

Welcome to COMP 526 – Applied Algorithms

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- ▶ Module website: www.wild-inter.net/teaching/comp526
→ your first address for any infos on COMP 526

- ▶ Piazza: collaborative Q&A (more on this later)
also used for announcements
→ please register via link on website (<https://piazza.com/liv.ac.uk/spring2020/comp526>)
- ▶ Clickers: student response system for formative feedback
please bring your smartphone, laptop, etc. to class
- ▶ Final marks: 75% final exam + 25% assessments

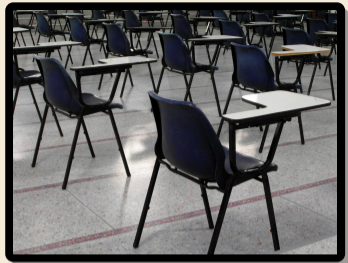


But before we start ...



Prior knowledge survey

- ▶ not graded
- ▶ anonymous
- ▶ formative assessment
 - ▶ helps me to tailor teaching to needs
 - ▶ helps you to know where you and others stand
- ▶ Questions cover various topics, some or tough



I don't expect you can answer everything!

We don't need everything for COMP526!

Overview of the module

Goals:

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

Units:

- | | |
|--------------------------------------|---|
| 0. Administrativa & Proof Techniques | 5. Parallel String Matching |
| 1. Machines & Models | 6. Text indexing |
| 2. Fundamental Data Structures | 7. Compression |
| 3. Efficient Sorting | 8. Codes |
| 4. String Matching | 9. Group Testing & Streaming Algorithms |

Components of COMP 526

Clicker questions

immediate feedback
simple questions

Lectures

new material
discussions
big picture

Tutorials

practice problem solving
deep questions, details

Piazza

collaborative Q&A knowledge base

Video presentation

disseminate knowledge

Exam question pool

consolidate knowledge

Programming tasks 1 & 2

find & realize creative solutions

Assessments

$$\text{final grade} = \frac{3}{4} \cdot \text{exam grade} + \frac{1}{4} \cdot \text{ongoing assessment grade}$$

The ongoing assessments consist of

1. Video presentation
2. Programming task 1 (more on that later in the term)
3. Programming task 2 (more on that later in the term)
4. Participation in clicker questions
5. **Collective bonus points** for online participation
 - ▶ good questions and answers on Piazza
 - ▶ helpful sample exam questions

Σ total points

but 80% required

to get 100%

for ongoing assessment

What are clickers? Why use it?

- ▶ I use “clickers” as short term for any *student response system*
We will use PINGO, a free web-based system.
- ▶ 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) if (most of) you are on track.



↪ grade for *participation*, not for correct answers!

Let's try it!



pingo.upb.de/622222

Clicker Question



Have you ever used clickers (or similar systems before)?

A Yes

B No

pingo.upb.de/622222

What is Piazza?

Piazza is a *collaborative question & answer platform*

- ▶ Ask *public* questions
 - ▶ Why is $\lg(n^3) = \Theta(\lg n)$?
 - ▶ Will there be classes during Carneval?
- ▶ **Answer your peers' questions!**
 - ▶ Know the answer? → put it in!
 - ▶ Know a partial answer? → Post it, others can augment it!
 - ▶ All answers are *collaborative* efforts (a bit like a Wiki)
- ▶ Ask *private* questions
 - ▶ if your question might contain “spoilers” for assessments
 - ▶ if you feel the answer is only relevant for you personally



How to Piazza

▶ My goals for Piazza:

1. **be fair** Same answers for everyone }
2. **learning by teaching** YOU will answer most questions!
3. **be inclusive** posts can be anonymous, take your time

▶ Therefore, we instructors will

- ▶ redirect you to Piazza for questions,
- ▶ wait before answering, to give other students a chance to answer first,
- ▶ explicitly mark good answers (and questions!) as such

▶ You will collectively earn **bonus points**:

- ▶ 10 points for each good question
- ▶ 20 points for each good answer
- ▶ 10 extra points for each good answer that did not require clarification from us

Video Presentation

▶ Goals:

- ▶ engage with research literature
- ▶ explore cutting-edge research in one topic
- ▶ try out novel ways of disseminating knowledge

▶ Schedule:

- ▶ **this week:** form teams of 3–4 students
- ▶ **next week:** select an article
 - ▶ recommendation:



COMMUNICATIONS
COMMUNICATIONS
OF THE
ACM

ask me!

a *contributed article, review, practice, or research highlight*
from 2019

- ▶ or: other recent paper in reputable journal/conference with connection to algorithms
- ▶ **till 1 March:** present article in video presentation and upload it!
alternatively, create an interactive website

Pool of Sample Exam Questions

- ▶ We jointly collect a **pool of exemplary exam questions**.
 - ▶ *You add **your** questions to it.*
 - ▶ I will give feedback which questions are realistic.
- ~> up to 40 bonus points per good question
- ~> great resource for exam preparation
- ~> I will answer selected questions in recap session (last week of reading period)
- ▶ Engage in this early (before exam submission deadline!) and pose great questions
... I might be tempted to use your question for the actual exam! —
 - ▶ Start today: <https://www.overleaf.com/6392268671zsrnwsthqynt> }

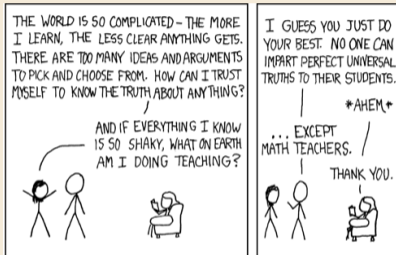
Philosophy of the module

COMP 526 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.