

MICRO-705

Low-voltage analog CMOS IC design

Kayal Maher

Cursus	Sem.	Type
Electrical Engineering		Obl.
Microsystems and Microelectronics		Obl.

Language of teaching	English
Credits	2
Session Exam	Written & Oral
Workload	60h
Hours	32
Courses	32
Number of positions	

Remark

Next time : September 21st 2020 - October 2nd 2020

Summary

The course is covering following aspects: MOS Transistor Modeling for Low-Voltage and Low-Power Circuit Design, Noise Performance of Elementary Transistor Stages, Stability of Operational Amplifiers, Important Opamp Configurations and Distortion in Elementary Transistor Circuits.

Content**Day 1:**

- MOS Transistor Modeling for Low-Voltage and Low-Power Circuit Design
- Basic Low-Power, Low-Voltage Circuit Techniques
- Differential Amplifying Blocks with Positive Feedback

Day 2:

- Noise Performance of Elementary Transistor Stages
- Stability of Operational Amplifiers
- Systematic Design of Low-Power Operational Amplifiers
- Important Opamp Configurations

Day 3:

- Important Opamp Configurations
- Bandgap and Current Reference Circuits
- Distortion in Elementary Transistor Circuits
- Low-Power Continuous-Time Filters

Day 4:

- Matching of MOS Transistors in Deep-Submicron
- Micropower ADCs

Day 5:

- Layout Considerations in Mixed-Signal Circuit Design
- Ultra-Low Voltage Analog Circuit Design

Keywords

Low-Voltage Analog, Op-Amps, Sigma-Delta Converters, Switched-Capacitor

Learning Prerequisites**Recommended courses**

Analog IC Design

Resources

Ressources en bibliothèque

- [Understanding Delta-Sigma Data Converters / Pavan](#)
- [Understanding delta-sigma data converters / Schreier](#)
- [Analog-to-Digital Conversion / Pelgrom](#)
- [Charge-Based MOS Transistor Modeling: The EKV Model for Low-Power and RF IC Design / Enz](#)
- [Methodology for the Digital Calibration of Analog Circuits & Systems / Kayal](#)
- [All-Digital Frequency Synthesizer in Deep-Submicron CMOS / Staszewski](#)
- [Structured Analog CMOS Design / Kayal](#)
- [Analog Design Essentials / Sansen](#)
- [RF analog impairments modeling for communication systems simulation : application to OFDM-based transceivers / Smaini](#)