EE321 – Fall 2002

Tentative Syllabus

Web Site: http://www.ee.nmt.edu/∼rison/ee321

Text: Microelectronic Circuits, 4th Edition, A.S. Sedra and K.C. Smith, Oxford University Press

We will cover most of Chapters 1 through 5. If time permits we will cover some topics from Chapter 6.

1. Brief Review of Circuit Theory

    (a) Amplifier Models
    (b) Analysis of Amplifier Models
    (c) Frequency Response of Simple Amplifiers

2. Operational Amplifiers

    (a) The Ideal Op-Amp (review)
    (b) Analysis of Ideal Op-Amp Circuits (review)
    (c) Basic Op-Amp Circuits (review)
    (d) Non-Ideal Op-Amp Effects
          i. Finite Open-Loop Gain
         ii. Finite Bandwidth
        iii. DC Imperfections

    • **Exam 1**

3. Diodes

    (a) Simple Diode Theory
    (b) I-V Relationship of Diodes
    (c) Analysis of Diode Circuits
    (d) Small-Signal Model of Diodes
    (e) Diode Circuits
          i. Zener Diodes
         ii. Rectifiers
        iii. Limiting Circuits

    • **Exam 2**

4. Bipolar Junction Transistors

    (a) Simple BJT Theory

    (b) DC Analysis of BJTs

    (c) Small-Signal Analysis of BJTs

    (d) Biasing of BJTs

    (e) Analysis and Design of BJT Amplifier Circuits

    (f) BJTs in Saturated Mode — The BJT Switch

    - **Exam 3**

5. Field-Effect Transistors (FETs)

    (a) Simple FET Theory

    (b) Metal Oxide Subsrate FETs (MOSFETs)

        i. MOSFET Models

        ii. Biasing MOSFETs

        iii. MOSFET Amplifiers

        iv. MOSFET Switches

    (c) Junction FETs (JFETs)

        i. JFET Amplifiers

        ii. JFET Switches

6. Differential Transistor Amplifiers

7. Multistage Transistor Amplifiers

- **Exam 4**