EPFL

EE-428 | **Introduction to VLSI Design**

Leblebici Yusuf, Tajalli Seyed Armin

Cursus	Sem.	Type
MNIS	MA3	Obl.

Language of teaching	English
Credits	2
Session	Winter
Semester	Fall
Exam	Written
Workload	60h
Weeks	14
Hours	**2 weekly**
Courses	2 weekly
Number of positions	

Summary

The course objective is to introduce the fundamental principles of VLSI circuit design, to examine the basic building blocks of large-scale digital integrated circuits, and to provide hands-on design experience with professional design (EDA) platforms.

Content

CMOS device technology
Basic CMOS circuit design (inverters)
Concepts of delay time and drive strength
Complex logic gates
Sequential circuit design (Latch, DFF)
Clock generation and distribution
Interconnect parasitics and estimation
Arithmetic circuits: adders and multipliers
Memory cells and arrays

Learning Outcomes

By the end of the course, the student must be able to:
- Design CMOS logic circuits
- Design Complex arithmetic blocks
- Analyze performance of CMOS circuits

Teaching methods

Classroom teaching complemented by EDA lab (EDA-TP)

Assessment methods

Midterm examination
Final examination

Resources

Ressources en bibliothèque

- CMOS digital integrated circuits : analysis and design