

MICRO-709 **Power management**

Kayal Maher

Cursus	Sem.	Type
Microsystems and Microelectronics		Obl.

Language of teaching	English
Credits	2
Session	
Exam	Written & Oral
Workload	60h
Hours	28
Courses	28
Number of positions	

Frequency

Every year

Remark

August 31st to September 4th, 2020

Summary

The objective of this course is to discuss the state-of-the-art in low-power analog and digital system design, with special emphasis on transistor level measures to limit and to control the power dissipation of portable systems.

Content

1. DC-DC Converters, Topologies & Control Techniques
2. Converter Modeling and Feedback Loop Design
3. Microprocessor Power Supplies
4. Switched-Capacitor Power Supplies
5. CMOS Linear Regulators, Design and Case Studies
6. Bandgap References
7. Alternative Bandgaps and Applications
8. Battery Charging Techniques & Circuits for Notebook Computers & Cellular Phones
9. Transistor-Level Off-line DC-DC Controller Design
10. Circuit Techniques for Integrated Switching
11. Regulators

Keywords

DC-DC Converters, Power Supplies, Bandgap References

Learning Prerequisites**Required courses**

Basic electronic circuits

Resources**Ressources en bibliothèque**

- [Methodology for the Digital Calibration of Analog Circuits & Systems / Kayal](#)
- [Charge-Based MOS Transistor Modeling: The EKV Model for Low-Power and RF IC Design / Enz](#)
- [All-Digital Frequency Synthesizer in Deep-Submicron CMOS / Staszewski](#)
- [Understanding Delta-Sigma Data Converters / Pavan](#)

- RF analog impairments modeling for communication systems simulation : application to OFDM-based transceivers / Smaini
- Analog Design Essentials / Sansen
- Structured Analog CMOS Design / Kayal
- Understanding delta-sigma data converters / Schreier
- Analog-to-Digital Conversion / Pelgrom