Great Ideas in Computing

University of Toronto CSC196
Fall 2025

Class 1: September 3 (2025)

Course Organization

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Teaching Assistant : Tristan Lueger

I strongly encourage questions and discussions in class. In addition, we are also using quercus and piazza for questions and discussions.

Using piazza, you can also answer questions posed by others. You can pose or answer questions anonymously or using your name. The benefit of in class and quercus or piazza (over email) is that the entire class benefits from the discussion. Please sign up at "piazza.com uoft" if you wish to be part of the piazza discussions. But best of all is in person discussions.

Course organization continued

The class meets M,F 3-4 PM in B2139 and Wed 3-4 in WB 1191

Usually I will be presenting on Mondays and Wednesdays and the tutorials will be on Fridays. You should not have a conflict with any of these three 50 minute classes. If you have a conflict then you must resolve the conflict.

There might be be some exceptions to the usual schedule (for example. if we have to accomodate the schedule of a guest presenter). Also for the week of September 22, the tutorial will be on Wednesday, September 24 with the class on Monday and Friday.

Course web site: http://www.cs.toronto.edu/~bor/196f25
My slides will be on the web page. I will try to post slides "soon" after each class. Why not before? I will also post various documents on the web page.
There are also links to the previous versions of CSC196 (fall 2021, fall 2022, fall 2023) and links to versions of SCI199 on the web page.

I will be using Quercus or the Course Web Page for Announcements.

COVID considerations

Lets hope we do not have to worry about COVID.

Unfortunately, COVID and other contaguous diseases are still around but currently not a major health problem. Everyone has their own sense of how much to still be concerned about COVID. At the moment, I am personally not worried about the current status of COVID, RSV, measles, etc. . But things can change so keep aware of any changes in University policy.

ASIDE: We might discuss social networks and the spread of information,misinformation,rumours,conspiracies. How do they differ from the spread of diseases?

Announcement: RSGs

Recognized Study Groups (RSGs) are voluntary, peer-led study groups of up to eight students enrolled in the same Arts and Science course. The RSG program is designed to increase student engagement in individual courses, support academic skill-building and keep students socially connected. During the 2024-25 academic year, over 4500 Arts and Science students participated in an RSG.

Each RSG requires a student to sign-up to be an RSG Leader. RSG Leader applications are now open. All RSG Leaders receive training under Student Success staff supervision. Students will also be able to join an RSG starting September 2nd 2025, with new RSGs added daily as students sign up to be leaders. If a student cannot find an RSG for your course, they can volunteer to lead an RSG or check back regularly.

RSG Poster

Preliminaries

Getting to know each other
- A little about myself
- Your plans at the University?

What is this course about?

- FAS Calendar about First Year Foundational Seminars
  https://www.artsci.utoronto.ca/future/academic-opportunities/first-year-opportunities/first-year-foundations-seminars

- Seminars enable students to engage in discussions and develop strong written, oral and teamwork skills. Small classes help students build relationships with professors early in their academic career.

- One might say that all of these first year courses are an "Introduction to Critical Thinking".

Grading scheme, syllabus and possible topics

- The grading scheme will be based on 4 assignments (15% each), two quizzes (10% each), and class participation (20%). Students are expected to attend all classes regularly and participate actively. There will be no final exam.
- Assignments will be submitted on Markus. You can access Markus from Quercus. You can also access Piazza from Quercus. Tentative dates appear on the next slide and I also posted tentative dates in the syllabus.
- It is difficult but not impossible to fail this course. Mainly do NOT plagarize. If you have any questons about plagarism, ask me.
- The syllabus (listed on the course web page) contains other organizational information.
- There is also an ambitious list of possible topics on the web page. What have we missed? **When I ask a question in red, thats a strong invitation for YOU to join the conversation but don't wait for an invitation to speak up.**

Relevant dates

- A0 September 9 9PM. This is worth 2% as part of the participation grade
- A1 September 24 at 3PM
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- A2 October 15 at 3PM
- Q1 October 17 To be held in tutorial classroom
- Reading week is October 27-31.
- A3 November 5 at 3PM
- A4 November 26 at 3PM
- Q2 November 26 To be held in tutorial classrooom
- Fall classes end December 1. We are allowed to schedule a possible makeup date on December 2 to compensate for the missed class on Thanksgiving.

Here is the statement of Assignment A0. As I said, it is worth 2% as part of the 20% participation component of the grading scheme. Tristan will go over the submission to Markus during the tutorial on Friday.

In at most a two page (pdf) response, tell me briefly about yourself. Indicate why you have chosen this course, and do you have plans for what majors/specializartions you are considering. What do you believe will be the most significant differences (if any) between High School and University Education. Have you taken any CS courses or have any relevant CS background? Look over the topics discussed in the previous 2022 and 2023 offerings of CSC196 (and any other great ideas you think should be considered) and select and rank the 3 topics of most interest to you. In a sentence or two, indicate which of these topics will or will not be of interest in 20 years.

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ChatGPT then asks if you want to frame this specifically in the context of computer science and mathematics there is a list that looks (suspiciously?) like topics we have discussed in previous offeringds of this course. ChaptGPTs "top five": Universal Turing Maachine (Turing 1936), NP Completeness (Cook, Levin 1971), Public key Cryptography (Diffie and Hellman 1976, , RSA 1977), Relational Databases (Codd 1970), Internet Protocol and Packet Rocket Routing and TCP (Kleinrock, Cerf, Kahn 1960s-70s).

More Thoughts on What Constitutes a Great Idea

Here is what I said in previous years:

Impact, surprise, elegance. Of course, it is easier to agree on great ideas in retrospect rather than as ideas are being introduced.

And of course ideas rarely occur in a "vacuum"; usually there are similar ideas known and often the timing of when an idea becomes viable is very critical.

It is also the case that credit for an idea is not always completely fair to all those involved.

And More Thoughts on What cConstitutes a Great Idea

- "It is a breakthrough"; meaning it accomplishes something that was not possible before.
- "It allows for new (possibly unexpected) possibilities"
- "It provides an *optimal* solution to a problem"
- When you say "I wish I would have thought of this"

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  A point of view: perhaps one should not judge the quality of a decision by outcomes. The quality of a good decision may simply be whether or not, given all the information available at the time the decision was made, the decision was a good or the best decision one could make.

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- It is important to understand that in all ideas, decisions, plans, there is always some degree of **uncertainty** as to how the "world" will unfold.

- In research and development (and more generally in life) how long should we stick with our intuition or when do we see that our beliefs and plans are inconsistent with facts or "common wisdom"?

End of first class

We will start the second class with the following question: Can great ideas have negative consequences