



Course Outlines

Course Details:

Course Code : CSE 427 Credit hours: 3.0
 Course Title : VLSI Design
 Program : CSE
 Semester : Fall-2016
 Course Teacher : Santa Maria Shithil
 Lecturer, Dept. of CSE

Course Assessment:

The assessment components for evaluation of students are as follows:

Item/Activity	Marks (%)
Work Sheet (including class attendance and class tests)	25%
Assignment/ Presentation	10%
Mid-Term Test	25%
Final Examination	40%
Total	100%

Course Contents:

Lectures	Contents (Each lecture will be 1.5 hours duration)
Lecture-1	Introduction to VLSI, IC
Lecture-2	Advantages of IC, Moore's 1 st Law, Moore's 1 st Law and Intel Microprocessor
Lecture -3	Challenges / Problems of IC Design Techniques, BJT
Lecture -4	MOS, Comparison between BJT and MOS
Lecture -5	CMOS, Reasons of Choosing CMOS
	Assignment/Presentation
Lecture -6	IC Design Approach, IC Design Process
Lecture -7	Circuit Design/ Layout Design, Combinational Logic
Lecture -8	IC Design Technique, Net List and Component List

Lecture -9	Static Complementary Gate, Static Complementary Inverter, NAND, NOR Gate
	Class Test
Lecture -10	Stick Diagram
Lecture -11	AOI and OAI Gates
Lecture -12	Solving Problems of Exercises
	Class Test
	Mid-Term
Lecture -13	IC Design Rules, SCMOS Design Rules
Lecture -14	Transistor Basic Construction Rules, Standard Cell Based Layout
Lecture -15	Structure of a Routing Channel, Channel Routing Algorithm
Lecture -16	Cross Talk, Cross Talk Minimization, Combinational circuit Delay
	Assignment/Presentation
Lecture -17	Critical Path, False Path, Finding Critical Path
Lecture -18	Transistor Sizing, Logical Effort
	Class Test
Lecture -19	Fanout Inverter 4
Lecture -20	Reversible Computing
Lecture -21	Landauer's Principle
Lecture -22	Logical and Physical Irreversibility, Reversible Logic, Difference Between Reversible and Irreversible Gate
Lecture -23	Garbage Bit, Feynman Gate, Toffoli Gate, Fredkin Gate, Khan Gate, Peres Gate
	Class Test
Lecture -24	Overview
	Final Examination
Textbooks:	1. Modern VLSI Design By Wayne Wolf