

INF-2201 Operating System Fundamentals

Introduction

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Topics

- Course structure / plan
- Plagiarism and other cheating
 - How to learn / what does approaches teach you?
- Introduction to booting and running code on a computer.

What you will be doing

- Build an operating system kernel
 - (partly) from scratch
 - We provide you with pre-code for each project, so you should not try to solve all problems (you will not have the time to get them done correctly)
- 6 projects
 - P1: Boot mechanism
 - P2: Non-preemptive Scheduling
 - P3: Preemptive Scheduling
 - P4: Interprocess Communication (IPC) and Process Management
 - P5: Virtual Memory
 - P6: File System



Skypelling:
"A busy beaver writing an operating system on an old computer"
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What you will be doing

There will be a lot of work, but you gain something:

- Better insight into how an operating system works than people that just read about it
- Building abstractions:
 - How to design an abstraction
 - How to implement the abstraction
- You will be better prepared for other courses at IfI

Major changes this (and last) year

2025:

- No home exams
- Oral exam at the end. The plan is:
 - Groups of 2 students
 - Up to 1 hour per group
 - Mainly focused on the projects!
- Projects
 - P1 : some tasks have been integrated into P2
 - P2-P6 are mandatory (a pass is required to take the exam)
 - Groups of 2 (limit due to exam)
 - Approx 3 weeks for each
 - Design reviews approx 1 week into the project
 - Last mandatory hand-in end of April
- Updated projects
 - Work in progress
 - Moving away from older architectures that are not easily available
 - Simplification and more consistency

2023:

- P1, P3, P5 mandatory projects
 - P2, P4, P6 home exams
 - Last hand-in end of May
- 2024
- P1 tutorial
 - P2-P5 mandatory
 - P6 optional
 - Last hand-in end of April
- 2025
- P1 - reduced/removed
 - P2-P6 mandatory
 - Last hand-in end of April

Major changes in the future

- 10 credit course (2026)
 - Followed by a 10 credit advanced operating systems, concurrency and systems / experiments course
- P1 (boot mechanism) will be drastically changed
- Probably ARM (Raspberry Pi) or UEFI boot on PC
- Project 2-6 restructured (and some simplifications)

Course plan

Two ways to view it (both links are in Canvas)

- <https://github.com/uit-inf-2201/uit-inf-2201.github.io/blob/master/index.md>
- <https://uit-inf-2201.github.io/>

We need feedback

- Both what you like and what could be improved
- The good parts help us see what we need to keep

Cheating



Skypierling:
"A criminal racoon running away with a stolen operating systems book"
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Approaches to solving a problem

Approach	Risk (Especially plagiarism)	What did you learn?
Ask friend for solution	Copying content	Copying and adapting solutions Not learning problem solving
Ask Google	Copying content	Copying and adapting solutions Not learning problem solving
Ask ChatGPT / AI tool	Copying content (without knowing)	Copy problem text and adapt prompts Copying and adapting solutions Not learning problem solving
Try a simple (brute force?) solution first, then above approaches. Compare solutions	Fewer if you clearly reference what you copied.	Problem solving + above

Plagiarism – generic advice (WIP)

- Always check your references
 - Can you find the paper the way you cited/referenced it?
 - Does it say what you claim in your text?
 - Did you copy any of the text without making it clear it's a quote? (The same goes for figures, tables, source code...)
 - There are a lot of incorrect references out there, and lazy people copy other people's references without checking them.
- The "acceptable" limit may not be the same everywhere!
 - Problem: what used to be acceptable or not focused on may be an issue in the future.

Plagiarism (source code)

- If you borrow a library, function etc from somewhere
 - At least add a comment in the code stating where you copied it from
 - The comment could also be "this is based on X"

Resources

- Canvas
- <https://github.com/uit-inf-2201>
 - Need GitHub user names to add to org.
- Discord – invite is in Canvas