

# Chapter 1 - Introduction and overview

Course authors (Git file)



- 1 Welcome
- 2 Course overview
- 3 Course components
- 4 Feedback and Cheat Sheets
- 5 The Training sessions
- 6 Certificate
- 7 Open-source EDA for digital designs



## Section 1

Welcome



# Trainer profile

Me:

Name, Company / Uni

Why i'm here. My motivation.

What i've done before.

What interests me most.



# Participants backgrounds and motivations

You:

Name, Company / Uni

Why i'm here. My motivation.

What i've done before.

What interests me most.



## Section 2

### Course overview








# Chapter names

- 1 Introduction
- 2 OpenROAD tools
- 3 Verilog
- 4 OpenROAD first run
- 5 PDK
- 6 OpenROAD GUI
- 7 OpenROAD flow scripts
- 8 Tapeout



# Schedule for the course

Mon	Tue	Wed	Thu	Fri
<b>L1:</b> Introduction	<b>Q1, Q2:</b> Recap <b>Feedback</b>	<b>Q3, Q4:</b> Recap <b>Feedback</b>	<b>Q5, Q6:</b> Recap <b>Feedback</b>	<b>Q7:</b> Recap
<b>T1:</b> Training	<b>L3:</b> Verilog  <b>T3:</b> Training	<b>L5:</b> PDK  <b>T5:</b> Training	<b>L7:</b> OpenROAD Flow scripts <b>T7:</b> Training	<b>L8:</b> Tapeout  <b>Feedback</b>
				
<b>L2:</b> OpenROAD tools	<b>L4:</b> OpenROAD first run	<b>L6:</b> OpenROAD GUI	<b>L7:</b> OpenROAD Flow scripts 2	Spare time and Wrap-Up
<b>T2:</b> Training	<b>T4:</b> Training	<b>T6:</b> Training	<b>T7:</b> Training	

**L** : Lectures

**T** : Training and  
Hands-On

**Q** : Questions





## Section 3

### Course components



# Get the course materials here:

Course materials (Release):

<https://github.com/OS-EDA/Course/releases>

- Download the latest release
- Unpack into a directory on your computer



## Additional links:

OS-EDA Github organization:

<https://github.com/OS-EDA>

Course Github repository:

<https://github.com/OS-EDA/Course>



# Lectures



## Lectures:

- All the chapters start with a lecture slide deck.
- The trainer will walk you through the content of the lectures.
- Whenever you have a question in between: ask directly.
- The lectures contain the base knowledge of the course.



# Trainings



## Common training tasks:

Every training sessions starts with the common part. The tasks of the common part are sufficient to follow along the content of the course. If you're a beginner, these trainings should be your goal to reach.



## Advanced training tasks:

The advanced training sessions are for those With pre knowledge. If the common training was finished fast or was just to easy, the advanced sessions get you convered.



## Bonus training tasks:

Still time left to do some tasks? Want something to take with you as homework? Please enjoy the bonus rounds of the training sessions.

# Questions



## Questions:

- The questions are for re-visiting and remembering a previous chapter.
- They guide an interactive session between the trainer and the room:
  - Trainer: Asks the questions.
  - Room: Answers the questions.
    - Skipping a question is fine.
    - Not knowing the answer is fine.
    - This is not a test nor a challenge.
    - Think of this as a helpfull recap of yesterdays content.
  - If no answer is found, the trainer helps with the answer.



## Section 4

### Feedback and Cheat Sheets



# Feedback and Cheat Sheets

- We please you to give us feedback for the course.
- There is a short timeframe each day reserved for feedback.

We have two ideas about this:

- 1 Developing Cheatsheets together
- 2 Collecting general feedback





# Cheatsheets




Some things are really hard to remember:

- Abbreviations
- Complex relations and graphics
- EDA tools workflow
- Schedule of the week
- Mathematics (joking, we're not doing math here)
- ...

- That is why we would like to develop Cheat Sheets.
- They're made for cheating the hard parts.
- Cheatsheets work best when printed as handouts.
- One can have them nearby the computer while learning.



# Cheatsheet example








Mon	Tue	Wed	Thu	Fri
<b>L1:</b> Introduction	<b>Q1, Q2:</b> Recap <b>Feedback</b>	<b>Q3, Q4:</b> Recap <b>Feedback</b>	<b>Q5, Q6:</b> Recap <b>Feedback</b>	<b>Q7:</b> Recap
<b>T1:</b> Training	<b>L3:</b> Verilog <b>T3:</b> Training	<b>L5:</b> PDK <b>T5:</b> Training	<b>L7:</b> OpenROAD Flow scripts <b>T7:</b> Training	<b>L8:</b> Tapeout <b>Feedback</b>
				
<b>L2:</b> OpenROAD tools <b>T2:</b> Training	<b>L4:</b> OpenROAD first run <b>T4:</b> Training	<b>L6:</b> OpenROAD GUI <b>T6:</b> Training	<b>L7:</b> OpenROAD Flow scripts 2 <b>T7:</b> Training	Spare time and Wrap-Up

Figure 1: Cheatsheet Chapter 1



# Cheatsheet example



## Cheatsheet - Chapter 5 PDK Examination

### KLayout:

.lyp	Layer properties file
.lyt	Technologies file for Layout ↔ Technology mapping

### XScheme:

.sym	Schematics file

### Hardware Description Languages (HDL):

Verilog	
VHDL	

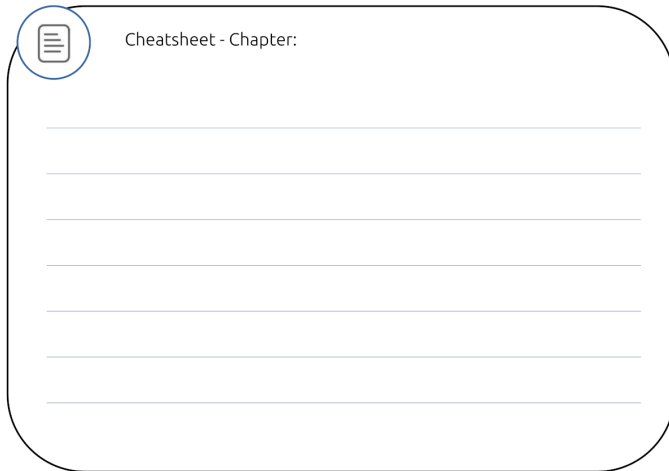
### Abbreviations:

LVS	Layout versus Schematic
CDL	Circuit design language
GDS II	Graphic data system (II)
LEF	Library exchange format
techLEF	Additional info about the technology
.lib	Liberty timing file: ASCII descriptions of timing / power of cells.

Figure 2: Cheatsheet Chapter 5



# Empty Cheatsheet printversion



A template for a cheatsheet, consisting of a rounded rectangle with a black border. In the top-left corner, there is a blue circular icon containing a document symbol. To the right of this icon, the text "Cheatsheet - Chapter:" is written. Below this text, there are seven horizontal blue lines for writing.

Cheatsheet - Chapter:

Figure 3: Cheatsheet Chapter 5



# General feedback

## General feedback:

- The general feedback will be collected verbally in the room.
- Everyone has the opportunity to give feedback
- We will write down the feedback, without your name.



# What will happen with your feedback?

- We will put the feedback into Github issues.
- Right now, think of Github issues as some sort of tracker- or ticketsystem.
- Your feedback will not be connected to you (Anonymous).
- You can join a public discussion in the Github issues, if you want to.

Weblink to the issues of the course:

<https://github.com/OS-EDA/Course/issues?q=is%3Aissue>



## Section 5

### The Training sessions



# Login at IHP

Now:

- Onboarding to the computers for everyone





# Levels

- Success points inbetween lectures
- This is too fast
- This is too slow



## Section 6

### Certificate



# Certificate

We will explain live about the certificate of the course.

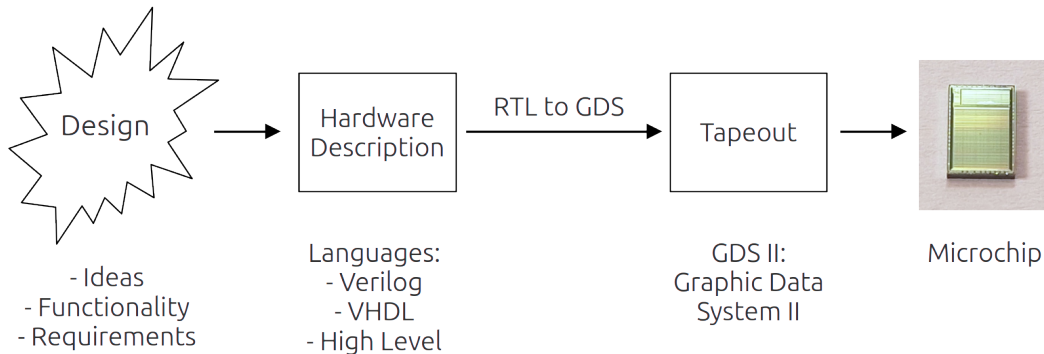


## Section 7

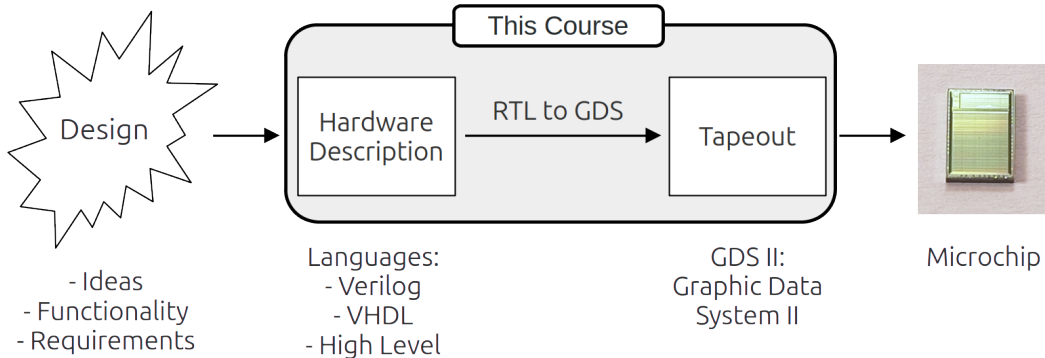
# Open-source EDA for digital designs



# From Design to Microchip



# RTL to GDS - Workflow



# Further topics

- What is the new thing with this course?
- Advantages of open-source in EDA
- The actual state of open-source EDA
- Goals of this course.
- How to participate and interact with this course.
- Producing chips at IHP with the open PDK

