Prof. JAYANTA MUKHERJEE

Department of Electrical Engineering

IIT Bombay

INTENDED AUDIENCE : B.E/B.Tech,B.Sc

COURSE OUTLINE :

This course is designed as the introductory course on Analog Circuits for undergraduate students. It covers the basic components and methodologies used for Analog Design. Most of the portion deals with OPAMP based circuits. Later in the course some BJT and MOSFET based circuits are discussed.

ABOUT INSTRUCTOR :

Prof. Jayanta Mukherjee is an Associate Professor, at the department of Electrical Engineering at the Indian Institute of Technology, Bombay. His research interests are in the field of RF circuit design and Microwave Engineering. He has a keen interest in product design and has delivered a number of products to organizations such as BARC, and ISRO. He also actively collaborates with the private sector in India. Professor Mukherjee has won a number of research awards, has published extensively and is a Senior Member of IEEE.

COURSE PLAN :

Week 1: Introduction, Poles and Zeros, Ideal Opamp, Applications of OPAMP – Inverting and Non Inverting Amplifier

Week 2: Applications of OPAMP (..Contd) – Summer Amplifier, Difference Amplifier, Integrator, Differentiator

Week 3: Non Idealities in an OPAMP – Finite Gain, Bandwidth, Slew Rate, Saturation, Offset Voltage, Bias Current

Week 4: Bode Plots, Frequency Response, Millers Theorem, Feedback, Effect of Feedback

Week 5: Stability, Nyquist Plot, Phase Margin, Gain margin, Frequency Compensation

Week 6: Filter Design, Butterworth and Chebyshev Filters Non Linear Applications of Filters – Limiters, Oscillators, Multivibrators

Week 7: Diodes, Basic BJT Circuits

Week 8: Basic BJT based circuits