

DETAILED COURSE SYLLABUS (TENTATIVE)

The following comprises a tentative syllabus describing the material to be covered in this course. Material to be covered for each dated lecture is indicated along with the corresponding sections of the required and recommended textbooks, where GM = Gray and Meyer's "Analysis and Design of Analog Integrated Circuits" (i.e., the required text) and R = Razavi's "Design of Analog CMOS Integrated Circuits" (i.e., the recommended text). How much of this material we can actually cover is a function of the degree of preparation of the average student in the class, which can vary depending upon which version of EE 105 was taken.

| Date | Material to be Covered | HWs | Labs |
|---------|---|-------------|---|
| Aug. 28 | Administrative Information, Introduction/Overview; Op amps | | Week 1: No Lab |
| 2 | Device Operation & Models; BJT & MOS: GM 1.1-1.6; R Chap. 2 | | Week 2: No Lab |
| 4 | Device Operation & Models; Inspection Analysis: GM 1.1-1.6; R Chap. 2 | | " |
| 9 | BJT Inspection Analysis: GM 3.1-3.3; R 3.1-3.4, 6.1-6.4 | | Week 3: No Lab |
| 11 | MOS Inspection Analysis: GM 3.4; R 3.5-3.6 | HW 1 Due | " |
| 16 | Frequency Response Inspection Analysis I: GM 7.1-7.3; R 6.5 | | Week 4: Lab 1 1-Tx MOS Amp |
| 18 | Frequency Response Inspection Analysis II: Active Loads: GM 4.3 | HW 2 Due | " |
| 23 | Active Loads: 1-TX and Multi-TX Loads: GM 4.3 | | Week 5: Lab 1 (cont.) |
| 25 | Current Sources: GM 4.2; R 5.1-5.2 | HW 3 Due | " |
| 30 | Supply & Temperature Indep Biasing: GM 4.4.2-4.4.3; R Chap 11 | | Week 6: Lab 2-1 Diff Pair Design & Analysis |
| Oct. 2 | High-Swing Current Sources I: GM 4.2.5.2; R 5.1-5.2 | HW 4Due | " |
| 7 | High-Swing Current Sources II: GM 4.2.5.2; R 5.1-5.2 | | Week 7: Lab 2-2 2 nd Gain Stage Design |
| 9 | Current Source Matching: GM A.4.1 | HW 5 Due | " |
| 14 | Op Amps: Op Amp Feedback Circuits: GM 6.1-6.2, 3.5; R 4.1-4.4 | | Week 8: Lab 2-3 Complete opamp Analysis |
| 16 | Op Amps: SCP; Current Mirror Load; GM 4.3.5 | HW 6 Due | " |
| 21 | Op Amps: Input Offset Voltage; Finite Gain-BW Product, Frequency Response in Feedback: GM 3.5.6, A.4.2, 9.2 | | Week 9: Lab 3 CMOS opamp design project |
| 23 | Op Amps: High Gain Designs; GM 6.3-6.7; R 9.3-9.4 | HW 7 Due | " |
| 28 | Op Amps: Swing, Compensation and Slew Rate (a 1 st pass); GM 9.4.1-9.4.2, 9.6.1-9.6.2; R 9.7-9.8 | | Week 10: Lab 3 Work on Project |
| 30 | MIDTERM EXAMINATION | | " |

DETAILED COURSE SYLLABUS (TENTATIVE)

| | | | |
|-----------|---|------------------------|---|
| Nov. 4 | Op Amps: Output Stages; GM 5.1-5.5 | | Week 11: Lab 3 Work on Project |
| 6 | Compensation: Stability of Feedback Circuits, Narrowbanding; GM 9.4; R 10.1-10.3 | | " |
| 11 | ACADEMIC HOLIDAY – NO CLASS | | Week 12: Lab 3 Work on Project |
| 13 | Compensation: Pole-Splitting and Pole-Zero Plots; GM 9.4-9.5; R 10.4 | HW 8 Due | " |
| 18 | Compensation: For CMOS Op Amps, Choosing C_c ; GM 9.4.3-9.4.5; R 10.5-10.6 | | Week 13: Lab 3 Work on Project |
| 20 | Compensation: CMOS Op Amp RHP Zero; GM 9.4.3; R 10.5-10.6 | HW 9 Due | " |
| 25 | Slew Rate: GM 9.6 Settling Time and PSRR; Handout; R 9.9 | | Week 14: Lab 3 Work on Project |
| 27 | THANKSGIVING HOLIDAY – NO CLASS | | " |
| Dec. 2 | Feedback I: Pros and Cons; Inspection Analysis of Feedback Circuits, Influence of I/O Impedance; Handout; GM 8.1-8.2, 8.4; R 8.1-8.2 | | Week 15: Lab 3 Work on Project |
| 4 | Feedback II: Feedback Loading; GM 8.5-8.6; R 8.1-8.3 | HW 10 Due | " |
| 9 | READING/REVIEW/RECITATION | | Week 16 |
| 11 | " | Project Due | " |
| 18 | FINAL EXAMINATION 11:30 – 2:30 P.M. (Exam Group 18) | | |
| | | | |
| | | | |