COMP 2804 A and B (Fall, 2025)

Discrete Structures II

Instructor: Pat Morin (he/him/his)

Email: patrickmorin@cunet.carleton.ca

Office Location: Room 5177, Herzberg Building

Best Ways to be in Touch: in class, via email, or during office hours

Teaching Assistant: A list of teaching assistants and their contact/office hours information will be posted once the course starts.

Class Location: Check Carleton Central

Lecture Times: Check Carleton Central

Course Website: https://patmorin.me/teaching/2804/

Important dates and deadlines can be found here: Dates, Deadlines, and Regulations—Registrar's Office, including class suspension for fall, winter breaks, and statutory holidays.

Course Calendar Description

A second course in discrete mathematics and discrete structures. Topics include: counting, sequences and sums, discrete probability, basic statistics, recurrence relations, randomized algorithms. Material is illustrated through examples from computing.

Prerequisite(s): COMP 1805 with a minimum grade of C-, or permission of the School of Computer Science for those in Combined Honours in Computer Science and Mathematics.

Learning Material(s) and Other Course/Lab-Related Resources

Students are not required to purchase textbooks or other learning materials for this course. Instead, we will be using the following free (libre and gratis) textbooks. The first one is the primary textbook for this course. The second contains supplementary and background material:

- Michiel Smid. Discrete Structures for Computer Science: Counting, Recursion, and Probability, 2019.
- Eric Lehman, F Thomson Leighton, and Albert R Meyer. Mathematics for Computer Science, 2018

Topics Covered and Learning Outcomes

I am committed to fostering an environment for learning that is inclusive for everyone regardless of gender identity, gender expression, sex, sexual orientation, race, ethnicity, ability, age, class, etc. All students in the class, the instructor, and any guests should be treated with respect during all interactions. Please feel free to contact me via email or in person to let me know about any experiences you have had related to this class that have made you feel uncomfortable. I welcome emails or in-person communications to let me know your preferred name or pronoun (though I am terrible at remembering names).

Week	Topic/Content	Readings/Prep for Class	Calendar Week
1	Introduction	Lecture 1, Chapter 1	Sep 1
2	Counting	Lectures 2 & 3, Sections 3.1–3.5	Sep 8
3	Counting	Lectures 4 & 5, Sections 3.6–3.9	Sep 15
4*	Pigeonhole principle	Lecture 6, Test 1, Section 3.10	Sep 22
5	Recursion	Lectures 7 & 8, Sections 4.1–4.5	Sep 29
6*	Recursion	Lecture 9, Test 2, Sections 4.6	Oct 6
7	Discrete Probability	Lectures 10 & 11, Sections 5.1–5.6	Oct 13
8	Conditional Probability	Lectures 12 and 13, Sections 5.7, 5.8, 5.11	Oct 27
9	Probability	Lecture 14 & 15, Sections 5.12, 5.13, 5.15	Nov 3
10*	Random variables	Lecture 16, Test 3, Sections 6.1–6.5	Nov 10
11	Random variables	Lectures 17 & 18, Sections 6.8–6.10	Nov 17
12*	Geometric and binomial random variables	Lecture 19, Test 4, Sections 6.6, 6.67	Nov 24
13	The Probabilistic Method	Lectures 20 & 21, Sections 7.1–7.5	Dec 1

Each * indicates a week that includes an in-class test.

Assessment Scheme

Grade Breakdown

COMPONENT	**GRADE VALUE**	**DATE**
In-class Test 1 (Counting)	12.5%	Sep 24, 25
In-class Test 2 (Pigeonhole and recursion)	12.5%	Oct 8, 9
In-class Test 3 (Probability)	12.5%	Nov 12, 13
In-class Test 4 (Random variables)	12.5%	Nov 26, 27
Formally scheduled Final Exam	50%	TBA

Late and Missed Work Policies

If you miss an in-class test for any reason, then the entire weight of the test will be added to the weight of the final exam.

For example, if you miss two of the in-class tests, then the two tests you take will be worth 12.5% each and your final exam will be worth 50+12.5+12.5=75% of your final grade.

Undergraduate Academic Advisors (only for UG course)

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.

Mental Health and Wellness

All students are encouraged to review the resources available to them at the Carleton Wellness Website.

Academic Accommodations and Regulations

Academic Accommodation

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 (https://students.carleton.ca/course-outline/).

Chat GPT/Generative AI Usage

Students may use AI for study purposes if they believe it will help them.

Academic Integrity *(additional sample text available at the end of the template)*

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 such as ChatGPT when your assessment instructions say it is not permitted.

Misconduct in scholarly activity will not be tolerated and will result in consequences as outlined in Carleton University's Academic Integrity Policy. A list of standard sanctions in the Faculty of Science can be found here.

Additional details about this process can be found on the Faculty of Science Academic Integrity website.

Students are expected to familiarize themselves with and abide by Carleton University's Academic Integrity Policy.

Student Rights & Responsibilities

Students are expected to act responsibly and engage respectfully with other students and members of the Carleton and the broader community. See the 7 Rights and Responsibilities Policy for details regarding the expectations of non-academic behaviour of students. Those who participate with another student in the commission of an infraction of this Policy will also be held liable for their actions.

Student Concerns

If you have any concerns regarding this course, your first point of contact is me. Please email me or visit during my student hours, and I will do my best to address your concerns. If I cannot resolve the issue, the next point of contact is the School of Computer Science at studentconcerns@scs.carleton.ca. If the concern remains unresolved, the final point of contact is the Office of the Dean of Science at ODScience@carleton.ca. Please follow this order of contact.

Note: You can also bring your concerns to Ombuds services.

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/.

School of Computer Science Laptop Requirement (only applies to on-campus courses)

Every student that has been enrolled in a 1000-level (i.e., first year) course offered is required to have a laptop. This includes COMP1001, COMP1005, and COMP1006. For more information, please visit https://carleton.ca/scs/scs-laptop-requirement/ and then review the requirements at https://carleton.ca/scs/scs-laptop-requirement/laptop-specs/.