Ontario Tech University acknowledges the lands and people of the Mississaugas of Scugog Island First Nation. We are thankful to be welcomed on these lands in friendship. The lands we are situated on are covered under the Williams Treaties and the traditional territory of the Mississaugas, a branch of the greater Anishinaabeg Nation, including Algonquin, Ojibway, Odawa and Pottawatomi. These lands remain home to a number of Indigenous nations and people.

We acknowledge this land out of respect for the Indigenous nations who have cared for Turtle Island, also called North America, from before the arrival of settler peoples until this day. Most importantly, we remember the history of these lands has been tainted by poor treatment and a lack of friendship with the First Nations who call them home.

This history is something we are all affected by as we are all treaty people in Canada. We all have a shared history to reflect on, and each of us is affected by this history in different ways. Our past defines our present, but if we move forward as friends and allies, then it does not have to define our future.

FACULTY OF SCIENCE

CSCI 5010G: Survey of Computer Science Research Topics & Methods

Course outline for Fall 2024

1. Course Details & Important Dates*

Term	Course Type	Day	Time
Fall 2024	Lecture	Fridays	2:10pm-5:00pm

Location	CRN #	Classes Start	Classes End	Final Exam Period
SHA 245	42050	Sept. 3, 2024	Dec.02, 2024	Dec. 4-14, 2024

* Visit https://ontariotechu.ca/current-students/academics/important-dates-and-deadlines.php for other dates

Important Note – Final Exams
The final exam for this course will be run ON CAMPUS during the regular final exam period. If a student cannot attend due to COVID-19 related international travel restrictions you **must email your course instructor ASAP** (as soon as possible) regarding the possibility of alternate arrangements.

2. Instructor Contact Information

Instructor Name	Office	Phone	Email
Jeremy Bradbury	UA4016	x3685	jeremy.bradbury@ontariotechu.ca
Office Hours: Mondays & Fridays 1:00pm-2:00pm			

3. Course Description

CSCI 5010G – Survey of Computer Science Research Topics and Methods. This course is a survey of some of the main research topics in computer science and the corresponding computer science research methods. Topics covered vary from year to year and may include digital media, computer graphics, human-computer interaction, computer networks, security, health informatics, databases and software design. Research methods covered include library methods, topic analysis, data management, technical writing, presentations, evaluation methods and peer review. This course includes guest lectures by experts in the research topics covered. Credit hours: 3

4. Learning Outcomes

On the successful completion of the course, students will be able to:

- Understand the role and nature of the various disciplines that contribute to the design and implementation of modern computer systems
- Appreciate the differences and commonalities of research conducted in the main fields of Computer Science at Ontario Tech University – Digital Media, Information Systems, Networks & IT Security, Software Design
- Search the research literature to identify papers based on topic and publication quality
- Read and understand papers in the Computer Science research literature
- Create an annotated bibliography
- Understand and apply the best practices of technical writing
- Manage research activities, materials and meetings
- Conduct a topic analysis and write a thesis proposal
- Communicate their research effectively (e.g., elevator pitch, formal presentation)

Understand the peer review process and effective techniques for reviewing a research paper

5. Course Design

Survey of Computer Science is a required course for all Computer Science MSc and PhD students. The course is designed as a comprehensive survey of Computer Science research areas and research methods that provides a strong research foundation for any student pursing graduate studies in Computer Science. The research areas/topics surveyed will be presented by weekly guest lectures from graduate faculty in the Computer Science program. In addition to surveying Computer Science topics the course will also survey Computer Science research methods. Each week half of the lecture will be devoted to introducing a new research method. Students will be evaluated by applying the covered research methods to their own area of interest within Computer Science.

6. Outline of Topics in the Course

- State-of-the-art research examples from the Computer Science graduate program fields:
    - Digital Media
    - Information Systems
    - Networks and IT Security
    - Software Design
- Research Methods to address the following questions:
    - How do I learn about my chosen field of research?
        - Finding research papers and creating an annotated bibliography
        - Conducting literature reviews, classifications and taxonomies

- How do I select a research topic?
  - Conducting a topic analysis
  - Technical writing
- How do I write a thesis proposal?
  - The structure of a thesis proposal
  - Defining a research hypothesis
  - Proposing a methodology and understanding the possible outcomes
- Is there a right way to manage my research?
  - Research logs
  - Research meetings – agendas, notes
  - Backing up data! – The benefit of version control systems
- How do I evaluate my research work?
  - Evaluation methods for computer science research tools and techniques
  - Evaluation methods for computer science research involving human subjects
  - The importance of reproducibility, threats to validity
  - Conducting ethical research
- How do I write up and defend my thesis?
  - The structure of a thesis proposal
  - Advice on obtaining feedback from your supervisor and committee
- How do I publish and disseminate my research?
  - Different kinds of research publication venues – workshops, conferences, journals, books
  - Publication quantity vs. quality – understanding publication metrics, citation counts, etc.
  - The peer review process and how to review a paper
  - Oral communication and research presentations

7. Required Texts/Readings

Textbooks.

Writing the Doctoral Dissertation: A Systematic Approach, 3/E
by Gordon B. Davis & Clyde A. Parker

Writing for Computer Science, 3/E
by Justin Zobel

Online Resources.

Online articles and websites will be used to supplement the textbook. Links to all online resources will be posted on the course website.

Additional readings may be assigned or recommended during the course.

8. Evaluation Method

Annotated Bibliography	15%
Paper	25%
Peer Review	15%
Presentations	25%
Attendance & Participation	20%

All students are required to attend 80% of the lectures and 80% of the Computer Science seminars in order to pass the course.

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found under Academic Regulations in the University calendar.

9. Assignments and Tests

The schedule for course deliverables is as follows:

- Presentation 1 – Oct. 2024
- Annotated Bibliography – Nov. 2024
- Paper (preliminary submission) – early Dec. 2024
- Peer Review – Dec. 2024
- Paper (final submission) – mid Dec. 2024
- Presentation 2 – Dec. 2024

For information on how missed/late assignments and medical excuses are managed, please refer to the university's revised *Procedures for Consideration of Missed In-Term Course Work and Examinations* https://usgc.ontariotechu.ca/policy/policy-library/policies/academic/procedures-for-consideration-of-missed-in-term-course-work-and-examinations.php.

10. Technology Requirements and Learning Management System Information

Ontario Tech uses *Canvas*™ as its learning management system (LMS). Access to the LMS is limited to students formally registered in courses. That access is for the duration of the semester **and for an additional 120 days once the semester is over**. Students are strongly encouraged to download any/all relevant course material during that access period. Any requests for access post this period must be made in writing to the instructor/faculty member responsible for the course.

To support online learning, the university recommends certain technology requirements for laptops, software and internet connectivity which are available at:

Students experiencing technical difficulties such that they are unable to meet the technology requirements may contact the IT Service Help Desk at: servicedesk@dc-uoit.ca
Students experiencing financial difficulties such that they are unable to meet the technology requirements may contact Student Awards and Financial Aid Office at: connect@ontariotehu.ca

By remaining enrolled in this course, you acknowledge that you have read, understand and agree to observe the Recommended Technology Requirements for accessing university online learning resources, including those minimum requirements that are specific to your faculty and program.

11. Sensitive/Offensive Subject Matter

The classroom (both physical and virtual) is intended to provide a safe, open space for the critical and civil exchange of ideas and opinions. Some articles, media and other course materials may contain sensitive content that is offensive and/or disturbing. For example, some articles or videos may contain [Instructors should provide examples that are applicable to the course subject matter – e.g., graphical depictions of violence, profanity, human anatomy, sexual acts, matters pertaining to race, gender, or sexuality]. The Course Instructor will try to identify such material and communicate warnings to students in advance of the distribution and use of such materials, affording students the choice to either emotionally prepare for, or not to view or interact with, the content. [Instructors should publish a warning statement in advance so as to give students adequate opportunity to make a choice to avoid any such matter. The following is a sample disclaimer: "The content you are

about to view contains sensitive subject matter that may be considered offensive and/or disturbing to some viewers. By viewing and/or interacting with the content you acknowledge and agree that it is your decision to view and interact with the content and to take the risk that you will experience a negative emotional response or reaction to the nature of the content."]

12. Student Support

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact studentlife@ontariotechu.ca for support. Furthermore, please notify your professor if you are comfortable in doing so. This will enable them to provide any resources and help that they can.

13. Student Sexual Violence Support and Education

Ontario Tech is committed to the prevention of sexual violence in all its forms. For any student who has experienced Sexual Violence, Ontario Tech can help. We will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.

If you think you have been subjected to or witnessed sexual violence:

- Reach out to the gender-based case specialist in the Human Rights office, a specially trained individual authorized to receive confidential disclosures about incidents of sexual violence. The Human Rights Office will make support services, including counselling, access or referrals to medical services, safety planning and accommodations, available to Students affected by an Incident of Sexual Violence. Book a consultation with the Case Specialist for more information.

14. Students with Disabilities

Ontario Tech University is committed to promoting an environment where everyone has an equal opportunity to contribute to their fullest potential. Students who require accommodation for a disability are advised to contact Student Accessibility Services (SAS) as soon as possible. Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining integrity.

Disability-related and accommodation support is available for students with mental health, physical, mobility, sensory, medical, cognitive, or learning challenges. Office hours are 8:30am-4:30pm, Monday, Tuesday, Thursday, and Friday, Wednesday's 10:00 am to 4:30. Please note they are closed each day between noon and 1:00 pm. For more information on services provided, you can visit the SAS website. Students may contact Student Accessibility Services by calling 905-721-3266, or email studentaccessibility@ontariotechu.ca.

Students who require the use of the Test Centre to write tests, midterms, or quizzes MUST register online using the SAS test/exam sign-up module. Students must sign up for tests, midterms, or quizzes **AT LEAST seven (7) working days before the date of the test.**

Students must register for final exams no later **than 3 weeks prior to the start of the final examination period**. The final examination period is given at

15. Professional Suitability (if applicable)

[Include faculty statement on professional conduct, if applicable.] Click on the respective titles for more information - The *Professional Suitability* policy and the related procedures.

16. Academic Integrity

Students and faculty at Ontario Tech University share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with and abide by Ontario Tech University's regulations on Academic Conduct which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to be copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. A lack of familiarity with these regulations on academic conduct does not constitute a defense against its application. Please note that generative artificial intelligence (GAI) tools should not be utilized without advance, specific written approval by the faculty member teaching the course.

Click on the title for more information on Academic Integrity.

Extra support services are available to all Ontario Tech University students in academic development, study skills, counseling, and peer mentorship. More information on student support services are provided by Student Life.

17. Turnitin (if applicable)

Ontario Tech University and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to Ontario Tech University's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must provide with their assignment at the time of submission to the instructor a signed Turnitin.com Assignment Cover sheet.

18. Online Test and Exam Proctoring (Virtual Proctoring)

Ontario Tech University will conduct virtual monitoring of examinations in accordance with Ontario privacy legislation and all approved policy instruments.

19. Final Examinations (if applicable)

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are required to show their valid physical or digital Ontario Tech University student photo ID card (campus ID), or a valid government issued photo ID that is in English when writing an **in-person examination.** Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit an Academic Consideration form to the applicable Faculty as soon as possible and no later than three weeks prior to the first day of the final examination period.

Further information on final examinations can be found in the university's *Procedures for Final Examination Administration*.

20. Freedom of Information and Protection of Privacy Act

The following is an important notice regarding the process for submitting course assignments, quizzes, and other evaluative material in your courses in the Faculty of [Insert Faculty name].

Ontario Tech University is governed by the Freedom of Information and Protection of Privacy Act ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that the University not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner (student) ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of [Insert Faculty name] encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that Ontario Tech University will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact accessandprivacy@ontariotechu.ca

Notice of Collection and Use of Personal Information
Throughout this course, personal information may be collected through the use of certain technologies under the authority of the *University of Ontario Institute of Technology Act, SO 2002, c. 8, Sch. O.* and will be collected, protected, used, disclosed and retained in compliance with Ontario's *Freedom of Information and Protection of Privacy Act R.S.O. 1990, c. F.31.*

This course will use the following technologies that may collect, use, disclose and retain personal information (including images) for the purposes described below: [Instructors should edit this section according to the systems and technologies to be used in this specific course (e.g., If using Proctortrack, remove any reference to Respondus)]

- Respondus Monitor and Proctortrack to maintain academic integrity for examinations;

- Google Meet and Kaltura Virtual Classroom to facilitate remote instruction and interactive learning;
- Peer-shared applications, services or technologies that may be reviewed, assessed, or used as part of coursework.
- Other applications, services, or technologies that support or enhance online learning that include, but are not limited to, the following: [Instructor to list all relevant components].

Questions regarding personal information may be directed to: Ontario Tech University Access and Privacy Office, 2000 Simcoe Street North, Oshawa, ON L1G 0C5, email: accessandprivacy@ontariotechu.ca.

By remaining enrolled in this course, you acknowledge that you have read, understand, and agree to the terms and conditions under which the technology provider(s) may collect, use, disclose and retain your personal information. You agree to the university using the technologies and using your personal information for the purposes described in this course outline.

21. Human Rights and Respect

Ontario Tech University is committed to providing a campus environment in which all University Members are treated with dignity and to fostering a climate of understanding and mutual respect. The University will not tolerate, ignore or condone Discrimination or Harassment by or against anyone. Examples of Harassing behavior include, but are not limited to; bullying, taunting or mocking someone's race or creed, ridiculing an individual's disability, or targeting individuals with unwanted sexual or negative stereotypical comments about one's sex, gender, sexual orientation, gender identity and/or gender expression. Pursuant to Ontario Tech's Respectful Campus Policy, students are reminded of their role in ensuring an equitable and inclusive learning environment. Requirements to refrain from harassment and discrimination apply broadly to on campus activities, e.g., on University property, in the classroom, including in lectures, labs and practicums, and also apply to off-campus activities, e.g. during any organized Ontario Tech class or extra-curricular activity including experiential learning opportunities such as co-op, practicum or during research endeavors, during official Ontario Tech events or using University equipment and technological tools that facilitate remote learning, e.g., class and other chat functions, video conferencing, and electronic mail.

22. Freedom of Expression

Pursuant to Ontario Tech's Freedom of Expression Policy, all students are encouraged to express ideas and perspectives freely and respectfully in university space and in the online university environment, subject to certain limitations. Students are reminded that the limits on Freedom of Expression include speech or behaviour that: is illegal or interferes with the university's legal obligations; defames an individual or group; constitutes a threat, harassment or discrimination; is a breach of fiduciary, contractual, privacy or confidentiality obligations or commitments; and unduly disrupts and interferes with the functioning of the university. In the context of working online, different forms of communication are used. Where permitted, students using "chat" functions or other online forms of communication are encouraged to ensure that their communication complies with the Freedom of Expression Policy.

23. Copyright Notice

All Teaching Materials, as they are defined under Ontario Tech's Intellectual Property policy ("IP Policy"), provided by the instructor throughout the course, including, but not limited to, in whole or in part, course notes, teaching notes, custom books, tutorials, evaluation tools, presentations and examinations are subject to the Copyright Act, R.S.C., 1985, c. C-42 and the IP Policy. Subject to the IP Policy, Teaching Materials are owned by the faculty member, instructor or other third party

who creates such works, with a license to the University. The copyright owner(s) reserves all intellectual property rights in and to the foregoing materials. Consistent with the IP Policy, Teaching Materials are intended to be used by Ontario Tech University students registered in the course that is the subject of this course outline for educational purposes only. Any distribution or publishing of this material (e.g., uploading material to a third-party website) by a student is strictly prohibited under the law unless the student has obtained the copyright owner's prior written consent. Any violation of copyright law or the IP Policy, if proven, may be subject to sanction as academic misconduct, and/or under the Student Conduct Policy.

24. Student Course Feedback Surveys

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of Ontario Tech University's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Canvas, Weekly News, and signage around the campus.

25. AODA

The Accessibility for Ontarians with Disabilities Act (AODA) standards have been considered in the development of this model course template and it adheres to the principles outlined in the University's Accessibility Policy.