COIS-2040H-A: Object-Oriented Programming
2025WI - Peterborough Campus

Instructor:

Instructor: Gabriel Chol

Email Address: gchol@trentu.ca

Phone Number: 705-748-1011 x7802

Office: TBD

Office Hours: See BlackBoard

Meeting Times:

The course involves a 2-hour lecture, and a 1-hour lab weekly. Attendance is highly recommended but not required.
Please see the academic timetable for updated times and locations.
http://www.trentu.ca/timetable/

Co-instructors and Teaching Assistants:

Lab Demonstrator: Jamie Mitchell
Email: jamiemitchell@trentu.ca;
SC 113; Lab Hours: See Blackboard
Lab Assistants: TBA

Department:

Academic Administrative Assistant: Hannah McSweeney

Email Address: cois@trentu.ca

Phone Number: 7802

Office: OC 102.6

Description:

The C++ programming languages is utilized to examine object-oriented concepts. These concepts can include classes, objects, inheritance, encapsulation, polymorphism, class derivation, abstract classes, interfaces, static class members, object construction and destruction, exception handling, function overloading and overriding, overload resolution, container classes, and/or template classes. This course will also include an introduction to Git and GitHub. **Prerequisite**: COIS 1020H

Learning Outcomes:

By the end of the course, students should:

- Expand their understanding of the object-oriented paradigm.
- Translate abstract concepts into classes in software.
- Apply an object-oriented programming language to develop software, including programs utilizing multiple classes.
- Be able to utilize object-oriented constructs such as inheritance, encapsulation, polymorphism, abstract classes, interfaces, object construction and destruction, exception handling, function overloading and overriding, overload resolution, container classes, and/or template classes.
- Utilize Git and GitHub effectively for software version control.

Texts:

Recommend Texts:
• *Problem Solving with C++,* 10th edition, Walter Savitch and Kenrick Mock, Pearson, 2018, ISBN No. 978-0134448282 (paperback costs C$245.99)

Other references:
• I*ntroduction to C++ Programming and Data Structures*, 5th edition, Y Daniel Liang, Pearson, 2022, ISBN No. 978-0137454181 (costs C$84.99)

• *Big C++: Late Objects*, 3rd Edition by Cay S. Horstmann, Approx. $155

Assessments, Assignments and Tests:

Labs:

There are ten (10) labs in this course: Weeks 2-11. Each lab should take up to 1 hour to complete. The lab will consist of a mixture of working with supplied code, developing new code, and/or answering questions -- all of which are based on material from the lecture notes. The labs will assist students with the independent assignments.
Some labs may require a lab report and some may be required to be demonstrated during the lab

period. If a lab report is required, it would be due by 11:59pm, three days after the registered lab period. Late lab reports will not be accepted (no extensions). We count the best 8 of 10 labs to compensate for missed or poorly completed labs.

Assignments:

Based on the theoretical foundations arising from the lectures as well as the practical foundations from the labs, the five assignments provide students with the opportunity to develop programming solutions for original problems. The programming assignments are to be done individually and give the students exposure to object-oriented constructs of the programming language and help to develop their problem-solving skills. Each assignment consists of one medium-sized programming problem.

Midterm:

The midterm test will be 55 minutes in length, and consist of multiple choice, true/false, and problem-solving questions -- all selected to examine the key aspects of the curriculum.

Final examination:

The exam will be in-person, 3 hours long and contain material spanning the entire course. It will contain a mixture of theoretical and practical questions -- both short-answer and programming problems.

Grading:

30% - 5 Assignments
due Weeks 3, 5, 8, 10, 12

20% - Labs
Weeks 2-11

15% - Midterm
Week 7

35% - Final Exam
TBD, during exam period

Grade Total by Withdrawal Date:

Labs 1-4, Assignment 1, Assignment 2, Midterm = 35%

Schedule:

Week 1: Introduction, C++ Basics [Ch. 1-3]
Week 2: Procedural Abstraction and Functions [Ch. 4, 5]
Week 3: I/O, Arrays, [Ch. 6, 7] / Assignment 1
Week 4: Strings, Pointers, Dynamic Arrays [Ch. 8, 9]
Week 5: Classes and Objects [Ch. 10] / Assignment 2

Week 6: Friends, Overloaded Operators, and Arrays in Classes [Ch. 11]
Reading Week - no class
Week 7: Separate Compilation, Namespaces, Git/GitHub [Ch. 12] / Midterm
Week 8: Pointers and Linked Lists [Ch. 13] / Assignment 3
Week 9: Inheritance [Ch. 15]
Week 10: Exception Handling [Ch. 16] / Assignment 4
Week 11: Templates [Ch. 17]
Week 12: Review / Assignment 5
Exam Period: Final Exam

Course Guidelines:

Blackboard Learning System will be used to post announcements, lecture notes, assignments, labs, and grades. There is also a Course Calendar that will have the due dates for the course deliverables. It is the student's responsibility to monitor the course Blackboard site and their Trent University email.

Completed labs and assignments are to be submitted electronically by 11:59pm to the corresponding Blackboard Dropbox. A penalty of 10% per business day will be applied to late assignments however, NO late labs will be accepted. After 5 days late, assignments will be worth 0.

One last note about labs and assignments. While students are permitted (even encouraged) to work together on labs, each student must submit their own lab write-up. On assignments however, students must submit their own independent program code and testing documentation. Students can assist each other but be careful not to share code (do not copy, email or hand over your code to another student). Students who's program code is too similar could be charged with a violation of Trent's Academic Integrity policy. Also, students may not use homework sites (such as Course Hero, Chegg, etc) or any AI generated code. The purpose of the assignments is to develop program design and coding skills. Labs will not be checked for plagiarism but assignments will (we monitor the homework sites). Please be careful.

University Policies:

Academic Integrity

Academic dishonesty, which includes plagiarism and cheating, is an extremely serious academic offence and carries penalties varying from failure on an assignment to expulsion from the University. Definitions, penalties, and procedures for dealing with plagiarism and cheating are set out in Trent University's *Academic Integrity Policy*. You have a responsibility to educate yourself – unfamiliarity with the policy is not an excuse. You are strongly encouraged to visit Trent's Academic Integrity website to learn more: www.trentu.ca/academicintegrity.

Access to Instruction

It is Trent University's intent to create an inclusive learning environment. If a student has a disability and documentation from a regulated health care practitioner and feels that they may need accommodations to succeed in a course, the student should contact the Student Accessibility Services Office (SAS) at the respective campus as soon as possible.

Sharing and Distribution of Course Content

Students in this class should be aware that classroom activities (lecture, seminars, labs, etc.) may be recorded for teaching and learning purposes. Any students with concerns about being recorded in a classroom context should speak with their professor. If a student shares or distributes course content in any way that breaches copyright legislation, privacy legislation, and/or this policy, the student will be subject to disciplinary actions under the relevant Academic Integrity Policy, the Charter of Student Rights & Responsibilities, or the Policy on the Protection of Personal Information, at a minimum, and may be subject to legal consequences that are outside of the responsibility of the university.

Student Absenteeism, Missed Tests and Examinations

Students are responsible for completing all course requirements, including attending classes and meeting assignment deadlines as specified on their syllabus.

Adjustments and deferrals to dates for participation, assignment submissions, tests, midterms and final examinations are not automatic. It is the student’s responsibility to email their instructor immediately if they are unable to fulfill academic requirements.

Courses delivered remotely may involve student participation in scheduled (synchronous) classes via web-based platforms, such as Zoom. Students unable to participate (i.e., by video and/or audio) should email their instructors to request alternative arrangements for participation in these scheduled (synchronous) classes.

Students are required to be available for all tests, midterms and exams that are listed in their course syllabus and scheduled by their instructor or the Office of the Registrar. Depending on their program, the instructor or the chair/director may decide on alternative arrangements for exams and tests. Normally a doctor’s note or supporting documentation is not required; however, when a student’s success in the course or program is in jeopardy as determined by the instructor or chair/director, documentation may be requested.

Specific SAS accommodations can be implemented for students registered with Student Accessibility Services (SAS), but it is the responsibility of the student to make these arrangements in advance as per SAS guidelines, and to discuss accommodations of due dates with their instructors.

Students can notify the Office of the Registrar of their wish to observe cultural or religious holidays during scheduled examination periods by the deadline set in the Academic Calendar. Personal travel plans are not acceptable reasons for missing tests or exams.

Print