



A 1.2mmx1.2mm CMOS microchip developed at Silicon and Fabricated by X-Fab, Germany

CERTIFICATE COURSE IN CMOS VLSI DESIGN

What Will You Learn:

- Fundamental concepts in circuits and systems.
- CMOS Digital VLSI design and layout.
- Industry-standard EDA tools from Mentor Graphics.
- Design flow from circuit abstraction to chip fabrication.
- Design with commercial CMOS technology.

**Silicon Institute
of Technology** | An Autonomous Institute |

**BASIC CONCEPTS TO
A REAL MICROCHIP
IN JUST 4 WEEKS!!**

**TAUGHT BY
INDUSTRY VETERAN
WITH 20 YEARS OF
EXPERIENCE**

**INCREASE
EMPLOYABILITY!**

**BEST VALUE FOR
MONEY!!**

**A PREREQUISITE FOR
VLSI PROJECT**

SIGN UP!

Industry Interface Cell

Registration Close:

4pm, Mar 30, 2019

Batch Starts:

May 28, 2019

COURSE OBJECTIVE

This course will provide a strong analytical fundamental in circuits, systems and CMOS design. Laboratory exercise and projects will be based on industry IP blocks using commercial full-custom EDA tool chain from Mentor Graphics, providing the participant entire backend experience (design abstraction to chip fabrication). A sub-micron (0.18 μ m) CMOS semiconductor technology from the foundry Taiwan Semiconductor Manufacturing Corp. (TSMC) will be used for the design and layout of the circuits. This course will prepare a participant for employment in VLSI design and layout and will have a strong foundation for other domains like Physical Design and Design Verification.

HIGHLIGHTS

- 4-weeks full time flagship program in VLSI. 1 week will devoted to a mini project.
- 25% time spent on theory, 75% time spent in Labs and Real-Life Projects
- Access to commercial sub-micron CMOS Semiconductor Technology, TSMC 180nm/65nm.
- Trained in industry-standard EDA tools from Mentor Graphics.
- Taught by Dr. Saroj Rout, with more than 20 years of chip design experience in US with 12+ commercial chips of which two have sold more than 2 billion units and holder of 7 patents.

COURSE OVERVIEW

Introduction to Circuits, Systems and Productivity Tools

Introduction to Linux Operating system: Components of Unix System, directory structure, utilities and commands, VI editor. **Basic Math:** differential equations and Linear Algebra. **Basic circuits and systems:** circuit elements, lumped abstraction, Linear systems, Superposition, Thevenin and Norton, Laplace, Fourier, Convolution. **Introduction to Digital electronics:** Binary number system, Boolean algebra, combinational ckts, sequential ckts (Basic FSM: Mealy and Moore, shiftregs, counters), timing analysis

Introduction to Integrated Circuit (IC) Devices and CMOS Digital VLSI Design

Introduction to IC Design Process and VLSI Design Flow. IC Fabrication, Layout and Simulation: CMOS Processing, Layout Basics, Modeling of IC Devices. **IC Devices and Characterization:** MOS Transistors, parameter extraction. **CMOS Inverter:** Static and Dynamic Characteristics. **Sequential Circuits:** Basic latch and Flip-Flop design and timings.

Domain Specific

Introduction to Full custom Design Flow. Review of Foundry documents. DFM, DRC/LVS and Back annotation flows. Advance Layout techniques: Optimization, stick diagrams, Euler graphs, Matching techniques, Noise sensitive layouts. ESD, LUP and tape-out Flow. SKILL based programming and automation.

COURSE FEES: 6,000/-