BILL, RECORD LECTURE!!!!

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Welcome to CMSC 250: Discrete Structures
Today: Admin, Intro to Discrete Structures
Admin
Necessary Administrative

Course Webpage:
Necessary Administrative

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1. Taught by William Gasarch.
2. TAed by Emily Kaplitz.
Necessary administrative stuff

- Course Website: We will post HW and Slides there.
- We will post recordings to Elms.
- Gradescope: You will submit HW there.
- Gradescope: We will grade HW there.
- Regrade Requests due within a week of the HW being graded.
- Grades on Elms.
- Piazza is great for asking questions.
How to Get Contact Us

▶ Ask questions in Lecture.
▶ Ask questions in recitation.
▶ Piazza
▶ Office hours
  Bill-TuTh 11:00-12:15 2:00-3:15 in IRB 2242.
  Emily-M 10:00AM-11:00AM at IRB 1266.
▶ Email us- put 250 on the subject line.
What You Need For This Class

- CMSC 131 (First Prog Course), Good Numbering: 131 is for 1st Prog Course.
- Math 141 (Second Calc Course), Bad Numbering: 141 is for 2nd Calc Course.
- A love of mathematics. Or at least a like of mathematics.
- You are in some Honors Prog or have Permission from Dept.
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1. Read notes and slides before class. (Caution: Some of the slides are in progress. They will be labeled as such. You should not read those, they may contain fake news.)
2. Ask questions on Piazza and/or bring questions to class.
3. This course will be taped so you can catch up or review. However, coming to class has the following advantages:
   3.1 You can ask questions.
   3.2 If you miss class and don’t watch the video before the next class, you could fall far behind.
   3.3 Some people learn better in person.
   3.4 Recording might not always work (happens about twice a semester)
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- Due Monday **before** recitation begins. But see next item.

Dead Cat Policy:
Can submit HW Wed **before** recitation without penalty.

**WARNING:** YOU have an extension. HW solutions are posted Wednesday. So NO extensions past that.

We will keep track of your lateness NOT for grade, but for recommendation letters.
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What you say, what I hear:

You Say

I thought it was due at midnight!

I hear

Oh, so you submitted it Monday at midnight, then realized that the Dead-Cat Policy saved you. You are telling me that you appreciate the Dead-Cat Policy!

You Say

Oh, I forgot to hand it in on time but I can prove I did it on time because my computer time stamps my work.

I hear

Oh, so you forgot to hand it in Monday, then realized this, got it in on Wednesday before rec. You are telling me that you appreciate the Dead-Cat Policy!

I am not sure why you are telling me about time stamps, but, as the kids say, whatever.
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Textbook

**Required Text** None.

**Recommended Text** None.

**If you really want a text**

1. Essential Discrete Mathematics for Computer Science by Lewis and Zax. (Disclosure: Lewis was my PhD Advisor).

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There are also many resources on the web.
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You Can!

If for whatever reason you are falling behind in the class, or are having trouble with the HW, see us in office hours or you can make an appointment to see us! Either in person or on zoom.
Discrete Structures
Our Key question

Given a statement that you think is true, how do you establish that it is true?

1. In the Social Sciences
   1.1 Statistics (e.g., Does the level of education for women correlate with a country's prosperity?) Needs to control for other variables. And needs to be unbiased. And hard to know what-causes-what.
   1.2 Take a poll (e.g., Are you for or against gun control?). And again, needs to be unbiased.
   1.3 There are other ways as well.

2. In the Physical Sciences
   You can do controlled experiments.

3. In Mathematics
   We have the idea of proof! We can establish absolute truths in a way that neither Social Science or Physical Science can.

4. All of these fields are worthy endeavors if done right and honestly.
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Methods of Proof

1. Direct Proof
   Take premises and use reasoning to get conclusion.

2. Indirect Proof or Contradiction
   Assume OPPOSITE of what you want to do and get a contradiction.

3. Induction
   too much to talk about in this intro slide. It does allow us to prove for all statements.

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Why is this Course Relevant for Computer Science?

1. Some parts of this course are directly relevant: Circuits, Cryptography, Reasoning about conditional statements.

2. Some parts of this course are indirectly relevant: We teach you how to reason about numbers and sets. This will help you reason about algorithms and programs.


4. This entire course will give you mathematical maturity which will serve you well in computer science and in life.
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