

Electronics III

Department of Electrical Engineering
Amirkabir University of Technology (Tehran Polytechnic)

Instructor: Dr. Mohammad Yavari
Spring 2025

Topics:

1. Introduction to Analog IC Design
2. Basic MOS Device Physics and Modeling
3. Current Mirrors and Single-Stage Amplifiers
4. Differential Amplifiers and Active Current Mirrors
5. Frequency Response of Amplifiers
6. Noise Analysis and Modeling
7. Basic Opamp Design and Frequency Compensation
8. CMOS Operational Amplifiers
9. Introduction to Switched-Capacitor Circuits
10. Introduction to Data Converters
11. Oscillators
12. Nonlinear Analog Circuits

References:

1. B. Razavi, *Design of Analog CMOS Integrated Circuits*, Second Edition, McGraw-Hill, 2017.
2. P. Gray, P. Hurst, S. Lewis, and R. Meyer, *Analysis and Design of Analog Integrated Circuits*, 6th Edition, John Wiley & Sons, 2024.
3. T. C. Carusone, D. A. Johns, and K. W. Martin, *Analog Integrated Circuit Design*, Second Edition, John Wiley & Sons, 2012.
4. A. S. Sedra and K. C. Smith, T. C. Carusone, V. Gaudet, *Microelectronic Circuits*, 8th Edition, Oxford University Press, 2020.
5. Class Notes and Selected Publications.

Requirement:

Electronics II

Grading:

Homeworks: 10%

Final Design Project: 10%

Quizzes: 15%

Midterm Exam: 30%

Final Exam: 35%