

COMP 3000B for Term Fall 2023

Operating Systems

Course Information

Instructor: Zinovi Rabinovich

Contact: zinovirabinovich@cunet.carleton.ca

Classroom: Please access the Time Table via Carleton Central

Lectures: Tuesdays & Thursdays, 08:30-10:00 (in-person)

Tutorials: Check your schedule on Carleton Central

Course Website: <https://brightspace.carleton.ca/d2l/home/208110>

For information about Carleton's academic year, including registration and withdrawal dates, see [Carleton's Academic Calendar](#).

Teaching Assistants

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

Course Calendar Description

Operating system implementation course stressing fundamental issues in design and how they relate to modern computer architectures. Assignments involve the modification and extension of a multitasking operating system.

Includes: Experiential Learning Activity

Precludes additional credit for SYSC 4001.

Prerequisite(s): COMP 2401 with a minimum grade of C- and COMP 2402.

Lectures three hours a week, tutorial one and a half hours a week.

Required Textbook(s) and Other Resources

[Operating Systems: Three Easy Pieces](https://pages.cs.wisc.edu/~remzi/OSTEP/) (<https://pages.cs.wisc.edu/~remzi/OSTEP/>), 2018. Springer. (Textbook by Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau). List all textbooks, course books, online resources or links required for the course.

Topics Covered and Learning Outcomes

Course Outline:

Week	Date		Topic
Week 1			
	Sep 7		OS Course: Why, What and Who
Week 2	Sep 12		Introduction to Operating Systems
	Sep 14		
Week 3	Sep 19	A1 starts (due: Oct 9)	Abstraction
	Sep 21		
Week 4	Sep 26		Facilities for Users/Programmers
	Sep 28		
Week 5	Oct 3		File Systems and Storage Management
	Oct 5		
Week 6	Oct 10	A2 starts (due: Oct 30)	File Systems and Storage Management
	Oct 12		
Week 7	Oct 17		Mid-term test (in class)
	Oct 19		Inter-Process Communication and Concurrency
Week 8	Oct 24		Fall Break
	Oct 26		
Week 9	Oct 31	A3 starts (due: Nov 20)	Inter-Process Communication and Concurrency
	Nov 2		Kernel Modules
Week 10	Nov 7		Memory Management
	Nov 9		
Week 11	Nov 14		Containerization and Virtualization
	Nov 16		
Week 12	Nov 21	A4 starts (due: Dec 4)	Security and Additional OS Topics
	Nov 23		
Week 13	Nov 28		
	Nov 30		
Week 14	Dec 5		
	Dec 7		Review Towards the Exam
Week (end)	TBD		Final Exam

Assessment Scheme

There are **4 (four) components** to the scheme:

- **Tutorials: 20%** of the final grade

- There will be 9 tutorials in total, but only 8 best will be taken towards the Tutorials Component mark. Thus each tutorial holds 2.5% of the final grade
- Each tutorial's 2.5% will be broken into 0.5% for attendance (check in in person with your TA) and 2% for the actual answers
- **Assignmentst: 20% of the final grade**
 - Each assignment will carry 5% of the final grade
 - The deadlines for the assignments are semi-soft. You can delay up to 4 days, but every day of the delay will reduce the assignment's mark by 7.5%. E.g., the day after the deadline, the maximum mark for the assignment will be 92.5/100. After 4 days, the assignment will be marked 0 (zero).
 - The deadline is 23:59 on the noted deadline date
- **Midterm exam, in-class, closed book: 25%**
- **Final exam, closed book: 35%**

If you are unsure of the expectations regarding academic integrity (how to use and cite references, if unauthorized collaboration with lab- or classmates is permitted (and, if so, to what degree), then you must ASK your instructor. Sharing assignment or quiz specifications or posting them online (to sites like Chegg, CourseHero, OneClass, etc.) is ALWAYS considered academic misconduct. You are NEVER permitted to post, share, or upload course materials without explicit permission from your instructor. Academic integrity offences are reported to the office of the Dean of Science. Information, process and penalties for such offences can be found on the ODS webpage: <https://science.carleton.ca/students/academic-integrity/>.

- ****NEW **** With the (now highly accessible) A.I. systems, students may be using them in illegitimate ways because the course outline did not specify whether or not they were permitted. Here are a few sample paragraphs that faculty can consider adding:

Notes on AI Tools

Many of the assessed activities in this course were designed to be completed by an individual working alone. Unless it is explicitly stated otherwise, the use of any will be considered academic misconduct. This includes, but is not limited to, chatbots (e.g., ChatGPT, Google Bard, Bing Chat), research assistants (e.g., Elicit), and image generators (e.g., Stable Diffusion, Dall-E), etc.

An exception to the above rule is made for automated grammar and punctuation checking tools (such as Grammarly).

References to any material you use but did not originate must use the IEEE/APA/MLA citation style. Failure to reference materials correctly can result in severe penalties, and the use of manufactured (i.e., falsified) or misleading references will be treated as evidence of plagiarism and considered academic misconduct.

Everything you submit for evaluation (i.e., assignments, quizzes, tutorials, examinations, etc.) must be the result of your own work and only your own work. If you use more than five consecutive words from

a single source without providing a valid reference, then that is considered plagiarism and an example of academic misconduct.

School of Computer Science Policies

Undergraduate Academic Advisors

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.

Graduate Academic Advisors

The Graduate Advisors for the School of Computer Science are available in Room 5302 HP; or by email at grad.scs@carleton.ca or scs.ug.advisor@cunet.carleton.ca. The graduate advisors can assist with understanding your academic audit and the remaining courses required to meet graduation requirements.

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/>.

University Policies:

- **Academic Accommodations**

Carleton is committed to providing academic accessibility for all individuals. Please review the academic accommodation available to students here: <https://students.carleton.ca/course-outline/>.

- **Academic Integrity**

Student Academic Integrity Policy. Every student should be familiar with the Carleton University Student Academic Integrity policy. A student found in violation of academic integrity standards may be sanctioned with penalties which range from a reprimand to receiving a grade of F in the course, or even being suspended or expelled from the University. Examples of punishable offences include plagiarism and unauthorized collaboration. Any such reported offences will be reviewed by the office of the Dean of Science. More information on this policy

may be found on the ODS Academic Integrity page: <https://carleton.ca/registrar/academic-integrity/>.

Plagiarism. As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Such reported offences will be reviewed by the office of the Dean of Science. More information and standard sanction guidelines can be found here: <https://science.carleton.ca/students/academic-integrity/>.

Unauthorized Collaboration. Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis".