Complex Analysis

This lecture will be recorded. If you do not want your face in the recording, please turn off your camera. If you do not want your voice in the recording, please participate using the chat.

First, a poll

I set up Campuswire for asynchronous questions, but CEMS uses Piazza. Should we keep Campuswire or switch?

A. My other classes use Piazza and it's annoying to have both

B. I prefer Piazza but whatever

C. I prefer Campuswire but whatever

D. ??? or Don't care either way

What was I thinking?!?

- We learn by talking to others, but connecting with peers and teachers is harder remotely.
- We need to give flexibility and grace to each other this semester.
- Mastery based grading fosters a growth mindset, which is proved to be linked to better learning outcomes.
- In particular it bridges much of the sex and race achievement gaps in mathematics.
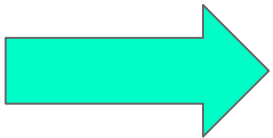
Let's jump into this together!

What we master: Learning Objectives

The material will be divided into <u>learning objectives</u>.

Each question you solve will cover some learning objectives, giving you the chance to get a score on this objective.

The best score you get on a given objective during the semester is your score on this objective.

You will have at least three opportunities to solve a problem on each objective.

Example

Let $z = -1 + 2i$ and $w = 5 + i$. Compute $\overline{w} + z$.

➡️ This covers both the "identify and apply the rules of arithmetic for complex numbers" objective and the "prove and use properties of the conjugate" objective.

You would receive a score out of five for each objective when solving this problem.

How we master these objectives

Before class on Monday and Wednesday you will solve some warm up problems to get acquainted with this week's learning objectives.

In class on Monday and Wednesday we will do peer instruction and solve harder problems together.

On Friday you will turn in homework; this is how you can get a score on the learning objectives.

Learning boost: Metacognition

Metacognition is the act of thinking about one's thinking.

Metacognition has been shown to improve learning outcomes.

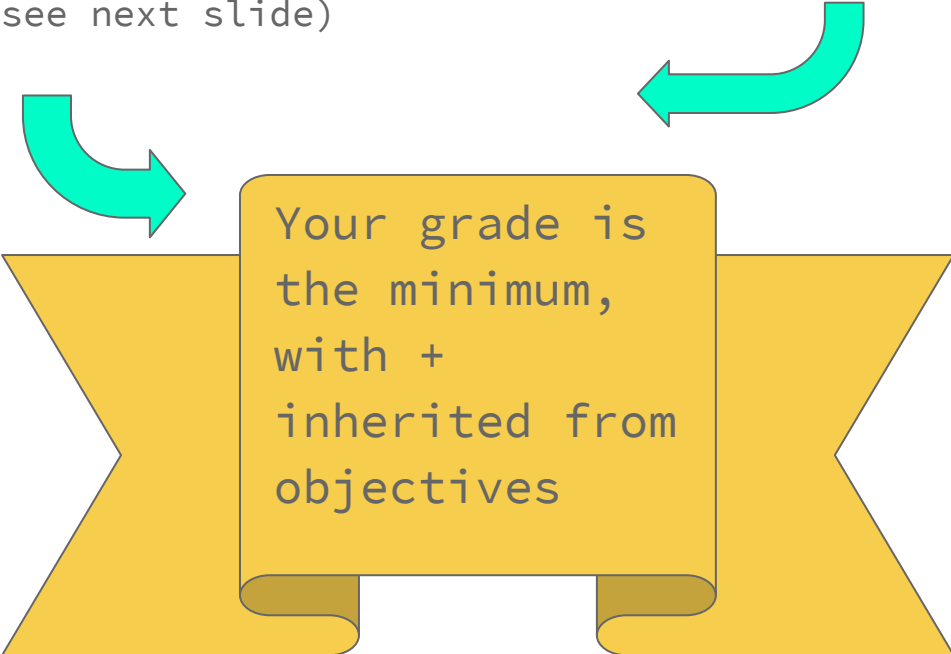We will engage in metacognition this semester.

Your complex analysis grade

Objectives grade

(see next slide)

Warm up grade

A: turn in 12 out of 20
B: turn in 8 out of 20
C: turn in 4 out of 20
D: turn in 1 out of 20

Your grade is the minimum, with + inherited from objectives

Meta-cognition grade

A: Turn in 8 out of 12
B: Turn in 6 out of 12
C: Turn in 3 out of 12
D: Turn in 1 out of 12

For grad credit:

→ Must attempt all problems

→ Grad objectives

Your objectives grade

Each objective you attempt will get a score of 1, 2, 3, 4, or 5.

At the end of the semester, if you have any 2s you will have a B+ or lower, and if you have any 1s you will get a grade of C+ or lower.

A+: mostly fives, few fours
A: mostly fours, maybe 3-4 threes
A-: mostly fours, few threes
B+: half fours, half threes
B: mostly threes, few twos
B-: half threes, half twos
C+: mostly twos, maybe 3-4 ones
C: mostly twos, a few ones
C-: half twos, half ones
D: all objectives attempted

Objective scores

5: perfect work -- arithmetic mistakes only

4: shows understanding of the concepts

3: engages with the ideas of the objective

2: engages with the ideas of the objective, but shows fundamental misunderstandings

1: the objective was attempted

Examples

If you get an A on metacognition, an A- on objectives, and a B on warm ups, you will get a B in the class.

If you get an A on metacognition, an A+ on objectives, and a B on warm ups, you will get a B+ in the class.

If you get an A on metacognition, a B- on objectives, and a B on warm ups, you will get a B- in the class.

If you get an A on metacognition, a B+ on objectives, and an A on warm ups, you will get a B+ in the class.

That was a lot!

For Wednesday (before class):

⟹ Prepare an introduction slide for yourself (including uploading a picture to Teams)

⟹ Turn in a "practice homework" to Gradescope

That's all for today!