

Operating System Concepts and Implementations

Betriebssystemkonzepte und -implementierungen

I. Introduction

October 13, 2026

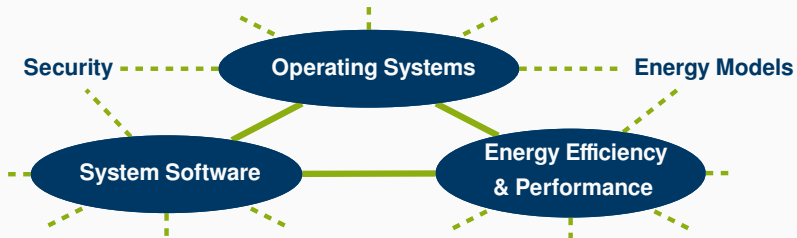
Benedict Herzog

Material based on *Chair of Computer Science 4 (System Software)*
Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)



RUHR
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RUB





Operating System Concepts and Implementations

- **Deepen** your understanding of the internal workings of operating systems
 - Starting point: Operating Systems lecture
 - Focus: concurrency and synchronisation
- **Develop** an operating system *from scratch*
 - MPStuBS teaching operating systems
 - Gain **practical experience** in operating-system development
- **Understand** the underlying hardware technology
 - Understand and assess PC technology
 - Focus: x86/x86-64 architecture



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 - ... have **basic knowledge about OSs** (e.g. from Operating Systems lecture)
 - ... like **programming**: C/C++, assembly (x86-64)
 - ... like programming **close to the hardware**
 - ... like **concurrency problems**
 - ... have a certain degree of **perseverance**



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... which makes a lot of fun!



Lecture

- every week
- course contents

Exercises

- approx. bi-weekly
- *Multiprocessor Studentisches Betriebssystem* (MPStuBS)
- Technical background
- 6 mandatory tasks

Lab Sessions

- 2x week
- Technical support
- Questions
- Bug hunting
- Task assessments



	Mo	Tu	We	Th	Fr
08:15-09:45					
10:15-11:45	Computer Lab Niels Magnus (MC 5.202)	Lecture Benedict (MC 4.112)		Computer Lab Niels Magnus (MC 5.202)	
12:15-13:45		Exercise Manuel (MC 4.112)			
14:15-15:45					
16:15-17:45					



Dr.-Ing. Benedict Herzog
Lecture



Manuel Vögele, M.Sc.
Exercises



Niels Magnus Buttler
Lab Sessions

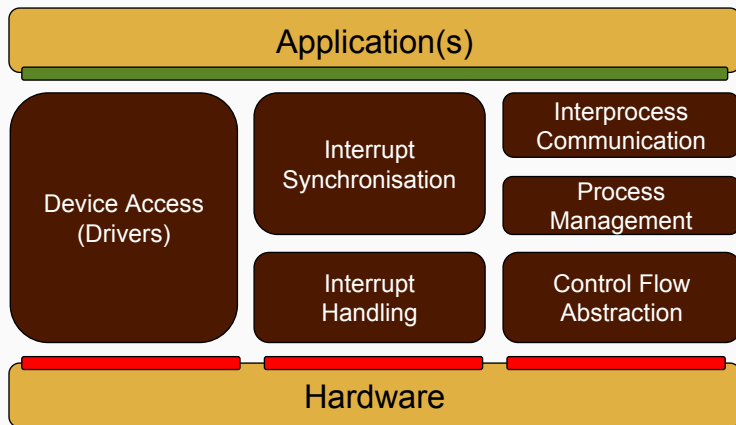


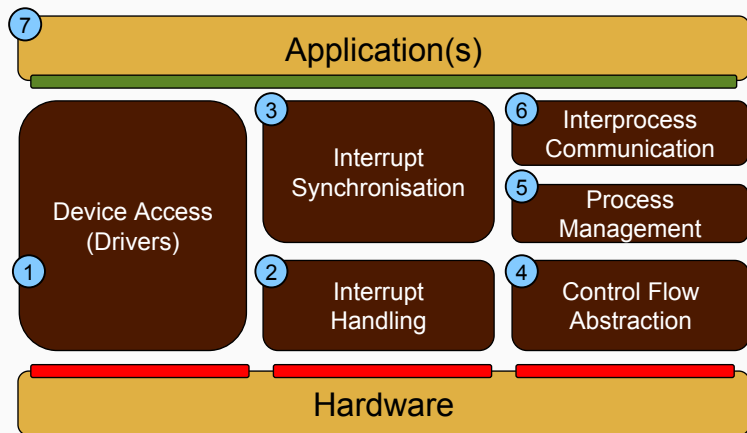
- Language of instruction: Lecture and exercises
 - English** Primary working language
 - German** Fall-back position
- Language of instruction: Lab Sessions
 - English or German** Whatever you prefer
- Course materials (slides, task documentation, ...)
 - English** Standard in industry and academia



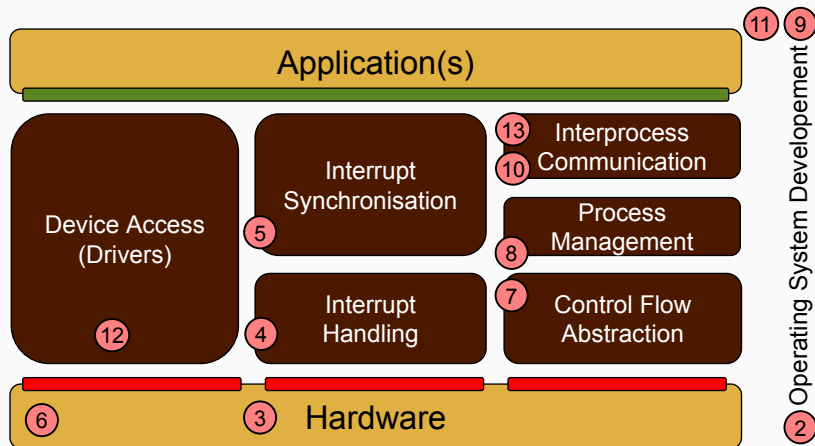
Course Assessment and Examination

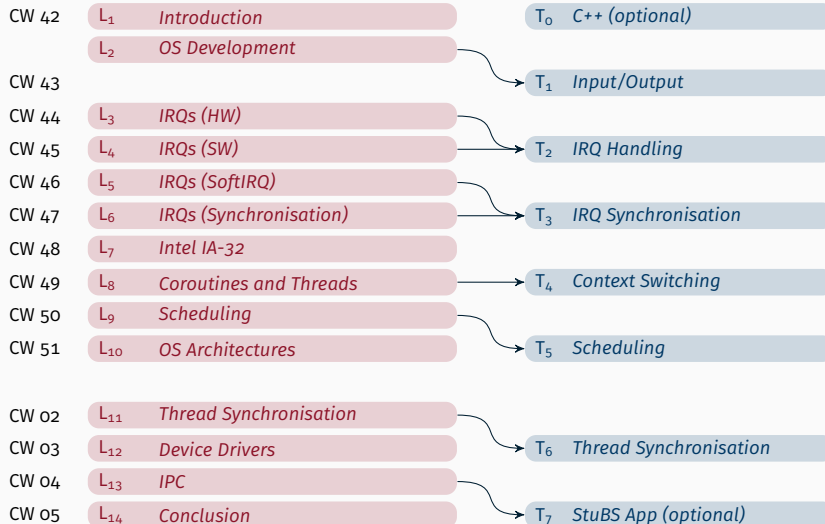
- Successful completion of the module has two prerequisites
 - ... successful completion of a 30-minute oral examination
 - ... successful assessment of all mandatory tasks
- Oral examination
 - Contents of lecture **and** exercises **and** tasks
 - Format: Expert discussion
 - Language: English or german
- Task assessments
 - Joint discussion with teaching assistant
 - Practical demonstration (on real hardware)
 - Subsequent exercises extend code base of previous exercises
- Oral examination $\Rightarrow$ module grade





Operating System Development







Website:

- Organisational Information
- Slides & lab materials
- Task description and documentation

<https://osci.boss.rub.de>

Moodle:

- Announcements
- Questions / Discussions

<https://moodle.ruhr-uni-bochum.de/course/view.php?id=71954>

Mailingliste:

- Organisational Questions

cs-os-osci-orga@lists.rub.de