CMOS Analog Integrated Circuit Design

Department of Electrical Engineering
Amirkabir University of Technology
Instructor: Dr. Mohammad Yavari
Fall 2020

Topics:

1. MOS Device Physics and Modeling
2. Current-Mirrors and Single-Stage Amplifiers
3. Differential Amplifiers
4. Frequency Response of Amplifiers
5. Noise Analysis and Modeling
6. Basic Operational Amplifiers and Frequency Compensation
7. Advanced Operational Amplifiers
8. Bandgap References
9. Switched-Capacitor Circuits
10. Nonlinearity and Mismatch
11. CMOS Processing Technology
12. Layout and Packaging

Texts:

1. B. Razavi, *Design of Analog CMOS Integrated Circuits*, McGraw-Hill, Second Edition, 2016.
2. T. C. Carusone, D. A. Johns, and K. W. Martin, *Analog Integrated Circuit Design*, John Wiley & Sons, Second Edition, 2012.

References:

3. W. M. Sansen, *Analog Design Essentials*, Springer, 2006.
4. F. Maloberti, *Analog Design for CMOS VLSI Systems*, Kluwer Academic Publishers, Dordrecht, 2001.
5. Y. Tsividis, *Operation and Modeling of the MOS Transistor*, McGraw-Hill, Second Edition, 2003.
6. P. Allen and D. Holberg, *CMOS Analog Circuit Design*, Oxford University Press, 2nd Edition, 2002.
7. K. Laker and W. Sansen, *Design of Analog Integrated Circuits and Systems*, McGraw-Hill, 1994.
8. P. Gray, P. Hurst, S. Lewis, and R. Meyer, *Analysis and Design of Analog Integrated Circuits*, John Wiley, 5th Edition, 2009.
9. R. Gregorian, *Introduction to CMOS Op-Amps and Comparators*, New York: John Wiley & Sons, 1999.
10. R. Gregorian and G. C. Temes, *Analog MOS Integrated Circuits for Signal Processing*, New York: Wiley, 1986.
11. Class Notes and Selected Publications.

Requirement:

Electronics III

Grading:

Homeworks: 10%
Design Projects: 15%
Midterm Exam: 35%
Final Exam: 40%