

## SYLLABUS

**Small Signal & large signal Models** of MOS & BJT transistor. Analog MOS Process **Passive & Active Current Mirrors:** Basic current mirrors, Cascode current mirror, Active loads, voltage and current references; **Frequency response of integrated circuits:** Single Stage (CS,CG,CD) amplifiers, Cascade Stage; frequency response( miller effect) of CG, CS, CD, Operation of Basic Differential Pair, differential pair with MOS loads, Frequency response of Cascade & Differential Pair; **Operational Amplifiers with single ended outputs:** Applications of operational amplifiers, basic two stage MOS operational amplifiers, Deviations from ideality in real operational amplifiers, Basic two-stage MOS operational amplifier, MOS Folded –cascode operational amplifiers, **Feedback:** Ideal feedback equation, gain sensitivity, feedback configurations, practical configuration and effect of loading **Nonlinear Analog circuits & other applications:** Precision rectification ,phased locked loops, Sampling Switches, switched capacitor integrator, oscillators, ADC, DAC.

## TEXT BOOKS

- 1.Gray & Meyer, Analysis & Design of Analog Integrated Circuits, 4<sup>th</sup> edition, Wiley, 2001.
- 2.Behzad Razavi, “Design Of Analog CMOS Integrated Circuits”, Tata Mcgraw Hill,2005.

## REFERENCE

- 1.Jacob Baker, “CMOS Mixed Signal Circuit Design”, John Wiley.
2. Gray, Wooley, Brodersen, " Analog MOS Integrated Circuits ", IEEE Press, 1989.
3. Kenneth R. Laker, Willy M.C. Sansen, William M.C.Sansen, “Design of Analog Integrated Circuits and Systems ", McGraw Hill.