Course Outline

Course Information

Instructor: Alan Tsang (https://people.scs.carleton.ca/~alantsang/)
Contact: Alan.Tsang@carleton.ca
Course Website: https://brightspace.carleton.ca/d2l/home
Lectures: Wednesdays & Fridays, 1135 – 1255 (see Carleton Central for room)
> *Note that lecture classes will only be 80 minutes long, but the full 2 hours will be utilized for student presentations in the final weeks of the course*

Office Hours: Wednesdays, 1255 – 1355 in HP 5411
> *You may book additional appointments (including Zoom meetings) via email. Online messages during this hour will be replied to promptly.*

Last Revised: 2024-01-23

Teaching Assistants

Contact info for your TA will be posted once assignment grading is underway.

Course Calendar Description

Introduction to virtual communities, overlay networks and social networking. Topics include architectural principles for heterogeneous social networking platforms, trust and reputation as social concepts, agent-based computing, and extraction of trends and patterns from information exchanged between community members.
Precludes additional credit for COMP 3601 (no longer offered).
Prerequisite(s): ((COMP 2404 or SYSC 3010 or SYSC 3110) and (COMP 2406 or SYSC 4504)) or COMP 2601.

Course Objectives

Social networks are mathematical constructs that model human and mechanical relationships. This course will survey mathematical and computational methods for modeling and analyzing networks in a variety of domains and applications. Students will learn how to construct suitable network models for these domains and analyze emergent properties derived from the network structure.

Textbooks (Not Mandatory):

Primary Textbook (downloadable at the link)

- D. Easley, J. Kleinberg, [Networks, Crowds, and Markets: Reasoning About a Highly Connected World](), Cambridge University Press, 2009.

Other Useful References

- M. Jackson, Social and Economic Networks, Princeton University Press, 2008.
- M. Newman, Networks an Introduction, Oxford University Press, 2010.
- M. Newman, A.-L. Barabási, D. Watts, Structure and Dynamics of Networks, Princeton University Press, 2006

Course Format and Assessments

The course has **two in-person classes every week**. You are expected to attend as lectures **will not be recorded**. If you miss a lecture, it will be your responsibility to catch up on missed materials.

Assessments will be done via individual assignments and a group final project. Groups for the final project may be sizes from 2 to 4. You are encouraged to form your own groups.

Inquiries

If you have a question (ex: clarification on readings, discussion about something said during class, questions about assignments), you should **post them on Brightspace** so your classmates can benefit from the discussion. Please do not post code or assignment answers in the open or in course discussions.

If the question is about your assessments or situation, you may email the instructor or come to office hours, or email a TA about grading inquiries. Please **add COMP 4602 in your email subjects** to ensure they are prioritized.

Questions about assessments **will not** after the due date.

Topics Covered

1	Introduction to graph theory
2	Relationships
3	Contexts, Ties
4	Braess Paradox
5	Matching Markets

6	Web Search
7	Power Laws, Growing Networks
8	Small World
9	Epidemics
10	Cascades, Voting

Other important dates and deadlines can be found [here](#).

Assessment Scheme

40%*	Final Project
20%*	Presentation
40%	Assignments

* Grade assigned as a group

It is your responsibility to ensure submitted files are correct and human-readable, and code is runnable and well documented. You should upload multiple versions on Brightspace in case there is a mishap; normally, only the most recent version will be graded. If your files cannot be read or run by the grader, a grade of 0% will be assessed unless earlier submissions on Brightspace can be accessed.

Late Policy

All assignments and the final project may be submitted **up to 48 hours late**, with **no late penalty**. You do not need to petition for this grace period. Presentations must be done on the assigned date.

This policy accommodates unexpected circumstances such as technical and personal issues; therefore, no additional extensions will be granted (excepting accommodations provided by university policy). Submissions are handled electronically via Brightspace and items submitted after the extended deadline will not be accepted.

Generative AI Tools

You are discouraged from relying on generative AI tools such as chatbots (e.g., ChatGPT, Google Bard, Bing Chart) and research assistants (e.g., Elicit) as they frequently produce incorrect information with exaggerated confidence. As such, they should never be referenced as an

authoritative source. However, you may use them for inspiration and ideas. Note that everything you submit for evaluation should be in your own words or properly cited. Because generative AI tools create words that are not your own, you **must cite AI tools in every situation** where you have used them. Improper citations of this sort may constitute an academic integrity offense, and will be reported to the office of the Dean of Science. An exception is made for automatic grammar and punctuation checking tools (such as Grammarly), which may be used without citation.

Writing and Academic Integrity

This course includes significant written and oral evaluation components. This may be the first time you have written long form prose in some time. Nonetheless, clear and concise written communication is a valuable skill for computer scientists. All written and oral communications should be **in your own words** (with several clearly marked and referenced quotations).

Marks will be deducted for grammar, spelling, and punctuation errors, and other mangled misuse of language. You are expected to follow academic integrity guidelines, particularly the section on plagiarism. Plagiarism is often *very obvious* to the grader. Don't do it!

Other academic boilerplate:
If you are unsure of the expectations regarding academic integrity (how to use and cite references, how much collaboration with lab- or classmates is appropriate), ASK your instructor. Sharing assignment or quiz specifications or posting them online (to sites like Chegg, CourseHero, OneClass, etc.) is considered academic misconduct. You are never permitted to post, share, or upload course materials without explicit permission from your instructor. Academic integrity offences are reported to the office of the Dean of Science. Penalties for such offences can be found on the ODS webpage: https://science.carleton.ca/academic-integrity/.

Undergraduate Academic Advisors
The Undergraduate Advisors for the School of Computer Science are available in Room 5302HP; or by email at scs.ug.advisor@cunet.carleton.ca. The undergraduate advisors can assist with information about prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisors will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and Writing Tutorial Services.

Graduate Academic Advisors

The Graduate Advisors for the School of Computer Science are available in Room 5302 HP; or by email at grad.scs@carleton.ca. The graduate advisors can assist with understanding your academic audit and the remaining courses required to meet graduation requirements.

SCS Computer Laboratory

Students taking a COMP course can access the SCS computer labs. The lab schedule and location can be found at: https://carleton.ca/scs/tech-support/computer-laboratories/. All SCS computer lab and technical support information can be found at: https://carleton.ca/scs/tech-support/. Technical support staff may be contacted in-person or virtually, see this page for details: https://carleton.ca/scs/tech-support/contact-it-support/.

University Policies:

- **Academic Accommodations**

Carleton is committed to providing academic accessibility for all individuals. Please review the academic accommodation available to students here: https://students.carleton.ca/course-outline/.

- **Academic Integrity**

Student Academic Integrity Policy. Every student should be familiar with the Carleton University Student Academic Integrity policy. A student found in violation of academic integrity standards may be sanctioned with penalties which range from a reprimand to receiving a grade of F in the course, or even being suspended or expelled from the University. Examples of punishable offences include plagiarism and unauthorized collaboration. Any such reported offences will be reviewed by the office of the Dean of Science. More information on this policy may be found on the ODS Academic Integrity page: https://carleton.ca/registrar/academic-integrity/.

Plagiarism. As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Such reported offences will be reviewed by the office of the Dean of Science. More information and standard sanction guidelines can be found here: https://science.carleton.ca/students/academic-integrity/.

Unauthorized Collaboration. Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis".

Acknowledgements