AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Recg. By Govt. of T.S & Affiliated to JNTUH, Hyderabad)
NAAC "B++" Accredited Institute
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M.TECH VLSI I & II SEM Course Outcomes For the A.Y 2022-23

S.no	Year/Sem	Course Name	Course Outcomes
1	I-I	DIGITAL SYSTEM DESIGN WITH FPGA	CO1 :To exposes the design approaches using FPGAs
			CO2:To provide in depth understanding of Fault models.
			CO3:To understands test pattern generation techniques for fault detection.
			C04:To design fault diagnosis in sequential circuits.
			CO5:To provide understanding in the design of flow using case studies.
2	I-I	CMOS ANALOG IC DESIGN	CO1:Design basic building blocks of CMOS analog ICs.
			CO2:Carry out the design of single and two stage operational amplifiers and voltage references.
			CO3:Determine the device dimensions of each MOSFETs involved
			CO4:Design various amplifiers like differential, current and operational amplifiers
3	I-I	PATTERN RECOGNITION AND MACHINE LEARNING	CO1:Familiar the basics of pattern classes and functionality
			CO2:Construct the various linear models.
			CO3:Use the different kernel methods.
			CO4:Design the Markov and Mixed models.
4	I-I	CMOS MIXED SIGNAL DESIGN	CO1:Designing CMOS analog circuits to achieve performance specifications.
			CO2:Analyzing CMOS based switched capacitor circuits.
			CO3:Designing data converters and know how to use these in specific applications
			CO4:Design a mixed-signal circuits with understanding design flow.

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5	I-I	MEMORY TECHNOLOGIES	CO1:Select architecture and design semiconductor memory circuits and subsystems
			CO2:Identify various fault models, modes and mechanisms in semiconductor memories and their testing procedures
			CO3:Know, how of the state-of-the-art memory chip design
6	I-I	ARM MICROCONTROLLERS	CO1:Explore the selection criteria of ARM processors by understanding the functional level trade off issues.
			CO2:Explore the ARM development towards the functional capabilities.
			CO3:Work with ASM level program using the instruction set.
			CO4:Programming the ARM Cortex M.
7	I-I	EMBEDDED REAL TIME OPERATING SYSTEMS	CO1:Be able to explain real-time concepts such as preemptive multitasking, task priorities, priority inversions, mutual exclusion, context switching, and synchronization, interrupt latency and response time, and semaphores
			CO2:Able describe how a real-time operating system kernel is implemented
			CO3:Explain how the real-time operating system implements time management.
			CO4:Be able to work with real time operating systems like RT Linux, Vx Works, MicroC /OS-II, Tiny OS
8		CMOS ANALOG IC DESIGN LAB	CO1:Design analog Circuit using CMOS.
			CO2:Use EDA tools like Cadence, Mentor Graphics and other opensource software tools like Ngspice

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9	I-I	RESEARCH METHODOLOGY AND IPR	CO1:Understand research problem formulation.
			CO2:Analyze research related information
			CO3:Follow research ethics
			CO4:Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
			CO5:Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular
10	I-II	VLSI ADVANCED PHYSICAL DESIGN	CO1:Design power mesh for given specifications, analyze IR drop and EM issues and fix them.
			CO2:Implement the low power intent of the design using current industry standard UPF
			CO3:Verify whether the design meets the power intent in UPF
			CO4:Perform physical verification both at LVS & DRC level and fix all issues.
11	I-II	SYSTEM VERILOG TEST BENCHES USING UVM	CO1:Implement test bench programs using system Verilog
			CO2: Develop random stimulus and SVAs using system Verilog
			CO3:Develop a UVM testbench with all its features
12	I-II	IOT ARCHITECTURES AND SYSTEM DESIGN	CO1:Integrate the sensors and actuator depending on the applications
			CO2:Interface the IoT and M2M with value chains
			CO3:Write Python programming for Arduino, Raspberry Pi devices
			C04: Design IoT based systems such as Agricultural IoT, Vehicular IoT etc.,

13	I-II	SOC DESIGN	CO1:Identify and formulate a given problem in the framework of SoC based design approaches
			CO2:Design SoC based system for engineering applications
			CO3:Realize impact of SoC on electronic design philosophy and Macro-electronics thereby incline towards entrepreneurship & skill development.
14	I-II	DESIGN FOR TESTABILITY	CO1:Acquire verification knowledge and test evaluation
			CO2:Design for testability rules and techniques.
			CO3: Utilize the scan architectures for different digital circuits
			CO4:Acquire the knowledge of design of built-in-self test.
15	I-II	DEVICE MODELLING	CO1:Develop a functional relationship among the terminal electrical variables of the device that is to be modeled.
			CO2:Describe the behavior of all components successfully
			CO3: Perform the simulation and analyze the VLSI circuits
			CO4:Use the FinFET for various applications
16	I-II	RF IC DESIGN	CO1:Analyze the behavior of high frequency components.
			CO2:Calculate the scattering parameters of various RF components and analyze the various filter parameters.
			CO3:Implement component modelling and biasing networks.
			CO4:Design the various RF filters, amplifiers, oscillators and mixers.
17	I-II	HARDWARE AND SOFTWARE CO-DESIGN	CO1:Acquire the knowledge on various models of Co-design.
			CO2:Explore the interrelationship between Hardware and software in a embedded system
			CO3:Acquire the knowledge of firmware development process and tools during Co-design
			CO4: Implement validation methods and adaptability.

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18	II-I	ADVANCED COMPUTER ARCHITECTURE	CO1:Familiarize the instruction set, memory addressing of Computer
			CO2:Handle the issues in pipelining and parallelism
			CO3:Familiarize the practical issues in inter network
19	II-I	HARDWARE SECURITY	CO1:Design a more secure systems by knowing countermeasures of various hardware attacks
			CO2:Experiment the impressive efficiency of hardware attacks
			C03:Monitor computation time or power consumption to reveal secrets
			CO4:Design a secure systems which lead to privilege escalation and compromise
20	II-I	NANOMATERIALS AND NANOTECHNOLOGY	CO1:Formulate new engineering solutions for current problems and competing technologies for future applications
			CO2:Made inter disciplinary projects applicable to wide areas by clearing and fixing the boundaries in system development.
			CO3:Gather detailed knowledge of the operation of fabrication and characterization devices to achieve precisely designed systems

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