Course outline for CCCS 301
PROGRAMMING TECHNIQUES 2

McGill University School of Continuing Studies

Technology & Innovation

Taught by
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Section 754 for Fall 2023
3 credits
Undergraduate-level credit course

Contents

1 Course Information

Office hours Upon request

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Description Object-oriented design and programming techniques, including creating classes, using objects, inheritance, and other object-oriented principles. Strong focus on problem-solving techniques and ways programmers can support decision-making within an organization. Inheritance. Interfaces. Design patterns. Application development frameworks. Build automation tools.

Pre-requisites CCCS 300

Co-requisites No co-requisites

Contact hours 39 hours

Learning outcomes

- Understand Object Oriented Programming (OOP) concepts
- Write a multi-tasking program
- Build automation testing using some cutting-edge tools.
- Identify the core design patterns on Object Oriented Design (OOD)

Instructional methods This course consists primarily of lectures and assignments. As with most programming courses, most of the learning occurs through writing programs. So, doing the programming assignments and independently thinking through the steps required to complete the assignments are crucial to excelling in this course. The lectures aim to provide the background knowledge required to do the assignments. We take a learning-by-example approach, where in many cases we will convey concepts by showing example programs. Class time will follow this pattern: presentation of theory and implementation details; Followed by practical examples; Ending with an in-class problem, or two, solved as a group activity. A lot of time will be available to ask questions and explore student concerns.

The official version of this course outline is the version posted on myCourses on the day of the first class session.

In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

Note on email policy   In accordance with McGill University's official email policy, the instructor *will not respond* to email messages sent from **outside** the McGill network (e.g., gmail or hotmail). As well, while instructors appreciate that email correspondence is an efficient method of communication, students should keep in mind that instructors are not on call. Students should therefore not expect a response to emails during the weekend or after 5:00 p.m., Mondays through Fridays.

Prior to contacting instructors via email, students seeking course-related information, including information about assignments, should first attempt to locate that information by (a) consulting the course syllabus or textbook, (b) consulting materials uploaded to the course website (myCourses), or (c) consulting with other students in the class. Generally speaking, during the week, a valid request submitted via e-mail will receive a response within 36 hours, exclusive of weekends and statutory holidays.

1.1 Evaluation

%	Item	Deadline	Description
10	Quiz1	September 25th	multiple-choice questions
10	Quiz2	October 23rd	multiple-choice questions
10	Quiz3	November 13th	multiple-choice questions
10	Assignment1	September 24th	A Java programming project that all code must be written individually
10	Assignment2	October 22nd	A Java programming project that all code must be written individually
10	Assignment3	November 12th	A Java programming project that all code must be written individually
10	Assignment4	November 26th	A Java programming project that all code must be written individually
30	Final	TBA	An online Java program writing test.

1.2 Course Content

1. Module 1: Course Description & Polymorphism

2. Module 2: Collections: HashMap and HashSet

3. Module 3: Generic type and Recursion

4. Module 4: Multi-threading and Quiz1 that covers modules 1, 2, and 3

5. Module 5: Synchronous vs asynchronous

6. Module 6: UML Diagram

7. Module 7: Testing Automation and Quiz 2 that covers modules 4, 5, and 6

8. Module 8: Introduction to design patterns

9. Module 9: Observer and Factory pattern

10. Module 10: Builder and Singleton Patterns

11. Module 11: Functional Programming in Java and Quiz 3 that covers modules 8, 9, and 10

12. Module 12: Review

13. Module 13: final exam preparation

2 Materials

Please note that any electronic materials available on the LMS will be accessible to students for six months after the conclusion of the course.

2.1 Hardware

2.1.1 Required computer hardware

- A computer that is able to run Java IDE. e.g. Eclipse or intellij

- Any computer able to run a web browser and zoom suffices.

2.2 Software

2.2.1 Required software and services

- Java (JDK)

- Zoom

- Web browser to access the LMS myCourses

- Windows, Mac, or Linux as the base operating system

2.3 Connectivity

There are no specific requirements regarding the type of internet connection for this course.

2.3.1 Recommended internet connection

- Sufficient for online video streaming

- Sufficient for online screensharing

2.4 Readings

Readings and assignments provided through myCourses.

3 Additional Course Information & Support

3.1 Student Support

Please note that there is an **MS Team for all Technology & Innovation students** you are encouraged to join: log into Microsoft Teams with your McGill email and use the join code `e8i8f26` in the lower-left corner ("Join or create a team").

You can email help.ti.scs@mcgill.ca for technical-academical assistance and ti.scs@mcgill.ca if you have administrative academic questions.

4 Important Information

4.1 Land Acknowledgment

McGill University is located on land, which has long served as a site of meeting and exchange amongst Indigenous peoples, including the Haudenosaunee and Anishinabeg nations. McGill honours, recognizes and respects these nations as the traditional stewards of the lands and waters on which we meet today.

4.2 McGill Resources for Academic Success

Inclusive Learning Environment McGill is committed to providing an inclusive and supportive learning environment. If you experience barriers to learning in this course, do not hesitate to discuss them with your instructor. If you have a special learning need or disability, you are encouraged to contact *Student Accessibility & Achievement*. For more information, please visit `https://www.mcgill.ca/access-achieve/`.

Health and Wellness Student well-being is a priority for the University, the School (SCS), and the McGill Association of Continuing Education Students (MACES). Should you find yourself in need of support, please keep in mind that there are a number of resources available to help you. Many SCS students are automatically covered by the MACES Health and Dental Plan. For further details, please visit `https://maces.ca/`. In addition, eligible students will also be covered by a virtual healthcare service provided by *Dialogue* through MACES. The Dialogue service allows students to connect virtually with nurses and physicians in Canada via a mobile or web app. Both the MACES Health and Dental Plan and the Dialogue app include access to professional psychologists. MACES students also currently have free access to `Keep.meSAFE`, a psychological counselling service where students can speak to a counsellor in one of six languages. For more information, please visit `https://www.mcgill.ca/continuingstudies/student-services`.

McGill Writing Centre Writing well is key to both academic and professional success. The *McGill Writing Centre* (MWC) offers credit courses in academic and professional writing, and a tutorial service open to all McGill students. The tutorial service offers one-to-one sessions with seasoned instructors and experienced tutors who will work with you at any stage of the writing process. For information about the availability of in-person and online appointments, please visit `https://www.mcgill.ca/mwc/tutorial-service`.

McGill Library Find a workshop, learn about library services, and reach out to your liaison librarian for research help at `https://www.mcgill.ca/library/orientation`.

4.3   Academic Conduct

McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the *McGill Code of Student Conduct and Disciplinary Procedures*.

The work submitted for all assessments is expected to be your own. The use of technologies such as ChatGPT are prohibited and will be considered a violation of the Code of Student Conduct.

See `https://www.mcgill.ca/students/srr/honest/` for more information.

Academic Integrity Students are responsible for knowing McGill's rules and regulations concerning academic honesty, which can be found on the Student Rights and Responsibilities website. Violations of academic integrity undermine not only the value of honest students' work, but also the academic integrity of the University and the value of a McGill credential. The Student Rights and Responsibilities website provides resources that can help students avoid dishonest work, and an explanation of the disciplinary measures that go with it. **All newly admitted students must complete the Academic Integrity Tutorial (AIT) in Minerva during their first semester at McGill.** Failure to complete the tutorial will restrict the student from registering for courses in the following semester. The Tutorial can be accessed as follows: `Minerva / Student Menu / Academic Integrity Tutorial`.

Respectful and Professional Communication This course is designed to help you learn to communicate professionally both during your time at McGill and in your future workplaces. In keeping with McGill's policies on student rights and responsibilities, it is expected that during class discussions and small group interactions you will communicate constructively and respectfully. Sexist, racist, homophobic, ageist, and ableist expressions will not be tolerated in the classroom or during group meetings held outside of class.

To learn more about these policies, please consult `https://mcgill.ca/students/srr/policies-student-rights-and-responsibilities`.

Students **may not record any class proceedings** or collect any electronic data (including photos and videos) from class activities without the express consent of the instructor. Instructor generated course materials (e.g., handouts, notes, summaries, test questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without the explicit permission of the instructor. Note that infringements of copyright can be subject to followup by the University under the *Code of Student Conduct and Disciplinary Procedures*.

4.4 Policy Against Sexual Harassment and Violence

McGill University is committed to creating and sustaining a safe environment through proactive, visible, accessible, and effective approaches that seek to prevent and respond to sexual harassment and sexual violence. McGill's Policy against Sexual Violence underlines this commitment and ensures that procedures are in place to address complaints. To learn more, visit `https://www.mcgill.ca/osvrse/`.

Sexual Violence Training *It Takes All of Us* In accordance with Québec law (Bill 151), all newly admitted credit-course students must complete the sexual violence training course, called "It Takes All of Us," in myCourses during their first semester at McGill. Students will receive an automated email letting them know when they have been enrolled in the training course. Failure to complete the training will restrict the student from registering for courses in the following semester. The training can be accessed through myCourses and will appear as a separate course in your profile. For more information, please visit `https://www.mcgill.ca/osvrse/`.

4.5 Policy on Harassment and Discrimination

McGill University is committed to promoting an equitable environment where the fundamental dignity of all of its members is respected. The objectives of *McGill's Policy on Harassment and Discrimination Prohibited by Law* are to promote education and awareness about equity issues and to ensure that procedures are in place to address complaints. To learn more about McGill's policy, including how to report a complaint, please visit `https://www.mcgill.ca/how-to-report/`.

4.6 Right to Submit in English or French

In accord with McGill University's *Charter of Students' Rights*, students in this course have the right to submit in English or in French any written work that is to be graded. This does not apply to courses in which acquiring proficiency in a language is one of the objectives.

Please reach out to the instructors and the assistants to inquire if they are able to additionally advise you in other languages, remembering that they are not required to do so. If you do share a language, there is no impediment to using that in informal discussions, as long as submitted work and any written agreements and complaints are either in English or in French.

4.7 Grades

4.7.1 Final Grades

For **credit courses** (that are measured in credits), the official final course grade is the one that appears in *Minerva*.

A final grade appearing in other locations (for example, myCourses) may be subject to change. The School of Continuing Studies reserves the right to correct mistakes.

4.7.2 Undergraduate Credit Course Grading System

Result	Numerical Scale (%)	Letter Grade
Pass	85–100	A
	80–84	A-
	75–79	B+
	70–74	B
	65–69	B-
	60–64	C+
	55–59	C
	50–54	D
Failure	0–49	F

Although a D is a passing grade, it *will not permit entry* into a subsequent course for which it is a prerequisite, and nor will it be recognized if the course is a required course in your program. You **must** obtain a grade of C or better in courses that you take to fulfil program requirements. You may not register in a course unless you have passed all the prerequisite courses with a grade of C or better, except by written permission of the appropriate department chair.

What does a final course grade of J mean?   A J grade is a failing grade due to either (i) an unexcused absence for an official final exam, or (ii) failure to submit required work worth more than 20% of the final grade for the course as a whole. A J grade is calculated as a failure.

4.8   Assessments

Work submitted for evaluation as part of this course **may be checked with text-matching software** within my-Courses.

To learn more about assessment of student work, consult McGill's Student Assessment Policy at `https://mcgill.ca/secretariat/files/secretariat/2016-04_student_assessment_policy.pdf`.

4.8.1   Assignments

Please refer to Section 1.1 concerning assignment submission for this course. Unless this outline or another written document from your instructor authorizes you to **share** the assignment results online or directly, please keep the questions and the responses *confidential*.

Legitimate exceptions for late submission of assignments include documented medical, family, and personal emergencies, and observance of holy days. Students planning to observe holy days (see `https://www.mcgill.ca/importantdates/holy-days-0/policy-holy-days`) listed in the McGill calendar should notify the instructor by email no later than two (2) weeks prior, and preferably at the beginning of the course.

4.8.2   Examinations

If the course includes exams, students should not make other commitments during a scheduled exam, which is indicated on your course outline. Vacation plans do not constitute valid grounds for the deferral or the rescheduling of examinations, tests or assignments. See the School of Continuing Studies Calendar for the regulations governing examinations, or go to `https://www.mcgill.ca/continuingstudies/current-students/exams`.

Students who have a documented disability and require academic accommodation must contact *Student Accessibility & Achievement*. For information on Exam Accommodation, visit `https://www.mcgill.ca/osd/exams` and `https://mcgill.ca/osd/student-resources/forms/scs-accommodation-request`.

Students may *request a deferral* of final examinations or timed tests and assignments for medical reasons or out-of-town business commitments, which must be justified in writing with a medical certificate or company letter. To learn more, visit `https://www.mcgill.ca/continuingstudies/exams-conflicts-deferrals-and-rereads`.

Students requesting the *rescheduling of a mid-term examination(s)* due to a religious, business-related,or scheduling conflict must submit the Mid-term Examination Conflict form, together with supporting documentation, to the School of Continuing Studies, Client Services Office, at least two (2) weeks prior to the date of the scheduled mid-term examination(s). Students who miss a mid-term examination(s) due to medical reasons must complete and submit the *Mid-term Examination Conflict form*, with supporting documentation, within two (2) business days from the date of the missed mid-term examination(s). The forms are available at `https://www.mcgill.ca/continuingstudies/forms`.

Examination schedules are posted online approximately six (6) weeks before the examination period begins. The exam schedule can be found at `https://www.mcgill.ca/continuingstudies/important-dates-exam-information`.

4.9 Resources

Student Services Various services are available to Continuing Studies students. To learn more, visit `https://www.mcgill.ca/continuingstudies/getting-started`.

Students with Disabilities McGill is committed to providing an inclusive learning environment. If you experience barriers to learning in this course, do not hesitate to discuss them with me. If you have a special learning need or disability, you are encouraged to contact *Student Accessibility & Achievement.*. To learn more, visit `https://www.mcgill.ca/access-achieve`.

Computer Labs Free access to computer labs is available at 688 Sherbrooke (12th floor), MACES, the McLennan Library and other locations on campus.

MACES The McGill Association of Continuing Education Students (MACES) is located at 3437 Peel, 2nd floor, tel. (514) 398-4974. To learn more, visit `https://maces.ca/`.

Career Advising and Transition Services Gain the clarity, skills, confidence and connections you need to succeed in your career thanks to the support provided by *Career Advising and Transition Services* (CATS). To learn more, visit `https://www.mcgill.ca/continuingstudies/career-advising-and-transition-services`.

myCourses Please check the myCourses site on a daily basis. Failure to do so may result in your missing important information. Neither absence from class nor failure to check myCourses is an acceptable excuse for being unaware of important course-related information.

Minerva For credit courses, access your **personal student information** online `https://horizon.mcgill.ca/pban1/twbkwbis.P_WWWLogin`. For issues related to student accounts, please call 514-398-7878.

IT Support Information related to online resources such as email, VPN, myCourses, etc. can be found at IT Services `https://www.mcgill.ca/it/`.