



FACULTY OF SCIENCE

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

Course outline for Fall 2020

1. Course Details & Important Dates*

Term	Course Type	Day	Time
Fall 2020	Lecture	Mondays	2:10pm – 5:00pm

Location	CRN #	Classes Start	Classes End	Final Exam Period
Online	42050	Sept. 8, 2020	Dec. 7, 2020	Dec. 9-20, 2020

* For other important dates go to: <https://ontariotechu.ca/current-students/academics/important-dates-and-deadlines.php>

2. Instructor Contact Information

Instructor Name	Email
Jeremy Bradbury	jeremy.bradbury@ontariotechu.ca
Office Hours: Thursdays 3:30pm – 4:30pm or by appointment	

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 pursuing 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 at:

<http://calendar.uoit.ca/content.php?catoid=22&navoid=879#Grading>

9. Assignments and Tests

The schedule for course deliverables is as follows:

- Presentation 1 – Oct. 5, 2020
- Annotated Bibliography – Nov. 2020
- Paper (preliminary submission) – early Dec. 2020
- Peer Review – Dec. 2020
- Paper (final submission) – mid Dec. 2020
- Presentation 2 – Dec. 2020

10. Technology Requirements

To support online learning, the university recommends certain technology requirements for laptops, software and internet connectivity which are available at: <https://itsc.ontariotechu.ca/remote-learning.php>.

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@ontariotechu.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. 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.

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. 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 a Support Worker, a specially trained individual authorized to receive confidential disclosures about incidents of sexual violence. Support Workers can offer help and resolution options which can include safety plans, accommodations, mental health support, and more. To make an appointment with a Support Worker, call 905.721.3392 or email studentlife@ontariotechu.ca

- Learn more about your options at: <https://studentlife.ontariotechu.ca/sexualviolence/>

14. Students with Disabilities

Accommodating students with disabilities at Ontario Tech is a responsibility shared among various partners: the students themselves, SAS staff and faculty members. To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with me as soon as possible. **Students who suspect they have a disability that may affect their participation in this course are advised to go to Student Accessibility Services (SAS) as soon as possible.** Maintaining communication and working collaboratively with SAS and faculty members will ensure you have the greatest chance of academic success.

When on campus access is allowed, students taking courses on north Oshawa campus can visit Student Accessibility Services in the Student Life Building, U5, East HUB (located in the Founders North parking lot). Students taking courses on the **downtown Oshawa campus** can visit Student Accessibility Services in the 61 Charles St. Building, 2nd Floor, Room DTA 225 in the Student Life Suite.

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 to Friday, closed Wednesday's 8:30am – 10:00am. For more information on services provided, you can visit the SAS website at

<https://studentlife.ontariotechu.ca/services/accessibility/index.php>. Students may contact Student Accessibility Services by calling 905-721-3266, or email studentaccessibility@ontariotechu.ca.

When on campus access is allowed, 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, found here <https://disabilityservices.ontariotechu.ca/uoitclockwork/custom/misc/home.aspx>. Students must sign up for tests, midterms, or quizzes AT LEAST seven (7) days before the date of the test.

Students must register for final exams by the registration deadline, which is typically two (2) weeks prior to the start of the final examination period. SAS will notify students of the registration deadline date.

15. Professional Conduct

Information on professional suitability can be found at

http://calendar.uoit.ca/content.php?catoid=22&navoid=879#Academic_conduct

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. This information can be found at http://calendar.uoit.ca/content.php?catoid=22&navoid=879#Academic_conduct

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 can be found at <https://studentlife.ontariotechu.ca/services/academic-support/index.php>

17. Turnitin

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:

<https://shared.uoit.ca/shared/department/academic-integrity/Forms/assignment-cover-sheet.pdf>

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 Science.

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 Science 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:

- 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: [Google Docs](#), [HotCRP](#), [Slack](#).

For more information relating to these technologies, we encourage you to visit:

<https://tlc.ontariotechu.ca/learning-technology/index.php> 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. 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.

22. 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.

University Response to COVID-19

The government response to the COVID-19 pandemic is continually evolving. As new information becomes available from federal and provincial public health authorities, the Province of Ontario and the Regional Municipality of Durham, Ontario Tech University will remain nimble and prepared to respond to government orders, directives, guidelines and changes in legislation to ensure the health and safety of all members of its campus community. In accordance with public health recommendations, the university may need to adjust the delivery of course instruction and the availability and delivery mode of campus services and co-curricular opportunities. Ontario Tech University appreciates the understanding and flexibility of our students, faculty and staff as we continue to navigate the pandemic and work together to demonstrate our strong commitment to academic, research and service excellence during these challenging and unprecedented times.

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.