The CSC303 Handbook (Winter 2024 Edition)

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 0	3%	Thu Jan 25, 11:59pm	
Assignment 1	14%	Thu Feb 15, 11:59pm	
Midterm (in-person)	20%	Fri Mar 8, in-tutorial	
Assignment 2	14%	Thu Mar 21, 11:59pm	
Critical Review of a Current Article	14%	Choice of paper:	Fri Mar 1, 11:59pm
		First Draft:	Fri Mar 22, 11:59pm
		Peer Review:	Fri Mar 29, 11:59pm
		Final Submission:	Thu Apr 4, 11:59pm
Final Exam (in-person)	35%	During Final Exam Period, date TBA	

The assignments 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 16:00-17:00 [WB116]. Also Fri Jan 12 [WB116].
Tutorials: Fridays 16:00-17:00, starting Fri Jan 19 [BA2165, BA2175, and BA2195]

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:

Week	Dates	Lecture Topics	Tutorial Topic	Suggested Readings
1	Jan 8-12	Networks, graph concepts	N/A	Ch 1,2
2	Jan 15-19	Strong and weak ties	Mini Lecture	Ch 3
3	Jan 22-26	Homophily and Influence	Mini Lecture	Ch 4
4	Jan 29-Feb 2	Structural balance	Paper Discussion	Ch 5
5	Feb 5-9	Small worlds	Problem Set	Ch 20
6	Feb 12-16	Power laws, Web link analysis	Mini Lecture	Ch 18,14
7	Feb 26-Mar 1	Rumour spread, influence maximization	A1 Solutions	Ch 19
8	Mar 4-8	Influence models, disease spread	Midterm	Ch 19,21
9	Mar 11-15	Mitochondrial Eve, Bargaining power	Problem Set	Ch 21,12
10	Mar 18-22	Stable marriage, Network traffic	Paper Discussion	Ch 8
11	Mar 25-29	Braess' paradox, kidney exchange.	Univ. closed	Ch 8
12	Apr 1-5	Additional topics and course review.	A2 Solutions	

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/303s24//material.html`

Guidelines about Communication

Course website: `https://www.cs.toronto.edu/~ianberlot/303s24/`
Course discussion board (Piazza): `https://piazza.com/utoronto.ca/winter2024/csc303h1slec0101`
Digital submission of work via MarkUs: Link will be released on the course website
Course Email (only for other inquiries): 303s24 HYPHEN instr AT cs DOT toronto DOT edu
Anonymous feedback: `https://forms.gle/vARbnB6vqaNEQz6R6`
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

Assignments

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 Thu Mar 28 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 Mon Apr 8 11:59pm.

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.

This policy is intended to cover students who are registered with Accessibility services and require extra time to complete assignments, as well as students who discover that they are unable to meet the original assignment deadline. Do not use it lightly to simply shift the original deadline! If a student uses the unconditional extension of 1 week and then becomes ill on the extended deadline, no further extension or accommodation will be given unless the student has been ill for more than 7 days, they are registered with Accessibility services, or the student's college registrar is involved for extremely extenuating circumstances.

Midterm

There will be a single make-up term test on Fri Mar 15 during the tutorial time (location and other details TBD).

The make-up test is available for students who did not write the term test due to any reason – you do not need to ask my permission, or check whether you had a valid reason for missing the term test.

Important! Unless you're significantly impacted on the day of the term test (Fri Mar 8), then I do not recommend writing the make-up midterm. You will be missing a tutorial, and you will be increasing your workload later in the term.

Furthermore, only one make-up term test will be scheduled!

The make-up midterm is *only* for students who did not write the midterm – if you try writing both tests then the make-up midterm grade will be discarded.

I will make adjustments if there are significant differences in the class averages of midterm & makeup tests; I'm happy to go into the details on request.

Some reasons under which I might suggest taking the term test: illness, late arrival at the term test, unexpected events that prevented studying the week before or impair your ability to write the day-of, forgetting your aid sheet.

Reasons for which I do **not** suggest writing the make-up test:

- Seeking an academic advantage by writing a later test (the questions will be completely different, and the make-up test marks will likely be adjusted to correct for any differences in test difficulty)
- Test anxiety (unless there's solid reason to believe things would be better a week later)
    - If you suffer from test anxiety, I suggest getting in touch with Accessibility Services who may be able to offer accommodations
- Seeking "perfect" testing conditions (perfect testing conditions are impossible, and we don't aim to provide them: that's fine because the errors average out over time. This policy is meant to address significant handicaps that may befall a student, but can fall between the cracks of stricter policies).

An absence on the make-up test due to illness should be reported to me via email, and via the ACORN online absence declaration.

Missed Work

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 affecting 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.

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.

If you accidentally submit the wrong file for an assignment or the critical review, then I will only allow you to change the file if I'm sent the correct file *before* related content in the incorrect submission is graded, or the solutions are covered in class. Furthermore, I will only allow such a substitution *once*. So be sure to double check your submission!

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 register at the beginning of the academic year with Accessibility Services at 416-978 8060; https://studentlife.utoronto.ca/department/accessibility-services/. The process is entirely private: details will not be shared with instructors, and instructors will not disclose who is registered in their class.

If, despite my efforts, a test (or other compulsory course component) has been scheduled on a religious holy day and you're unable to attend due to religious observance, please do let me know as soon as possible so we can make alternative arrangements, and I can learn from my mistakes.

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.

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 procedures outlined in the Code of Behaviour on Academic Matters (https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019). If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, please reach out to me. Note that you are expected to seek out additional information on academic integrity from me or from other institutional resources. For example, to learn more about how to cite and use source material appropriately and for other writing support, see the U of T writing support website at http://www.writing.utoronto.ca. Consult the Code of Behaviour on Academic Matters for a complete outline of the University's policy and expectations. For more information, please see A&S Student Academic Integrity (https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity) and the University of Toronto Website on Academic Integrity (https://www.academicintegrity.utoronto.ca).

Guidelines on Generative AI

In this course, you may use generative artificial intelligence (AI) tools, including ChatGPT and GitHub Copilot, as learning aids and to help complete assignments. You will not be permitted to use generative AI on in-person assessments. While some generative AI tools are currently available for free in Canada, please be warned that these tools have not been vetted by the University of Toronto and might not meet University guidelines or requirements for privacy, intellectual property, security, accessibility, and records retention. Generative AI may produce content which is incorrect or misleading, or inconsistent with the expectations of this course. They may even provide citations to sources that don't exist—and submitting work with false citations is an academic offense. These tools may be subject to service interruptions, software modifications, and pricing changes during the semester.

Generative AI is not required to complete any aspect of this course, and we caution you to not rely entirely on these tools to complete your coursework. Instead, we recommend treating generative AI as a supplementary tool only for exploration or drafting content. Ultimately, you (and not any AI tool) are responsible for your own learning in this course, and for all the work you submit for credit. It is your responsibility to critically evaluate the content generated, and to regularly assess your own learning independent of generative AI tools. Overreliance on generative AI may give you a false sense of how much you've actually learned, which can lead to poor performance on the midterm test or final exam, in later courses, or in future work or studies after graduation.

If you choose to use any generative AI tools while working on an assignment, you must acknowledge which generative AI tools you used and how you used them. Specifically, you should include an appendix at the end of your submitted PDF with a description of how generative AI was used and how the results from the AI were incorporated into the submitted work. Furthermore, the appendix should include transcript(s), or a link to transcript(s), that record your interactions with the tool while working on the assignment.

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/vARbnB6vqaNEQz6R6`

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 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!