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### CP 6200 Java Programming 2 Syllabus (OER)

Shoshana Marcus

*CUNY Kingsborough Community College*

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Kingsborough Community College  
Department of Mathematics and Computer Science  
CP 6200: Java Programming II

**Instructor:** Dr. Shoshana Marcus

**Objectives:** Second course in JAVA programming with an emphasis on object-oriented Programming (OOP), advanced programming concepts (data structures, recursion), JAVA Graphics (advanced applet design) and additional selected topics.

**Prerequisites:** CP 6100 or CP 500 with a grade of C or higher.  
4 hours, 4 credits

**Software:** You may use any Java IDE at home. In class we will be using jGrasp, which you can download for free. *You must install the Java SE Development Kit first.* jGrasp at <http://www.jgrasp.org/> and Java SE Development Kit at oracle.com <https://www.oracle.com/java/technologies/javase/javase-jdk8-downloads.html>

This is an OER course so you do not need to spend money purchasing textbook!

**Free (online) Textbooks:**

- **Think Java by Allen B. Downey and Chris Mayfield**  
<http://greenteapress.com/thinkjava6/thinkjava.pdf>  
This book provides a wonderful introduction to java, then covers arrays and Strings. Then, Object Oriented Programming is introduced with classes that include arrays and arrays of objects. This book does not delve into inheritance, abstract classes, or interfaces.
- **Introduction to Computer Science Using Java by Bradley Kell**  
<https://chortle.ccsu.edu/cs151/cs151java.html>  
This is a wonderful free textbook that covers the introductory Java topics, loops, arrays, and basic OOP. The site is interactive and includes examples and quizzes.
- **Java Tutorial for Beginners**  
<https://beginnersbook.com/java-tutorial-for-beginners-with-examples/>  
This Java tutorial provides a very good introduction to the Object Oriented Programming concepts and constructs that we will cover in this course. It includes inheritance, polymorphism, abstract classes, and interfaces.

**Recommended (print) Textbooks:**

- *Building Java Programs: A Back to Basics Approach*, by Stuart Reges and Martin Stepp, Addison-Wesley. You can use any recent version, not specifically the latest one. Book supplement website:  
<http://www.buildingjavaprograms.com/supplements4.shtml>
- Introduction to Java Programming, Brief Version or Comprehensive Version, by Y. Daniel Liang. You can use any recent version, not specifically the latest one.

We will be using **Turing's Craft CodeLab** for programming exercises. CodeLab is free for all CUNY students! A separate document will explain how to register using our course's access code.

In addition, there will be larger programming assignments that you are expected to complete on your own. It is important to keep up with the work to develop skills in Java programming. Assignments will often build on past assignments.

**Course Requirements:** There will be frequent programming assignments during the semester. *It is imperative to keep up with homework assignments!* During the semester there will be 2 or 3 midterm exams, and a final exam at the conclusion of the semester.

<b>Grading:</b>	Assignments and Participation	15%
	Midterm Exams	50%
	Final Exam	35%

Week	Topic	Source	HW
1	Review Java Basics – Part 1	Slides	CodeLab Exercises
2	Review Java Basics – Part 2	Slides	CodeLab Exercises
3	Arrays	<p>Chapter 8 in <i>Think Java</i>  <a href="https://greenteapress.com/thinkjava6/thinkjava.pdf">https://greenteapress.com/thinkjava6/thinkjava.pdf</a></p> <p>Chapters 46 and 47 in Kell's interactive e-book  <a href="https://chortle.ccsu.edu/Java5/index.html#46">https://chortle.ccsu.edu/Java5/index.html#46</a></p> <p>Video introducing arrays  <a href="https://www.youtube.com/watch?v=L06uGnF4lpY">https://www.youtube.com/watch?v=L06uGnF4lpY</a></p>	CodeLab Exercises
4	Strings introduce Java API documentation	<p>Chapter 9 in <i>Think Java</i>  <a href="https://greenteapress.com/thinkjava6/thinkjava.pdf">https://greenteapress.com/thinkjava6/thinkjava.pdf</a></p> <p>Videos introducing Strings in Java  <a href="https://www.youtube.com/watch?v=o5dcpcuyulA">https://www.youtube.com/watch?v=o5dcpcuyulA</a>  <a href="https://www.youtube.com/watch?v=4I50JaPca7Y">https://www.youtube.com/watch?v=4I50JaPca7Y</a></p>	CodeLab Exercises
5	Exam 1  User Defined Methods	<p>Chapters 48 and 49A in Kell's interactive e-book  <a href="https://chortle.ccsu.edu/Java5/index.html#47">https://chortle.ccsu.edu/Java5/index.html#47</a></p>	CodeLab Exercises
6	Intro To OOP: What is a class? What is an object?	<p>Chapter 1 in Java Programming tutorial  <a href="https://www3.ntu.edu.sg/home/ehchua/programming/java/j3f_oopexercises.html">https://www3.ntu.edu.sg/home/ehchua/programming/java/j3f_oopexercises.html</a></p>	Item class (Phase 1)

	<p>data members, methods, constructors, access specifiers, toString, this keyword, instance vs static members</p>	<p>Part 6 in Kell's interactive e-book  <a href="https://chortle.ccsu.edu/Java5/Notes/chap25/ch25_1.html">https://chortle.ccsu.edu/Java5/Notes/chap25/ch25_1.html</a></p> <p>Chapters 10 and 11 in <i>Think Java</i>  <a href="https://greenteapress.com/thinkjava6/thinkjava.pdf">https://greenteapress.com/thinkjava6/thinkjava.pdf</a></p>	
7	<p>Intro to OOP (cont): array of objects, objects as parameters and returned from methods, composition of objects</p>	<p>Chapters 49B, 35B, 35 in Kell's interactive e-book  <a href="https://chortle.ccsu.edu/Java5/index.html#47">https://chortle.ccsu.edu/Java5/index.html#47</a></p> <p>Arrays of objects (in a more sophisticated way) – Chapter 12 in <i>Think Java</i>  <a href="https://greenteapress.com/thinkjava6/thinkjava.pdf">https://greenteapress.com/thinkjava6/thinkjava.pdf</a></p> <p>Composition of objects – Chapter 2 in Java Programming tutorial:  <a href="https://www3.ntu.edu.sg/home/ehchua/programming/java/j3f_oopexercises.html#zz-2">https://www3.ntu.edu.sg/home/ehchua/programming/java/j3f_oopexercises.html#zz-2</a>.</p> <p>This video introduces composition with a computer example in which each data member is an object. (You can ignore the example in the beginning that has about Car extends Vehicle.)  <a href="https://www.youtube.com/watch?v=bsg3xe8NVoQ">https://www.youtube.com/watch?v=bsg3xe8NVoQ</a></p>	<p>Item class (Phase 2)</p> <p>Shopping Cart class</p>
8	<p>Exam 2</p> <p>Inheritance and polymorphism: super keyword, instanceof operator, type-casting, equals method (reference equality vs. content</p>	<p>Chapters 50 – 52 in Kell's interactive e-book  <a href="https://chortle.ccsu.edu/Java5/Notes/chap50/ch50_1.html">https://chortle.ccsu.edu/Java5/Notes/chap50/ch50_1.html</a></p> <p>Java Tutorial For Beginners, Sections 1-3  <a href="https://beginnersbook.com/java-tutorial-for-beginners-with-examples/">https://beginnersbook.com/java-tutorial-for-beginners-with-examples/</a></p>	<p>Course Project Phase I</p>

	equality), arrays of objects with inheritance		
9	Continue polymorphism with arrays of objects, abstract classes and interfaces.	Chapters 51 – 53 in Kell’s interactive e-book <a href="https://chortle.ccsu.edu/Java5/Notes/chap51/ch51_1.html">https://chortle.ccsu.edu/Java5/Notes/chap51/ch51_1.html</a>  Java Tutorial For Beginners, Sections 1–3 <a href="https://beginnersbook.com/java-tutorial-for-beginners-with-examples/">https://beginnersbook.com/java-tutorial-for-beginners-with-examples/</a>	Course Project Phase II
10	Exam 3  Java Collections Framework ArrayLists Demonstrate Comparable interface and introduce Arrays class (sort method)	Chapters 53B – 54 in Kell’s interactive e-book <a href="https://chortle.ccsu.edu/Java5/Notes/chap53B/ch53B_1.html">https://chortle.ccsu.edu/Java5/Notes/chap53B/ch53B_1.html</a>	Course Project Phase III
11	Using OOP: developing GUI in Java using API documentation	Part 11 in <a href="https://chortle.ccsu.edu/Java5/index.html#47">https://chortle.ccsu.edu/Java5/index.html#47</a>	
12	Recursion or Exception Handling (if time allows)	Part 12 in Kell’s interactive e-book Part 13 in Kell’s interactive e-book <a href="https://chortle.ccsu.edu/Java5/index.html#34">https://chortle.ccsu.edu/Java5/index.html#34</a>	
13	Final Exam		

