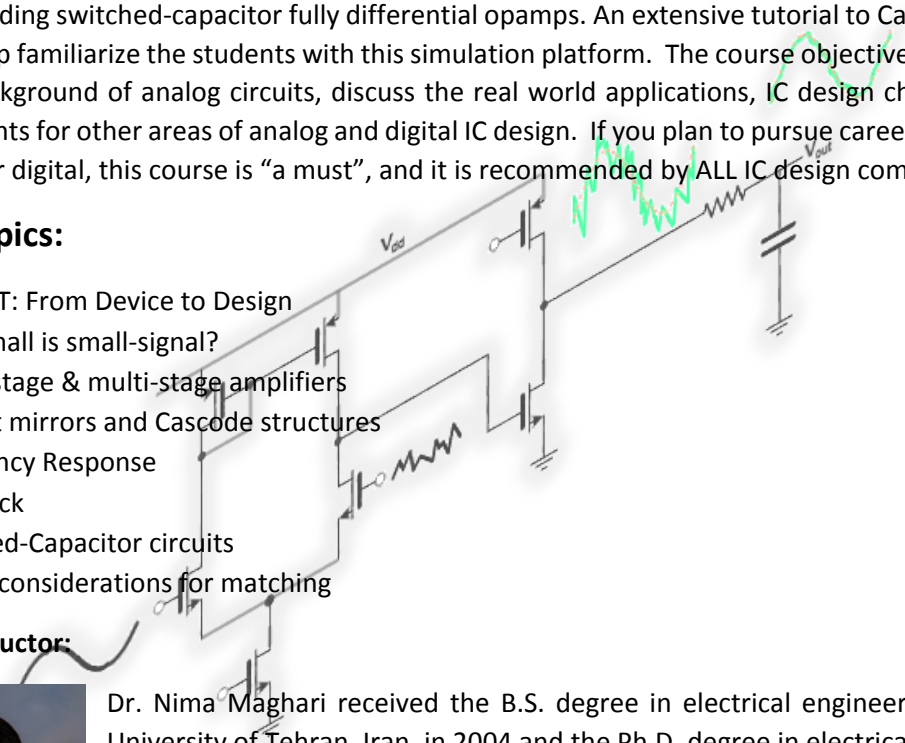
Analog IC Design I

This course explores the fundamentals of the analog IC design, ranging from single stage amplifiers to switched-capacitor networks and multi-stage frequency compensation schemes. Throughout the semester, the students will be introduced to fundamental analog circuit blocks, their benefits and shortcomings in the view of CMOS geometry scaling. The state of the art applications will be discussed for each of these circuits, and the past and future challenges and the roadmap of analog IC will be tackled. In this course, the students will be introduced to Cadence® platform, an industry preferred simulation and layout engine, not only to analyze the provided circuits, but also to design several commonly used structures including switched-capacitor fully differential opamps. An extensive tutorial to Cadence will be provided to help familiarize the students with this simulation platform. The course objective is to provide a thorough background of analog circuits, discuss the real world applications, IC design challenges and prepares students for other areas of analog and digital IC design. If you plan to pursue career in IC design, either analog or digital, this course is "a must", and it is recommended by ALL IC design companies.



Selected Topics:

- MOSFET: From Device to Design
- How small is small-signal?
- Single-stage & multi-stage amplifiers
- Current mirrors and Cascode structures
- Frequency Response
- Feedback
- Switched-Capacitor circuits
- Layout considerations for matching

About the instructor:

Dr. Nima Maghari received the B.S. degree in electrical engineering from the University of Tehran, Iran, in 2004 and the Ph.D. degree in electrical engineering from Oregon State University in 2010.

He is currently senior member of IEEE and an assistant professor at ECE department, University of Florida, Gainesville. From 2004 to 2006, he was with IC-LAB, University of Tehran, where he was involved with audio delta-sigma converters and low-voltage bandgap references. In 2008 he was recipient of CICC-AMD outstanding student paper award. He has served as an Associated Editor of IEEE Transactions on Circuits and Systems-I and Technical Program Committee of CICC. He has published more than 50 conference and journals papers in IEEE and IEE.

His research interests include high performance analog-to-digital converters, delta-sigma modulators, phased-locked loops, synthesizable analog circuits, time-assisted data conversion techniques and low-power low-voltage regulator

This course is offered through the ECE-EDGE distance learning program. More information can be found at: https://www.ece.ufl.edu/ece-edge-online-course-offerings