COSC 2P05 – Programming languages

Course Information

Course Number: COSC 2P05
Term/Year/Duration: Fall 2025 D2
Course Title: Programming languages
Course Fees: None

Instructor Information

Instructor Name: Michael Winter
Email: mwinter@brocku.ca
Office Locations: MCCJ323
Contact: by email or during office hours, Mon & Wed, 10am-noon
Teaching Assistants: tba

Times and Locations

- *Lecture: Mon & Wed, 08:00am-09:30pm, TH245*

Note: Classes at Brock University end ten minutes ahead of the hour or half hour to facilitate transfer time.

Optional language regarding synchronous lecture recordings:

*A Student may make or share an audio or video recording of a lecture, presentation, or lesson, **only with the permission of the instructor.***

Course Calendar Description

Fundamental concepts of programming languages including syntax, semantics, program translation, virtual machines, control, data types, multi-threading, exception handling and abstraction mechanisms. Introduction to programming paradigms including imperative, applicative, logic and object-oriented.

Learning Outcomes:

- Recall the history and major paradigms of programming languages.

- Identify core issues in programming language design: control flow construct and exception handling.

- Identify core issues in programming language design: data and types.

- Identify core issues in programming language design: subroutines and parameter passing methods.

- Identify core issues in programming language design: names, scopes (static and dynamic) and bindings

- Describe basic concepts, computational model and language constructs of functional programming.

- Use a functional programming language to write simple programs.

- Describe basic concepts and language constructs of logic programming.

Recommended Readings or Texts

Sebesta, Robert W.: [Concepts of Programming Languages (12th edition)](https://www.cosc.brocku.ca/~mwinter/Courses/2P05/) Pearson, 2019, ISBN: 9780135102268

Course Communications

All information about the course can be found on the course web page at:

https://www.cosc.brocku.ca/~mwinter/Courses/2P05/

All other communication is via Brock email.

Assessment Components and Due Dates

Table 1 Assessment Components

Assessment Component	Grade Weight
Midterm test 1 (October 01, in class)	25%
Midterm test 2 (November 05, in class)	25%
Final exam	50%
Total	100%

Important dates

The most recent listing of Important Dates for all durations is at https://brocku.ca/important-dates/all/

First day of classes: September 3, 2025

Last day of lectures: December 2, 2025

Last day of exams: December 18, 2025

Deadline for withdrawal without academic penalty: November 02, 2025

Relationship between attendance and grades:

Students are expected to attend all classes.

Academic Policies

Academic Integrity

<u>Statement for undergraduate courses</u>

Academic misconduct is a serious offence. The principle of academic integrity, particularly of doing one's own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study. Students should consult Section VII, "Academic Misconduct", in the "Academic Regulations and University Policies" entry in the [Undergraduate Calendar](#) to view a fuller description of prohibited actions, and the procedures and penalties. Information on what constitutes academic integrity is available at [Brock University Academic Integrity Website.](#)

Penalties for Academic Misconduct in the Faculty of Mathematics and Science

The following are penalties usually imposed in academic misconduct cases in FMS. Please be aware that the Associate Dean, Undergraduate Programs, may assign different penalties than those listed here, depending on the details of individual cases. When the offense involves misconduct on a final exam, the penalties are steeper.

Course work, including mid-term tests

First academic integrity offence: Zero grade on the test.

Second academic integrity offence: Zero grade on the test, zero grade in course OR 4-month suspension.

Third or additional academic integrity offence: Zero grade in course, 1-year suspension, permanent removal from major program.

Final exams:

First academic integrity offence: Zero grade in course.

Second academic integrity offence: Zero grade in course, 4-month suspension

Third or additional academic integrity offence: Zero grade in course, 1-year suspension, permanent removal from major program.

Intellectual Property Notice

All slides, presentations, handouts, tests, exams, and other course materials created by the instructor in this course are the intellectual property of the instructor. A student who publicly posts or sells an instructor's work, without the instructor's express consent, may be charged with misconduct under Brock's Academic Integrity Policy and/or Code of Conduct, and may also face adverse legal consequences for infringement of intellectual property rights.

Accommodations

The University is committed to fostering an inclusive and supportive environment for all students and will adhere to the Human Rights principles that ensure respect for dignity, individualized accommodation, inclusion and full participation. The University provides a wide range of resources to assist students, as follows:

a) If you require academic accommodation because of a disability or an ongoing health or mental health condition, please contact Student Accessibility Services at askSAS@brocku.ca or 905 688 5550 ext. 3240.

b) **Medical Self-Declaration Forms (brief absence up to 72 hours)**

In the case of a short-term medical circumstance, if a student wishes to seek an academic consideration, please use the Medical Self-Declaration Form. The request is to be made in good faith by the student requesting the academic consideration due to a short-term condition that impacts their academic activities (e.g., participation in academic classes, delay in assignments, etc.).

The period of this short-term medical condition for academic consideration must fall within a 72-hour (3 day) period. The form must be submitted to the instructor either during your brief absence or if you are too unwell, within 24 hours of the end of your 3 day brief absence.

Medical Verification Form (extended duration)
In cases where a student requests academic consideration due to a medical circumstance that exceeds 72 hours (three days) and will impact their academic activities (e.g., participation in academic classes, delay in assignments, etc.), or in the case of a final exam deferral, the medical verification form must be signed by the student and the health professional as per process set out in the Faculty Handbook III:9.4.1.

c) If you are experiencing mental health concerns, contact the Student Wellness and Accessibility Centre. *Good2Talk* is a service specifically for post-secondary students, available 24/7, 365 days a year, and provides anonymous assistance: Good 2 Talk or call **1-866-925-5454**. For information on wellness, coping and resiliency, visit: Brock University (Mental Health)

d) If you require academic accommodation on religious grounds, you should make a formal, written request to your instructor(s) for alternative dates and/or means of satisfying requirements. Such requests should be made during the first two weeks of any given academic term, or as soon as possible after a need for accommodation is known to exist.

e) If you have been affected by sexual violence, the Human Rights & Equity Office offers support, information, reasonable accommodations, and resources through the Sexual Violence Support & Education Coordinator. For information on sexual violence, visit Brock's Sexual Assault and Harassment Policy or contact the Sexual Violence Support & Response Coordinator at humanrights@brocku.ca or 905 688 5550 ext. 4387.

f) If you have experienced discrimination or harassment on any of the above grounds, including racial, gender or other forms of discrimination, contact the Human Rights and Equity Office at humanrights@brocku.ca.

Sequence and Dates of Topics and Readings

Below is a list of dates of topics with associated readings and other relevant information. This list is subject to change based on class discussions.

Table 2 Sequence of Dates of Topics and Readings

Week	Date	Chapter	Topic
1	Sep 03/08	1, 2	Introduction, Evolution of programming languages
2	Sep 10/15	2	Evolution of programming languages
3	Sep 17/22	5, 6	Names, Bindings, Scope, Data types
4	Sep 24/29	6, 7	Data types, Expressions and assignments
5	Oct 01/06	8	Control structures **(Midterm 1)**
6*	Oct 08/20	9, 10	Subprograms
7	Oct 22/27	11	Abstract data type
8	Oct 29/Nov 03	12	Object-oriented languages
9	Nov 05/10	13	Concurrency **(Midterm 2)**

10	Nov 12/17	15	Functional programming languages
11	Nov 19/24	15, 16	Functional programming languages, Logic programming languages
12	Nov 26/Dec 01	16	Logic programming languages, Review

[*]Oct 13-17 is Reading Week.