

Lecture 0: Course Overview

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May 9, 2023

Overview

- Introduction
 - What is this course about?
 - What to expect from me?
 - What do I expect from you?
 - Guidelines

- Logistics
 - Structure of Lectures
 - Homework
 - Final Project
 - Student drop-in hours
 - Piazza

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This course aims to use the algorithmic lens to:

- explore several models of computation (deterministic, randomized, parallel, distributed, memory-efficient, online, interactive)
- expand your algorithmic toolkit (amortized analysis, use of randomness, dealing with NP-complete problems, etc.)

What to expect from me?

Here is what you can expect from me:

- Give lectures
- Provide homework which helps you understand the material better
- Be very present/interactive during student drop-in hours
- Do my best to have many and helpful problem solving sessions
- Help you with choosing your final project topic (grads only)
- Give feedback on you final project mid way (grads only)
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I care much more about your **learning** rather than your **grades**. I also care much more about your **exploration** of this vast field of algorithm design and analysis rather than **forcing on you** any opinion on what are the “important algorithms.” So I am trying to design a course which will reflect that.

What to expect from the TA and myself

- This class, albeit difficult, is not designed in an adversarial format
We are here to help you learn and grow, and we are very happy and excited to do so!
- Use us (and one another) as a resource for this class!
- Ask questions in class
- Come to office hours and ask questions
- Start your work early!! This has many benefits:
 - Allows you to ask us questions if you don't understand the homework problem statements
 - Your brain will be unconsciously working on the material
 - You have more chances to come to office hours and ask questions
 - You will minimize your stress of clutch-time homework solving (which is not great for your learning)
- Also use office hours for feedback on how to write solutions (this is also an important part of learning)

What do I expect from you?

If you are taking the class, I expect that you:

- Do the homework
- Participate in class (asking questions, correcting me, etc.)
- Always ask yourself: “why is this important? Why should I care?”
- Explore the topics, and/or some area that fascinates you!
- Always keep an open mind!
- Be kind to your classmates, to the TA and myself
- Participate a lot on Piazza (asking question, answering your classmates’ questions if you know the answer)
- Provide me feedback on how the course is going
- Let me know if any problems arise during the term, so we can help as soon as possible.

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There will be no participation points.

Guidelines for the course

Please read

`https://cs.uwaterloo.ca/~r5olivei/courses/2021-fall-cs466/
guidelines/`

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Purpose of Lectures and Homework

The purpose of a story is not to hold your attention, but to put you back doing your work, inner and outer.

A story is not for presenting some explicit meaning, and it is not for anyone's entertainment.

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The purpose of a lecture is not to exhaustively explain the entirety of a
concept,

but to give you a basic understanding of the material
and instigate your own exploration, of the material and of yourself.

The purpose of homework isn't to automatically repeat what was taught,
but for you to go a bit further in your understanding and (meta-) skills.

Homework

We will have 5 sets of homework for this class. See *assignments* section in <https://cs.uwaterloo.ca/~r5olivei/courses/2023-spring-cs466/homework/>.

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- June 2nd
- June 16th
- July 7th
- July 24th

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Each homework will have n questions, where $n \sim 6$ and you will be required to turn in only $n - 1$ of them.

If you turn them all in, we will take the best $n - 1$ grades.

Please list sources used and collaborators.

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In addition, I will post practice problems (won't be graded/don't turn in) which are selected so that you can get a better understanding of the material. I am a strong believer that we only *learn by doing*.

Homework Submissions

- We will use crowdmark for homework submissions
- We strongly recommend you to write your solutions in LaTeX.
- If you are handwritting your solution, please:
 - 1 Write in a *clearly legible* manner
 - 2 Take a very good picture of your solution (one where we can clearly read and understand what you wrote)
 - 3 Illegible solutions will be given a *zero* mark

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 - 3 Illegible solutions will be given a *zero* mark
- Solutions will be posted within 5 days after the homework is due.
- We will do our best to grade your homework within *14 days after submission*
- Late submissions will be dealt with as follows: each late day will have a penalty of 25% on your total grade for that homework.

Final Project (grad students only)

<https://cs.uwaterloo.ca/~r5olivei/courses/2023-spring-cs466/final-project/>

- Topic of your choice (see page above for suggestions)
I must approve the topic though!
- Must be done *individually*
- Goal: work on an open problem and/or present a survey on a problem or area of your choice within algorithm design.
- To turn in: project report (around 10 pages - see LaTeX template)
- Each student will be required to do a 20 min presentation on their project, and then there will be a 10 min period for questions (by me and perhaps the TA)

Student drop-in hours

TBD

Piazza Policy

- We strongly encourage everyone to interact a lot on Piazza
- Whenever you have a question about the material or the HW, please ask them in public mode (as chances are other students also have same question).
- To encourage participation, the TA and myself will wait for ~ 6 h before answering a question on Piazza, so that you have a chance to collaboratively work through it.
- I will do my best to answer lecture-related questions on piazza with the timeline above as well
- Please **do not expect** the TA and myself to be active on Piazza at late hours (say from 10pm until 9am)
- **Do not expect** the TA to answer Piazza questions *over the weekend*.

Questions?