

Course Outline

Differential and multistage amplifiers (MOSFET only)

- [8.1] The MOS differential pair
- [8.3] Common-mode rejection
- [8.4] DC offset
- [8.5] The differential amplifier with a current-mirror load
- [8.6] Multistage amplifiers

Frequency response (MOSFET only)

- [9.1] Low-frequency response of discrete-circuit common-source and common-emitter amplifiers
- [9.2] Internal capacitive effects and the high-frequency model of the MOSFET
- [9.3] High-frequency response of the CS amplifiers
- [9.4] Useful tools for the analysis of the high-frequency response of amplifiers
- [9.5] High-frequency response of the common-gate and cascode amplifiers
- [9.6] High-frequency response of the source and emitter followers
- [9.7] High-frequency response of the differential amplifiers

Feedback

- [10.1] The general feedback structure
- [10.2] Some properties of negative feedback
- [10.6] Summary of the feedback analysis method
- [10.7] The stability problem
- [10.8] Effect of feedback on the amplifier poles
- [10.9] Stability study using Bode plots
- [10.10] Frequency compensation

Output Stage

- [11.1] Classification of output stages
- [11.2] Class A
- [11.3] Class B
- [11.4] Class AB

Operational-amplifier circuits

- [12.1] The two-stage CMOS op amp
- [12.2] The folded-cascode CMOS op amp

Signal generators

- [14.1] Basic principles of sinusoidal oscillators
- [14.2] Op amp-RC oscillator circuits
- [14.3] LC and crystal oscillators

CMOS digital logic circuits

- [15.1] CMOS logic gate circuits
- [15.2] Digital logic inverters
- [15.3] CMOS inverter

[15.4] Dynamic operation of the COS inverter
[15.5] Transistor size
[15.6] Power dissipation
Memory circuits
[17.1] Latches and flip-flops
[17.2] Semiconductor memories
[17.3] RAM
[17.4] Sense amplifier and address decoders
[17.5] ROM

Examine Schedule

Examine	Week	Date/Time	Coverage	%
Quiz 1	5 (tentative)	03/23 (Tue.) 10:20~11:10	Ch 8-9	6
Quiz 2	9	04/20 (Tue.) 10:20~11:10	Ch 10	6
Midterm	9	04/21 (Wed.) 13:20~15:10	Ch 8-10	35
Quiz 3	14 (tentative)	05/25 (Tue.) 10:20~11:10	Ch 11, 12, 14	6
Quiz 4	18	06/22 (Tue.) 10:20~11:10	Ch 15, 17	6
Final exam	18	06/23 (Wed.) 13:20~15:10	Ch 11, 12, 14, 15, 17	36
Homework			Quiz 1~4	5

Homework:

Chapter 8: 8.17, 8.20, 8.51, 8.65, 8.79, 8.85, 8.107, 8.109

Chapter 9: 9.4, 9.14, 9.52, 9.63, 9.73, 9.83

Chapter 10: 10.6, 10.8, 10.17, 10.19, 10.75, 10.77, 10.82, 10.83, 10.90, 10.94, 10.95, 10.96

Chapter 11: 11.1, 11.7, 11.8, 11.15, 11.17

Chapter 12: 12.3, 12.8, 12.12, 12.13, 12.23, 12.26

Chapter 14: 14.14, 14.15, 14.17, 14.22, 14.24, 14.27

Chapter 15: 15.1, 15.7, 15.21, 15.27, 15.28, 15.35, 15.37, 15.46, 15.55, 15.60, 15.63

Chapter 17: 17.4, 17.7, 17.17, 17.18, 17.27, 17.31, 17.35

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