CSIS 2175– Advanced Integrated Software

Development COURSE INFORMATION AND SCHEDULE

DOUGLAS   COLLEGE
COMMERCE AND BUSINESS ADMINISTRATION

Term: Summer 2021   Section: 001
Instructor: Caesar Jude Clemente   Times: Tue 9:30- 12:20 Online

Email: **clementec@douglascollege.ca**

Office Hours: Tue 1 pm – 2 pm,

COURSE MATERIALSS

       Text book: Java Programming, 9th Edition, Joyce Farrel
       Software: IntelliJ

ONLINE COURSE MATERIALS

All instructor materials, resources, assignments and communication such as announcements, course messages and other resources will be shared through Douglas College Blackboard Community (https://douglascollege.blackboard.com/). Unless it is specifically mentioned, all assignments should be submitted through Blackboard. It is the students' responsibility to check the announcements before coming to class. Every effort will be made to ensure that the notification is made as soon as possible.

COURSE DESCRIPTION

This is an intensive Java programming course. Students are assumed to have prior knowledge in Object Oriented Programming, data manipulation (text, binary, database), prior knowledge in GUI design, and event handling. Students will learn Java application development using packages, classes, abstract, interface, inner classes, file i/o, graphical user interface, database connectivity, and many mor.

COURSE OBJECTIVES

The student will be able to
1. Identify the purpose and behavior of a provided code fragment.
2. Modify an existing code fragment to change its behavior.
3. Modify conditional and iterative structures in a short program.
4. Write well-structured, well- documented, well-commented readable code.
5. Design, implement, test, and debug a program that uses each of the following fundamental programming constructs: basic computation, simple I/O, basic conditional and iterative structures, and functions.
6. Describe the syntax and semantics of conditional structures.
7. Use conditional structures.
8. Apply the techniques of decomposition to break a program into smaller pieces.
9. Describe the role of formal and actual parameters of a function.
10. Describe how strings and arrays are allocated, manipulated and used.
11. Compare iterative and recursive solutions for elementary problems such as factorial.

12. Formulate loop invariants for simple loops.
13. Demonstrate loop termination.
14. Implement, test, and debug simple recursive methods.
15. Explain the philosophy of object- oriented design and the concepts of encapsulation, abstraction, inheritance, interface and polymorphism.
16. Describe how the class mechanism supports encapsulation and information hiding.
17. Compare and contrast the notions of overloading and overriding.
18. Identify the scope of the variables involved in a given code.
19. Access and program databases using various classes.
20. Design GUI programs.
21. Implement version control.
22. Construct class diagram, aggregation, and collaboration.
23. Describe the significance and benefits of version control.
24. Learn basic version control, assess the role of Git and create online repositories using Git.
25. Describe the basic Junit framework, Design effective unit test cases for Java lasses in Junit Execution Environment.
26. Design class diagrams which describe the structure of a system by modeling its classes, attributes, methods and relationships among objects.

COURSE CONTENT
1. Introduction
    1. Usage of the official Java Development Kit (JDK) and any appropriate third-party development kit for Java
    2. Git – version control
    3. JUnit
2. Java Fundamentals
    1. Data types, variables, and comments
    2. Arithmetic operators
    3. Conversion between primitive data types
    4. Math and String class
    5. Scope
    6. Reading keyboard input using different classes
    7. Displaying formatted output with System.out.printf
3. Decision Structures
    1. if, if-else, if-else-if
    2. logical operators
    3. comparing String objects
    4. Conditional operator
    5. switch
4. Loops
    1. while, do – while, for
    2. nested loops
5. Files
    1. Input and output file processing
6. Classes
    1. Basic class diagram
    2. Instance fields and methods

3. static class members
4. Constructors
5. Overloaded methods and constructors
6. Passing objects as arguments
7. Returning Objects from methods
8. toString method
9. copy method/constructors
10. Aggregation (UML)
11. this reference
12. inner classes
13. Class collaboration (UML)

7. Arrays and ArrayList
 1. Single and multidimensional arrays
 2. Passing arrays as arguments to methods
 3. Returning Arrays from methods
 4. String Arrays
 5. Arrays of Objects
 6. Command-line arguments
 7. Variable length argument lists
 8. ArrayList/Vector Class

8. Introduction to basic Search and Sorting algorithm

9. Text Processing and Wrapper Classes
 1. Wrapper classes
 2. String object and related classes (e.g StringBuilder)

10. Inheritance, Abstract classes and Interfaces
 1. Calling superclass constructor and methods
 2. Protected members
 3. Polymorphism
 4. Abstract classes and abstract methods
 5. Interfaces
 6. Anonymous inner classes

11. Exceptions and Advanced File I/O
 1. *Handling and Throwing Exceptions*
 2. *Tokenizing Strings*
 3. *Binary and Random Access Files*
 4. *Object Serialization*

12. GUI and Event Handling through
 1. Swing and/or JavaFX

13. Database Programming

METHODS OF INSTRUCTION
E-learning with both synchronous (online, real time) and asynchronous (offline) activities. The online real-time learning is exemplified by the course virtual classroom lecture sessions, virtual office hours and online proctoring exams. The asynchronous delivery is when students can finish their deliverables, e.g., lab works, assignments, at their own pace, or email consultations with the instructor.
Note: Please see the announcement about Summer 2020 semester on Douglas College website.

POLICY AND REGULATIONS

Communication
1. **The primary means of communication in this course is through your student email**. Any correspondence using the un-official email will not be entertained. Please send email to clementec@douglascollege.ca the mention of: course and section numbers, e.g. CSIS 3860 – 001, student name and student ID numbers.
2. If the **student needs** to personally talk to the instructor during the instructor's designated official office hours, he or she needs **to book an appointment beforehand through email**. The instructor will set the time. Students should check their email for the meeting links.
3. If a student would like to discuss about their labs or assignments, **she/he needs to send the related files through email prior to the meeting**. She/he needs to mention the meeting ID, or at least reply to the instructor's email about the appointed time and describe the question that she/he wants to talk about.
4. Students are expected to be punctual if he or she booked an appointment. **The instructor has the right to remove the meeting link** if the student is not on time.

Virtual Classroom
1. **Students are not allowed to record the class lectures** at any point of time.
2. Although virtual classes can be done at the comfort of the student's home, this is still a formal gathering; hence appropriate attire is expected. The instructor may ask the student to provide a video feed during the synchronous activities.
3. Students are expected to share their screen if it is required during the class.
4. It is the **students' responsibility to join the virtual classroom on tim**e by launching BB Ultra and to **make sure that their audio and video devices are working correctly**.
5. Students need to close all other programs that are open at their device to focus all the resources of the computer to the classroom meeting. This setup is no different from an actual classroom.
6. Students should use the chat feature to ask questions. The instructor will monitor the chat and answers the questions during the break.
7. **Students are required to mute the mic** to avoid the sound feedback. A student can raise their hand and turn the mic on only when her/his name are called by the instructor.
8. Students should refrain from doing other distracting activities such as eating, unnecessary chatting, playing, and other activities that a student shouldn't be doing if he or she is in an actual classroom during a lecture.
9. **Sharing of virtual classroom exercises will be considered as cheating**.
10. During virtual classroom sessions, there may be instances where students will be required to collaborate in a group. This situation usually happens during break out session where students are expected to work within his or her group mates.
11. Student should find a quiet place where they will have minimal distractions and have ample light to get the best of the virtual classroom sessions.

Attendance
1. **Learners are expected to attend the class on time** and during class refrain from carrying on other activities unrelated with the course during a lecture.
2. The instructor may require the students to provide feedback using poll or any other means during the lecture sessions.
3. **Attendance will be checked** through the login time and the time the students join the synchronous lecture sessions. Video feed might be required as proof of attendance.

Asynchronous activities, e.g., assignments, labs, open book tests
1. **Students are expected to submit their original work** on assessment criteria such as assignments, labs, and projects.
2. Every assignment, project or lab will be given a due date. The student is responsible for handing the instructor the assignment at the deadline shown in the Blackboard.
3. **The instructor has the right to conduct a meta-analysis on all the submitted works.**
4. **Any discrepancy** between the authors or point of origin of files will be construed as prima-facie **evidence for cheating**.
5. **Students are expected to use computers with their data stamp on it**. This requirement means they must ensure that they have their login account with their name on the computer they are using.
6. Unless it is mentioned otherwise, asynchronous activities are not collaborative activities. Students are expected to do these types of examinations on their own.

Online Proctoring
The instructor may subject the students to perform tests with online proctoring tools.
1. The same hardware and software requirements to conduct synchronous activity are needed for online proctoring guidelines (**camera**, microphone, speaker, computer).
2. A student should choose a quiet area, with a plain wall as a backdrop and with ample light.
3. No unnecessary sounds such as music or people chatting should be heard in the background.
4. Just like in a regular exam, students are expected to be punctual. Latecomers will forfeit their chance of taking the exam.
5. **Technical glitches during the exam should be communicated to the instructor immediately**.
6. **No other devices** except for the computer **will be allowed during online proctored exams**.
7. **Pausing the camera feed or leaving your seats during the exam will be considered as cheating.**
8. **No bathroom breaks are allowed during online proctored exams.**

Deadlines
1. **Assignment due dates:** Every assignment will be given a due date. The student is responsible for submitting the assignment at the deadline shown in the Blackboard.
2. **Late assignments** will not be accepted.
3. **Tests or examinations**: Tests and examinations will be offered only during the scheduled date and time. **Missed quizzes or exam will NOT be made up.**

Illness and Unavoidable Circumstances
1. **Students should inform the instructor immediately** through email if there is a chance of missing a deadline, a quiz, or an exam.
2. COVID-19 symptoms do not automatically justify a student to submit his/her deliverables late. A student needs to present proof that he/she was incapacitated due to an illness.

Final Exam
Final exam is cumulative. It will include all the lessons that were discussed in the course.

Online Glitches/Loss of Internet
In the event of a technical glitch, the delivery format is deemed to become asynchronous. This situation means students are still expected to fulfill all deliverables within the course outline. Loss of Internet will not result in moving of deadlines or change of schedules.

DOUGLAS COLLEGE POLICIES
Students are responsible for being familiar with the information contained in the Douglas College calendar, policies and procedures relating to appeals, petitions, formal complaints, standard of conduct, violence and academic honesty as stated at http://www.douglascollege.ca/about-douglas/governance/policies

ACADEMIC INTEGRITY
Plagiarism and Cheating: There will be **zero tolerance** for any plagiarism or cheating. Douglas College, in common with other educational institutions, condemns academic dishonesty.

Plagiarism is the deliberate formal presentation or submission of the research, ideas, words, illustrations or diagrams of others as one's own without citation or credit.

Cheating is the use of unauthorized aids, assistance or materials in the preparation of assignments or in examinations. During examinations it is considered cheating to communicate with others to obtain information, to copy from the work of others or to deliberately expose or convey information to others. The resubmission of one's work for which credit has already been granted in another course, without instructor permission, is also cheating.

Violations of Academic Integrity: Violations of academic integrity policy will be reported to the Dean's office for review. The college mandates penalties for these offenses, which range from a zero grade on the work affected by this policy all the way to expulsion from the college. For more information, see: https://www.douglascollege.ca/sites/default/files/docs/finance-dates-and-deadlines/Academic%20Integrity%20Policy%20w%20Flowchart.pdf

CLASS CANCELLATION
In the event that a class is cancelled due to some unforeseen circumstance, a **notification will be made through Blackboard.**

Appeals

You are given one week to appeal your grades after each assessment. If you do not appeal, your grade will be deemed final.

COVID 19 Safety Statement

KEEPING OUR CAMPUSES HEALTHY
This summer semester, Douglas will welcome a small number of faculty on our campuses for in-person instruction. Other students may also attend campus to seek advice or assistance from a number of our service areas. To help ensure the safety of our campus community, please adhere to the following guidelines.

If you come to campus:
• Complete a daily self-assessment before coming to campus: https://bc.thrive.health/
• Follow all posted signage.
• Maintain physical distance of 2m (6 feet) from others. Do not congregate in groups.

• Wear a non-medical face mask in public areas or areas where physical distancing is not possible.

DO NOT come to campus if:
• You are sick.
• You have been in contact with someone with a confirmed case of COVID-19 within the last 14 days.
• You have travelled or been in contact with someone who has travelled outside of Canada in the past 14 days.

If you are unable to attend a class due to illness, contact your instructor immediately.

Illness on campus
If you become ill while on campus, contact Campus Security immediately for first aid and to report your symptoms.
If you are concerned that you may have COVID-19, use the BC government COVID-19 self-assessment tool to help guide you on what to do. The province of BC has also set up a dedicated COVID-19 hotline at 1-888-COVID19 or text 604-630-0300. The service is available daily from 7:30 a.m. to 8 p.m. with information available in over 110 languages

MEANS OF ASSESSMENT
A final course grade is determined based on the following instruments and its corresponding weighted percentages:

Lab Assignments	20%
Quizzes **	20%
Midterm**	30%
Final**	30%
Total	100%

**In order to pass the course, students must, in addition to receiving an overall course grade of 50%, also achieve a grade of at least 50% on the combined weighted examination components (including quizzes, tests, exams).

The student's achievement will be converted to a letter grade, in accordance with department policy. **A student is required to produce his or her ID card during examinations.**

GRADING SYSTEM

A+	=	95% - 100%	C+	=	65% - 69%
A	=	90% - 94%	C	=	60% - 64%
A-	=	85% - 89%	C-	=	55% - 59%
B+	=	80% - 84%	P	=	50% - 54%
B	=	75% - 79%	F	=	0%-49%
B-	=	70% - 74%	UN		completed < 70% of total evaluations or
					missed >30% of classes where attendance is required

Students who do not attempt at least 70% of the evaluated work or did not present for at least 70% of scheduled class times will be assigned a mark of "UN" or unofficial withdrawal in the course.

Tentative Course Schedule
The course schedule is subject to change (Following College Policy and with notice to students).

Weeks	Topics	Activity

Week 1	1. Introduction to the course
	2. Java Fundamentals
	   1. Data types, variables, and comments
	   2. Arithmetic operators
	   3. Conversion between primitive data types
	   4. Math and String class
	   5. Scope
	   6. Reading keyboard input using different classes
	   7. Displaying formatted output with System.out.printf
		Lectures
		Class Exercise

Week 2	Decision Structures
	   1. if, if-else, if-else-if
	   2. logical operators
	   3. comparing String objects
	   4. Conditional operator
	   5. Switch
		Lectures
		Class Exercise
		Assignment 1

Week 3	1. Loops
	   1. while, do – while, for
	   2. nested loops
	2. Input and output file processing
		Lectures
		Class Exercise

Week 4	Classes
	    1. Basic class diagram
	    2. Instance fields and methods
	    3. static class members
	    4. Constructors
	    5. Overloaded methods and constructors
	    6. Passing objects as arguments
	    7. Returning Objects from methods
		Lecture
		Quiz 1

	8. toString method
	    9. copy method/constructors
	    10. Aggregation (UML)
	    11. this reference
	    12. inner classes
	    13. Class collaboration (UML)	

Week 5	- Continuation for Classes	Lectures Class Exercise

Week 6	Arrays and ArrayList
	    1. Single and multidimensional arrays
	    2. Passing arrays as arguments to methods
	    3. Returning Arrays from methods
	    4. String Arrays
	    5. Arrays of Objects
	    6. Command-line arguments
	    7. Variable length argument lists
	    8. ArrayList/Vector Class
		Lectures
		Class Exercise
		Assignment 2

Week 7	1. Introduction to basic Search and Sorting algorithm	Lectures Class Exercise

Week 8	1. Text Processing and Wrapper Classes
	    1. Wrapper classes
	    2. String object and related classes (e.g StringBuilder)
		Lectures
		Midterm

Week 9	- Continuation for Text Processing
	
	2. Inheritance, Abstract classes and Interfaces
	
	  1. Calling superclass constructor and methods
	  2. Protected members
	  3. Polymorphism
	  4. Abstract classes and abstract methods
	  5. Interfaces
	  6. Anonymous inner classes
		Lectures
		Class Exercise

Week 10	- Continuation for Inheritance, Abstract Classes and Interfaces	Lectures Class Exercise
Week 11	1. Handling and Throwing Exceptions 2. Tokenizing Strings 3. Binary and Random Access Files 4. Object Serialization	Quiz 2
Week 12	1. GUI and Event Handling through 1. Swing and/or JavaFX	Lectures Class Exercise Assignment 3
Week 13	GUI continued /Database Programming - 1	Lectures Class Exercise
Week 14	Database Programming Continued/Review	Lectures Class Exercise
Week 15	Final Exam	