Diskmath Week 2

Emil Straschil

Hello

I am Emil.

I have a **website**:

emils.site (yes thats the URL)

repo: https://github.com/emil3tr/emil3tr.github.io

All materials will be uploaded there.

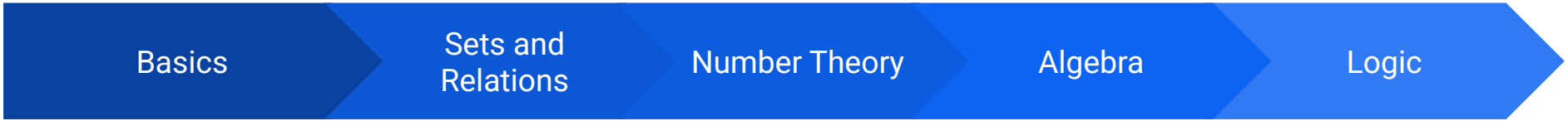
Any Feedback / Questions / Wishes / … ?

→ estraschil@student.ethz.ch

→ “Emil” (floxi4) on dinfk-discord

→ Diskmath-questions: ask here so others can benefit (:

Where are we right now?



- Abstraction
- Formulas
- Statements
- Prop. Logic
- Pred. Logic
- Proof Patterns

- Sets
- Set Operations
- Relations
- Equivalence
- Partial Order
- Functions
- Countability

- Division
- Primes
- Modular Arith.
- Diffie-Hellman

- Monoids
- Groups
- Euler Totient
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- Rings
- Polynomials
- Finite Fields
- Err. Corr. Codes

- Proof Systems
- Logic
- Calculi
- Res. Calculus
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Today

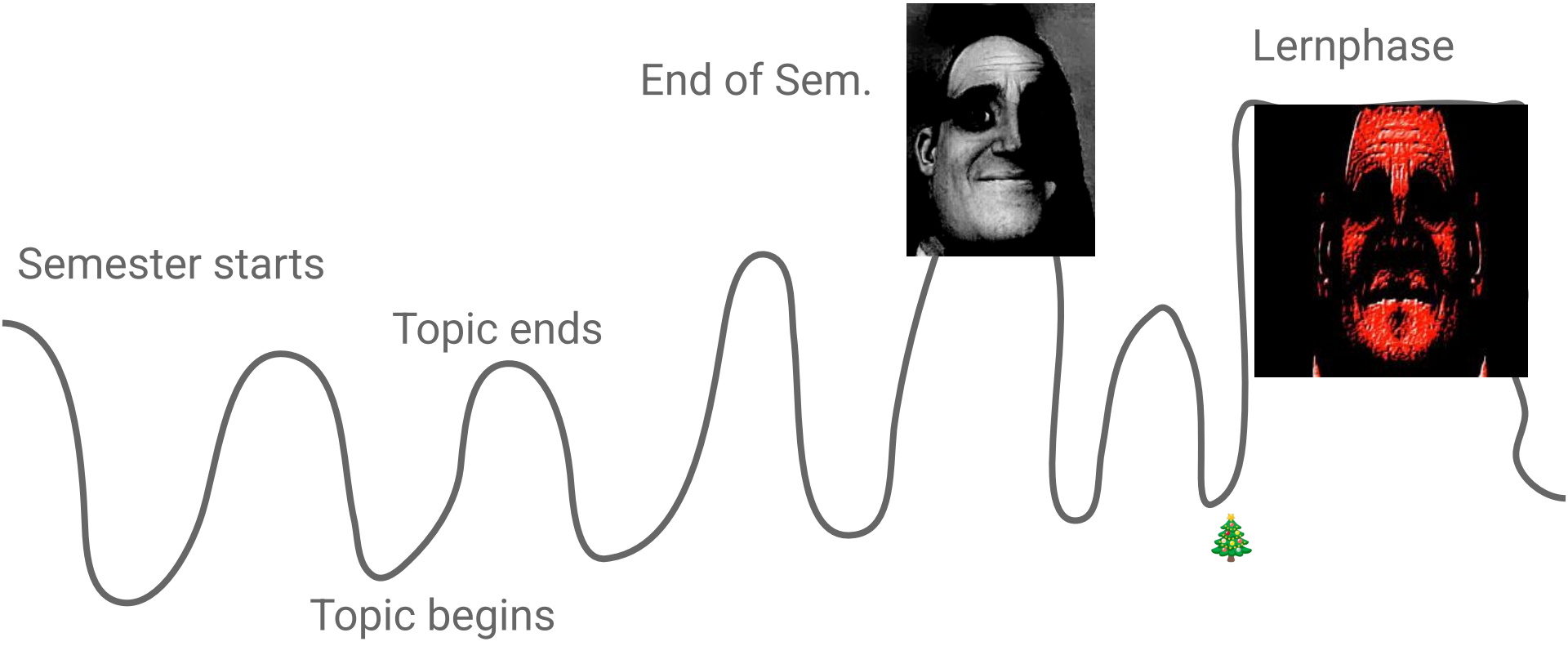
Hope you had a good start!

1. Questions?
2. Introduction
3. How to Study
4. Plan for Exercise Sessions
5. Last Exercise Sheet Review
6. Kahoot
7. Theory Recap
8. Exercises

Questions?

About Diskmath...

Diskmath Semester Stress Level



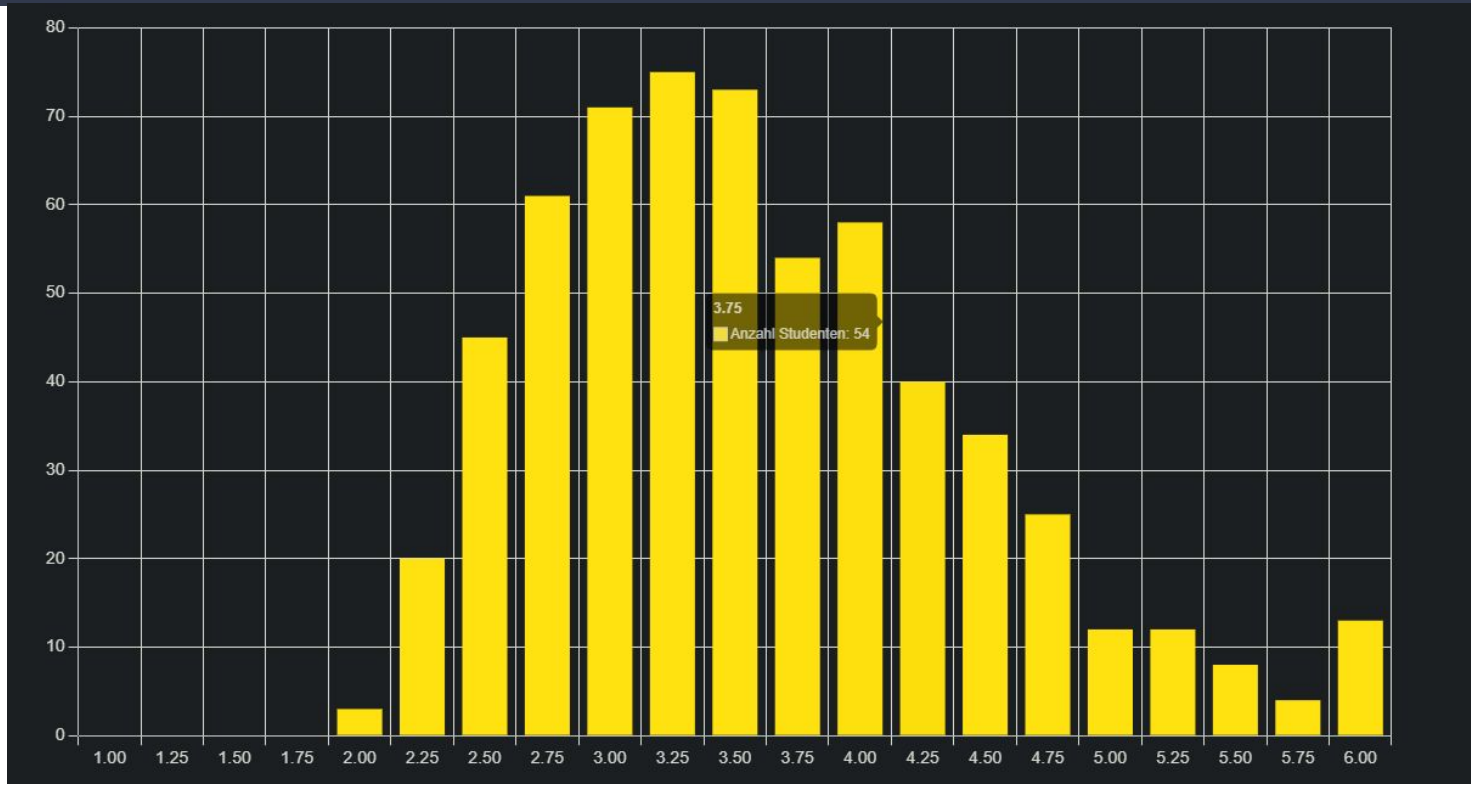
You are not stupid

Grades:

~40% = pass

→ not knowing = normal

→ ASK QUESTIONS !!!



BUT: You CAN do it!

“This is difficult, so I cannot understand it.” = **WRONG**

BETTER: “This is actually not that hard, I just need to find a way to understand it.”

One Week of Diskmath

Mo	Di	Mi	Do	Fr	Sa / So
Lecture Session here **ask questions**		Lecture	hand in serie	+Serie	**start Serie**
READ THE SCRIPT, discuss with colleagues					

ASK QUESTIONS!!

You need to prove stuff in the exam!

This requires understanding of that stuff.

Best way to gain deep level of understanding? → Ask and answer questions to / from colleagues.

Study Tips

The Obvious...

- go to the lectures
- go to the exercise classes
- do the homeworks
- read the script
- ask questions (:

It’s your first semester, try to complete it “as intended”. You will find your own rhythm after some time.

My Tips

- Read the script **before** the lecture
- Take a peek at old exams
- Discuss together
- But solve exercises alone

- Explain to your friends
- Explain to yourself
- Work on paper (or tablet)

About Exercise Sheets

Try every exercise!

→ Stuck? Wait some days. Don’t skip it, ask questions!

→ Really stuck? Skip it, don’t waste time

→ ChatGPT can be helpful, but real humans are better

→ Look at the solutions

→ **Do it again ON PAPER** even if you saw the solution

Handing in Solutions

- Hand-in is on moodle
- **Hand in the bonus exercise** to get bonus points!!
- No need to hand in anything else. Need feedback → tell me
- Leave enough space for corrections and feedback
- readable handwriting = very happy TA (:

Corrections

My view: Discussion helps more than long comments
→ want longer comments? tell me!

There is a grading scheme, it’s not all me.

I make mistakes too!
→ anything unclear? tell me!

Plan for my sessions

I like the blackboard

- The script is amazing, read it!
- Otherwise I will provide a summary on the website / link to one
- discmath.ch contains a lot of good content
- You will find A LOT of diskmath material online

→ Everything you need to know for the exam is either in the script, or (linked) on my website, you don’t need to take notes

My Website

Everything will be uploaded there
+ anything useful I have for you

Take a look at the links on today's session page

Reading Questions

- Little idea of mine
- Give me feedback!

Plan for the sessions

Theory Recap (~25mins)

Quiz / Questions (~25mins)

Break (~15mins, as needed)

Exercises, Tutorials (variable)

Preview, Common Mistakes (~10mins)

Feedback please (:

- **YOU** should benefit from this session, so make sure you do!
- NOTHING is fixed, tell me what you need, like, hate, …
- Write me a mail, talk to me!

This is my first time too.

→ I know my stuff, trust me. Tell me if anything is unclear, I might make mistakes too

I love Diskmath (:

And when I talk about things I love, I might talk very fast. So tell me to slow down if it is too fast.

And finally...

ASK QUESTIONS!!!!!

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ASK QUESTIONS!!!!!

Every question is valuable and helps you!

If I don’t know something? Great! That was probably a good questions. (I will get back to you)

Okay, let’s do Diskmath…

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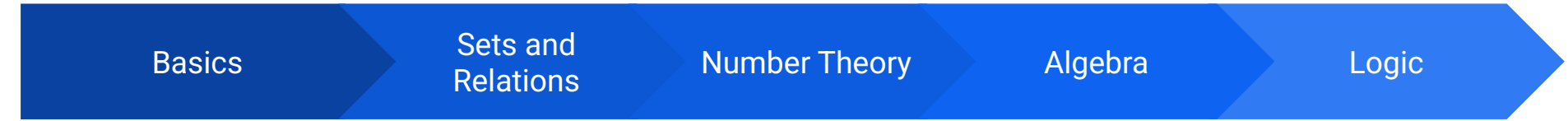

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Last Exercise Sheet

Recap of Last Week

Abstraction

Important, but don’t worry about it now.

You won’t need to divide chocolate in the exam

Formulas and Statements

Statement

is true or false!

uses $\Rightarrow$, “and”, “or”, language

Formula

is like a function

uses $\rightarrow$, $\wedge$, $\vee$, A, B

evaluates to a truth value for an interpretation

When do I need to be exact?

When we do logic, you need to be exact.

Later on, something like “I like apples $\wedge$ I like trees” is fine

Now? **Be exact!**

Proving Equality of Formulas

Formula is small? → Compare truth tables for all cases

Longer Formula? → Use the rules from Lemma 2.1 to refactor it.

Be exact with the rules! Commutativity is also a rule, don't just assume it. Be precise for now, it's a good habit.

Kahoot

Theory Recap

Exercises

Outlook