
CSD-3464 Programming Java SE

Computer Studies

Course Number: CSD-3464	Co-Requisites: N/A	Pre-Requisites: CSD-1113 and CSD-1133 and CSD-1233 and CSD-2206
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Approved by:	Chris Slade, Senior Dean	
Approval Date:	Friday, June 4, 2021	
Approved for Academic Year:	2021-2022	
Credit Weight:	4.00	

Course Description

Various components of the Java object-oriented programming language are introduced. Students (1) develop solutions using data types, I/O, and control structures; (2) use arrays and collections to store and work with single and multidimensional data; (3) create programs that adhere to the object-oriented paradigm; and (4) build standalone GUI applications that interface with a database.

Course Learning Outcomes/Course Objectives

- 1. Develop solutions using data types, I/O, and control structures**
 - 1.1 Use standard input and output methods of the Java API
 - 1.2 Use variables and literals of primitive and String data types
 - 1.3 Use arithmetic and assignment operators
 - 1.4 Use the *if* and *else* keywords to implement various decision structures
 - 1.5 Use logical operators to combine conditions
 - 1.6 Use the ternary conditional operator to resolve a condition
 - 1.7 Use the *switch* statement to resolve branching flow
 - 1.8 Use the increment and decrement operators
 - 1.9 Use the *while*, *do-while* and *for* loops to implement repetition structures
 - 1.10 Perform text processing with the String class
 - 1.11 Format Strings using the *NumberFormat* and *DecimalFormat* classes
- 2. Use arrays and collections to store and work with single and multidimensional data**

- 2.1 Implement array processing and management techniques
- 2.2 Design and implement enumerated data types
- 2.3 Use the *for-each* to iterate over both collections and arrays
- 2.4 Work with Java's *ArrayList* collection to store and manipulate variable length datasets
- 2.5 Solve programming challenges using partially filled and ragged arrays

3. Create programs that adhere to the object-oriented paradigm

- 3.1 Design and implement classes in Java consisting of instance variables and methods
- 3.2 Write methods/constructors that work with primitive and reference type parameters
- 3.3 Apply the *public*, *protected*, and *private* access modifiers to classes, methods/constructors, and instance variables
- 3.4 Create copy constructors capable of performing deep-copies of objects
- 3.5 Overload and override methods
- 3.6 Override *java.lang.Object*'s *toString()*, *equals()*, and *clone()* methods
- 3.7 Use the *static* keyword to implement static class members
- 3.8 Implement class-based aggregation
- 3.9 Design an inheritance hierarchy
- 3.10 Use polymorphism with common-ancestor problems
- 3.11 Work with abstract classes, methods and interfaces
- 3.12 Use the *this* keyword to refer to instance variables, invoke a constructor, and pass an object as an argument to a method/constructor.
- 3.13 Utilize Java's wrapper classes to work with primitive data

4. Build standalone GUI applications that interface with a database

- 4.1 Use the Java Database Connectivity (JDBC) API to connect to and work with relational database systems
- 4.2 Write SQL statements in the context of Java application development to create, read, update, and delete (CRUD) records from a relational database system
- 4.3 Develop Java applications that feature a GUI developed using the JavaFX API

Relationship to Essential Employability Skills

This course contributes to your program by helping you achieve the following Essential Employability Skills:

- EES 2.3 Execute mathematical operations accurately. (T, A,)
- EES 3.4 Apply a systematic approach to solve problems. (T, A,)
- EES 3.5 Use a variety of thinking skills to anticipate and solve problems. (T, A,)
- EES 6.10 Manage the use of time and other resources to complete projects. (A,)
- EES 6.11 Take responsibility for one's own actions, decisions and consequences. (A,)

Relationship to Vocational Learning Outcomes

This course provides the opportunity for you to achieve the following Program Vocational Learning Outcomes (VLO) which will be taught and evaluated at an taught (T), assessed (A) or culminating performance (CP) level:

BISC - Business Administration - Information System

- VLO 3 Apply knowledge of computer hardware, programming languages, databases, file structures, networking, and software applications to the specific business processes of the enterprise. (T, A)
- VLO 4 Apply problem solving skills in the analysis of business problems and development of appropriate information technology solutions. (T, A)

CPCM - Computer Programmer

- VLO 2 Contribute to the diagnostics, troubleshooting, documenting and monitoring of technical problems using appropriate methodologies and tools. (T, A)
- VLO 4 Implement robust computing system solutions through validation testing that aligns with industry best practices. (T, A)
- VLO 6 Select and apply strategies for personal and professional development to enhance work performance. (T, A)

CPCT - Computer Programmer

- VLO 2 Contribute to the diagnostics, troubleshooting, documenting and monitoring of technical problems using appropriate methodologies and tools. (T, A)
- VLO 4 Implement robust computing system solutions through validation testing that aligns with industry best practices. (T, A)
- VLO 6 Select and apply strategies for personal and professional development to enhance work performance. (T, A)

CPRO - Computer Programmer

- VLO 1 Identify, analyze, develop, implement, verify and document the requirements for a computing environment. (T, A)
- VLO 5 Communicate and collaborate with team members and stakeholders to ensure effective working relationships. (T, A)
- VLO 6 Select and apply strategies for personal and professional development to enhance work performance. (T, A)
- VLO 7 Apply project management principles and tools when working on projects within a computing environment. (T, A)
- VLO 9 Support the analysis and definition of software system specifications based on functional and non-functional requirements. (T, A)
- VLO 10 Contribute to the development, documentation, implementation, maintenance and testing of software systems by using industry standard software development methodologies based on defined specifications and existing technologies/frameworks. (T, A)
- VLO 11 Apply one or more programming paradigms such as, object-oriented, structured or functional programming, and design principles, as well as documented requirements, to the software development process. (T, A)
- VLO 12 Model, design, implement, and maintain basic data storage solutions. (T, A)

CSAC - Computer Software and Database Development

VLO 1	Evaluate system requirements and implement multi-tiered (client, server, and database) web applications to meet client requirements. (T, A)
VLO 2	Design, model, implement, maintain and query databases using an enterprise-level relational database management system (DBMS) to meet end-user specifications. (T, A)

CSAM - Computer Software and Database Development

VLO 1	Evaluate system requirements and implement multi-tiered (client, server, and database) web applications to meet client requirements. (T, A)
VLO 2	Design, model, implement, maintain and query databases using an enterprise-level relational database management system (DBMS) to meet end-user specifications. (T, A)

CSAT - Computer Software and Database Development

VLO 1	Evaluate system requirements and implement multi-tiered (client, server, and database) web applications to meet client requirements. (T, A)
VLO 2	Design, model, implement, maintain and query databases using an enterprise-level relational database management system (DBMS) to meet end-user specifications. (T, A)

Learning Resources

Required:

- Savitch, W. (2016). Absolute Java. (6th ed.). Hoboken, NJ: Pearson Education. ISBN: 978-0-13-404167-4

Supplemental:

- None

Student Evaluation

Assignments (8 evenly weighted) - 25%

Quizzes (6 evenly weighted) - 15%

1 Test - 30%

Project - 30%

Grade Scheme

The round off mathematical principle will be used. Percentages are converted to letter grades and grade points as follows:

Mark (%)	Grade	Grade Point	Mark (%)	Grade	Grade Point
94-100	A+	4.0	67-69	C+	2.3
87-93	A	3.7	63-66	C	2.0
80-86	A-	3.5	60-62	C-	1.7
77-79	B+	3.2	50-59	D	1.0
73-76	B	3.0	0-49	F	0.0
70-72	B-	2.7			

Prior Learning Assessment and Recognition

Students who wish to apply for prior learning assessment and recognition (PLAR) need to demonstrate competency at a post-secondary level in all of the course learning requirements outlined above. Evidence of learning achievement for PLAR candidates includes:

- Other: Students interested in PLAR consideration are advised to discuss details with the program coordinator.

Course Related Information

Courses with CSD course codes have program policies related to evaluations and classroom conduct. These program policies for the CSD courses are available in D2L and students are expected to be aware of these policies.

This is a project-based learning course consisting of a variety of teaching environments. All course work is completed according to the syllabus. Students should take careful notes as not all material can be found in the textbook or handout materials. Attendance is expected and necessary to be successful.

College Related Information

Academic Integrity

Lambton College is committed to high ethical standards in all academic activities within the College, including research, reporting and learning assessment (e.g. tests, lab reports, essays).

The cornerstone of academic integrity and professional reputation is principled conduct. All scholastic and academic activity must be free of all forms of academic dishonesty, including copying, plagiarism and cheating.

Lambton College will not tolerate any academic dishonesty, a position reflected in Lambton College policies. Students should be familiar with the Students Rights and Responsibilities Policy, located at lambtoncollege.ca. The policy states details concerning academic dishonesty and the penalties for dishonesty and unethical conduct.

Questions regarding this policy, or requests for additional clarification, should be directed to the Lambton College Student Success Department.

Students with Disabilities

If you are a student with a disability please identify your needs to the professor and/or the Accessibility Centre so that support services can be arranged for you. You can do this by making an appointment at the Accessibility Centre or by arranging a personal interview with the professor to discuss your needs.

Student Rights and Responsibility Policy

Acceptable behaviour in class is established by the instructor and is expected of all students. Any form of misbehaviour, harassment or violence will not be tolerated. Action will be taken as outlined in Lambton College policy.

Date of Withdrawal without Academic Penalty

Please consult the Academic Regulations and Registrar's published dates.

Waiver of Responsibility

Every attempt has been made to ensure the accuracy of this information as of the date of publication. The content may be modified, without notice, as deemed appropriate by the College.

Students should note policies may differ depending on the location of course offering. Please refer to campus

location specific policies:

LAMBTON COLLEGE POLICIES – applicable to all Lambton College students.

- Student Rights & Responsibilities & Discipline policy (2000-5-1)
- Test & Exam Writing Protocol (2000-1-6)
- Evaluation of Students (2000-1-3)
- (<https://www.lambtoncollege.ca/custom/Pages/Policies/Policies.aspx>)

CESTAR COLLEGE:

- https://www.lambtoncollege.ca/Programs/International/Lambton_in_Toronto/Student_Policies/

QUEENS COLLEGE:

- https://www.lambtoncollege.ca/Programs/International/Lambton_in_Mississauga/Student_Policies/

Note: It is the student's responsibility to retain course outlines for possible future use to support applications for transfer of credit to other educational institutions.