INSTRUCTOR: Francisco de la Parra, PhD
email: parra@cs.queensu.ca
(Please only send emails from your queensu address - all other sources (gmail, hotmail, etc.) will be ignored.)
Office hours: Thursdays, 12:30 pm – 4:30 pm, Goodwin 621

TEXTBOOK:
Absolute Java, 6th (or 5th) edition, by Walter Savitch. (Recommended)

MARK BREAKDOWN:
- Final exam (grade must be 50% or greater in order to pass course)   45%
- 4 lab assignments (4x10%)   40%
- 3 quizzes (3x5%)   15%
                                                       Total   100%

COURSE DESCRIPTION:

Content Overview - There are four major focus areas for the course:
- Understand basic concepts about the design and development of computer programs using object-oriented techniques and languages. Write reliable and efficient software using the facilities of the Java language and ancillary tools.
- Solve medium-complexity problems using algorithms and computational techniques which you can efficiently translate to object-oriented programs.
- Reuse in an effective manner the existing modules, constructs and facilities in the Java environment: packages, class libraries, interfaces, inheritance, exception handling, encapsulation, representational abstraction, polymorphic programming, functional programming, collections, iterators.
- Design and diagram basic class hierarchies and interfaces. Apply to the development of graphical user interfaces and other medium-complexity problems.

Class Work (3 hours per week) – Formal lectures, discussion of labs and exercises. Overall, the following topics will be covered:
- Problem solving with object-oriented techniques – throughout the course
- Design of 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 Java libraries: core classes and hierarchies. Application to medium-complexity problems and the development of graphical user interfaces.

Labs (2 hours per week) – Allocated time to design, implement, debug and document Java programming solutions to assignments. TA's will be available for consultation during this time. Scheduled quizzes will be written during the first hour of a corresponding weekly lab session. Labs are done underlined individually unless otherwise indicated.

Assignment Submissions – You should submit your programming solution as reasonably **well-documented Java source code**, including a summary header in the main class file (e.g., author, program description, and date). Insert short (i.e., 1 – 2 lines) and descriptive comments in other class files and before methods. Include any additional items requested, for example: samples of program executions, text files, documents(s) with analyses of results and answer to questions.

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. Quizzes will be written during lab hours according to the schedule specified below.

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

Week No.	Dates	Activity	Description
1	Jan 7 to Jan 11	L-1	Course introduction. The Java environment
		L-2	Basic Java program structure. Console I/O
		L-3	Developing software with Java: tools and basic concepts. Modules, packages, classes
		A-1	**Jan 13 – Assignment 1 posted**
2	Jan 14 to Jan 18	L-1	Primitive and class types. Arrays. Strings.
		L-2	Expressions. Conditional branching. Applications
		L-3	Selector and loop statements. Applications
		Lab	Java JDK and JRE. Eclipse IDE Assignment 1: development, testing and debugging
3	Jan 21 to Jan 25	L-1	Basic class design: attributes, methods, member qualifiers, visibility
		L-2	Design of methods: functional decomposition, others
		L-3	2D and ragged arrays. String and array manipulation
		Lab	Assignment 1: development, testing and debugging
4	Jan 28 to Feb 1	L-1	Core classes. Overloading methods. Aliasing
		L-2	Exceptions. Examples and application
		L-3	Useful classes in the Java API: String, StringTokenizer, wrapper classes, others
		A-1	**Jan 30 – 11:00 p.m. – Assignment 1 due**
		A-2	**Jan 31 – Assignment 2 posted**
		Lab	**Quiz 1 – Jan 28, 29 and 30** Assignments 2: development, testing and debugging
5	Feb 4 to Feb 8	L-1	Text file I/O processing
		L-2	Binary file I/O processing
		L-3	Objects and encapsulation
		Lab	Assignment 2: development, testing and debugging

Week No.	Dates	Activity	Description
6	Feb 11 to Feb 15	L-1	Number representation and storage. Numeric errors
		L-2	Class documentation with Javadoc
		L-3	Software testing and debugging. Junit demo
		Lab	Assignment 2, development, testing and debugging
	Feb 18 – Feb 22		**Reading week.**
7	Feb 25 to Mar 1	L-1	Inheritance. Introductory design of class hierarchies
		L-2	Class hierarchy case studies
		L-3	Special classes: abstract, inner, anonymous. Interfaces
		A-2	**Feb 25, 11:00 p.m. – Assignment 2 due**
		Lab	**Quiz 2 – Feb 25, 26, 27** Assignment 3: development, testing and debugging
8	Mar 4 to Mar 8	L-1	Applying special classes, interfaces. Polymorphism
		L-2	Introduction to Generics. Arraylist<T> class.
		L-3	Generic classes and methods. Instantiation bounds. Object comparison
		A-3	**Mar 6 – Assignment 3 posted**
		Lab	Assignment 3: development, testing and debugging
9	Mar 11 to Mar 15	L-1	Functional programming in Java: lambda expressions
		L-2	Event driven programming. Intro to JavaFX
		L-3	JavaFX Panes and Layout Managers
		Lab	Assignment 3: development, testing and debugging
10	Mar 18 to Mar 22	L-1	GUI building with SceneBuilder and Eclipse
		L-2	Handling GUI events
		L-3	User Input: Text, Dialogs, Menus, etc.
11	Mar 25 to Mar 29	L-1	More JavaFX containers
		L-2	More Dialogs, Spinners, Animation Demos
		L-3	Simple GUI example
		A-3	**Mar 28, 11:00 p.m. – Assignment 3 due**
		Lab	**Quiz 3 – Mar 25, 26, 27**
12	Apr 1 to Apr 5	L-1	Linked list implementation
		L-2	Double-linked list implementation
		L-3	Generic Collections

L: Lecture
A: Assignment

Academic Integrity

Academic Integrity is constituted by the six core fundamental values of honesty, trust, fairness, respect, responsibility and courage (see 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.uslcwww/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.