

COMP 5703

Advanced Algorithms

Fall 2026 | Course outline dated August 30, 2026



Course at a glance

Class schedule

WHEN

Tuesday and Thursday, 14:35–15:55

TERM DATES

September 10–December 10, 2026

FALL BREAK

No classes October 26–30

Course team and access

Instructor: Prosenjit (Jit) Bose

Email: jit@scs.carleton.ca

Instructor office/hours: TBD

Teaching assistant: Zoltan Kalnay

TA contact: TBD

TA office/hours: TBD

Classroom: Check Carleton Central.

Course site: [Brightspace](#)

Best way to communicate

The **Brightspace Discussions area** (the course forum/message board) is the best place to ask questions about course content, assignments, and logistics. It will be checked regularly by the instructor and teaching assistants, and answers will be visible to the entire class. Use email only for personal or confidential matters.

How the course runs

Lectures are delivered live and in class. Assignments should be typeset and submitted through Brightspace. Confirmed instructor and TA office locations, student hours, and TA contact information will be posted in Brightspace. Important dates and deadlines, including class suspensions and statutory holidays, are published on the Registrar's [Academic Dates](#) page.

Course overview

Calendar description and course scope

An advanced course on the design and analysis of algorithms. Topics include advanced recurrence relations, algebraic complexity, advanced graph algorithms, amortized analysis, algorithms for NP-complete problems, and randomized algorithms.

The course will draw from randomized algorithms, graph algorithms, geometric algorithms, data structures, amortized analysis, and approximation algorithms.

Prerequisites and learning materials

Prerequisites: COMP 3804 or MATH 3804 or equivalent. This course cannot be taken for credit by students who completed COMP 4804 at Carleton.

There is no required textbook. References, readings, and handwritten notes will be posted or linked in Brightspace. **Students are not required to purchase textbooks or other learning materials for this course.**

Learning environment

Students arrive with different backgrounds and ways of learning. Questions and requests for clarification are welcome. The course will aim to maintain a respectful learning environment in which all students can participate.

Learning outcomes

By the end of the course, students should be able to:

1. select and apply appropriate advanced algorithm-design techniques;
2. prove correctness and analyse time and space complexity rigorously;
3. analyse randomized, graph, geometric, amortized, and approximation algorithms; and
4. communicate complete algorithmic arguments using precise mathematical notation.

Assessment at a glance

Component	Weight	Date(s)	What to know
Four assignments	4%	Sep. 24; Oct. 15; Nov. 3; Nov. 24	Each is worth 1%; timely best-effort submission earns the point.
Three required tests	96%	Oct. 1; Nov. 5; Nov. 26	In class; each required test is worth 32%.
Optional Test 4	0%	Dec. 10	Replaces the lowest required-test mark only when higher.
Total	100%	–	There is no final examination.

Assignment and test expectations

Grades will be posted in Brightspace. Each assignment is worth 1%; students receive the point for submitting their best effort by the deadline. Late assignments will not be considered.

Tests are written in class during the regular lecture period. Unless announced otherwise in advance, tests are closed-book and must be completed without electronic aids. Test marks will be posted in Brightspace; questions about a mark should be directed to the instructor.

Test conditions and electronic aids

All quizzes, tests, and exams are expected to be completed individually and without electronic aid; any communication or access to electronic devices (for example, cellphones) during a test will be considered cheating. Use of smart glasses or other similar assistive technologies before or during a test is strictly prohibited and is considered an academic-integrity violation.

Even if you have prescription glasses with assistive technologies, you will not be allowed to use them during a test, so please make sure that you have acceptable prescription glasses. The proctor has the right to ask to inspect your glasses before or during the test. Unless authorized through PMC accommodations, headphones and earbuds are not permitted. A proctor may move a student whose baseball cap, sunglasses, or other item prevents monitoring where the student's eyes are focused. Students must submit their test before leaving the classroom or it will not be graded.

Late and missed work

Late assignments

No late assignments will be accepted. Each assignment is intended to help students prepare for the tests and is graded for timely submission of a best effort.

Short-term missed work

For circumstances lasting five days or less, submit the University's [Academic Consideration for Coursework form](#) and contact the instructor promptly.

Missed tests

Students who miss a test must contact the instructor promptly and submit the appropriate academic-consideration form. Arrangements will follow University regulations.

Long-term missed work

For circumstances lasting more than five days, follow the University's [long-term academic-consideration process](#) and contact the instructor promptly.

Collaboration and generative AI

There is absolutely no collaboration permitted on tests. The four assignments help students prepare for the tests and reinforce the concepts taught in class. Unless an assignment explicitly says otherwise, students may discuss general ideas but must write their own solutions independently and cite all references and collaborations. Students may use AI tools as a supplementary tool to clarify challenging concepts or get started on assignment questions. Students remain responsible for understanding, checking, and writing their own solutions. Any use of AI in submitted work must be disclosed, including the tool used and its purpose. Students must discuss any use of AI not described here with the instructor to ensure that it supports the course learning goals. Students may never post, share, or upload course materials without the instructor's explicit permission.

Academic accommodations and integrity

Academic accommodations

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes are outlined on the [Academic Accommodations website](#).

Academic integrity

Students are expected to uphold the values of academic integrity, which include fairness, honesty, trust, and responsibility. Examples of actions that compromise these values include, but are not limited to, plagiarism, accessing unauthorized sites for assignments or tests, unauthorized collaboration on assignments or exams, and using artificial-intelligence tools when assessment instructions say that they are not permitted.

Misconduct in scholarly activity will not be tolerated and will result in consequences as outlined in Carleton University's [Academic Integrity Policy](#). Standard Faculty of Science sanctions and process information appear on the Faculty's [Academic Integrity website](#). Students are expected to familiarize themselves with and abide by the policy. Claiming ignorance of or confusion about the academic-integrity standards does not excuse responsibility for violating them.

Student rights and responsibilities

Students are expected to act responsibly and engage respectfully with other students and members of Carleton and the broader community. See the [Rights and Responsibilities Policy](#) for details regarding expectations for non-academic behaviour. Those who participate with another student in the commission of an infraction will also be held liable for their actions.

Course participation and support

Course questions belong in Brightspace Discussions

Students are responsible for lecture notes and all material discussed in class. Post course-content questions in the Brightspace Discussions area so that everyone benefits from the answer. The instructor and teaching assistants will check it regularly. Email the instructor only for personal or confidential matters; private student email will normally be answered within three business days unless the requested information is already available in Brightspace or this outline. Students should check their Carleton email and Brightspace regularly.

Graduate academic advising

The Graduate Advisors for the School of Computer Science are available in Room 5302 HP or at grad.scs@carleton.ca. They can assist with prerequisites and preclusions, course substitutions and equivalencies, program requirements, and other graduate-program questions, and can refer students to other University resources.

SCS laboratories and technical support

Students taking a COMP course can access the SCS computer laboratories. Find schedules and locations on the [Computer Laboratories page](#). All laboratory and technical-support information is available through [SCS Technical Support](#); support staff may be contacted through the [IT Support contact page](#).

Mental health and wellness

Resources are available through the [Carleton Wellness website](#).

If you have a concern

1. **Start with the instructor.** Email or visit during student hours, and the instructor will do their best to address the concern.
2. **If unresolved, contact the School of Computer Science** at studentconcerns@scs.carleton.ca.
3. **If the concern remains unresolved, contact the Office of the Dean of Science** at ODScience@carleton.ca.

Please follow this order of contact. You may also bring concerns to [Ombuds Services](#).