The CSC303 Handbook (Winter 2023 Edition) – Revised Feb 9th 2023

University of Toronto
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Introduction

Hello and welcome to CSC303, Social & Information Networks! My name is Ian, and I have the pleasure of teaching you all this term. I've written this handbook to help you succeed in the course; it outlines the material we'll be covering, the assignments we'll be completing, and various policies ranging from grading and dates, to communication and accessibility.

Throughout the course, our main textbook is the 3rd edition of *Networks, Crowds, and Markets: Reasoning About a Highly Connected World*, by D. Easley and J. Kleinberg. The book is freely available from the authors, at http://www.cs.cornell.edu/home/kleinber/networks-book/networks-book.pdf

Grade Breakdown and Important Dates

Component	Weight	Due Date
Assignment 1	15%	Thur. Feb 16th, 11:59pm
Midterm	20%	Fri. Mar 10th, in-tutorial
Assignment 2	15%	Thur. Mar 23rd, 11:59pm
Critical Review of a Current Article	15%	Choice of paper: Fri. Mar 3rd, 11:59pm First Draft: Fri. Mar 24th, 11:59pm Peer Review: Fri. Mar 31rst, 11:59pm Final Submission: Thur. Apr 6th, 11:59pm
Open-Book, Take-Home, Final Exam	35%	2-day window for completion; exact date and time to be determined by the Faculty of Arts & Science

The assignments and the final are take-home open book assessments in which you solve a problem set. The midterm is similar, but shorter, in-class, and closed-book. Finally the critical review is a fun group project in which you choose a real, recent, published, research paper related to the course material, and critique its strengths and weaknesses. As part of the critical review, you will be reading another group's first draft, and providing feedback. With the sole exception of the midterm, all work will be submitted via MarkUs.

What to expect

Lectures: Mondays & Wednesdays 1-2pm [BA1170]. Also Friday Jan 13th (location TBD).
Tutorials: Fridays 1-2pm, starting Jan 20th [GB 120, 244, and 248]

Lectures will be delivered in class, and I strongly encourage questions and related ideas! I will try to run a Zoom call during the lecture, though I may have to give up on the idea.

Tutorials will be a combination of mini-lectures that expand on course material, presentations and discussions of related papers, opportunities to work on problem sets in groups, and sessions reviewing the solutions for assignments. Most weeks, there will also be the opportunity to complete an ungraded practice Quercus quiz in groups, and the chance to ask the TA any questions about the current material. You are free to attend whichever tutorial section works best for you.

I encourage attendance in tutorials, as in tutorials we'll be learning important material not seen in lecture.

The tentative schedule for each week is outlined below:

Dates	Lecture Topics	Tutorial Topic	Suggested Readings
Jan 9-13	Networks, graph concepts	N/A	Ch 1,2
Jan 16-20	Strong and weak ties	Mini Lecture	Ch 3
Jan 23-27	Homophily and Influence	Mini Lecture	Ch 4
Jan 30-Feb 3	Structural balance	Paper Discussion	Ch 5
Feb 6-10	Small worlds	Problem Set	Ch 20
Feb 13-17	Power laws, Web link analysis	Mini Lecture	Ch 18,14
Feb 20-24	Reading week		
Feb 27-Mar 3	Rumour spread, influence maximization	A1 Solutions	Ch 19
Mar 6-10	Influence models, disease spread	Midterm	Ch 19,21
Mar 13-17	Mitochondrial Eve, Bargaining power	Problem Set	Ch 21,12
Mar 20-24	Stable marriage, Network traffic	Paper Discussion	Ch 8
Mar 27-31	Braess' paradox, kidney exchange.	A2 Solutions	Ch 8
April 3-7	Additional topics and course review.	N/A	

Modality of Course Delivery

As per the Faculty of Arts & Science timetable, CSC303 is an in-person course.

Having said this, I will do my best to make lectures available in real time via Zoom, so that in-person attendance would not be required for lectures. The Zoom link is on Quercus.

As the course is in person, hybrid delivery is purely a best-effort offering on my part. I believe that hybrid delivery creates many exciting opportunities, but if I find that it is not working, overly time consuming, or otherwise impractical, then I will be forced to abandon it.

Tutorials are completely in-person, as I was unable to find a practical way to make tutorials hybrid. I will make a best-effort attempt to provide tutorial recordings, though the recordings may not be useful on the weeks with problem sets.

Learning Goals & Prerequisites

Together, we'll be learning about how to represent and model various phenomena as networks. Specifically, we'll be focussing on social networks (i.e., people and the connections between them, such

as friendships), and information networks (i.e., pieces of information and the connections between them, such as hyperlinks on the internet).

Together, we will be learning and practicing with the goal of ultimately being able to:

- Represent and analyze social, technological, and natural systems as networks
- Describe, apply, and critique concepts including: strong & weak ties, triadic closure, selection vs. influence, structural balance, small worlds, influence spread, and stable matching
- Describe, execute, and critique various graph-based models of social phenomena
- Use examples to illustrate the versatility of graph-based methods, and the dangers of abstraction
- Identify strengths, weaknesses, and possible future work for a selected research paper in the area of social or information networks

To succeed, we'll need some previous knowledge. The course prerequisites are listed below, along with the most important concepts from the course:

- CSC263H1/CSC265H1/CSC263H5/CSCB63H3
  - What is a graph, directed vs. undirected graph, the definition of a path, etc…
- STA247H1/STA255H1/STA257H1/ECO227Y1/STA237H1/STAB52H3/STAB57H3
  - Independent vs. mutually exclusive events, conditional probability, etc…
- MAT223H1/MAT240H1
  - Matrix multiplication, eigenvalues, the null space of a matrix, etc…

For more details, there are linear algebra and probability refreshers on the course website at https://www.cs.toronto.edu/~ianberlot/303s23/material.html

Guidelines about Communication

Course website: https://www.cs.toronto.edu/~ianberlot/303s23
Course discussion board (Piazza): https://piazza.com/utoronto.ca/winter2023/csc303/home
Digital submission of work via MarkUs: Link will be released on the course website
Course Email (only for other inquiries): 303s23 HYPHEN instr AT cs DOT toronto DOT edu
Informal course Discord (not monitored by myself): Link on Quercus
Office hours: Regular time to be announced on Quercus, or by appointment

The official course website is at the link above, and course announcements will be made on Quercus. Any information that shouldn't be publicly available (e.g., Zoom links, the informal Discord link, etc…) will be released on Quercus.

If you have questions about the material, then the best place for them is on Piazza (the course discussion board) so that the entire class can benefit. I am also available during office hours (time TBD based on a course survey; results will be announced via Quercus). There will be an online accessible office hour, but note that it will not be recorded – see Quercus for details.

I will be checking Piazza weekly. I will do my best to check more frequently, but unfortunately I can't make any guarantees.

For all other communications, please reach out to me via the course email and I will do my best to respond within two business days.

If you'd like to attend office hours back can't make the regularly scheduled times, then please do let me know and we can meet outside of the regular hours.

Finally, in the interest of providing an informal social space for the class, there is a class Discord (link on Quercus). Note that I will not be reading the class Discord, so any messages intended for me should go to Piazza, office hours, or my email.

Guidelines about Due Dates & Missed Work

For both Assignment 1 and Assignment 2, all students have an unconditional 1 week extension (e.g., Assignment 2 can be submitted as late as March 30th 11:59pm without penalty). However, please be aware that I absolutely cannot accept submissions later than the 1 week extension, as we will be covering the solutions in tutorial. If you are unable to complete an assignment by the extended deadline for reasons beyond your control such as personal illness or family emergency, then please contact me.

The critical review project has a similar unconditional extension until Monday April 10th 11:59pm. Note that this is less than a week, as the exam period begins on Tuesday.

Before we continue, an important word of warning about the unconditional extensions: be aware that an extension is *not* a new deadline. It is expected that work will be done by the deadline; the TAs will begin collecting and grading submissions at that time accordingly. Furthermore, you will *not* be able to get additional time after the deadline and unconditional extension have passed. So please, plan your time as carefully as you can, and try to avoid falling into the trap of treating the extension as a new deadline.

In the event of term work or a test that could not be completed due to extenuating circumstances, the weight will be shifted to the final exam. I will make adjustments if there are significant differences in the class averages of the various tests; I'm happy to go into the details on request. Note that the circumstances should be A) unexpected, B) outside our control, and C) significantly effecting your ability to demonstrate your understanding of the material. If there is any doubt, then please do ask.

In all cases not covered by an automatic extension, I strongly encourage students to contact me – the absolute worst I can do is say "no", and I will respect you for having the bravery to ask.

In general, any absence due to illness should be reported via the ACORN online absence declaration.

If you have an absence that exceeds 2 weeks, then it's strongly encouraged that you get in touch with your College Registrar. They can provide guidance, and help connect you to other university resources.

Guidelines about Grading

We all make mistakes, and if you believe that there was an error in the grading then you can submit a remark request via MarkUs up to one week after receiving your grades. Remark requests should state which question(s) should be regarded, as well as an explanation of the mistake made by the grader.

For any question, you can write "I don't know" to receive 20% of the marks for that question. You will receive 0 marks if you leave the answer blank. This holds on all assessments, including the final.

If you do not know the answer, then I strongly encourage you to follow "I don't know" with an explanation of why you do not know the answer (e.g., "I can't remember if this triangle is balanced or not", "I don't think it's true, but the counterexamples I've thought of below don't work", "I didn't have time because of work, and so I didn't study this because I thought that the Wright-Fisher algorithm wouldn't be on the test", etc…). If your answer demonstrates relevant knowledge of the course material, then you may receive additional marks.

Finally, rest assured that there is no auto fail (i.e., minimum grade to pass) on the final exam.

Guidelines about Lecture & Tutorial Recordings

I will do my best to provide a recording of the lectures and at least one of the tutorial sections. As this course is in person, all recordings are purely a best-effort offering on my part. Consequently, I cannot make any guarantees on the quality or totality of the recordings. It is entirely possible that early recordings may be of lower quality, that I may be unable to record certain days, or that I may be unable to continue recordings throughout the entire term. I fully admit that the situation is far from ideal, but my time and energy is sadly finite, and I have a responsibility to focus on the in-person core of the course.

To reiterate: it is my intent that this course, including your participation, will be recorded on video and will be available to students in the course for viewing remotely and after each session.

Course videos and materials belong to myself, the University, and/or other source depending on the specific facts of each situation, and are protected by copyright. In this course, you are permitted to download session videos and materials for your own academic use, but you should not copy, share, or use them for any other purpose without my explicit permission.

For questions about recording and use of videos in which you appear please contact me.

Guidelines on Accommodations and Accessibility

Everyone is welcome in my class, and if there is anything I can do to make a better learning environment for you (whatever the factors, be they religious, racial, preferred name or pronoun, parenthood, learning style, personal identity, mental or physical health, etc…) then please don't hesitate to get in touch with me – either via email, or the anonymous course feedback form; whichever is most comfortable. I freely admit that I am human, fallible, and have my blind spots, but I do try to learn and improve. When I make a mistake, I value the feedback of students who are brave enough to let me

know; in this way I grow more aware of my shortcomings, and I can start taking the necessary steps to educate myself, and work on my flaws.

In addition to any support that I can provide, if you have a disability/health consideration that may require accommodations, you may also approach Accessibility Services at 416-978 8060; http://accessibility.utoronto.ca/

Guidelines on Academic Integrity & Collaboration

As you all know, academic integrity and collaboration are both important! We want to help each other learn, and collaboration is a big part of that.

In this course, the assignments are individual work, and solutions should not be shared. You are however encouraged to discuss course concepts with each other, as well as related (but different!) problems. You are also allowed to discuss assignment problems in broad strokes, but again, not going so far as to share solutions. If you discuss an assignment problem with another student, you are required to disclose this by writing down their names in your assignment submission. After assignment solutions are discussed in tutorial, then you are free to discuss solutions among yourselves – please do not discuss before this point as there may be submissions after the initial deadline for the assignment.

The critical review project is done in groups, each critiquing a different paper. As such, discussion is encouraged among groups, and there will be a dedicated peer-review component.

The open book final is individual work; during this 48 hour period there should be no discussion, whatsoever, of CSC303 material with anyone other than myself or the TAs.

In the interest of reminding us all of the specifics of academic integrity, the University's academic integrity statement is reproduced below:

The University of Toronto treats cases of academic misconduct very seriously. Academic integrity is a fundamental value of learning and scholarship at the U of T. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that your U of T degree is valued and respected as a true signifier of your individual academic achievement.

The University of Toronto's Code of Behaviour on Academic Matters outlines the behaviours that constitute academic misconduct, the processes for addressing academic offences, and the penalties that may be imposed. You are expected to be familiar with the contents of this document. Potential offences include, but are not limited to:

In papers and assignments:

- Using someone else's ideas or words without appropriate acknowledgement.
- Submitting your own work in more than one course without the permission of the instructor.
- Making up sources or facts.
- Obtaining or providing unauthorized assistance on any assignment (this includes working in groups on assignments that are supposed to be individual work).

On tests and exams:

- Using or possessing any unauthorized aid, including a cell phone.
- Looking at someone else's answers.
- Letting someone else look at your answers.
- Misrepresenting your identity.
- Submitting an altered test for re-grading.

Misrepresentation:

- Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.
- Falsifying institutional documents or grades.

All suspected cases of academic dishonesty will be investigated following the procedures outlined in the *Code of Behaviour on Academic Matters*. If you have any questions about what is or is not permitted in this course, please do not hesitate to contact me. If you have questions about appropriate research and citation methods, you are expected to seek out additional information from me or other available campus resources like the College Writing Centres, the Academic Success Centre, or the U of T Writing Website.

Useful University Resources

- Writing resources: http://www.writing.utoronto.ca/
- Academic Integrity: http://academicintegrity.utoronto.ca/
- UofT Student Life: http://www.studentlife.utoronto.ca/
- Accessibility Services: http://www.accessibility.utoronto.ca/
- UofT Health Services: https://studentlife.utoronto.ca/department/health-wellness/

Student Feedback

This is, ultimately, a living course. I do my best to take student feedback and issues into account. Sometimes I can change things on the fly, such as moving lecture recordings to a platform that allows them to be downloaded, or trying to use the whiteboard more often. Other times, I try my best to adjust the course the next time it's offered – such as providing advance warning and resources to review linear algebra! I deeply believe that students learn best in a non-stressful environment. Although there are some stressors that can't be removed, such as the need for assessment, I try my best to remove the stressors that arise from my choices. As such, if there's something that could be done better in the course, if I've made a mistake in my assumptions about what's best for you, or if you have exciting ideas for how we could improve the course, please do let me know! I'm more than happy to hear from you, either through the instructional email, or through anonymous feedback: https://forms.gle/fN3dYF2PrWY8WH8H8

Thank you! And I hope that together, we'll have a great year, and make it even better for next year's students :)

Appendix: Everything You Ever Wanted To Know About Course Design (But Were Too Afraid To Ask) or: How I Learned To Stop Worrying and Trust My Students

This section is entirely optional, but it goes over some of the reasons behind the decisions that make this course. If you disagree with some of these reasons or decisions – then please let me know! Over the years I have made many revisions to the course based on student feedback, and your thoughts on where my assumptions are off are invaluable! It's always been my view that CSC303 is a joint project between myself and my students. Together, we're learning how best to guide students to success with the material :)

Due dates are always tricky, but I've tried to do my best under various constraints (mostly ensuring time to grade, review, and remark results, trying to prevent work during or immediately after reading week, various restrictions from the instructor handbook, etc...).If you're curious, or have suggestions, then feel free to contact me for more details!

I intend to create lecture recordings based on student feedback from previous years, and pedagogical research suggesting that the modality of learning is unrelated to performance (https://eric.ed.gov/?id=EJ872412).

The unconditional 1 week extension policy is new this year, and arises from advice from the book, *Grading for Equity*, by Joe Feldman, as well as Dr. Perez-Quinones' talk at the WCCE-LITE 22 conference. The principle behind extensions is that a student's available time reflects many factors, and is ultimately irrelevant to how well they've learned the material. Furthermore, the extension is unconditional so that students do not have to come forth, and can therefore use the extension independent of their comfort in personally approaching me.

In an ideal world I would also provide a blanket 1 week extension for the critical review, but I am unable to do so due to faculty policies disallowing class-wide extensions into the examination period.

The 20% IDK policy has practical, and pedagogical motivations. Practically speaking, it saves everyone time if you don't have to try and bluff us for marks! Pedagogically speaking, the policy is quite valuable since a key part of learning is knowing what we don't know. Knowing what we don't know, and having the courage to admit it, is a valuable lifelong skill. This policy also functions as an implicit form of grade floor (another idea from *Grading for Equity*). Simply put, averages are skewed by outliers, and grade categories (i.e., A, B, C, D, F) do not align proportionally with the corresponding percentage ranges. If you're curious, I'm happy to discuss in detail!

In closing, I'm honoured that you're trusting me with your time, attention, and energy, and I look forwards to repaying that trust by doing my best to help you all learn. Here's to a great term!