Instructor Information and Office hours
Jerome Talim - Office hours are posted on cuLearn

Calendar Description
Introduction to engineering problem solving. Defining and modeling problems, designing algorithmic solutions, using procedural programming, selection and iteration constructs, functions, arrays, converting algorithms to a program, testing and debugging. Program style, documentation, reliability. Applications to engineering problems; may include numerical methods, sorting and searching.

Course Objectives
The course introduces the general sequence of steps in solving problems using computer programs. Students will learn to analyze problems (ie. Identify the objectives, the inputs and the outputs to produce), to derive a pseudo-code detailing the sequence of operations to solve the problem, to verify the proposed solution before converting it to a C++ program. Examples will include simple numerical methods, sorting arrays or extracting data from arrays ...

Learning Outcomes
State the objective of a problem (ie. the results to produce)
Extract the inputs and the assumptions from the problem description
Formulate the solution as an algorithm or pseudo-code, using assignments, conditional statement and loops
List scenarios to test their solution
Write simple C++ programs with functions, arrays
Convert the algorithm to a C++ program

Graduate Attributes
1.4.S - Knowledge base: Discipline-specific concept SCE-1: Programming and Algorithms
2.1 - Problem analysis: Problem definition
2.2 - Problem analysis: Approach to the problem
2.3 - Problem analysis: Use of assumptions
2.4 - Problem analysis: Interpreting the solution - validity of results
5.3 - Use of engineering tools: Tools for design, experimentation, simulation, visualization, and analysis

Textbooks (or other resources) if applicable


“Programming Fundamentals - A Modular Structured Approach using C++”, Kenneth Busbee, https://cnx.org/contents/MDgA8wfz@22.2:YzfkjC2r@17/Preface


Software

https://www.onlinegdb.com

or

Dev C++

Evaluation and Grading Scheme

Lab work 5%

Midterm exam : 25%

Final exam : 70%

Breakdown of course requirements (labs, assignments, quizzes, exams, etc)

- The final examination is for evaluation purposes only and will not be returned to students. You will be able to make arrangements with the instructor or with the department office to see your marked final examination after the final grades have been made available.

- The midterm and the final examination will be closed books.

- There will be 10 labs, each of which is worth 0.5% of the final mark.

- Students are required to write the lab in the section in which they are registered. The lab must be submitted before the end of the session.
- If you miss a lab and you have a valid support documentation, contact the lab coordinator Dr. Al-Habashna (use the email application that is associated to cuLearn course web page), no later than 3 working days from the date of the missed lab. Attach the support documentation to your message; and with the approval of the lab coordinator, you may write your lab on your own time (without exceeding 3 hours). The lab coordinator will ask a TA to mark your work.

- If you miss a lab and you do not have any valid support documentation, contact the lab coordinator Dr. Al-Habashna (use the email application that is associated to cuLearn course web page), no later than 3 working days from the date of the missed lab. You can complete the lab on your own time. Contact the lab coordinator to have a TA evaluate your work. But a mark of 0 will be assigned to the missed lab.

**List of topics and Dates**

- Topic 1: Introduction to problem solving and to algorithm
- Topic 2: Introduction to C++ syntax; Variables and variable type
- Topic 3: Assignment and arithmetic operations; tracing the program execution
- Topic 4: Selection (two-way and multiway selection)
- Topic 5: Introduction to loops
- Topic 6: Counting loops and practice problems
- Topic 7: Introduction to Arrays
- Topic 8: Introduction to functions
- Topic 9: Functions with arrays (as arguments or calculated results)

First date of classes: January 7

Winter break: February 18-22

Midterm examination: Wednesday February 26 and Thursday February 28

Last of classes: April 9

Final examinations period: April 12-27
General Regulations

**Student Responsibility:** It is the student's responsibility to remain informed of all rules, regulations and procedures required by their program and by the Faculty of Graduate and Postdoctoral Affairs. Ignorance of regulations will not be accepted as a justification for waiving such regulations and procedures.

**Academic Integrity:** Students should be aware of their obligations with regards to academic integrity. Please review the information about academic integrity at: [https://carleton.ca/registrar/academic-integrity/](https://carleton.ca/registrar/academic-integrity/). This site also contains a link to the complete Academic Integrity Policy that was approved by the University's Senate.

**Plagiarism:** Plagiarism (copying and handing in for credit someone else's work) is a serious instructional offense that will not be tolerated.

**Deferred Term Work :** Students who claim illness, injury or other extraordinary circumstances beyond their control as a reason for missed term work are held responsible for immediately informing the instructor concerned and for making alternate arrangements with the instructor and in all cases this must occur no later than three (3.0) working days after the term work was due. The alternate arrangement must be made before the last day of classes in the term as published in the academic schedule. For more information, see the current *Graduate Calendar, Academic Regulations of the University, Section 9.3.*

**Academic Accommodation:** You may need special arrangements to meet your academic obligations during the term. You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at [http://www.carleton.ca/equity/](http://www.carleton.ca/equity/) For an accommodation request, the processes are as follows:

- **Pregnancy obligation:** write to me 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 see [https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)
- **Religious obligation:** write to me 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 see [https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)
- **Academic Accommodations for Students with Disabilities:** The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and 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 me to ensure accommodation arrangements are made. Please consult https://carleton.ca PMC students/dates-and-deadlines/ for the deadline to request accommodations for the formally-scheduled exam (if applicable).

- **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 where 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: https://carleton.ca/sexual-violence-support/.

- **Accommodation for Student Activities:** Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. 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, see https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf

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**Health and Safety:** Every student should have a copy of our Health and Safety Manual. A PDF copy of this manual is available online: http://sce.carleton.ca/courses/health-and-safety.pdf

**Students from the University of Ottawa:** You can request to have access to cuLearn: please see http://gradstudents.carleton.ca/forms-policies/