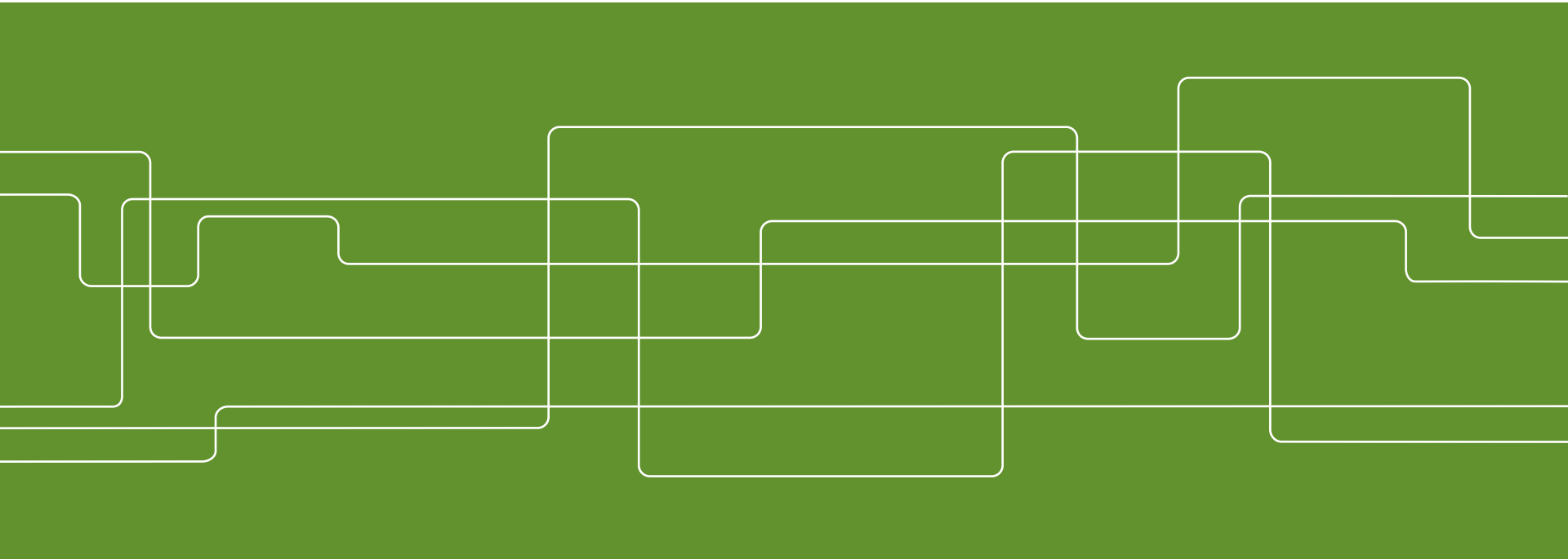




EP1200 Introduction to Computing Systems Engineering

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This presentation accompanies the textbook “The Elements of Computing Systems” by Noam Nisan & Shimon Schocken, MIT Press, 2005.

We provide 13 such presentations.

Each presentation is designed to support about 3 hours of classroom or self-study instruction.

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The course at a glance

Objectives

- Understand how hardware and software systems are built and how they work together
- Learn how to break complex problems into simpler ones
- Have fun!

Methodology

- Build a complete, general-purpose and working computer system
- Play and experiment with this computer, at any level of interest



Some course details

10 projects

- Individual work!
- Hardware projects are done and simulated in HDL – Hardware Description Language
- Software projects are done in C, Python and Jack, a simple language for the course

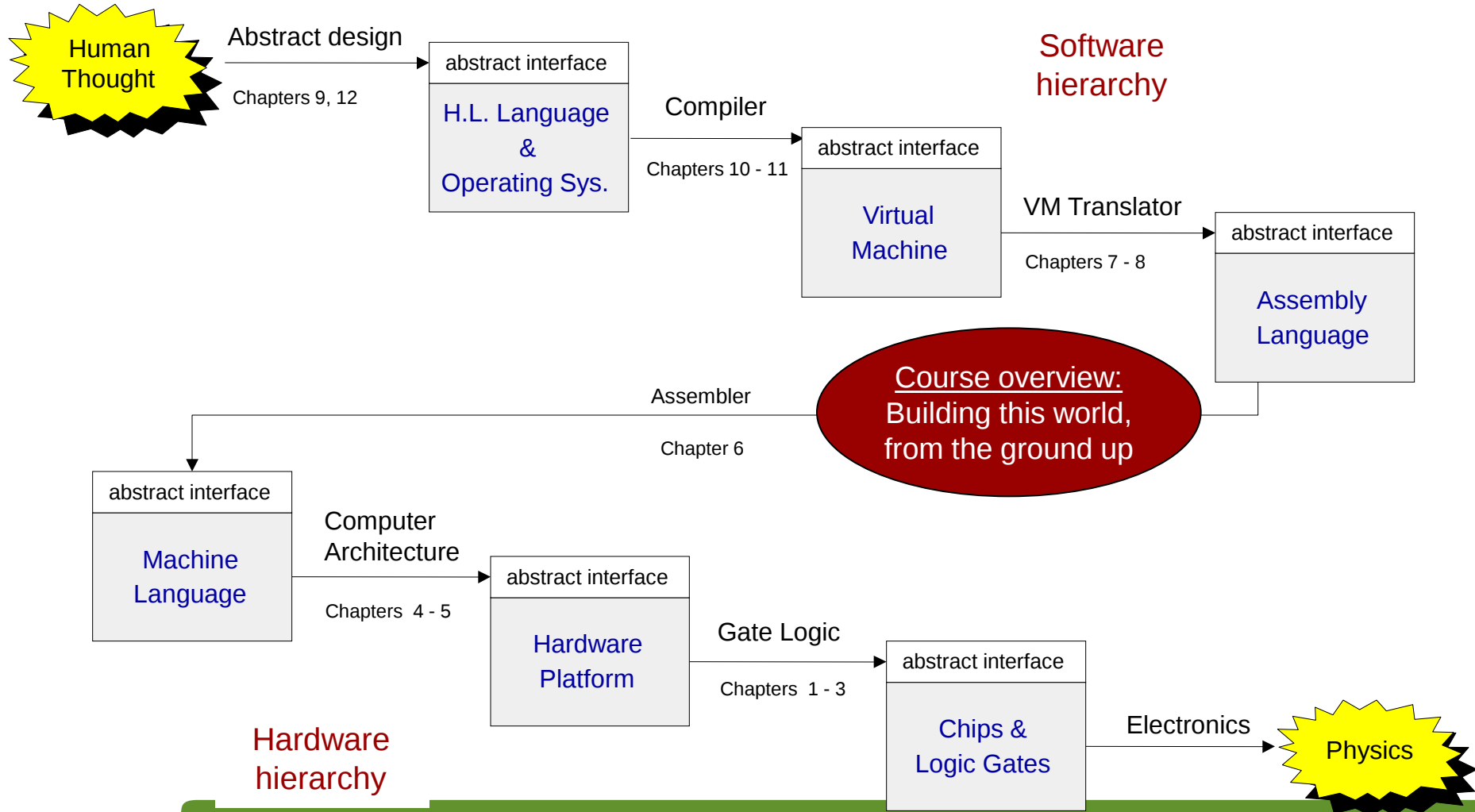
Methodology

- Design (API) + test materials are given
- Implementation done by yourselves
- Tools: simulators, tutorials, test scripts from web page of the book

Book

- Nisan and Schocken, *The Elements of Computing Systems: Building a Modern Computer from First Principles*
- Reading assignments with quizzes

The tour map of the course





Structure of the course

The course consists of an opening lecture and 10 seminars

- *Participation at seminars is compulsory*
- Today
 - Brief introduction of first part on logic design
 - First project assignment
- All following lectures
 - Quiz on reading assignment and theory of project
 - Student discussion and presentations
 - Discussion and perspective
 - Introduction to the next topic

To prepare for a seminar, students should

- Read the respective chapter in the book and watch the related video lectures
- Read the project descriptions *carefully* and learn how to use needed tools to solve the project
- Solve the project

Final exam at the end of the course



Expectations

Your own time management

- Demanding projects, short time for completion
- Allocate work hours for each project
 - 6 credits mean at least 160 hours of work
 - more than 10 hr/project
- Prepare to present completed projects

Highest standard of work

- Maximize your learning!
- Well presented projects
- Submitted solutions must be your own

Grading A to F

- All projects must be completed (55 p)
 - Quality of project presentations
- Results on quizzes (15 p)
- Final exam (35 p)



Resources

- Course web on KTH Social
 - <https://www.kth.se/social/course/EP1200/>
 - Schedules of seminars and office hours
 - News
 - Resources
 - Project descriptions with zip-archive per project
- Office hours are scheduled where students can get hints for solving the projects
- www.nand2tetris.org
 - All software tools and project templates
 - Good forum
- Mark Ambrust, Hardware Construction Survival Kit
 - Link from course web

The ultimate resource

- Your own ability!