



# SANTHIRAM ENGINEERING COLLEGE:: NANDYAL

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NH-40, Nandyal – 518501 :: Kurnool Dist. A.P.

DEPARTMENT: ECE - VLSI SYSTEM DESIGN					
COURSE OUTCOMES				REGULATION: R17	
Year/Sem.	S.No.	Subject Name	SUB CODE	COURSE OUTCOMES	
	1	Advanced MOSFET Modelling	17D57101	CO1	Able to Derive mathematical models for modern MOS devices.
				CO2	To Provide solution to overcome short channel issues.
				CO3	Understand the physics of and design elements of silicon MOSFETs
				CO4	Explain the equations, approximations and techniques available for deriving a model with specified properties, for a general device characteristic with known qualitative theory
				CO5	Understand and analyze the inner working of semiconductor p-n diodes, Schottky barrier diodes and advanced MOSFET technology
	2	CMOS Analog IC Design	17D57102	CO1	Understand significance of different biasing styles and apply them for designing analog ICs.
				CO2	Analyze the functionality of Current Mirrors, Current Sinks.
				CO3	Analyze the Differential amplifiers and Current amplifiers.
				CO4	Design basic building blocks of analog ICs like, current mirrors, current sources, current sinks.
				CO5	Design basic building blocks of Two stage CMOS Power amplifiers and comparators.
			CO1	To determine MOS design with specifications	

I M.TECH I SEM	3	CMOS digital IC design	17D5103	CO2	To design combinational MOS logic circuits by using boolean expressions.
				CO3	To realize and implement basic combinational and sequential circuits
				CO4	To design combinational and sequential elements using NMOS & CMOS.
				CO5	To analyze the dynamic Performance of CMOS circuits.
	4	CAD FOR VLSI	17D5105	CO1	Establish comprehensive understanding of the various phases design cycles of CAD for digital electronic systems, from digital logic simulation to physical design, including test and verification
				CO2	Establish comprehensive understanding of the various phases of floor planning and pin assignment algorithms
				CO3	Gain knowledge on the routing algorithms
				CO4	Gain knowledge on the methodologies involved in design, verification and implementation of digital esigns on reconfigurable hardware platform (FPGA)
				CO5	Gain knowledge on the methodologies involved in design, verification and implementation of digital designs on MCMs
	5	CPLD and FPGA Architectur es and Application s	17D06202	CO1	Acquire knowledge about various architectures and device technologies of PLD"s
				CO2	Comprehend the FPGA Architectures
				CO3	Analyze System level Design and their application for Combinational and Sequential Circuits
				CO4	Get familiar with Anti-Fuse Programmed FPGAs
				CO5	Apply knowledge of this subject for various design applications
			CO1	Able to design and comprehend the structural functionality of various sequential and combinational digital blocks.	

	6	SDSD	17D06101	CO2	Capable of comprehending the notion of design approaches and representing and realizing their designs in ASM charts.
				CO3	Able to build and implement Synchronous and Asynchronous ASM charts with their synthesis.
				CO4	Understand the concept of Micro program and issues related to micro programming.
				CO5	Able to build various applications and carry out their synthesis with test vectors.
	7	Structural Digital System Design Lab	17D38107	CO1	Different modeling styles available in VHDL and Verilog and difference between them
				CO2	Difference between verilog and VHDL
				CO3	Representation of different digital modules in different modelling styles available in VHDL and Verilog
	8	VLSI System Design Lab - I	17D57107	CO1	Understand syntax of various commands available with verilog and fundamental associated with design of digital systems
				CO2	To design and simulate and implement various digital system like traffic light controller, UART.
				CO3	Able develop problem solving skills and adapt them to solve real world problems
				CO4	Write scripts using perl for building digital blocks
		Low Power		CO1	Acquire the knowledge about various CMOS fabrication process and its modelling infer about the second order effects of MOS transistor characteristics.
CO2				Analyze and implement various CMOS low voltage and low power static logic circuits.	

1	VLSI Design	17D57201	CO3	learn the design of various CMOS low voltage and low power dynamic logic circuits
			CO4	learn the different types of memory circuits and their design.
			CO5	Design and implementation of various structures for low power applications
2	CMOS Mixed signal Design	17D57202	CO1	Demonstrate first order filter with least interference
			CO2	Extend the concept of phase locked loop for designing PLL application with minimum jitter by considering non ideal effects.
			CO3	Design different A/D, D/A, modulators, demodulators and different filter for real time applications
			CO4	Apply knowledge of mathematics, science, and engineering to design CMOS analog circuits to achieve performance specifications.
			CO5	Identify, formulates, and solves engineering problems in the area of mixed-signal design.
3	Embedded System Design	17D06201	CO1	Know the Basic Concept of Embedded Systems.
			CO2	Interpret the difference between Microcontrollers and Microprocessors.
			CO3	Apply the Software for Embedded System Design & concepts of Embedded OS
			CO4	Explain and apply the concept of Embedded Firmware, RTOS Based Embedded System Design and Task function
			CO5	Make significant contribution in the research in applications based on embedded system design
			CO1	Understand different types of faults associated with logic circuits and types of testing by employing fault models to the logic circuits.

I M.TECH II-SEM	4	Test and Testability	17D06109	CO2	Study about different methods of simulation and algorithms associated with testing.
				CO3	Get complete knowledge about different methods of simulation and algorithms associated with testing.
				CO4	Apply randomization concepts in designing testbench.
				CO5	Understand use of multi threading and inter process communication in testbench design.
	5	RF IC Design	17D57204	CO1	Demonstrate in-depth knowledge in Radio Frequency Integrated Circuits.
				CO2	Analyze complex engineering problems critically for conducting research in RF systems.
				CO3	Solve engineering problems with wide range of solutions in Radio Frequency Integrated circuits.
				CO4	Apply appropriate techniques to engineering activities in the field of RFIC Design.
	6	Internet of Things	17D38202	CO1	Able to understand the application areas of IOT
				CO2	Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
				CO3	Able to understand building blocks of Internet of Things and characteristics.
				CO4	Design and program IoT devices
				CO5	Design an IoT device to work with a Cloud Computing infrastructure
	7	Embedded System	17D38208	CO1	Design and Implement basic circuits that are used in Embedded systems.
				CO2	Develop code using appropriate tools.
				CO3	Test the circuit performance with standard benchmark circuits.

		Design Lab		CO4	Simulate appropriate application/distribution problems.
				CO5	Obtain the value of the point estimators using the method of moments and method of maximum likelihood.
	8	VLSI System Design Lab - II	17D57206	CO1	Design the RTL based digital circuits using HDL.
				CO2	Develop the hardware-software co-design using FPGA.
				CO3	Develop the custom IP using RTL design and/or high level synthesis with FPGA
				CO4	Design the digital system with low power and high throughput VLSI techniques
				CO5	Implement the fault tolerant hardware design and formal hardware verification using HDL & Design the digital circuits using CMOS transistor logic
II M.TECH I SEM	1	RESEARCH METHOD OLOGY	17D20301	CO1	Demonstrate knowledge on research approaches, research process and data collection.
				CO2	Identify and analyze research problem.
				CO3	Solve the research problems using statistical methods.
				CO4	Carryout literature survey and apply good research methodologies for the development of scientific/ technological knowledge in one or more domains of engineering.
				CO5	Learn, select and apply modern engineering tools to complex engineering activities & Write effective research reports.
	2	Seminar	17D57303	CO1	Demonstrate capacity to identify an advanced topic for seminar in core and allied areas.
				CO2	Extract information pertinent to the topic through literature survey.
				CO3	Comprehend extracted information through analysis and synthesis critically.
				CO4	Plan, organize, prepare and present effective written and oral technical report on the topic.
				CO5	Adapt to independent and reflective learning for sustainable professional growth
				CO1	Demonstrate capacity to identify an advanced topic for project work in core and allied areas.
				CO2	Gather information related to the topic through literature survey.
				CO3	Comprehend gathered information through critical analysis and synthesis.

II- M.TECH II SEM	Project Work Phase 1 & II	17D57305 & 17D57401	CO4	Solve engineering problems pertinent to the chosen topic for feasible solutions.
			CO5	Use the techniques, skills and modern engineering tools necessary for project work.
			CO6	Do time and cost analysis on the project.
			CO7	Plan, prepare and present effective written and oral technical report on the topic.
			CO8	Adapt to independent and reflective learning for sustainable professional growth.



**HECE**