# COMP1405Z/1406Z (Fall 2024) Introduction to Computer Science I/II Course Outline



# **Course Description:**

**COMP 1405:** A first course in programming emphasizing problem-solving and computational thinking. Topics include algorithms, data types, conditionals, iteration, data structures, functions, objects, testing, sorting, searching, and run-time analysis.

**COMP 1406:** A second course in programming emphasizing problem-solving and computational thinking in an object-oriented language. Topics include abstraction, mutable data structures, methods, inheritance, polymorphism, recursion, program efficiency, testing, and debugging.

**Instructor:** Farah Chanchary (she/her)

Email: farahchanchary@cunet.carleton.ca

**Lectures:** Online, asynchronous

**Tutorials:** Z1 - Thursday: 11:35 - 14:25 and Z2 - Thursday: 14:35 - 17:25

**Location:** See Carleton's schedule for the most up-to-date location

**Course Website:** all course materials and resources will be available on Brightspace.

Office Hours: TA's office hours and contact information are available on the course website.

# **Learning Modality:**

- Lectures will be asynchronous. Pre-recorded videos will be posted on Brightspace.
- Tutorials will be synchronous, and in-person. Attendance is mandatory. You must bring a laptop to the in-person tutorials. See Carleton's laptop requirements <a href="here">here</a>.
- Assignments and weekly quizzes will be asynchronous and delivered via Brightspace.
- The midterm and final exams will be in person. The midterm exams will be held during tutorial hours.

### **Learning Outcomes - COMP1405Z:**

If a student engages with the course material and completes all assignments, tutorials, and practice problems, then by the end of this course that student should be able to:

- Use a programming language to write computer programs (in the imperative paradigm)
- Explain the differences between algorithm design and implementation
- Apply different problem-solving heuristics (e.g., divide-and-conquer, abstraction)
- Explain the following topics:
  - data types, variable assignment, propositional logic, Boolean values, strings
  - branching, repeating, and nested control structures (i.e., "if", "for", "while")
  - data structures lists, dictionaries, tuples, etc.
  - functions, scopes, and recursion
  - objects and classes for data storage and manipulation
  - runtime analysis
- Implement some basic searching and sorting algorithms

# **Learning Outcomes - COMP1406Z:**

If a student engages with the course material and completes all assignments, tutorials, and practice problems, then by the end of this course that student should be able to:

- Implement object-oriented computer programs using the Java programming language
- Understand and effectively apply the key principles of object-oriented programming: encapsulation, abstraction, inheritance, and polymorphism
- Understand the basic memory model of Java programs
- Work with abstract data types to solve problems
- Apply exception handling to build fault-tolerant programs
- Create basic graphical user interfaces using the JavaFX library
- Save data to and load data from files

### Assessment Scheme - COMP1405Z:

In this course, students will be evaluated according to the following criteria.

Criteria	Frequency	Total %	Tentative dates*
Quizzes	Best 10/11	10%	Weekly, due on Friday at 11:59 pm
Tutorials	5	15%	Weekly, due on Friday at 11:59 pm
Midterm exam (in-person)	1	15%	Thursday, October 3rd
Assignments + Self-evaluation quizzes	4	35%	Self-evaluation quizzes are associated with assignments, more information is available on the course web page
Final exam (in- person)	1	25%	Will be scheduled by the Exam Services

<sup>\*</sup>Dates are subject to change. Announcements will be made in the class and on the course website. You are required to achieve a grade of <u>at least 50% on the final exam</u> to pass COMP1405Z.

### **Assessment Scheme - COMP1406Z:**

In this course, students will be evaluated according to the following criteria.

Criteria	Frequency	Total %	Tentative dates*
Quizzes	Best 10/11	10%	Weekly, due on Friday at 11:59 pm
Tutorials	5	20%	Weekly, due on Friday at 11:59 pm
Midterm exams (in-person)	2	35%	Thursday, November 21st and Thursday, December 5th
Assignments + Self-evaluation quizzes	4	35%	Self-evaluation quizzes are associated with assignments, more information is available on the course web page

<sup>\*</sup>Dates are subject to change. Announcements will be made in the class and on the course website. You are required to achieve a grade of <u>at least 50% on the Midterm exam - 2</u> to pass COMP1406Z.

### **Recommended Textbooks:**

This course does not require the purchase of any textbook. Reading materials will be shared on Brightspace.

**Collaboration** is NOT allowed on any assessment criteria. Assignments, tutorials, quizzes, and the final exam must be completed individually. Discussing assignments, tutorials, and quiz problems is allowed on a high level, but students should write code without any assistance from others.

- The use of any AI system to generate assignment code will be considered academic misconduct. This includes, but is not limited to, chatbots (e.g., ChatGPT, Google Bard, Bing Chart), research assistants (e.g., Elicit), and image generators (e.g., Stable Diffusion, Dall-E), etc. Students are not allowed to post questions/answers online (to sites like Chegg, CourseHero, etc.) and are never permitted to share or upload course materials without explicit permission from their instructor.
- There is a separate plagiarism policy document for this course in Brightspace. Students must read this document thoroughly and must agree to adhere to this policy (and to all policies stated in this course outline) before the assignment resources will be made available.
- If you are still unsure of the expectations regarding academic integrity (how to use and cite references, how much collaboration with lab or classmates is appropriate), you are invited to discuss any concerns with the instructor at the earliest opportunity.

**Late policies:** all weekly quizzes and assignments are due on Friday at 11:59 pm (night). A 56-hour grace period is granted for each submission and ends on Monday at 8 am (morning). TA office hours and forum monitoring are <u>not</u> available during the grace period. You may submit your quiz/assignment solutions at any time within this grace period with no penalty. Beyond this submission window, extensions will <u>not</u> be possible for any reason.

## **Software Requirements:**

**COMP1405Z:** we will use Python (version 3.x) in this course. Download and install the latest version of Python from this <u>official website</u>. Installation instructions are available in the Tutorial #1 specification on the course website.

**COMP1406Z:** we will use Java programming language in this course. Download the latest JDK for your computer's operating system from the official website of Oracle (<a href="https://www.oracle.com/technetwork/java/javase/downloads/index.html">https://www.oracle.com/technetwork/java/javase/downloads/index.html</a>). Be sure to install the JDK and not just the JRE. You may use JDK 17 or higher for this course.

**Weekly quizzes:** Every week a set of practice problems (MCQs, short answers, etc.) related to the lecture materials will be posted in Brightspace. These questions will test your knowledge of the concepts and the programming languages. Two attempts per quiz are allowed. Late attempts will not be allowed. The best 10 scores will be counted.

**Tutorials:** Tutorials will be done weekly. Attendance is mandatory. TAs will be available to answer any tutorial questions during these sessions. To receive full marks, you must submit the completed work to Brightspace by the deadlines (Thursdays, 11:59 pm). Late submissions will not be accepted.

**Midterm exams:** The midterm exams will be held in person during tutorial time. You must attend, write, and submit your exam immediately upon completion to be graded. If you are unable to attend the exam due to extenuating circumstances, you must inform the instructor via email <a href="mailto:before">before</a> the exam begins. There will be no make-up exam but students who receive accommodations will have the weight of the missed exam moved to the Final/next midterm exam. Accommodations are granted at the discretion of the instructor. Failure to follow the above instructions will result in a grade of zero (0) for your missed exam.

**Assignments:** All assignments will be made available in Brightspace, and you will use Brightspace to submit your assignments. All assignment scores will be counted.

**Tutorial/Assignment submission:** multiple submissions are allowed before the due date. You are expected to work on your assignments consistently once they are released and upload your progress on Brightspace periodically. As a result, the instructor does not grant exemptions for the assignments due to sudden sickness, or any technical problems such as problems regarding internet connectivity or computer hardware or software. No provision is made for missed tutorials/assignments, and no extra credit tutorials/assignments will be available. Therefore, you are advised to:

- periodically upload your progress (i.e., upload your progress whenever a change is made).
- attempt to submit your final submission at least one hour in advance of the due date and time.

For each assignment, you will be submitting one or more files that contain source code, and these files must be given the correct filename and provided in the specified format. Assignments that are incorrectly named or in the incorrect format will be penalized and may receive a zero (0) mark.

If any of the source code files you submit does not run, it will receive a zero mark. Consequently, after you upload your submission to Brightspace you must re-download it immediately and ensure that:

- your submission is a "zip" file that is not corrupt (i.e., it can be opened properly).
- each of your source code files can be run from an IDE or command line without error.
- each of your source code files can be viewed in a text editor (for marking purposes).
- your submission and each of your source code files follow the proper naming scheme.

You are expected to demonstrate good programming practices at all times. Your code may be penalized if it is poorly written.

**Grading and Appeal:** All assignments, tutorials, and exams submitted through Brightspace will be graded by the TAs. Weekly quizzes will be auto-graded. It is your responsibility to ensure that your marks (assignments, tutorials, exams, quizzes) published in Brightspace are correct within seven (7) working days of the date the marks were released. Concerns or

complaints about the grading must be communicated first to the TA who marked your work, then, if the result is unsatisfactory, to the instructor within that time. After that one week, no further consideration will be offered, and students will not be able to request their marks be changed under any circumstances.

**Bonus:** The remaining weekly quiz score, if completed, will be used as bonus points. This is completely optional; not doing the bonus point will not negatively impact your final grade.

**SCS Computer Laboratory:** students taking a COMP course can access the SCS computer labs. The lab schedule and location can be found <a href="here">here</a>. All SCS computer lab and technical support information can be found <a href="here">here</a>. Technical support staff may be contacted in person or virtually, see this <a href="page">page</a> for details.

### **Additional Notes**

In addition to the time spent reading/viewing lecture materials and completing tutorials, students can expect to spend at least fifteen (15) hours per week on this course. Students are responsible for all course materials, including lecture notes, tutorial exercises, and all materials discussed in class and on any of the official discussion forums.

Students are asked to pose all questions related to course content using the official discussion boards; students should <u>not</u> email the instructor directly unless the question contains confidential information or is of a personal nature.

The instructor will attempt to answer every student email received within two (2) working days of the time the message was received unless the email requests information already posted on Brightspace, Discord, or in this course outline. To ensure that all announcements are received, students are expected to check their email daily.

All materials created for this course (including, but not limited to, lecture notes, recorded videos, in-class examples, tutorial exercises, assignments, examinations, and posted solutions) remain the intellectual property of the instructor. These materials are intended for the personal and non-transferable use of students registered in the current offering of the course. Reposting, reproducing, or redistributing any course materials, in part or whole, without the written consent of the instructor, is strictly prohibited.

## **Plagiarism Policy:**

Any student who violates academic integrity (intentionally or not) must be reported to the Associate Dean (Undergraduate) who will investigate the matter. Penalties for such offences can be found on the <a href="ODS webpage">ODS webpage</a>.

There is a separate plagiarism policy document for this course that is located on Brightspace. Students must read this document thoroughly and must agree to adhere to this policy (and to all policies stated in this course outline) before the assignment resources will be made available.

If you are still unsure of the expectations regarding academic integrity (how to use and cite references, how much collaboration with lab or classmates is appropriate), you are invited to discuss any concerns with the instructor at the earliest opportunity.

Respect in the Classroom and Forums: Please remember to treat your peers and the course staff with respect. Treat the course spaces as professional spaces and behave accordingly. This includes any in-person activity and any course-related forums (Brightspace, Discord) and other electronic communications (emails). It is not acceptable to use offensive language or disparage a person or group, no matter the intent. Behavioral misconduct may be reported to Student Affairs. We recommend you read over our discord #rules-please-read channel and 'Class respect and Behaviour' on the Brightspace course page. You are responsible for behaving within these parameters. If you feel you have been disrespected or abused either by other students or course staff, please contact us (email) immediately.

# **Undergraduate Academic Advisor**

The Undergraduate Advisor for the School of Computer Science is available in Room 5302C HP; or by email at <a href="mailto:scs.ug.advisor@cunet.carleton.ca">scs.ug.advisor@cunet.carleton.ca</a>. 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.

----- University Policies -----

For information about Carleton's academic year, including registration and withdrawal dates, see <u>Carleton's Academic Calendar</u>.

**Pregnancy Obligation.** Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit <u>Equity Services</u>.

**Religious Obligation.** Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit <u>Equity Services</u>.

Academic Accommodations for Students with Disabilities If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or <a href="mailto:pmc@carleton.ca">pmc@carleton.ca</a> for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. For more details, visit the <a href="Paul Menton Centre">Paul Menton Centre</a> website.

**Survivors of Sexual Violence.** As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support

**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 awarded penalties which range from a reprimand to receiving a grade of *F* in the course or even being expelled from the program or University. Examples of punishable offences include: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found <a href="https://examples.com/here">here</a>.

**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. Standard penalty guidelines can be found <a href="here">here</a>.

**Unauthorized Co-operation or Collaboration.** Senate policy states that "to ensure fairness and equity in the 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". Please refer to the course outline statement or the instructor concerning this issue.

All members of the Carleton community are required to follow requirements and guidelines regarding health and safety which may change from time to time. For the most recent information about Carleton's COVID-19 response and health and safety requirements please see the <u>University's COVID-19 website</u> and review the <u>Frequently Asked Questions (FAQs)</u>. Should you have additional questions after reviewing, please contact <u>covidinfo@carleton.ca</u>.