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Administrativa

22 April 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

Advanced Algorithms

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

Welcome to CS 627 – Advanced Algorithms

- ▶ Dozent: Prof. Dr. Sebastian Wild
Mehrzweckgebäude, Raum 05 D 16
`wild@informatik.uni-marburg.de`
- ▶ Tutor: Mohammed Omer `Omerm@students.uni-marburg.de`
- ▶ Module website: www.wild-inter.net/teaching/advalg
→ 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/G8A144D4D> PIN 9631
- ▶ *Slido*: student response system for formative feedback → bring a smart device to class!
- ▶ Final mark: 100% final exam
Admission to exam: 50% of points from exercise sheets & mini-seminar

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 of Slido. It includes a QR code for joining at [slido.com](#) with the hashtag #comp526. Two questions are listed: one from Sebastian Wild asking how to ask a question in class, and one from an anonymous user expressing uncertainty about asking anonymously.

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

Assessments

- ▶ **Module mark** = mark in final exam
- ▶ **Final exam**
 - ▶ written or oral examination
- ▶ **Exam Material:** everything covered in lectures (except marked “~~€~~ exam”) everything covered in **tutorials** and exercise sheets
- ▶ **Admission requirements to final exam**
 - ▶ ≤ 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
 - ▶ successful participation in NP-completeness mini-seminar

stay tuned ...

NP-Completeness Mini-Seminar

► Goals

- ▶ Refresh NP-hardness and reductions
- ▶ Work with primary literature
- ▶ Practice writing and presenting formal proofs

► Deliverables

1. Written formal proof with full details
Must include two worked examples of the reduction (one Yes-instance, one No-instance)
2. Video presentation explaining your problem and the reduction
3. 3 short peer-review reports about other groups' submissions

► Organization

- ▶ During weeks 2 and 3
- ▶ Groups of 3–5 students
- ▶ On reductions from Richard Karp's original 21 NP-hard problems

Tutorials

- ▶ *Exercise Sheet* (Übungsblatt)
 - ▶ released on module website
 - ▶ to be **handed in**
 - ▶ handin on ILIAS
 - ▶ in **groups** of 3–4 students
 - ▶ practice problems
 - ▶ enhancement problems
- ▶ in *tutorials*
 - ▶ discussion of selected solutions
- ▶ **Marking**
 - ▶ Mainly for your feedback
 - ▶ Serious attempts will yield partial credit even if unsuccessful

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, DeepSeek etc.),
Media (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!)



assessments designed for upskilling *humans*

~~ For our assessments: ***Don't take away the thinking! = Don't cheat yourself!***

Acceptable use:

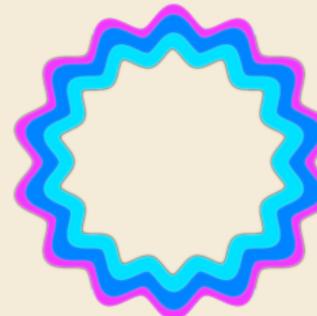
- ▶ preparatory research
(≈ Wikipedia)
- ▶ proof reading
(spelling, grammar)

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**

- ▶ 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

Join via link on website:
campuswire.com/p/G8A144D4D

Use in browser
campuswire.com/c/G8A144D4D
or via app
campuswire.com/download

How to Campuswire

- ▶ Our goals for Campuswire Q&A:
 1. **be fair** Same answers for everyone
 2. **learning by teaching** *You* should answer most questions (collectively)!
 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)
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- ▶ Engage in this early and pose great questions