UNIVERSITY OF CALGARY
FACULTY OF SCIENCE

Department of Computer Science
ICT 602
403 220-6015
cpsc@cpsc.ucalgary.ca

CPSC 351 - THEORETICAL FOUNDATIONS OF COMPUTER SCIENCE II - FALL 2025

COURSE OUTLINE

The University of Calgary, located in the heart of Southern Alberta, both acknowledges and pays tribute to the traditional territories of the peoples of Treaty 7, which include the Blackfoot Confederacy (comprised of the Siksika, the Piikani, and the Kainai First Nations), the Tsuut'ina First Nation, and the Stoney Nakoda (including Chiniki, Bearspaw, and Goodstoney First Nations). The City of Calgary is also home to the Métis Nation of Alberta (Districts 5 and 6).

A. Course Information

1. **Course Coordinator(s)**

   Not Applicable

2. **Section(s)**

   Lecture

   Lecture 01 : TR 12:30 - 13:45 - Online

Instructor	*Email*	*Phone*	*Office*	*Student/Office Hours*
Dr Wayne Eberly	eberly@ucalgary.ca	403 220-5073	ICT 613	TR 2:00-2:50pm

3. **Lab and Tutorial Sections**

Tut 01 TR 14:00 - 14:50 in ST 059	Tut 02 MW 17:00 - 17:50 in SA 107	Tut 03 MW 12:00 - 12:50 in MS 205
Tut 04 MW 13:00 - 13:50 in MS 205	Tut 05 MW 08:00 - 08:50 in SA 109	Tut 06 TR 14:00 - 14:50 in MS 325
Tut 07 MW 12:00 - 12:50 in MS 325		

4. **Scheduled Out-Of-Class Activities**

   The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
Term Test 1	On-Campus - Location TBD	Wednesday, October 15, 2025 at 6:00 pm	90 Minutes
Term Test 2	On-Campus - Location TBD	Wednesday, November 5, 2025 at 6:00 pm	90 Minutes

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.

If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

5. **Additional Course Delivery Details**

   This is a ***flipped course:*** Students are expected to watch a preparatory video before each lecture presentation. The lecture presentation will, generally, concern a problem - solved by the instructor - resembling one that students might be asked to solve for an assignment or test. Students will be encouraged to solve similar problems themselves, with the help of teaching assistants as needed, during in-person tutorials. Preparatory videos, and tutorial exercises, will be posted on D2L at least one week before the meetings in which they are discussed.

   Lecture and tutorial presentations will generally *not* be recorded. Completed lecture notes will be available on D2L following each lecture, so that students can participate during lecture presentations without extensive note-taking. Solutions for tutorial exercise problems will be available on D2L as well.

   When a class is large it is difficult to give reliable information about the time students will need to complete course work. However, the duration of each preparatory lecture video will be listed on D2L, in the link for the video, to help students budget time needed to prepare for lectures. While skipping lecture presentations or tutorial exercises might seem to be an effective way to reduce the time needed for the course, this can backfire - since it might lead to situations where students must figure out how to solve these problems later on, anyway, without the help of the instructor or the teaching assistants.

   Online Delivery Details:

   This course is being offered online in real-time via scheduled meeting times, you are required to be online at the same time.

   To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any

teaching materials, must not be shared or distributed or published without the instructor's permission.

Tophat may be used to ask questions, based on preparatory material, during lecture presentations. It may also be used to track tutorial attendance. Join codes for lectures and tutorials will be posted on D2L and announced at the beginnings of meetings in which Topcoat is used.

6. **Course Site & Materials**

D2L: CPSC 351 L01-(Fall 2025)-Theoretical Foundations of Computer Science II

Technology:

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC ELearning online website.

Course videos and readings are all available on the course web site.

7. **Approved Mandatory & Optional Course Supplemental Fees**

There are no mandatory or optional course supplemental fees for this course.

8. **Requisites**

See section 3.5.C in the Faculty of Science section of the online Calendar.

Prerequisite(s):

3 units from Computer Science 219, 233 or 235; and 3 units from Mathematics 249, 265 or 275; and 3 units from Philosophy 279 or 377; and 3 units from Computer Science 251 or 6 units from Statistics 213 and Mathematics 271 or 273.

Antirequisite(s):

Credit for Computer Science 351 and Computer Science 313 will not be allowed.

Note(s):

a. As prerequisites for this course, Computer Science 251 may be replaced by a combination of Statistics 213 and one of Mathematics 271 or 273.

9. **Course Learning Outcomes**

- Able to perform advanced transformations and operations on fundamental discrete structures.
- Familiar with common discrete probability distributions (e.g., uniform, binomial, Poisson, geometric, hypergeometric).
- Able to apply concentration bounds (e.g., Markov, Chebyshev and Chernoff bounds).
- Able to devise abstract representations of computational problems.
- Able to construct various types of proofs about discrete structures, including direct proofs, indirect proofs, and mathematical induction.
- Able to specify the behaviour of programs through pre- and postconditions, and prove the correctness of iterative and recursive programs.
- Able to design and analyze abstract machine models including finite automata and Turing machines, and explain the relationship to the classes of computational problems that can be solved by these models.
- Able to classify computational problems as regular, not regular, decidable, or undecidable.

B. Assessment and Evaluation Information

1. **Assessment Components**

The University policy on grading and related matters is described in F.1and F.2 of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Component	Weight	Due Date	Modality	Location
Participation [1]	5%	Ongoing		
Assignment 1 [2]	15%	Oct 10 2025		
Term Test 1	12.5%	Oct 15 2025 at 06:00 pm (90 Minutes)	in-person	TBA
Term Test 2	12.5%	Nov 05 2025 at 06:00 pm (90 Minutes)	in-person	TBA
Assignment 2 [3]	15%	Nov 21 2025		
Assignment 3	15%	Dec 05 2025		
Registrar Scheduled Final Exam	25%	Final Exams Schedule	in person	Final Exams Schedule

[1] Additional information, about how participation marks are awarded, is available on the course web site.

[2] First component (worth one-third of the assignment weight) is due at 11:59pm on September 24.

[3] First component (worth one-third of the assignment weight) is due on Friday, November 7.

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The Final Examination Schedule will be published by the Registrar's Office approximately one month after the start of the term.

2. **Assessment & Grading**

Assessment will include assignments that are completed by groups of up to four students. Each student in a group will receive the same assignment mark.

Reappraisal of Graded Term Work and Final Grades:

See Section I of the University Calendar and https://science.ucalgary.ca/current-students/undergraduate/program-advising/grade-reappraisals-and-appeals .

3. **Examination Policy**

Students will be allowed to bring one letter-sized, double-sided page of notes into each test.***Students bringing in more pages of notes than allowed are committing academic misconduct - and no other aids will be allowed.***

See also Section G of the Calendar, on Academic Assessments and Examinations.

4. **Missed Components of Term Work**

All course components are required.

Since the instructor will be supplying feedback for the first part of each of the first two assignments as quickly as possible, no extensions for the first parts of these assignments will be granted and late submissions for these will not be accepted. Student groups will have the opportunity to submit the second part of the first two assignments, or the third assignment, up to forty-eight hours after the assignment is due, with a late penalty. Additional details about the late policy will be included with each assignment.

Student groups may also request personal extensions for assignments, but they must submit each request at least forty-eight hours before the assignment is due, whenever possible.

There will be no make-up or deferred term tests in this course. Instead, students may request that course components be re-weighted.

Requests for assignment extensions, and notification of absences from tests, must be reported using the Faculty of Science Missed Term Work Form.

See also Sections G2.3 and M.1.1 of the Calendar, on Absence from In Course Assessments and Supporting Documentation for Absences.

5. **Letter Grade Conversion**

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	95 %	90 %	85 %	80%	75%	70 %	66 %	62%	58%	55 %	50 %

Each student's overall percentage grade will be***rounded up*** to obtain a whole number between 0 and 100 - which will be used to obtain a letter grade using the conversion table.

Students must obtain a weighted average of C- (58%) or higher on the test component of the course - including the term tests and the final examination - in order to receive a grade of C- or higher for this course.

The University of Calgary offers a flexible grade option, Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: https://science.ucalgary.ca/current-students/undergraduate/program-advising/undergraduate-processes

C. Course Policies & Procedures

1. **Equity Diversity & Inclusion**

The University of Calgary is committed to creating an equitable, diverse and inclusive campus, and condemns harm and discrimination of any form. We value all persons regardless of their race, gender, ethnicity, age, LGBTQIA2S+ identity and expression, disability, religion, spirituality, and socioeconomic status. The Faculty of Science strives to extend these values in every aspect of our courses, research, and teachings to better promote academic excellence and foster belonging for all.

2. **Course Communication**

Students must use their U of C account for all course correspondence.

Student inquiries, that cannot be made during lectures, should be sent by the email to the course instructor. The instructor will attempt to answer all student email within two business days after the email has been received.

3. **Academic Integrity and Misconduct**

Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional Code of Conduct and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

Student Handbook on Academic Integrity
Policy and Procedure for Student Academic Misconduct
Faculty of Science Academic Misconduct Process
Research Integrity Policy

Additional information is available on the Student Success Centre Academic Integrity page

4. **Acceptable & Prohibited Tools and Resources**

Students in this course are encouraged to help each other to learn. However, work submitted for assessment must be understood by each student in the group submitting the work, and this work must reflect the student's, or group's, abilities.

Thus, students must not take notes, pictures, or screen shots during discussions of assignment problems that include other students outside their assignment group, and they should not discuss assignment problems with anyone except other CPSC 351 students, CPSC 351 teaching assistants or the course instructor, at all. Furthermore, students should wait at least twelve hours after such discussions before resuming work on the assignment.

In a course like this, material supplied by generative AI or obtained from other sources can be highly unreliable - and the use of such tools and material can impede learning instead of promote it. Thus the use of advanced AI tools such as ChatGPT or Dall-E 2 is ***strictly prohibited*** for all academic work, including assignments in this course: You are expected to complete all tasks without substantive assistance from others, including AI tools.

Any use of AI tools for your academic work may result in academic penalties and be considered an act of academic misconduct. If you have questions about the use of AI tools, please arrange a conversation with the instructor.

5. **Writing Across the Curriculum**

Writing skills are not exclusive to English courses and, in fact, should cross all disciplines. The University supports the belief that throughout their University careers, students should be taught how to write well so that when they graduate their writing abilities will be far above the minimal standards required at entrance. Consistent with this belief, students are expected to do a substantial amount of writing in their University courses and, where appropriate, members of faculty can and should use writing and the grading thereof as a factor in the evaluation of student work. The services provided by the Writing Support , part of the Student Success Centre, can be utilized by all undergraduate and graduate students who feel they require further assistance. See also Section E.2 of the University Calendar.

6. **Academic Accommodations**

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf.

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the Request for Accommodation in Academic Courses Form and sending by email to science@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

7. **Instructor Intellectual Property.**

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy) and requirements of the copyright act (laws-lois.justice.gc.ca/eng/acts/C-42/index.html) to ensure they are aware of the consequences of unauthorized sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy.

8. **Recording of Lecture**

Audio recording of lectures, other than where an audio recording is an accommodation, shall be permitted for individual private study only at the discretion of the instructor. For any other use, whether by duplication, transcription, publication, sale or transfer of recordings, written approval must be obtained from the instructor for the specific use proposed. Any use other than that described above constitutes academic misconduct and may result in suspension or expulsion. For more information, see Section E.6 Recording of Lectures of the University Calendar.

9. **Freedom of Information & Privacy**

This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see Legal Services website.

10. **Human & Living Organism Studies Statements**

Students will not participate as subjects or researchers in human studies.

See also Section E.5 of the University Calendar.

D. Copyright Legislation

All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or non-academic misconduct, in addition to any other remedies available at law.

E. Support & Resources

Student well-being and safety resources that are not course-specific can be found on the Office of the Registrar's website: https://www.ucalgary.ca/registrar/registration/course-outlines

Electronically Approved - Aug 06 2025 12:54

Department Approval

Electronically Approved - Aug 14 2025 11:12

Associate Dean's Approval