



DADI INSTITUTE OF ENGINEERING & TECHNOLOGY

An Autonomous Institute

Approved by AICTE & Permanently affiliated to JNTU GV

Accredited by NAAC with 'A' Grade and Inclusion u/s 2(f) & 12(B) of UGC Act

An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Institute.

NH-16, Anakapalle - 531002, Visakhapatnam, A.P.

www.diet.edu.in, 9963993229 E-mail: principal@diet.edu.in

Course code	Course Name	CO	Course outcome: After the completion of the course student will be able to
DR23MECT11	CMOS Analog IC Design	CO1	Design MOSFET based analog integrated circuits.
		CO2	Analyze analog circuits at least to the first order.
		CO3	Appreciate the trade-offs involved in analog integrated circuit design
		CO4	Understand and appreciate the importance of noise and distortion in analog circuits.
		CO5	Solve engineering problems for feasible and optimal solutions in the core area of analog ICs
DR23MECT12	CMOS Digital IC Design	CO1	Demonstrate advanced knowledge in Static and dynamic characteristics of CMOS,
		CO2	Classify different semiconductor memories.
		CO3	Analyze, design and implement combinational and sequential MOS logic circuits.
		CO4	Analyze complex engineering problems critically in the domain of digital IC design for conducting research
		CO5	Solve engineering problems for feasible and optimal solutions in the core area of digital ICs.
DR23MECP11	VLSI Technology	CO1	Understand the basics of MOS transistors and also the characteristics of MOS transistors.
		CO2	Learn about the MOS fabrication process and short channel effects
		CO3	Learn about the basic rules in layout designing
		CO4	Analyse various combinational logic networks
		CO5	Learn and analyze about sequential systems
DR23MECP21	Device Modelling	CO1	To understand the physics of 2-terminal MOS operation and its characteristics
		CO2	To understand the physics of 4-terminal MOSFET operation
		CO3	To understand the physics of 4-terminal MOSFET operational characteristics



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		CO4	To learn about small signal analysis of MOSFETs
		CO5	To analyze the SOI MOSFET electrical characteristics
DR23MCST13	RM and IPR	CO1	Understand research problem formulation.
		CO2	Analyze research related information
		CO3	Follow research ethics
		CO4	Understanding that when IPR would take such important place in growth of individuals
		CO5	Understand that IPR protection provides an incentive to inventors for further research work
DR23MECL22	CMOS Digital IC design Lab	CO1	Have the ability to explain the VLSI Design Methodologies using Mentor Graphics Tools
		CO2	Grasp the significance of various design logic Circuits in full-custom IC Design.
		CO3	Have the ability to explain the Physical Verification in Layout Extraction
		CO4	Fully Appreciate the design and analyze of CMOS Digital Circuits
		CO5	Grasp the Significance of Pre-Layout Simulation and Post-Layout Simulation
DR23MECT21	Mixed Signal & RF IC Design	CO1	Design basic cells like Op-Amp, against process and temperature variations meeting the mixed signal specifications
		CO2	Design comparators that can meet the high speed requirements of digital circuitry.
		CO3	Design a complete mixed signal system that includes efficient data conversion and RF circuits with minimizing switching
		CO4	Understand the design bottlenecks specific to RF IC design, linearity related issues and ISI
		CO5	Comprehend different multiple access techniques, wireless standards and various transceiver architectures
DR23MECT22	Physical	CO1	Understand the relationship between design automation algorithms and Various



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	Design Automation		constraints posed by VLSI fabrication and design technology.
		CO2	Adapt the design algorithms to meet the critical design parameters.
		CO3	Identify layout optimization techniques and map them to the algorithms
		CO4	Develop proto-type EDA tool and test its efficacy
		CO5	Develop design style specific partitioning problems and algorithms
DR23MECP3A	Design For Testability	CO1	Demonstrate advanced knowledge in The basic faults that occur in digital systems, Testing of stuck at faults for digital circuits, Design for testability.
		CO2	Analyze testing issues in the field of digital system design critically for conducting research.
		CO3	Solve engineering problems by modeling different faults for fault free simulation in digital circuits.
		CO4	Apply appropriate research methodologies and techniques to develop new testing strategies for digital and mixed signal circuits and systems.
		CO5	Illustrate various Routing process and algorithms
DR23MECP4C	Low power VLSI Design	CO1	Analyze various sources of power dissipation in VLSI circuits, including dynamic and leakage power.
		CO2	Apply voltage scaling techniques and architectural strategies for low power consumption.
		CO3	Evaluate methods for switched capacitance minimization using encoding techniques and clock gating.
		CO4	Examine techniques for leakage power reduction using advanced CMOS fabrication and power gating methods.
		CO5	Perform simulation-based power analysis and assess low power clock distribution techniques.
DR23MECL21	Mixed Signal & RF	CO1	Design and simulate fully compensated operational amplifiers using resistor and Miller compensation techniques.



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	IC Design Lab	CO2	Analyze and implement high-speed comparators, including two-stage cross-coupled and strobed flip-flop comparators.
		CO3	Design basic data converters and understand their role in mixed-signal integrated circuits.
		CO4	Implement switched-capacitor circuits, including parasitic-sensitive and parasitic-insensitive integrators.
		CO5	Design and layout advanced analog circuits such as PLLs, VCOs, and bandgap reference circuits using industry-standard tools.
DR23ECL22	Physical Design Automation	CO1	Apply graph algorithms such as Depth First Search, Breadth First Search, and Dijkstra's algorithm to solve physical design problems in VLSI design automation.
		CO2	Demonstrate the ability to implement computational geometry algorithms like the Line Sweep and Extended Line Sweep methods for efficient layout processing.
		CO3	Analyze and compare various partitioning algorithms including Kernighan-Lin, Fiduccias-Mattheyses, and simulated annealing for optimized circuit partitioning.
		CO4	Design and evaluate floorplanning strategies using constraint-based, integer programming, and hierarchical tree-based approaches.
		CO5	Implement routing algorithms such as Lee's, Soukup's, and Hadlock's algorithms for two-terminal and multi-terminal routing problems.

DR23MECP52	Digital Design and Verification	CO1	Familiarity of Front end design and verification techniques and create reusable test environments.
		CO2	Verify increasingly complex designs more efficiently and effectively
		CO3	Use EDA tools like Cadence, Mentor graphics.
		CO4	Apply hardware description languages (HDL) such as Verilog/VHDL for modeling, simulation, and synthesis of digital integrated circuits.
DR23MEC011	Business Analytics	CO1	· Students will demonstrate knowledge of data analytics
		CO2	Students will demonstrate the ability of think critically in making decisions based on data and deep analytics.



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		CO3	Students will demonstrate the ability to use technical skills in predicative and prescriptive modeling to support business decision-making.
		CO4	Students will demonstrate the ability to translate data into clear, actionable insights



Dr. R. Vaikunta Rao

Principal

Dadi Institute of Engineering & Technology

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