Comp 249 - Object-Oriented Programming II Course Outline - Fall 2025

GINA CODY
SCHOOL OF ENGINEERING
AND COMPUTER SCIENCE

Instructor	Section D: Dr. Hassan Hajjdiab E-mail: hassan.hajjdiab@concordia.ca Office: H-961-27 Lecture: Monday/Wednesday 2:45 PM – 4:00 PM at FG-C080 Office Hours: Wednesday: 10:30 AM – 12:30 PM or By Appointment
Instructor & Coordinator	Section E: Dr. Aiman Hanna E-mail: contact@AimanHanna.com Office: ER_1103 Tel: (514) 848-2424 ext. 7878 Lecture: Monday/Wednesday 2:45 PM – 4:00 PM at CL-220 Office Hours: 1) Wednesday 1:00 PM – 2:00 PM; 2) By appointment anytime.
Fastest way to communicate: **Through the *Replied* App at the *COMP249F25* group**	

Tutorials and Labs
Tutors, PODs and markers can be contacted on Replied at *COMP249F25* group.

Tutorials:

Tutorial	Tutor	Replied ID
DA - Mo 11:45AM - 1:35PM at H-431	Mehakveer Bal	@mehakbal
DB - We 4:15PM - 5:55PM at H-423	Azamat Ochilov	@azamat
EA - Mo 11:45AM - 1:35PM at MB 3.430	Inderjeet Chauhan	@chauhans
EB - Mo 4:15PM - 5:55PM at H-423	Punamkumar Vekariya	@punam

Labs:

Lab	Lab Instructor	Replied ID
IX - Mo 6:15PM - 7:15PM at H-967	Rikin Chauhan	@rikinchauhan
JX - We 6:15PM - 7:15PM at H-967	Dhruval Shah	@dhruval_shah
KX - We 7:30PM - 8:30PM at H-903	Asliddin Maliko	@asliddin

LX - Mo 6:15PM - 7:15PM at H-903	**Mahmoud Saghir**	**@mahmoud.saghir**
MX - We 6:15PM - 7:15PM at H-903	**Rushin Makwana**	**@rushin**
NX - We 10:15AM – 11:15AM at H-903	**Shariq Anwar**	**@shariqanwar20**

PODs:

POD (Times are tentative; location TBA). Check website for updates.	POD Instructor	Replied ID
Tuesday 5:00 PM – 6:00 PM	**Shrey Hingu**	**@shery_27**
Tuesday 6:00 PM – 7:00 PM	**Mahdieh Shekarian**	**@mahdieh**
Wednesday 12:00 PM – 1:00 PM	**Vaibhavkumar Chauhan**	**@vaibhav**
Thursday 7:30 PM – 8:30 PM	**Joshua Onyema**	**@joshuaonyema**
Friday 3:00 PM – 4:00 PM	**Rushil Zaveri**	**@rushil**

Markers:

Marker	Replied ID
Mario Chahoud	**@mariochahoud**
Aya Al Haj	**@aya**
Hussien Hijazi	**@hussienhijazi**
Tarek Hamze	**@tarekhamze**
Pankaj Sharma	**@pankajs04**
Louay Helou	**@louayhelou**
Riya Gupta	**@riya**
Sanjay Upadhyaya	**@sanjay_upadhyaya**
Sahiti Chilakala	**@sahitinaidu**
Matin Koohjani	**@m_koohja**
Heli Shah	**@heli**
Yousef Moustafa	**@yousefmoustafa**

Pre-Requisites: COMP 248; MATH 203 or Cegep Mathematics 103.

Background Knowledge

You should have some previous experience of programming in Java such as that provided in COMP 248 or a similar course. In particular, you should have a good understanding of expressions, statements, methods, parameters, and arrays. You should also know the basic concepts of objects, classes, and packages.

Calendar Course Description: Design of classes. Inheritance. Polymorphism. Static and dynamic binding. Abstract classes. Exception handling. File I/O. Recursion. Interfaces and inner classes. Graphical user interfaces. Generics. Collections and iterators.

Course Objective

As a student, one rarely has the opportunity to write applications that exceed a few hundred lines of source code. In this context, it is entirely possible to produce acceptable software programs that require no more experience than that obtained in an introductory programming course. However,

once you eventually move on to industrial/engineering programming environments, where code bases typically run into tens of thousands or even millions of lines, you will quickly see that "programming in the large" is an entirely different undertaking. Specifically, it is important, and required, that your code be more modular, more robust, and more flexible. It is significant that you are able to identify and analyze complex problems, and use appropriate skills, knowledge and tools to not only solve these problems, but to achieve the most substantiated conclusions. In this course, we will begin to examine these elements for the purpose of designing more sophisticated software applications.

The course covers the higher-level subjects of object-oriented programming, including the design of classes, inheritance, composition, polymorphism, static and dynamic binding, abstract classes, exception handling, file I/O, recursion, interfaces, inner classes, generics, collections, iterators and graphical user interfaces (if time permits). Various data structures will be introduced including Array Lists, Linked Lists, Hash Tables, Tress and Sets.

Integration of Artificial Intelligence in Software Development:

In this course, you will explore how Artificial Intelligence (AI) tools and concepts can support and enhance your programming skills. You will learn how AI can assist in writing, analyzing, and refining code, while also developing the ability to use such tools thoughtfully and responsibly. Some assignments may involve simple AI algorithms or the integration of AI-assisted development. This experience will help you align with current industry trends where AI plays an increasingly vital role in software engineering.

Besides the work done on relation to AI, by the end of this course you will be able to:

1. Write more modular, robust and flexible Java programs by building on the knowledge you acquired in COMP 248 (Object oriented Programming I).

2. Design and implement Java programs which:
   - Include a hierarchy of classes (inheritance, polymorphism and abstract classes, inner classes and interfaces)
   - Include generic classes
   - Deal with unexpected situations (exception handling)
   - Read and/or write data to/from a file (not just from a keyboard and to the screen)
   - Use Collections and make use of tools that allow you cycle through all elements of a collection (iterators)
   - Use data structure classes which are available in Java libraries such as Array Lists, Linked Lists, Hash Tables, Trees and Sets to name a few.
3. Design and implement:
   - Methods that call themselves (recursion)
   - Graphical user interfaces (GUIs) – if time permits

Course Materials
Textbook: *Absolute Java* by Walter Savitch, *6th Edition <u>or later</u>*, Addison Wesley. The hardcopy of the book is available at the Concordia bookstore ISBN: 978-0-13-404167-4.
The book is available in Digital Copy: ISBN: 978-0-13-394783-0.

From the textbook we shall study these chapters: 4 to 16, as well as Chapters 17 & 18 (if time permits).

Grading Scheme

The table illustrates the components of the course and their corresponding weights (%).

Component	%
Assignments	20%
Labs	Please Read Carefully the Labs Section Below
Midterm	25%
Final Exam	55%

1. **There is no fixed, a priori relationship between the numerical percentage and the final letter grades for this course.**
2. **In order to pass the course, you must:**
   - ➢ **pass the assignments, pass the midterm, pass the final exam, and**
   - ➢ **attempt ALL 11 labs (no loss of marks); or attempt at least 8 of 11 labs (sufficient to pass, but with 5% loss for each missed lab). So, you should attempt all labs to avoid any loss of marks. <u>Missing more than 3 labs will result in failing the course.</u>**

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

The Midterm Exam, for both sections, is scheduled for **<u>Saturday, November 1, starting at 12:30 PM</u>. Your instructor will indicate the exact location of the midterm.**

Details of the Course Components

Tutorials

The tutorials will reinforce the material seen during the lectures with examples, exercises, and explanations of the assignments. The tutorials are also designed to help you acquire deeper knowledge and experience of problem analysis and problem solving. It is hence strongly recommended that you attend all the tutorials. Tutorials begin on the second week of classes.

Labs

The purpose of the labs is:
1) To provide you with better programming skills, grasp of the course materials, and good preparation for your exams.
2) To conduct lab exercises **(please read very carefully):** there will be one lab exercise each week during the course. These exercises must be done individually and be submitted during your lab period. To be clear, a lab exercise can only be done **in-person** during one single lab period (which you are registered into) and must be submitted electronically to the correct lab folder on the Moodle for your section by the end of that lab time.

<u>Now, please read even more carefully</u>: **These lab exercises will be examined by the markers to validate serious attempts to complete these labs, but will not be marked (or only random ones will be selected for marking). Hence, the labs generally do not evaluate to any load of the course.** However, serious attempts of **ALL** of these lab exercises are required, and attempting 8 of them at minimum is needed to pass the course.
<u>**In summary:**</u> Attempting all 11 labs = no loss of marks. Attempting 8 labs at minimum = -5% for each missing lab. Missing more than 3 labs = failing the course.
So; seriously attempt all 11 labs to avoid any loss of marks. There is no make-up for a missed lab exercise.

PODs

Very important subjects, such as how to debug, how to use copilots, how to use AI tools, etc. will be introduced during these Programmers On Duties (PODs) time. Additionally, the assigned PODs will be available to assist you in case you have issues with compilation, run-time errors, etc. You should take full advantage of these times, especially in case you have trouble with your assignments. You should notice that the PODs are not there to assist you with your assignments in particular; rather to assist to overcome general programming issues, so you can progress with your assignments. Please check your instructor's website/Moodle for full details on times and locations.

Assignments and Examinations

a) Assignments

There will be 3 to 5 assignments. The assignments will examine the programming materials and subjects covered in class and will allow you to develop a stronger foundation of problem analysis and solving. While all assignments have a programming component; some of them may have a theoretical component as well. You are allowed to work either individually or in a group of two, with another student from the same, or from a different, section. No additional marks are given for working individually. Assignments are to be submitted electronically only - no paper submission. Instructions on submitting assignments will be given in the first assignment. All assignment handouts will be available on the course web pages.

Submission format: For the programming assignments, all assignment-related submissions must be adequately archived in a ZIP file using your ID(s) and last name(s) as file name. The submission itself must also contain your name(s) and student ID(s). Use your "official" name only - no abbreviations or nick names; capitalize the usual "last" name. Inappropriate submissions will be heavily penalized. Students will have to submit their assignments (submit only one copy per group for the programming assignments).

IMPORTANT (Please read very carefully): Additionally, which is very important, for the programming part only, a demo will take place with the markers afterwards. Markers will inform you about the details of demo time and how to book a time slot for your demo. If working in a group, both members must be present during demo time. Different marks may be assigned to teammates based on this demo.

- **If you fail to demo, a zero mark is assigned regardless of your submission.**
- **If you book a demo time, and do not show up, for whatever reason, you will be allowed to reschedule a second demo but a penalty of 50% will be applied.**
- **Failing to demo at the second appointment will result in zero marks and no more chances will be given under any conditions.**

b) Examinations

- There will be one midterm exam. The midterm will cover all material presented in the lectures, the textbook, and in the assignments and labs, up to and including the lecture preceding the exam. Passing the midterm exam is necessary for passing the course. There is no make-up midterm exam.

- There will be one common final exam for all sections. The final examination will be administered during the examination period at the end of the term. The final examination covers all material seen during the term, and will examine your developed skills of problem analysis, in addition to your programming knowledge of the subjects covered during the entire course.

Tentative Course Schedule

The table below provides a summary of the material that will be covered during the course as well as a *very tentative* schedule. Please check the course webpage and follow actual class coverage for any changes.

Week #	Chapters	Material
1	4, 5 & 6	Review of Classes, Objects & Arrays
2	7	Inheritance
3	8	Polymorphism and Abstract Classes
4	9	Exception Handling
5	9	Exception Handling
6	10	File I/0 & Serialization
7	11	Recursion
8	13	Interfaces & Inner Classes
9	13	Interfaces & Inner Classes
10	14	Generics
11 & 12	15 & 16	Linked Data Structures & Collections
12	17 & 18	Graphical User Interfaces (if time permits)

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

Graduate Attributes

As part of either the Computer Science, or the Software Engineering program curriculum, the content of this course includes material and exercises related to the teaching and evaluation of graduate attributes. Graduate attributes are skills that have been identified by the Canadian Engineering Accreditation Board (CEAB) and the Canadian Information Processing Society (CIPS) as being central to the formation of Engineers, Computer Scientists and Information Technology professionals. As such, the accreditation criteria for the Software Engineering and Computer Science programs dictate that graduate attributes are taught and evaluated as part of the courses.

Course Learning Outcome (CLOs)

This course emphasizes and develops the following graduate attributes:

- **Design:** *Determine appropriate classes and their relationships, data structures, abstractions, use of external libraries in order to design a maintainable and extensible solution that meets the identified specifications and constraints using an object-oriented programming language.*
    - ➢ **Indicators:** Indicator 4.3: Architectural and detailed design
      Indicator 4.4: Implementation and validation.

- **Use of Engineering tools:** *Determine what appropriate syntactical constructs, data structures, libraries and abstractions to use to solve relatively complex programming problems in order to meet the problem's identified specifications and constraints.*
    - ➢ **Indicators:** Indicator 5.1: Ability to use appropriate tools, techniques and resources.

Web pages and other Resources

The fastest way to communicate, including communications with the TAs and markers, is through the ☺ replied app at *COMP249F25* group.

Web Pages

Many resources for the course (slides, assignments, example programs, ...) will be available online. For Sections D (Dr. Hajjdiab) please use Moodle website available through Concordia Course Web Sites.

For Section E (Dr. Hanna), the website is www.AimanHanna.com (follow Concordia link afterwards). Other material may be available on Moodle as well; so you will need to consult both locations. The web pages will contain announcements related to the class, pointers to documents, your theory and lab assignments, etc.

Additionally, the fastest way to communicate is through the 😮 **replied** app at the **COMP249F25** group**.** General questions for the course, and technical questions, should be communicated in that group only. For private messages, please create a private group and add **@dr.hanna** or **@hdiab** to it.

Further, a mailing list will be established for the course. You need to subscribe to this mailing list **ASAP**. You can subscribe at the following link:
    https://mailman.encs.concordia.ca/mailman/listinfo/comp249-f25.

Computing Facilities

You will be using the same computing facilities and the same computer account you used in COMP 248. If you did not take COMP 248 or do not have a computer account, you can obtain it from the help desk at H–960 or EV-007.182. This account will give you access to the laboratories. For more information on CSE Computer accounts please visit the website:
http://www.encs.concordia.ca/helpdesk/access.html

If you have a computer at home and prefer to use it, you may do so, but be aware that your programs must compile and run at the Concordia laboratory with the currently installed version of Java, so you have to verify that before submitting your assignments and going through the demos. Feel free to experiment with any of the open source/publicly available IDEs/editors.

Finally, the faculty web pages have a wealth of information pertaining to our computer systems and software, which includes simple user guides, and answers to many standard questions. You should explore these help pages. Begin your exploration from the URL: http://www.encs.concordia.ca/helpdesk/faq/faq.php

Health and Safety Guidelines

All health and safety rules specific to this course can be found in the lab manual. General health and safety instructions and available health and safety trainings can be found at: Safety Programs - Concordia University (https://www.concordia.ca/campus-life/safety/general-safety.html).

Plagiarism

The most common offense under the Academic Code of Conduct is plagiarism which the Code defines as *"the presentation of the work of another person as ones own or without proper acknowledgement."*
This could be:

- material copied word for word from books, journals, internet sites, professors course notes, etc.

- material that is paraphrased but closely resembles the original source.
- the work of a fellow student, for example, an answer on a quiz, data for a lab report, a paper or assignment completed by another student.
- a solution or Java code purchased through one of the many available sources.
- ➔ You must also notice that the submission of AI-generated material is strictly prohibited. The submission of such contents is considered as direct plagiarism and violates the University Code of Conduct. Any such submissions, partially or fully, will result in an immediate plagiarism case being submitted to the University.

Plagiarism does not refer to words alone; it can also refer to copying images, graphs, tables, and ideas. Presentation is not limited to written work. It also includes oral presentations, computer assignments and artistic works. Finally, if you translate the work of another person into French or English and do not cite the source, this is also plagiarism.

In Simple Words:
Do not copy, paraphrase or translate anything from anywhere without saying where you obtained it!

In cases where cheating or plagiarism is suspected, the case will be forwarded directly to the appropriate university office for consideration. Please do not assume that you get "second chances" when it comes to cheating. Once is often enough to damage your academic career.

IP [VERY IMPORTANT: PLEASE READ CAREFULLY]:
Course contents belonging to the instructor and the TAs, including, but not limited to, lectures, course notes, and video recordings of classes/tutorials remain the intellectual property of the faculty member and the TAs. It must not be distributed, published or broadcasted, in any form or shape, in whole or in part, without an explicit written permission of the faculty member or the TA. It is also prohibited for students to use their own means of recording of any elements of a class, lecture, tutorial, etc., without explicit written permission of the instructor. Any unauthorized sharing of course content will constitute a breach of the Academic Code of Conduct and/or the Code of Rights and Responsibilities. As specified in the Policy on Intellectual Property, the University does not claim any ownership of, or interest, in any of such IPs; all university members retain copyright over their work.

In addition, please notice the following important information concerning the assignments and the labs: As the assignments remain the sole property of the course instructor, you are not permitted to post the assignments or their solutions anywhere on the Internet either during the course or at any future point of time. Intellectual Property rights are reserved. Violation of such rules during the course, or at any future point, will result in both academic and legal actions.

Important Lecture Guidelines (Section E)

Laptops are **STRICTLY PROHIBITED** in classroom during the lectures. Other communications devices, such as cellular phones, communication watches, and text/video messaging devices, tablets, pads, and similar devices are also **STRICTLY PROHIBITED**. The usage of any of these materials during the class will result in you being asked to immediately leave the class.

In Case the Course has to be Switched to Online Delivery!

Due to the uncertainty of the current pandemic times, pressing situations may force the course to be switched to online delivery. If this is the case, there are few important matters that you should be aware of. More concrete details will also be given at such time.

1) You must have all equipment, tools, software, etc. that are needed for a remotely delivered course.
2) Lectures, Tutorials, Labs: all of these components, or only part of them, will be switched to online delivery. In such cases, the online delivery may be through pre-recorded videos, or through live online delivery. Your instructor will fully inform you about the delivery method.
3) In case the lectures are delivered live, there will be no recordings for these live lectures.

4) **EXAMS:**
   In case of switching to online delivery, exams may still take place in-person. If this is not possible, then exams will take place over The Concordia OnLine Exams (COLE) system. Additionally, you may be called for a follow-up oral exam afterwards. The exam will be proctored, through live Zoom invigilation with enabled lock-screen (which is the most likely way that the exam will take place), or through auto-proctoring. Please read very carefully the Addendums below, which provide the full details of such exams. You must make sure that you read this information very carefully.

   Additionally, in case the exams have to take place online, there will be one-hour period before the exam starts for ID verification and admission to the exam. For instance, if the midterm will take place on **Saturday, November 9, 2024 at 12:30 PM EST,** the ID verification will start at 11:30 AM EST that day, then the exam will start at 12:30 PM. **You should hence keep your schedule free for the exam between 11:30 PM EST and 2:30 PM EST.**

Addendum 1 – Zoom invigilation

This course will be taught and all assessments will be completely online. A midterm and/or a final online exam will be provided through the Concordia Online Exams (COLE) platform with **online live proctoring** (also known as invigilation). More information about the COLE system may be found at the COLE website.

Please note the following with respect to online live proctored exams:
- That the exam will take place during the exam period at the designated date and time set by the professor (midterm) or the Exams office (final). All exam times will be set to Eastern Standard Time.

- That your image, voice and screen activity *may* be recorded throughout the duration of the exam.
- That you must show your Concordia University Identification card to validate your identity. Alternative government-issued photo identification will be accepted, though it is not recommended. Only identification in English or French will be accepted.
- That any recording made (if one is made) will only be viewed by authorized university personnel (no external entity has authorization to review the recording).
- That you will be responsible for ensuring appropriate, properly functioning technology (webcam, a microphone, appropriate browser and an ability to download any necessary software, as well as a reliable internet connection with a minimum of a 3G connection).
  - For your online examination(s), you will need to download the appropriate browser lockdown technology and use Zoom. Protocols for entering the examination will be provided by your professor.
- That you should enter the virtual test site and become familiar with the software that will be used for your exam before starting the exam.
- That you will need a quiet place within which to take the exam. Earplugs or noise-cancelling headphones that are not connected to a device may also be used to allow you to focus for the duration of the exam.

Students who are unable to write an exam because they are unable to meet the above conditions and requirements **are advised that they will need to drop the course**. More information can be provided on the next or alternative offering of this course by consulting the Department. Students are advised to check the drop deadline (DNE) of the term.

Students who require additional accommodations for their exams due to a documented disability should contact the Access Centre for Students with Disabilities as soon as possible (acsdinfo@concordia.ca).

If you face issues during the exam, you should inform your professor of those issues immediately. Please note that there are in-exam supports you should spend time getting to know. Visit the COLE website for more information.

Addendum 2 – Auto-proctored timed assessments

This course will be taught and all assessments will be completely online. A midterm and/or a final online exam are planned to be provided with **online live proctoring** (see Addendum 1 above). Nonetheless; if this could take place for some reason, then the exams will be alternatively provided through the Concordia Online Exams (COLE) platform with **online proctoring** (also known as auto-proctoring). More information about the COLE system may be found at the COLE website.

Please note the following with respect to online live proctored exams:
- That the exam will take place during the exam period at the designated date and time set by the professor (midterm) or the Exams office (final). All exam times will be set to Eastern Standard/Daylight Time.
- That your image, voice and screen activity will be recorded throughout the duration of the exam.
- That you must show your Concordia University Identification card to validate your identity. Alternative government-issued photo identification will be accepted, though it is not recommended. Only identification in English or French will be accepted.
- That any recording made will only be viewed by authorized university personnel (no external entity has authorization to review the recording).
- That you will be responsible for ensuring appropriate, properly functioning technology (webcam, a microphone, appropriate browser and an ability to download any necessary software, as well as a reliable internet connection with a minimum of a 3G connection).
- That you are very strongly recommended to enter the virtual test site found at the COLE website and become familiar with the software that will be used for your exam before starting the exam.
- That you will need a quiet place within which to take the exam. Earplugs or noise-cancelling headphones that are not connected to a device may also be used to allow you to focus for the duration of the exam.

Students who are unable to write an exam because they are unable to meet the above conditions and requirements **are advised that they will need to drop the course**. More information can be provided on the next or alternative offering of this course by consulting the Department. Students are advised to check the drop deadline (DNE) of the term.

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