

# Formal Methods in Computer Science

UE 185.A93 WS 2019/20

## General Information

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# UE Formal Methods in Computer Science

Complementary Course for VU 185.291 Formale Methoden der Informatik

- Same Prerequisites as lecture.
- Attendance of the lecture is highly recommended. The explanations given in the lecture are important for understanding the intuition. Self-study without these explanations may turn out very hard!
- UE is compulsory for Computer Engineering, optional for others.

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## Goals

- Understand the intuition of the basic concepts and results of formal methods in computer science.
- Apart from the actual contents taught in the courses, an important goal is to train the abstract, formal and logical understanding.

# Lecturers

Team of lecturers from different research groups



Wolfgang Dvořák



Laura Kovács



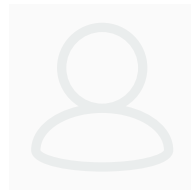
Uwe Egly



Florian Zuleger



Thanh Hai Tran



Jens Katelaan

# Overview

## Organization:

- The course is organized in four blocks.
- For each block there is an exercise sheet/mini project.  
    ↪ 15 – 20 h of work for each
- Solutions will be graded, and students receive feedback.
- Classes are at Tue 8:15 - 9:45 in 8 Pötzl HS (check schedule)
- We use TUWEL to organize the course.
  - Different from the lecture's TUWEL course.
  - Course material is provided there.
  - Solutions must be submitted there.
- Registration in TISS is required!

# Communication

## Language:

- The default language of this course is English.
- Solutions to exercises should be submitted in English.

## Information and communication:

- in class (ask questions)
- TUWEL will be the main platform of information and communication.
  - communication via TUWEL forum only
  - additional material is stored/linked in TUWEL

# Schedule

## Block 1

**Topics:** Complexity theory, Reduction of problems

**Lecturer:** Wolfgang Dvořák

**Schedule:**

- Oct 15: Presentation of the first exercise (class)
- Nov 4: 1st exercise due
- Nov 12: Discussion of solutions (class)

# Schedule

## Block 2

**Topic:** Satisfiability problems

**Lecturer:** Uwe Egly

**Schedule:**

- Nov 5: Presentation of the second exercise (class)
- Nov 25: 2nd exercise due
- Dec 10: Discussion of solutions (class)



# Schedule

## Block 3

**Topic:** Deductive Verification of Programs

**Lecturers:** Laura Kovács, Jens Katelaan

**Schedule:**

- Nov 26: Presentation of the third exercise (class)
- Dec 16: 3th exercise due
- Jan 14: Discussion of solutions (class)

# Schedule

## Block 4

**Topic:** Formal verification based on model checking

**Lecturers:** Florian Zuleger, Thanh Hai Tran

**Schedule:**

- Dec 17: Presentation of the fourth exercise (class)
- Jan 13: 4th exercise due
- Jan 21: Discussion of solutions (class)

# Assessment

- 4 blocks (exercise sheets).
- Each block graded by the responsible lecturer(s).
- max. 15 credits per block.
- You get a certificate if you hand in at least one solution.
- Final mark is by the sum of credits.

## Marks

< 30 credits	Nicht Genügend (5)
30 – 35.5 credits	Genügend (4)
36 – 41.5 credits	Befriedigend (3)
42 – 47.5 credits	Gut (2)
48 – 60 credits	Sehr Gut (1)

# Questions?

Register for the course in tiss !!!