



VLSI Design (MScTI_ANADESIGN)

Prof. Dr. P. Fischer

Lehrstuhl für Schaltungstechnik und Simulation
Technische Informatik der Uni Heidelberg



Organization of Lecture & Exercise

- Points: 6 Credit Points
- Time: Monday, 9:15 – 10:45, 11:00 – 12:30
- Location: OMZ, SR U012
- Teacher: Prof. Dr. P. Fischer
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- Prerequisites: CCS lecture or equivalent knowledge
- Examination: **Successful completion of a project work:
Schematics, simulation, layout, DRC, LVS,
Writeup**



Content (not treated in this order)

- Technology, Manufacturing of Integrated Circuits
- Test equipment & procedures

- Hierarchical *schematics*, busses, global nets,...
- *Layout* of components, rules, matching

- Design Rule Check, Design Rules, technology files; Extraction & rule files; Layout versus Schematic Check; ESD and Antenna rules, latchup
- Parasitic extraction

- Script programming using *skill*. (Simulation with ocean)
- *Mixed Mode Simulation*



Exercises

- Mainly in 2nd block (but also in 1st...)

- You get an account on a SuS computer!
- NOTE: The account will be CLOSED automatically at the start of the next (summer) term!

- Homework can be done
 - Remote from all CIP pools (KIP, PI, Philosophenweg,...)
 - Remote from home (via X2GO, see instructions on web site)

- For using the umc018 technology, a non-disclosure agreement has to be signed!



Further Comments

- The lecture is a mandatory element of major ,chip design‘



Literature

- **Principles of CMOS VLSI Design**

Neil H. E. Weste, K. Eshraghian, Addison-Wesley 1994,
ISBN 0-201-53376-6, 91 € (Amazon)

Classic for CMOS Design, easy to read, not really up to
date but sufficient for beginners.

- **Integrierte Schaltungen (in german language)**

K.H. Cordes, A. Waag, N. Heuck

Pearson Studium 2011, ISBN: 978-3-86894-011-4,
79,95 EUR

Gute Mischung der verschiedenen Themen



Demo

- Live Demo of what we will do...