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TEXTBOOK:

- *Absolute Java, 6<sup>th</sup> (or 5<sup>th</sup>) edition*, by Walter Savitch.

MARK BREAKDOWN:

• Final exam	44%
• 4 lab assignments (4x8%)	32%
• 3 quizzes (3x8%)	<u>24%</u>
Total	100%

**COURSE DESCRIPTION:**

**Content Overview** - There are four major focus areas for the course:

- Understand basic concepts about software systems design and programming using object-oriented techniques and languages. We will be investigating the architecture and elements applied in writing programs under this paradigm. We will use the Java language to illustrate and implement these concepts.
- Solve medium-complexity problems using algorithms and computational techniques which you can efficiently translate to object-oriented programs.
- Develop programming solutions using the facilities of Java. Use of packages, class libraries, and interfaces. Encapsulation and representational abstraction. Inheritance. Polymorphic programming. Exception handling. Iterators.
- Introduction to a class design notation. Application to the design of graphical user interfaces.

**Class Work** (3 hours per week): formal lectures, discussing labs, questions/answers about exercises. Overall, the following topics will be covered:

- Problem solving with object-oriented techniques – throughout the course
- Designing reusable classes with proper encapsulation and hierarchies
- Special object-oriented constructs in the Java language to handle data and encapsulate functionality in classes
- Reuse of predefined classes in Java libraries. Specific application to the development of graphical user interfaces.

**Labs** (3 hours per week): devise and design schematic solutions to assignments, write Java programs to implement these solutions, create and run tests to check the correctness of the programs, and write reports to document your code and findings. Labs are done individually unless otherwise indicated.

**Lab Reports** – Formal reports including the code you developed, samples of tests you carried out on your code (input data and output from your code), description of the results from the tests.

**Independent Work** – You should expect and plan to spend at least 4 hours per week in this course engaged in independent study.

**Exam and Quizzes** – Closed book, no calculators or other computing devices allowed. A one-page, handwritten “data sheet” will be allowed for each quiz.

CLASS / LAB SCHEDULE (may be modified if necessary):

Week No.	Dates	Activity	Description
1	Jan 8 to Jan 12	L-1	Introduction
		L-2	Hello World, History of Java
		L-3	How Java Works, Class Structure
		Lab	Java JDK and JRE. Eclipse IDE. Coding, testing and debugging solutions. Writing lab reports.
2	Jan 15 to Jan 19	L-1	<b>Assignment 1 handed out – Jan 15</b> Primitive Types, Array Declaration, Casting
		L-2	Expressions
		L-3	Loops and Conditionals
		Lab	Assignment 1, development, testing and reporting
3	Jan 22 to Jan 26	L-1	Style for Assn 1, Designing Functions
		L-2	Functional Decomposition Example, 2D arrays
		L-3	Useful classes in the Java API
		Lab	Assignment 1, development, testing and reporting
4	Jan 29 To Feb 2	L-1	<b>Assignment 1 due – Jan 29</b> String, String Tokenizer Classes, Method Overloading
		L-2	<b>Assignment 2 handed out – Jan 30</b> Exceptions, Pointers, Aliasing
		L-3	Passing by Reference
		Lab	<b>Quiz 1 – Jan 30</b> Assignments 2, development, testing and reporting.
5	Feb 5 to Feb 9	L-1	What is an Object?, Encapsulation
		L-2	Encapsulation
		L-3	Encapsulation
		Lab	Assignment 2, development, testing and reporting

CISC124: Introduction to Computing Science II – Section 2  
Winter 2018 – Course Outline

Week No.	Dates	Activity	Description
6	Feb 12 to Feb 16	L-1	Encapsulation
		L-2	Javadoc tool
		L-3	Debugging, JUnit Testing
		Lab	Assignment 2, development, testing and reporting
Feb 19 - Feb 23			Reading week.
7	Feb 26 to Mar 2	L-1	Assignment 2 due - Feb 26 Assignment 3 handed out - Feb 26 JUnit Demo, Unit Testing, TDD
		L-2	Packages, Enumerated Types, Inner Classes, Anonymous Classes
		L-3	Interfaces and Abstract Classes
		Lab	Quiz 2 - Feb 27 Assignment 3, development, testing and reporting
8	Mar 5 to Mar 9	L-1	Inheritance
		L-2	Inheritance
		L-3	Inheritance, ArrayList Class
		Lab	Assignment 3, development and testing
9	Mar 12 to Mar 16	L-1	Generic Classes and Methods
		L-2	Generic Wildcard Use, Generic Factory Methods
		L-3	Lambda Functions, Method References
		Lab	Assignment 3, development, testing and reporting
10	Mar 19 to Mar 23	L-1	Assignment 3 due - Mar 19 Assignment 4 handed out - Mar 19 Event Driven Programming, Intro to JavaFX
		L-2	JavaFX Panes and Layout Managers
		L-3	More JavaFX Panes
		Lab	Assignment 4, development, testing and reporting
11	Mar 26 to Mar 30	L-1	Attaching an Event to a Button, SceneBuilder
		L-2	SceneBuilder
		L-3	User Input
		Lab	Quiz 3 - Mar 29 Assignment 4, development, testing and reporting
12	Apr 3 to Apr 6	L-1	Text Input, Dialogs
		L-2	More Dialogs, Spinners, Animation Demos
		L-3	Assignment 4 due - Apr 5 Review

L: Lecture

## **Academic Integrity**

Academic Integrity is constituted by the six core fundamental values of honesty, trust, fairness, respect, responsibility and courage (see [www.academicintegrity.org](http://www.academicintegrity.org)). These values are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University (see the Senate Report on Principles and Priorities

<http://www.queensu.ca/secretariat/policies/senate/report-principles-and-priorities> ).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar on the Arts and Science website (see

<http://www.queensu.ca/artsci/academics/undergraduate/academic-integrity> ),

and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

## **Copyright of Course Materials**

This material is copyrighted and is for the sole use of students registered in CISC124. This material shall not be distributed or disseminated to anyone other than students registered in this course. Failure to abide by these conditions is a breach of copyright, and may also constitute a breach of academic integrity under the University Senate's Academic Integrity Policy Statement.

## **Accommodations Statement**

Queen's University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact Student Wellness Services (SWS) and register as early as possible. For more information, including important deadlines, please visit the Student Wellness website at: <http://www.queensu.ca/studentwellness/accessibility-services/>

### **Location and Timing of Final Examinations**

As noted in Academic Regulation 8.2.1, “the final examination in any class offered in a term or session (including Summer Term) must be written on the campus on which it was taken, at the end of the appropriate term or session at the time scheduled by the Examinations Office.” The exam period is listed in the key dates prior to the start of the academic year in the Faculty of Arts and Science Academic Calendar and on the Office of the University Registrar’s webpage. A detailed exam schedule for the Fall Term is posted before the Thanksgiving holiday; for the Winter Term it is posted the Friday before Reading Week, and for the Summer Term the window of dates is noted on the Arts and Science Online syllabus prior to the start of the course. Students should delay finalizing any travel plans until after the examination schedule has been posted. Exams will not be moved or deferred to accommodate employment, travel /holiday plans or flight reservations.

### **Academic Considerations for Students in Extenuating Circumstances**

The Senate Policy on Academic Consideration for Students in Extenuating Circumstances

(<http://www.queensu.ca/secretariat/sites/webpublish.queensu.ca.us/cwww/files/files/policies/ExtenuatingCircumstancesPolicyFinal.pdf> )

was approved in April, 2017. Queen’s University is committed to providing academic consideration to students experiencing extenuating circumstances that are beyond their control and which have a direct and substantial impact on their ability to meet essential academic requirements. The Faculty of Arts and Science has developed a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances, which was be posted on the Faculty of Arts and Science website in Fall, 2017.