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# Administrativa

14 October 2025

Prof. Dr. Sebastian Wild

# Goals for Today

- ▶ give you some detail on **what** this module covers
- ~~ so that you can decide whether to keep it
  - ↑ if it is an elective module for you

Efficient Algorithms / Effiziente Algorithmen

- ▶ inform you about **how** EA is run
- ▶ inform you about how EA is **assessed**

# Welcome to CS 566 – Efficient Algorithms

► Dozent: Prof. Dr. Sebastian Wild  
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[wild@informatik.uni-marburg.de](mailto:wild@informatik.uni-marburg.de)

Betreuer: Nikolaus Glombiewski  
[glombien@informatik.uni-marburg.de](mailto:glombien@informatik.uni-marburg.de)

Tutor: Hannes Feil [feilh@students.uni-marburg.de](mailto:feilh@students.uni-marburg.de)

► Module website: [www.wild-inter.net/teaching/ea](http://www.wild-inter.net/teaching/ea)  
→ your first address for any infos on CS 566



► *Campuswire*: collaborative Q&A (more on this later)  
**also used for announcements**  
→ please register via link from the ILIAS announcement  
<https://campuswire.com/p/G1B550BF9>

PIN 3740

► *Slido*: student response system for formative feedback → bring a smart device to class!  
► Final mark: 100% final exam (Klausur)  
Zulassungsvoraussetzungen zur Klausur: 50% of points from exercise sheets

# A Note on Languages

- ▶ Module is mostly in German
  - ▶ in particular examinations
  - ▶ except as prerequisite for English MSc admission  
If that's you, stay tuned.  
I'll come to that!
- ▶ some written material in English
  - ▶ in particular slides
- ▶ Why?
  - ▶ English is the *lingua franca* of our time
    - ~~ you profit from exposure
  - ▶ people (=future employers!) will assume you can at least read
  - ▶ in young computer science,  
technical terms are already English
- ▶ Also, it's 2024! AI tools bridged lots of language gaps 🤖  
Linguee & DeepL, Google Translate, ChatGPT



# CS 566 for Credit vs. for Conditional Admission

## ► (Normal / for-credit version of) CS 566:

- ▶ Taken by students in various undergrad or masters programs
- ▶ Compulsory for German *BSc Data Science*
- ~~> Offered in German (including exams)

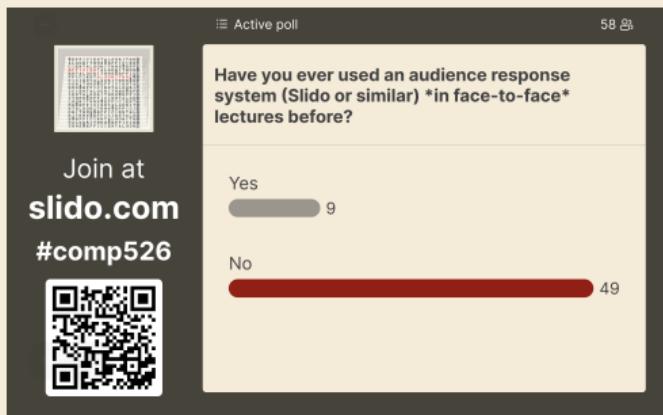
## ► CS 566 for conditional admission (into *MSc Data Science*):

- ▶ full program in English, international students
  - ~~> Separate English examinations
    - ▶ formally separate from CS 566
    - ▶ examination is pass/fail only
    - ▶ **If required for admission, you cannot also take CS 566 for credit.**
  - ▶ Examination based on English self-study materials (not full lectures) ~~> module website
  - ▶ Welcome to attend lectures, and tutorials (space permitting)
  - ▶ Join the Campuswire Q&A and team up with others to study!
- ~~> Required to do the conditional admission version?
- Join us **tomorrow (Oct 15), 4pm, Hörsaal A in H|05** for additional info!

# Audience Response System: *Slido*

- ▶ Goal: Collect immediate, formative feedback
  - ▶ Stay focused and engaged! (“active learning”)
  - ▶ Quick feedback (for you individually) if you are on track.
  - ▶ Quick feedback (for me) whether (most of) you are on track.
- ▶ Slido has 2 useful features:

## 1. Quick Polls



## 2. Audience Questions

The screenshot shows the Q&A section with two questions. Sebastian Wild asked, "How can I ask a question in class?", and an anonymous user responded, "I'm a bit unsure, I'd rather ask this anonymously." It includes a QR code for joining and the hashtag #comp526.

User	Question	Responses
Sebastian Wild	How can I ask a question in class?	0
Anonymous	I'm a bit unsure, I'd rather ask this anonymously.	0

# My approach to lectures

**My conclusions** (from years of own experience, a pandemic, and observing others)

irrespective of the mode of delivery!

0. Good explanations (intuitions!) and well-structure material are the most important aspect.
1. **Synchronous (live) lectures** beat videos in keeping up with class. (but recordings are great!)
2. Only a small minority of students asks questions in class. ↗ other backchannels
3. **Interaction** makes content memorable (and keeps brains awake!) ↗ *Slido* tasks

# Components of EA

## Slido questions

immediate feedback  
simple questions

## Lectures

new material  
discussions  
big picture

## Tutorials

get practice solving problems  
solve deep questions

## Campuswire

collaborative Q&A knowledge base

## Exam Question Gallery

collaborative pool of potential and past exam problems

## Final Exam

summative assessment  
of your acquired skills

# Overview of the module

## Goals:

- ▶ build / enhance your toolbox of algorithmic methods and techniques
  - ~~ here: focus on practical methods
- ▶ enable you to reason about and communicate algorithmic solutions
  - ~~ level of abstraction, proofs, mathematical analysis, vocabulary
- ▶ enable you to apply, combine and extend methods

## Units: (preliminary plan)

- |                                       |                                    |
|---------------------------------------|------------------------------------|
| <b>0.</b> Administrativa              | <b>8.</b> Clever Codes             |
| <b>1.</b> Proof Techniques            | <b>9.</b> Graph Algorithms         |
| <b>2.</b> Machines & Models           | <b>10.</b> Parallel Algorithms     |
| <b>3.</b> Fundamental Data Structures | <b>11.</b> Greedy Algorithms       |
| <b>4.</b> Efficient Sorting           | <b>12.</b> Dynamic Programming     |
| <b>5.</b> Divide & Conquer            | <b>13.</b> Text Indexing           |
| <b>6.</b> String Matching             | <b>14.</b> Compressed Text Indices |
| <b>7.</b> Text Compression            | <b>15.</b> Range-Minimum Queries   |

# Assessments

- ▶ **Module mark** = mark in final written exam
- ▶ **Final exam**
  - ▶ written examination
  - ▶ Preliminary dates:
    1. 25 Feb 2025
    2. 26 March 2025
- ▶ To pass the module, you have to pass either of the exams
  - ▶ If you pass the first exam, you *cannot* take the second to improve your mark
- ▶ **Exam Material:** everything covered in lectures (except marked “*notin* exam”) everything covered in **tutorials** and exercise sheets
- ▶ **Admission requirements to final exam**
  - ▶  $\leq 2$  exercise sheets with 0 points in your group  
(not handing in implies 0 points)
  - ▶  $\geq 50\%$  of available points in sum over all exercise sheets
  - ▶ We plan with 12 marked exercise sheets in total

stay tuned ...

# Tutorials

- ▶ *Exercise Sheet* (Übungsblatt)
  - ▶ released on module website every **Friday**
  - ▶ to be **handed in**
    - ▶ until 19:00 the Friday after release  
(1 week to work it out)
    - ▶ in **groups** of 3 students
    - ▶ online on ILIAS
  - ▶ practice problems (some old exam questions, too!)
  - ▶ enhancement problems
- ▶ in *tutorials*
  - ▶ discussion of solutions (in the week after hand-in)
  - ▶ work on **in-class exercises** (Präsenzaufgaben)
    - ▶ to prepare you for next marked exercise sheet
    - ▶ *not* handed in or marked

*Use the tutorials to practice your thinking!* = Don't cheat yourself!

*"If I tell you to run 10km,  
it isn't because I want you  
to be 10km away from me."*

# Generative AI

We live in exciting times!

LLMs (ChatGPT etc.), Media generators  
(Midjourney etc.), GitHub CoPilot, ...

- ▶ Generative Artificial Intelligence (GenAI) is amazing!
  - ▶ full of flaws (hallucination, bias, copyright, data privacy, cost, ...)
  - ▶ and yet ... often helpful, surprisingly versatile
- ▶ Why not use for everything?
  - ▶ Need for *deeply skilled* humans here to stay (for now anyways)
  - ~~ Skill comes from practice! (We still teach mental arithmetic in primary school!)



~~ For our assessments:

*Don't take away the thinking! = Don't cheat yourself!*

assessments designed for upskilling *humans*

## Acceptable use:

- ▶ preparatory research  
(≈ Wikipedia)
- ▶ proof reading  
(spelling, grammar)

## Unacceptable use: (not exhaustive!)

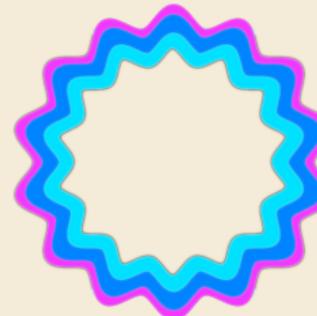
- ▶ use generated parts w/o acknowledgment & citation
- ▶ tools to paraphrase others' work to pass as own
- ▶ generated parts with inappropriate prompt,  
e. g., "write me a conclusion for this essay"

# What is Campuswire?

Campuswire is an online space for lectures

1. ***Class Feed:*** questions on material
2. ***Chatrooms:*** structured social space  
similar to Slack or Discord

We use Class Feed for **collaborative Q&A**



Join via link on website:  
[campuswire.com/p/G1B550BF9](https://campuswire.com/p/G1B550BF9)

Use in browser  
[campuswire.com/c/G1B550BF9](https://campuswire.com/c/G1B550BF9)  
or via app  
[campuswire.com/download](https://campuswire.com/download)

- ▶ Ask *public* questions
  - ▶ “Why is  $\lg(n^3) = \Theta(\log n)$ ? ”
  - ▶ “Will there be classes on public holidays? ”
- ▶ ***Answer*** your peers’ questions!
  - ▶ Know the answer? → put it in!
  - ▶ Know a partial answer? → Post it, others can build on it!
  - ▶ Found a helpful answer (or question)? → Vote it up!
- ▶ Ask *private* questions
  - ▶ if your question might contain “spoilers” for assessments
  - ▶ if you feel the answer is only relevant for you personally

# How to Campuswire

- ▶ Our goals for Campuswire Q&A:
  1. **be fair** Same answers for everyone
  2. **learning by teaching** YOU will answer most questions!
  3. **be inclusive** posts can be anonymous; you can take your time to ask and answer
- ▶ Therefore, we instructors will
  - ▶ redirect you to Class Feed for questions,
  - ▶ wait before answering, to give other students a chance to answer first,
  - ▶ explicitly mark good answers (and questions!) as such

# ILIAS

- ▶ Official announcements
- ▶ Hand-in of exercise sheets
- ▶ Announcement of marks

... what can be on the public module website  
goes to the public module website!



# Exam Question Gallery

- ▶ We jointly collect a **pool of exemplary exam questions**.
  - ▶ *You add your questions to it.*
  - ▶ I will give feedback which questions are realistic.
  - ▶ *... and we will pick one if there's sufficiently many good ones!*
- 
- ~~ great resource for exam preparation
  - ~~ We will answer selected questions in recap session (last week of classes)
- 
- ▶ Engage in this early and pose great questions
  - ▶ Start today: <https://tiny.cc/ea-exam-question-gallery>

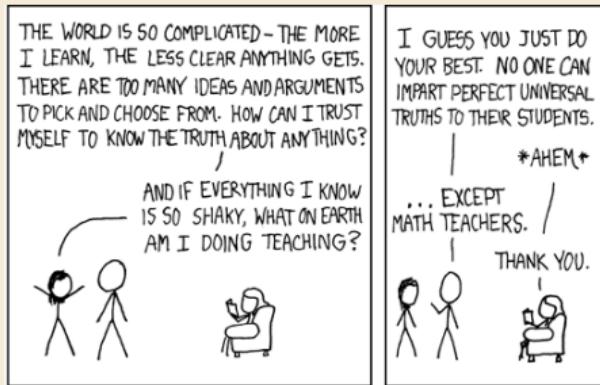
# Philosophy of the module

CS 566 is part of a *scientific* course.

Less . . .



. . . and more



- ~~ Focus on *universal truths* of practical algorithms
  - ▶ model of reality (machines, programs, data)
  - ▶ quantitative predictions
  - ▶ validate model in experiments
- ~~ Need some math techniques. (up next)