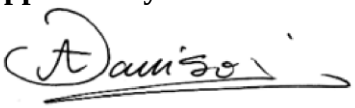
Approved by Chair:



20 August 2025

Signature

COMP 2130 - APPLICATION DEVELOPMENT USING JAVA

Course Description

This course introduces the fundamentals of the Java programming language. Students apply object-oriented concepts across all layers of development. They utilize various features of Java to design, build and test software solutions.

Course Outcomes

1. Use procedural statements, including assignments, conditional statements, loops, method calls and arrays.
2. Apply object-oriented concepts utilizing Java syntax, such as classes, subclasses, inheritance, polymorphism, and overriding.
3. Design, code, and test small Java applications that meet requirements expressed in spoken language.
4. Build console and graphical user interface applications in Java.
5. Write structured and object-oriented code.
6. Use exceptions for error handling.
7. Connect to files and databases in Java.

LIST OF TEXTBOOKS AND OTHER TEACHING AIDS:

Required:

1. Introduction to Java Programming and Data Structures, Comprehensive Version, 12th Edition by Y. Daniel Liang, Published by Pearson ISBN-13: 978-0-13-6520238 ISBN-10: 0-13-6520235
2. D2L https://learn.georgebrown.ca/

Recommended

1. The Java ™ Tutorials - https://docs.oracle.com/javase/tutorial/tutorialLearningPaths.html

by Oracle

2. Java SE 8 – Lambda Quick Start
   https://www.oracle.com/webfolder/technetwork/tutorials/obe/java/Lambda-QuickStart/index.html

Optional

Java How to Program, Early Objects, 11th Edition. by Paul Deitel, Harvey Deitel, Published by Pearson ISBN-13: 978-013474335-6 ISBN-10: 9780134743356

Course Delivery Mode

The course uses various instructional methods, such as lectures, demonstrations, hands-on exercises, and take-home assignments. The delivery mode depends on whether the course is online or in person. Online lectures will be the primary mode, but there may be in-person lectures for in-person participants. Labs will be conducted virtually for the online program, while in-person program students must attend on-campus labs. For more information about the delivery mode, please refer to D2L. Any updates will be communicated through D2L in advance.

Assignment Policy

- Students are responsible for keeping a backup copy of each assignment submitted.
- All assignments submitted should adhere to the documentation standards specified by the professor.
- All assignments must be submitted on the due date based on an instruction given by the professor. Late assignment will be penalized 20% per day to a maximum of 5 days, the weekend included unless the student has notified the professor (via e-mail, phone or in person) ahead of the due date that he/she has a valid reason for late submission.

Test Policy

- Students must take all tests and the final exam on the specified dates. If a student cannot take a test or exam as planned, they must inform the professor three days in advance to make alternative arrangements. Please adhere to this policy to avoid receiving a grade of zero.
- There are no make-up quizzes or lab exercises; if students anticipate missing up to two quizzes or lab exercises, they must inform their professor beforehand.

In-Person Exam Policy

Mid-term and Final exams for the T177 program will be conducted in person. Please note the following exam schedule:

- Mid-Term Exams: Week 7 of the semester
- Final Exams: Week 15 of the semester

Students are expected to be available in person during these exam periods.

Important Note on the Use of Generative AI:

Students must review the "Generative AI Usage Guidelines" document, available on D2L, for detailed instructions on how generative AI tools may be used in this course. The course evaluation table now includes a column labelled "AI Usage Allowed," indicating whether AI use is permitted for each assessment.

Yes: AI can be used with proper referencing.
No: AI cannot be used, and any usage will be considered plagiarism and subject to academic penalties.

Misuse of AI in assessments where it is not permitted or failure to adequately disclose its use will be treated as a violation of academic integrity. According to college policy, consequences may include failing the assignment or the course or more severe disciplinary actions. **Students must also download the AI Usage Declaration form from D2L, complete it, and submit it with their assignments where AI use is permitted.** Adherence to these guidelines is mandatory to maintain academic integrity.

EVALUATION SYSTEM:

The passing grade for this course is: _D (50%)

Assessment Tool:	Description:	Outcomes assessed:	EES	Date / Week:	% of Final Grade	AI Usage Allowed
Quizzes 5 x 2%	In-lecture quizzes (QuizAtClass), no make-up, best 5 counts.	1, 2, 3, 4, 5, 6	4, 5, 6	TBA	10	NO
Lab Test 1	Create a simple application that accepts user input, manipulates the input and displays results on screen based on requirements.	1, 2	1,2,3,4,5	Week 4	10	NO
Lab Test 2	Create a graphical user interface application that involves the creation of a user-defined class based on provided specification. The application should test the class by creating objects and displaying the object state on the screen.	1, 2, 3	1,2,3,4,5,6, 10,11	Week 11	10	NO
Assignment 1	Create an object-application based on the specifications provided.	1, 2, 4, 5, 6	1,2,3,4,5,6, 10,11	Week 5	10	YES

Assignment 2	Create an object-oriented application based on the specifications provided.	1, 2, 3, 4, 5, 6, 7	1,2,3,4,5,6, 10,11	Week 13	15	YES
Mid Term Exam	Mixed format exam that includes MC and short answer question exam.	1, 2, 4, 5, 6	1,2,3,4,5,6, 10,11	Week 7	20	NO
Final Exam	Mixed format exam that includes MC and short answer question exam.	1, 2, 3, 4,5,6, 7	1,2,3,4,5,6, 10,11	Week 15	25	NO
				TOTAL:	**100%**	

TOPICAL OUTLINE

Learning Schedule / Topical Outline (subject to change with notification)

Week	Topic / Task	Outcome(s)	Content / Activities	Resources
1	1, 2	1	● The Java Language Specification ● A Simple Java Program ● Creating, Compiling, and Executing a Java Program ● Identifiers, Variables, Constants ● Numeric Data Types and Operations ● Character Data Types and Operations	Chapters 1, 2
2	3, 4	1, 4	● Single-Dimensional Arrays ● Array Basics ● Copying Arrays ● Passing Arrays to Methods ● Returning an Array from a Method ● Searching Arrays ● Sorting Arrays ● The Arrays class ● Processing Two-Dimensional Arrays ● Passing Two-Dimensional Arrays to Methods ● Multidimensional Arrays	Chapters 7, 8
3	5	1, 2, 3, 4	● Objects and Classes ● Defining Classes for Objects ● Constructing Objects Using Constructors ● Static Variables, Constants, and Methods ● Visibility Modifiers ● Passing Objects to Methods ● Array of Objects ● Immutable Objects and Classes ● Scope of Variables ● The this reference ● Class Abstraction and Encapsulation ● The String Class ● The Character Class ● The StringBuilder and StringBuffer Classes	Chapters 9, 10

4	6, 7	1, 2, 3,5	• Inheritance and Polymorphism • Superclasses and Subclasses • Using the super keyword • Overriding Methods • Overriding vs. Overloading • The Object Class • Polymorphism • Dynamic Binding • The ArrayList class • **LABTEST 1**	Chapter 11
5	8, 9	1, 2, 3,5,6, 7	• Exception Handling Overview • Exception Types • The finally Clause • Rethrowing Exceptions • Chained Exceptions • Defining Custom Exception Classes • The File Class • File Input and Output • FileDialog class • **ASSIGNMENT 1 due**	Chapter 12
6	10	1, 2, 3, 5,6	• Abstract Classes • Interfaces • The Comparable Interface • The Cloneable Interface • Interfaces vs. Abstract Classes • Class Design Guidelines	Chapter 13
7			**MID-TERM EXAM**	
8			*INTERSESSION WEEK*	
9	11	2,3,5,6	• Basics of JavaFX • Java FX vs. Swing vs. AWT • Panes, UI Controls and Shapes • Property Binding • The Color Class • The Font Class • The Image and ImageView Classes • Layout Panes	Chapter 14
10	12	1, 2, 3, 4,5	• JavaFX UI Controls and Multimedia • Events for Button, CheckBox, RadioButton, TextField • Labels and Text Fields • Text Areas • Combo Boxes • Lists • Scroll Bars • Sliders • Video and Audio	Chapter 16

11	13, 14	2, 3, 5, 6	• Event-Driven Programming • Events and Event Sources • Listeners, Registrations, and Handling Events • Inner Classes • Anonymous Inner Class Handlers • Mouse Events • Key Events • Java SE 8 Lambdas and Streams • Functional Interfaces • Lambda Expressions • Event Handling using Lambda expressions • **LABTEST 2**	Chapter 15 Lamda Quick Start
12	16	2, 3, 5, 6, 7	• Binary Input/Output • Text Input/Output • Binary I/O Classes • Object I/O • Random-Access Files • **ASSIGNMENT 2 DUE**	Chapter 17
13	15	2,3, 5, 6, 7	• Java Database Programming • Relational Database Systems • Structured Query Language • JDBC - Java Database Connectivity • PreparedStatement • CallableStatement	Chapter 34
14	17	5,6	• Multithreading • Tasks and Threads • Thread Synchronization • Thread States • Deadlock prevention	Chapter 32
15			**FINAL EXAM**	

For information on withdrawing from this course without academic penalty, please refer to the College Academic Calendar: http://www.georgebrown.ca/Admin/Registr/PSCal.aspx

Policy on Academic Dishonesty:
The *minimal* consequence for submitting a plagiarized, purchased, contracted, or in any manner inappropriately negotiated or falsified assignment, test, essay, project, or any evaluated material will be a grade of zero on that material.
To view George Brown College policies please go to www.georgebrown.ca/policies