GALGOTIAS UNIVERSITY

(Established under Galgotias University Uttar Pradesh Act No. 14 of 2011)

M.Tech – VLSI Design

Vision and Mission of the University

Vision

To be known globally for value-based education, research, creativity and innovation"

Mission

- Establish state-of-the-art facilities for world class education and research.
- Collaborate with industry and society to align the curriculum,
- Involve in societal outreach programs to identify concerns and provide sustainable ethical solutions.
- Encourage life-long learning and team-based problem solving through an enabling environment.

Vision and Mission of the Department

Vision

To be known globally as a premier department of Electronics and Communication Engineering for value-based education and interdisciplinary research for innovation.

Mission

M1: Create a strong foundation on Fundamentals of Electronics and Communication Engineering through Outcome Based Teaching Learning (OBTL) Process

M2: Establish state-of-the-art facilities for design and simulation.

M3: Provide opportunities to students to work on real world problems and develop sustainable ethical solutions.

M4: Involve the students in group activities, including those of professional bodies to develop leadership and communication skills.

Programme Outcomes (POs)

PO1: An ability to independently carry out research /investigation and development work to solve practical problems

PO2: An ability to write and present a substantial technical report/document

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PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program

Po4 : An ability to function effectively as an individual or as a member or leader in a team

PO5 : An ability to keep abreast with state of art technologies through lifelong learning

Program Educational Objectives

PEO1: Post graduates will demonstrate their knowledge in the field of VLSI designing and allied engineering.

PEO2: Post graduates will contribute to interdisciplinary research with the use of modern tools & emerging technologies.

PEO3: Post graduates will become successful leaders through effective project management and contribute to the growth & development of the organization and society.

PEO4: The post graduates will be involved in promoting professional and societal activities.

Programme Specific Outcomes (PSOs)

For M.Tech. in VLSI Design

PSO1: VLSI Circuit Design : Apply the knowledge of CMOS technology including back end and front end process by focusing on various performance parameters in designing specific IC for real world problem.

PSO2: Analog VLSI Design: Design analog signal processing and generation circuit.

PSO3: Testing and Verification of VLSI Circuits: Testing and verification of VLSI circuits using modern tools.

Sample Course Outcomes

Name of The Course	Analog Filter Design			
Course Code	MVLS5004			
Prerequisite	Analog Signal Processing			
	L	**T**	**P**	**C**
	3	0	0	3

Course Objectives:. Analog circuits are essential in interfacing and building amplifiers and low pass filters. This course introduces design methods for CMOS an

alog filter circuit.

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Course Outcomes

CO1	Explain filters and their characteristics.
CO2	Develop the ability to analyze and design analog filter circuits.
CO3	Illustrate noise modeling of CMOS analog circuits
CO4	Analysis of Butterworth and Chebyshev filters.
CO5	Design analog filter using recent active building block(CFOA, OTRA, CDTA, etc.)

Text Book (s)

1. Sedra and K. C. Smith, "Microelectronic Circuits", Oxford.
2. G. Daryanani, "Principles of Active Network Synthesis & Design", John Wiley & Sons

Reference Book (s)

1. Design of Analog Filters, Van Valkenburg, Oxford.

Unit-1	**Basic Concepts**	**8 hours**
Filters: Types, Specifications and Transfer functions; Circuit elements and scaling; OP-AMP: integrator model & basic circuits; Bode plots.		
Unit-2	**Design and analysis of First & Second order Filters**	**8 hours**
First order: Bilinear transfer functions, Passive Realization, Active realization, Realization with Bode plots; Second order: Design parameters (ω and Q), Second order circuit.		
Unit-3	**Synthesis Techniques**	**8 hours**
Biquad Topology: Tow Thomas, KHN, Sallen-Key, Single Amplifier Biquad using Multiple feedback Topology; Inductance Simulation, General impedance converter (GIC) and FDNR.		
Unit-4	**Approximation Theory**	**8 hours**
Butterworth: Ideal low pass filter, Butterworth response & pole locations, low pass filter specifications; Chebyshev: Chebyshev polynomial, magnitude response, location of Chebyshev poles.		
Unit-5	**Study of Filter building blocks & recent trends**	**8 hours**
Current mode building blocks and tunable filters using OTA, Current conveyors (CCI, CCII), CFOA, OTRA etc. and recent trends.		

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