

Course Content

VLSI Design using CADENCE Tool	
Duration: 20 Days (40 Hours)	
Module-1 (4 Weeks)	
Day-01	<p><u>Introduction to VLSI Design</u></p> <ul style="list-style-type: none"> ● Historical Perspective. ● VLSI technology trends performance measures and Moore's law comparisons of technology trends. ● System approach to VLSI Design. ● Future Trends in CMOS VLSI Circuits and system design.
Day-02	<p><u>VLSI Design Cycle</u></p> <ul style="list-style-type: none"> ● ASIC Design Flow. ● System Specification, Fundamental Design, Logic Design. ● Circuit Design, Physical Design, Design Verification. ● Fabrication, Packaging, Testing and Debugging. ● Introduction to Cadence tool.
Day-03	<p><u>Basics of Analog Circuits-1</u></p> <ul style="list-style-type: none"> ● Design and Analysis of RC circuits. ● Timing issues in RC Circuits. ● Filter Implementation of RC Circuits.
Day-04	<p><u>Basics of Analog Circuits-2</u></p> <ul style="list-style-type: none"> ● Operation Amplifiers Fundamentals. ● Design and Analysis of feedback amplifiers. ● Filter Implementation of Op-Amps.
Day-05	<p><u>Fabrication Process and Layout Design Rules-1</u></p> <ul style="list-style-type: none"> ● Introduction to fabrication Process. ● General Aspects of CMOS Technology.
Day-06	<p><u>Fabrication Process and Layout Design Rules-2</u></p> <ul style="list-style-type: none"> ● CMOS Inverter Fabrication Process. ● Layout Design Rules.
Day-07	<p><u>Analog CMOS Design-1</u></p> <ul style="list-style-type: none"> ● Basic of MOS Device Physics. ● General Concepts on Level of Abstraction. ● General Concepts on Robust Analog Design.

Day-08	<p><u>Analog CMOS Design-2</u></p> <ul style="list-style-type: none"> ● Way of designing fast CMOS Circuits. ● Design of Single Stage Amplifier. ● Analog Layout and Design Concepts.
Day-09 & Day-10	<p><u>Analog CMOS Design-3</u></p> <ul style="list-style-type: none"> ● Performance Analysis of an Amplifier. ● Transfer characteristics and Amplifier Gain. ● Effect of Amplifier BW limitations on Analog Signal Processing.
Day-11 & Day-12	<p><u>Digital CMOS Design-1</u></p> <ul style="list-style-type: none"> ● CMOS Inverter Basics. ● Inverter Transfer Characteristics. ● Inverter sizing.
Day-13 & Day-14	<p><u>Digital CMOS Design-2</u></p> <ul style="list-style-type: none"> ● Inverter Design. ● Transfer Function & Frequency Response. ● Characterization for various inputs and timing analysis.
Day-15 & Day-16	<p><u>Combination Circuit Design-1</u></p> <ul style="list-style-type: none"> ● Digital CMOS implementation of Full Adder Circuit ● Output Verification. ● Timing and Power Analysis.
Day-17 to Day-19	<p><u>Combination Circuit Design-2</u></p> <ul style="list-style-type: none"> ● Digital CMOS implementation of 4-bit Multiplier Circuit. ● Output Verification. ● Timing and Power Analysis.
Day-20	<p><u>Concluding Session</u></p> <ul style="list-style-type: none"> ● Presentation & Reports. ● Feedback & Quiz.

Course Coordinator

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