electronics and Communication Engineering	Semester	VI

Course Code	Course Name	Credit Structure				Marks Distribution		
		L	T	P	C	Continual Evaluation	VIVA	Total
EC 352	Digital and Analog Integrated Circuits Lab	0	1	2	2	70	30	100
Course Objectives	To understand Spice Simulation of Circuits	Course Outcomes	CO1	Design of circuits using Spice simulator				
	To understand the amplifier characteristics		CO2	Design of amplifier using Spice simulator				
	To develop an ability of CMOS Circuits		CO3	Able to design of CMOS digital circuits				
	To develop the CMOS Circuits Layouts		CO4	Able to analyse CMOS Inverter				
			CO5	Able to analyse the VTC and layout of CMOS inverter				
			CO6					

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

SYLLABUS

No.	Content	Hours	COs
I	Introduction to SPICE Circuit Simulator.	4	CO1
II	Inverting and Non-Inverting Amplifier. Summing, Scaling and Averaging. Integrator and Differentiator	6	CO2
III	Implementation of CMOS Inverter. Obtain & Plot Its Transfer Characteristics, Determine Noise Margins and Measure Propagation Delay. Realization of MOSFET Characteristics Using Circuit Simulator Characteristics and BSIM Models. Realization of CMOS logic Gates.	4	CO2, CO3
IV	Realization of CMOS Half Adder & Full Adder Circuit.	2	CO2, CO3
V	Design and Implement of 1-Bit RAM CELL using JK & SR Flip-Flop.	2	CO4, CO5
VI	Layout of CMOS Inverter and Parasitic Extraction and Obtain VTC of Extracted Net List	4	CO2, CO4
Total Hours		22	

Essential Readings

- S-M. Kang and Y. Leblebici, "CMOS Digital Integrated Circuits: Analysis and Design", Tata McGraw-Hill, 3rd Edition, 2002
- B. Razavi, "Design of Analog CMOS Integrated Circuit" Tata McGraw-Hill, 2nd Edition, 2017

Supplementary Readings

- H. Taub and D. Schilling, "Digital Integrated Electronics", McGraw-Hill, International, 2017.
- R. Jan, A. Chandrakasan, and B. Nikolic, "Digital Integrated Circuits: A Design Perspective", Pearson Education, 2nd Edition 1999.
- S. Salivahanan S., "Linear Integrated Circuits", McGraw-Hill, 3rd Edition, 2018