

Topics Covered in SKU- VLSI:

Unit I:

Introduction to CMOS circuit, Circuit & System representation Behavioral representation, structural representation. Physical representation MOS transistor theory. NMOS and PMOS enhancement transistor. Threshold voltage, body effect. MOS device design equation. Basic DC equation, second order effects, MOS models.

Unit II:

The complementary CMOS inverter-DC character, Static load MOS inverters. The differential inverter. Tristate inverter. Bipolar devices, diodes, transistors, BICMOS inverters.

Unit III:

Review of silicon semiconductor technology and basic CMOS technology-n-well and p-well process. Interconnect and circuit Twin-tub process layout design rules and latch-up, latch-up triggering and prevention.

Unit IV:

Circuit characterization and performance estimation resistance and capacitance estimation, Switching characteristics, CMOS gate transistor sizing, power dissipation. Basic physical design of simple logic gates. CMOS logic structure.

Unit V:

CMOS design methods. Design strategies. Programmable logic, programmable logic structure, reprogrammable gate arrays. Exiling programmable gate array. Algotonix, concurrent logic, sea of gate and gate array design VHDL as a tool.