Course Introduction

Operating SystemsVU
2023W

Florian Mihola, David Lung, Andreas Brandstätter,
Axel Brunnbauer, Peter Puschner

Technische Universität Wien
Computer Engineering
Cyber-Physical Systems

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Overview

- Registration to the Course: TISS
- Course organization: TUWEL
  (resources, exercises, registration to exams, etc.)
- Lecture Mode Selection
- Getting started quiz (as prerequisite for the course)
- Lectures ($\rightarrow$ schedule and slides in TUWEL)
- 3 programming exercises
  - Programming language: C
  - Operating system: Linux
  - Get help from tutors
- 2 programming exams on computer
  - closed-book exam
  - usual lab environment incl. man pages
    but no Internet
- One written exam
  - closed-book exam

OSVU is sophisticated

- Spending effort here and there or only shortly before deadlines usually won't lead to success!
  $\Rightarrow$ 6.0 ECTS are about 10 h per week.
- Lectures alone are not sufficient to pass the exams!
  $\Rightarrow$ lectures are introductions, opening up of OS topics through exercises!
- No exceptions to regular procedure of the course!
  $\Rightarrow$ Fairness for all participants + smooth work load over the semester for students and teaching staff.

OSVU is sophisticated ... but pays off!

- Get familiar with Linux/Unix
  - Command line tools
  - Lightweight text editors (no need for IDEs)
- Advanced programming in C
  - Build environment (GNU Make)
  - Debugging
- Programming of concurrent processes
- Interprocess communication & synchronisation of access to shared resources
- Development of system-level tools and applications
- Basis for a deeper and wider range of skills:
  - e.g., Microcontroller programming, embedded systems

Registration

- Registration only via TISS:
  - 191.002 Betriebssysteme, 2023W
  - `https://tiss.tuwien.ac.at/course/educationDetails.xhtml?courseNr=191002&semester=2023W`
  - **We are not authorized to make STEOP exceptions!**
    $\Rightarrow$ contact dean of study
- Further organisation via TUWEL:
  - Requirement: Registration to OSVU via TISS (your registration will be forwarded!)
  - `https://tuwel.tuwien.ac.at/course/view.php?id=58007`
- InfLab account (required for the exercises and exams!)
  - Requirement: Registration to OSVU via TISS (your registration will be forwarded!)
  - Fetch account
    `https://password.inflab.tuwien.ac.at`

Registration

Procedure

1. You: TISS registration (until Oct 8th)
2. We: Registration to TUWEL
3. We: Creation of InfLab accounts
   - Account available from Oct 9, afternoon
4. You: Fetch InfLab account and set password
   `https://password.inflab.tuwien.ac.at`

Lecture Modes

- Before, there were two courses
  - 182.711 VO Betriebssysteme, 2 ECTS
  - 182.709 UE Betriebssysteme, 4 ECTS
- Now there is one course
  - 191.002 VU Betriebssysteme, 6 ECTS
- If you already have a certificate for one of the old courses, you only need to do the missing part.

Lecture Mode Selection

- Register in TISS for 191.002 VU Betriebssysteme
- Select Lecture Mode in TUWEL
  - If you do not have any Betriebssysteme certificate yet ⇒ pick option A. You will get a certificate for 191.002 VU Betriebssysteme.
  - If you have a positive certificate for 182.711 VO Betriebssysteme ⇒ pick option B. You will get a certificate for 191.002 VU Betriebssysteme.
  - If you have a positive certificate for 182.709 UE Betriebssysteme ⇒ pick option C. You will get a certificate for 182.711 VO Betriebssysteme.
  - If you study Electrical Engineering (Elektrotechnik) ⇒ pick option D. You will get a certificate for 182.737 VO Betriebssysteme für Elektrotechnik.
- Selection can be changed until the **Deadline: October 22th, 23:59**

Getting Started Quiz - VU Students only

- If you do not have a certificate 182.709 UE Betriebssysteme (Options A & B) ⇒ you need to do the Quiz!
- If you already have a positive certificate for 182.709 UE Betriebssysteme (Option C), or you don't need one (Option D) ⇒ Don't do the Quiz.
- in TUWEL
- available after Lecture Mode Selection
- Unlimited attempts, best one counts
- **Deadline: October 22th, 23:59**

Getting Started Quiz

- Prerequisite to participate in the new course (VU)
- Multiple choice test in TUWEL
  - None or multiple answers might be correct
- Unlimited attempts, best one counts
- **Deadline: October 22th, 23:59**

Note

You need to pass the quiz to be able to participate in the new course (VU) (upload the exercises and register for the programming exams)!

Attention

Once you pass the quiz you will get a certificate!

Lectures

Topics

- UNIX and C
  - Introduction to UNIX
  - The C programming language
  - Development in C (program conventions, compile, debug)
- Processes and Communication
  - Interprocess communication (Sockets, Pipes, POSIX Shared Memory)
  - Explicit synchronisation (POSIX Semaphores)
  - C interfaces to OS concepts
  - Programming examples

Lectures

Organisation

Lectures are blocked, see schedule on TUWEL

- Lectures take place in InfHS (Informatik Hörsaal)
  - 2023-10-03 Course introduction + Unix introduction
  - 2023-10-05 C programming (advanced)
  - 2023-10-10 Development in C I
  - 2023-10-12 Development in C I (ctd.)
  - 2023-10-17 Development in C II
  - 2023-10-19 Relevant topics for exercise 1
  - 2023-11-07 Relevant topics for exercise 2
  - 2023-12-05 Relevant topics for exercise 3

Lectures

Resources

- Slides (see TUWEL)
- "C Programming" in Wikibooks
  `http://en.wikibooks.org/wiki/C_Programming`
- Brian W. Kernighan and Dennis M. Ritchie:
  "C Programming Language (Second Edition)"

InfLab

Favoritenstraße 11, ground floor

Lab with UNIX workstations, on which you can program **and test** your implementations for the programming exercises.

- Remote access via SSH (ssh.inflab.tuwien.ac.at)
- (Remote access not available on days of the exams and the day before)
- Contact to lab admins (accounts, PCs, . . .): `https://www.inflab.tuwien.ac.at/`

Getting Started Tutorial

Taking place in Inflab

- Optional, but registration to a slot **in TUWEL** needed if you want to participate
- For students who have no or little experience with Linux
- Contents: editors, "Hello World" program, Makefiles, how to remotely access lab PCs, ...
- Duration: about 60 minutes
- Registration starts today, 18:00
- **Please do not panic if there are no places left!** Additional slots will be added if required!

Requirements

- Register to the TISS course ASAP!
- Fetch InfLab account and set your password **before** the tutorial!

Exercises

- 3 programming exercises (assignment in TUWEL, submission also via TUWEL)
- Support by tutors during lab hours in InfLab

→ see additional exercise information on TUWEL

Submissions

- **Individual work!** Group work is considered as plagiarism!
- Strict deadlines, no late submissions!

Note

Plagiarism will be graded with 0 points! In case of repetition the offenders will be expelled from the course with a negative certificate!

Exercises

Assessment

Upload in TUWEL

- Upload is tested automatically using multiple test cases
- Automated feedback (typically after a few minutes)
- Limited number of attempts
- Start early to avoid high server load close to the deadline!
  - Deadlines will not be extended

Delivery Talks

- Register for a slot in TUWEL!
- at InfLab
- Duration: about 20-30 minutes
- Procedure
  - Explanation
  - Check compliance with our coding guidelines
- Uploaded exercises will be graded with 0 points if you do not attend the delivery talks!

Exams

- Programming Exams take place in the lab
- registration via TUWEL
- Preparation time + usual development environment of InfLab
  - Closed-book exam! no own tools (e.g. keyboards) allowed
  - Lightweight text editors available
- 1^{st} Programming Exam (2023-12-01):
  Topics of Exercises 1 & 2
- Written Exam (2024-01-18): Operating System Principles
- 2^{nd} programming Exam (2024-01-24):
  Topics of all Exercises

Grading

	Points (max)
Exercise 1	20
Exercise 2	20
Exercise 3	20
1^{st} Programming Exam	70
Written Exam	100
2^{nd} Programming Exam	70
Sum	300

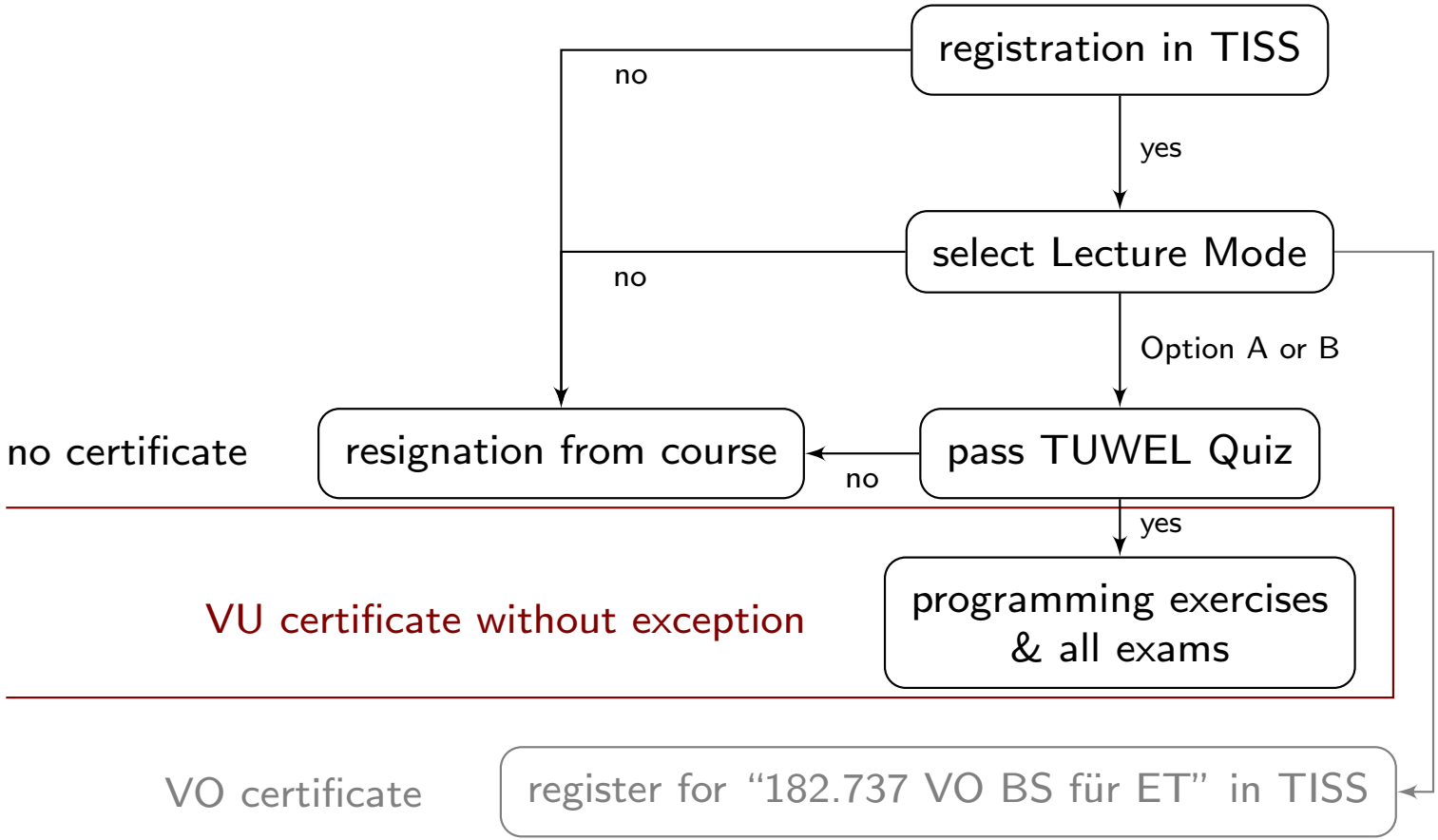
Assuming ≥ 60 points on the programming exams, ≥ 25 on the exercises and ≥ 50 on the written exam:

Grade	Points
1	≥ 262
2	≥ 225
3	≥ 187
4	≥ 150

Improve your grade by bonus points, when you are already positive

Grading

Certificate Criteria



Attention

Once you pass the quiz you will get a certificate!

Grading

Required Exams & Exercises

- Option A, VU: 3 exercises & 2 programming exams & written exam
- Option B, UE: 3 exercises & 2 programming exams
  - Your positive certificate for 182.711 VO Betriebssysteme "replaces" the written exam
- Option C, VO: oral exam
  - Register for exam in 182.737 VO Betriebssysteme für Elektrotechnik in TISS
- Option D, VO: oral exam
  - Register for exam in 182.737 VO Betriebssysteme für Elektrotechnik in TISS

Attention

All options: Register for 191.002 VU Betriebssysteme to do Lecture Mode Selection in TUWEL, and for all resources.

Getting Help

- All information on TUWEL
  (lecture slides, additional information, coding guidelines, lab hours of tutors)
- Problems with exercises?
  - Discuss with colleagues in TUWEL discussion forum
  - Meet tutors during lab hours (benefit from early feedback!)
  - Ask early. Do not expect timely help if you ask shortly before submission deadlines.
- Organisational matters
  - If it concerns all: TUWEL discussion forum
  - If it concerns you personally: Send an e-mail to
    `lva-betriebssysteme@tuwien.ac.at`
    Only accepts e-mails from TU Wien addresses!

Conclusion

Important:

- Registration in TISS (preferably today!)
- Lecture Mode Selection in TUWEL
- Fetch InfLab account online
- Start with the exercises on time

We wish you great success in the course!