13-EC568 ASIC DESIGN FLOW

SYLLABUS

Types of ASICs – Design flow – Economics of ASICs – ASIC cell libraries – CMOS logic cell data path logic cells – I/O cells – cell compilers. **ASIC Library design**: Transistors as resistors – parasitic capacitance – logical effort programmable ASIC design software: Design system – logic synthesis – half gate ASIC. **Low level design entry:** Schematic entry – low level design languages – PLA tools – EDIF – An overview of VHDL and verilog. Logic synthesis in verilog and & VHDL simulation. **CMOS System case studies: Dynamic warp processor:** Introduction, the problem, the algorithm, a functional overview, detailed functional specification, structural floor plan, physical design, fabrication. **pixels-planes graphic engine:** introduction, raster scan graphic fundamental, pixels-planes system overview, chip electrical design, chip organization and layout, clock distribution. **Hierarchical layout and design of single chip 32 bit CPU:** Introduction ,design methodology, technology updatability and layout verification. **Floor planning & placement:** Floor Planning Goals and Objectives**,** Measurement of Delay in floor planning, Floor planning tools ,I/O and Power planning, Clock planning ,Placement Algorithms**. Routing**: Global routing, Detailed routing ,Special routing.

TEXT BOOKS

1.Application specific Integrated Circuits", J.S. Smith, Addison Wesley.
2. Principles of CMOS VLSI Design : A System Perspective, N. Westle & K. Eshraghian ,Addison – Wesley Pub.Co.1985.

REFERENCES

1.Basic VLSI Design :Systems and Circuits, Douglas A. Pucknell & Kamran Eshraghian, Prentice Hall of India Private Ltd. , New Delhi , 1989.
2.Introduction to VLSI System,C. Mead & L. Canway, Addison Wesley Pub
3.Introduction to NMOS & VLSI System Design, A. Mukharjee, Prentice Hall,
4.The Design & Analysis of VLSI Circuits, L. A. Glassey & D. W. Dobbepahl, Addison Wesley Pub Co. 1985.
5.Digital Integrated Circuits: A Design Perspective, Jan A. Rabey, Prentice Hall of India Pvt Ltd