

Course Syllabus

Course Information

EECT 6326.002 Analog Integrated Circuit Design

Fall 2016

Mon & Wed: 2:30pm-3:45pm, ECSS 2.201

Professor Contact Information

Prof. Jin Liu

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Office Hours: Mon 3:45pm-5:00pm and by appointments

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Pre-requisite: EE 4340 / EECT 5340 Analog Integrated Circuit Analysis and Design

Student Learning Objectives/Outcomes

Ability to analyze low-frequency characteristics of single-stage amplifiers and differential amplifiers

Ability to analyze and design current sources/sinks/mirrors

Ability to analyze and design voltage and current references including bandgap references

Ability to analyze high-frequency response of amplifiers

Ability to understand stability compensation for amplifiers

Ability to design and characterize amplifiers according to design specifications in Cadence CAD software

Ability to prepare effective technical reports

Required Textbooks and Materials

Design of Analog CMOS Integrated Circuits, by Behzad Razavi, McGraw-Hill, 2001. ISBN: 0-07-238032-2.

Analysis and Design of Analog Integrated Circuit, Paul R. Gray, Paul J. Hurst, Stephen H. Lewis, and Robert G. Meyer, John Wiley & Sons, Inc., 4th edition, 2000. ISBN: 0-471-32168-0.

CMOS Analog Circuit Design, Phillip E. Allen and Douglas R. Holberg, Oxford University Press, 2nd edition, 2002. ISBN: 0-19-511644-5

Operational Amplifiers – Theory and Design, Johan H. Huijsing, Kluwer. ISBN: 0792372840

Analog Design for CMOS VLSI Systems, Franco Maloberti, Kluwer Academic Publishers, 2001. ISBN: 0-7923-7550-5.

Grading Policy

The final grade will be determined using the following scheme:

$\text{Homework} \times 20\% + \text{Project} \times 10\% + \text{Exam 1} \times 30\% + \text{Exam 2} \times 40\%$

Homework will be assigned on a bi-weekly basis and be collected at the beginning of the class on the due date. No late homework is allowed. The homework solution will be posted on the

professor's webpage, with password protection. Some of the homework and the project require the use of cadence/analog artist design tools; tutorial will be given at the beginning of the semester. In order to use Cadence tools at UTD, a UTD UNIX account is required. It is OK to use Cadence tools at students' workplace if preferred. Both exams are closed book with a one-page note allowed for Exam 1 and a two-page note for Exam 2.

Topics

<i>Topics</i>	<i>Razavi</i>	<i>Gray</i>
Review of MOSFET Device Models	Ch. 2 & 16	Ch. 1
Review of BJT Device Models		Ch. 1
Self-reading IC Technology	Ch. 17	Ch. 2
Review of Single-Stage Amplifier	Ch. 3	Ch. 3
Differential Amplifiers	Ch. 4	Ch. 3
Current Mirrors	Ch. 5	Ch. 4
References	Ch. 11	Ch. 4
Opamp Design	Ch. 9	Ch. 6
Frequency Response	Ch. 6	Ch. 7
Stability and Compensation	Ch. 10	Ch. 9
Noise - optional	Ch. 7	Ch. 11
Two-stage Amplifiers	Ch. 9	Ch. 12
Cadence Tutorial	Handout	Handout

Course & Instructor Policies

Students are responsible for all course materials, announcements, notes, etc. given during our regular class meeting time.

It is the responsibility of the instructor to encourage an environment where you can learn and your accomplishments will be rewarded fairly. Any behavior that compromises the University's rules of academic honesty will be reported to the University.