Course Description:

This course provides an introduction to the Java Programming language with Object Oriented concepts, and an emphasis on design, engineering and unit testing. The curriculum covers core Java features through introductory graphical interfaces. Hands-on development exercises will explore the production of real world business problems and culminate with individual competition in a software simulation challenge. Upon completion of this course, the student will possess a solid foundation to core Java functionality, and make informed decisions regarding Java's suitability to address workplace challenges.

Course Objectives:

- Demonstrate fluency in the Java programming language
- Understand and leverage procedural and object-oriented paradigms
- Understand standard data types, primitive classes, wrapper classes and String classes
- Understand OO concepts: encapsulation, inheritance, polymorphism, and abstraction
- Understand the usage of Abstract classes, interfaces and inner classes
- Understand handling of exceptions and multi-threaded programming
- Understand Arrays and Collection framework, Collections, Lists, Sets Maps
- Use file IO, and handling of exceptions
- Understand building user interfaces using Java Swing
- Sample project to develop a swing application for searching cars

Prerequisites:

This course assumes operating system level administration of computer hardware for either Windows or OSX. Students will be installing Eclipse and other build tools to develop programs and exercises.

Grading:

Attendance and Participation	**5%**
Individual Assignments	**40%**
Midterm Exams	**15%**
Final Project Assignment	**40%**

Academic Honesty:

The Northeastern University academic integrity policy applies to your work in this course. All students are expected to adhere to this policy. For more information on academic integrity policy, please visit website: http://www.northeastern.edu/osccr/academicintegrity/index.html

Facilitating academic dishonesty – Examples may include inaccurately listing someone as co-author of paper who did not contribute, sharing a take-home exam, or taking an exam or writing a paper for another student.

Attendance policy

The Information Systems Department has a strict class attendance policy. Students who miss two or more classes will automatically receive one letter grade lower in their final grade. Students who miss three classes will receive an automatic F for the class. No exceptions are allowed for this rule.

Individual Assignments

There will be four individual assignments. These assignments are to be done individually and submitted in class. Submittals consist of deliverable software with accompanying documentation. Assignment details will be provided during the second week of the course.

Final Project Assignment

Each student will have an opportunity to work in a team on the final project. Project details will be provided during the last 4 classes of the course.

Course Schedule: (Subject to change)

Week 1	Welcome, Overview of OOP, Thinking in Objects
Week 2	Java, Helloworld example, Variables, values and types, Classes and objects, Program flow control, Boolean expressions, Arrays, Loops
Week 3	Unit Testing, Debugging, String class and manipulation, StringBuilder, Wrapper classes
Week 4	Object Oriented Programming – Constructors/Destructors, Encapsulation, Abstraction, Polymorphism
Week 5	Object Oriented Programming cont'd– Encapsulation, Abstraction, Polymorphism
Week 6	Abstract classes, Interfaces, final, static keywords
Week 7	Exception handling Advanced Debugging and Logging
Week 8	Midterm Exam Java arrays, ArrayList, Collections framework Generics - Hashmap, Iterators
Week 9	Java Threads Synchronization Parallel processing File Processing (Input/Output)
Week 10	Java 8 Features
Week 11	Developing User interfaces using Java swing
Week 12	Sample project – Build a portal for Searching Cars
Week 13	Sample project cont'd
Week 14	Sample project cont'd
Week 15	Demo of the Final project