

Syllabus CSC K223 Java Programming I Fall 2019

Course and Instructor Information

Course Title: Java Programming I (CSC K223) Credits: 4 Format: Hybrid Instructor: Patrick Burton Location: B227 Lecture/Lab: Wednesday 03:20 – 05:00 pm Email: pburton@trcc.commet.edu Office Hours/Availability: see Blackboard Learn site or email to schedule an appointment

This course may contain copyrighted information.

All information is subject to change at any time. Check the course **Blackboard Learn** page for announcements and updates.

Course Materials

Online version of book should be downloaded no later than the first day of classes since it will be used throughout the semester for content, concepts, etc.

Introduction to Programming Using Java, Eighth Edition Version 8.1, July 2019 http://math.hws.edu/javanotes8/ Author: David J. Eck

Additional course materials including lecture notes, links, assignments, and handouts will be posted on this course's site within **Blackboard Learn**.

Required Software/Supplies

Unless otherwise stated, the course **Blackboard Learn** site is required for all assignment submissions. Email or hard copy submission **will not be accepted.**

Assignments and documentation generation:

- ASCII text files for *.java Java source code and data files
- Microsoft Office Word 2010+
- Microsoft Office PowerPoint 2010+
- Other drawing tool with artifacts submitted in a graphics format (*e.g.*, PNG or JPG)

Students will need to download a free Java Integrated Development Environment such as Eclipse (<u>https://www.eclipse.org/downloads/</u>) and install it on their own computer. In addition other nocharge libraries, packages, and software may be required during the semester.

Removable media is required. Specific usage will be covered in class so do not purchase before discussing this with the instructor.

Course Description

This course is a study of the fundamentals of object-oriented programming and design using the Java programming language. Fundamental topics include classes, objects, inheritance, polymorphism, graphics/multimedia, event handling, graphical user interfaces (GUIs), exception handling, threads, and Input/Output (I/O).

Goals

Upon course completion students will be able:

- Compare & contrast programming paradigms,
- Comprehend and utilize principles integral to:
 - Computational Thinking,
 - Algorithmic Thinking,
 - Design Patterns,
 - SOLID Programming,
- Conduct an object-oriented problem analysis,
- Visualize an object-oriented design using Unified Modeling Language (UML),
- Apply the concepts of abstraction, encapsulation, inheritance & polymorphism, and
- Develop an object-oriented application that employs:
 - A GUI in Swing and/or JavaFX,
 - Event-Driven Programming,
 - o Threads,
 - o File I/O,
 - Exception Handling.

Course Outline/Schedule

Unit	Duration	Topics	
1	1 Week	 Change Your Thinking Learning Objectives/Goals: Discuss the basics fundamentals of Algorithmic Thinking Computational Thinking Utilize problem solving strategies such as Writing Pseudo Code Stepwise Refinement/Development Start thinking like a professional programmer 	
2	1 Week	 Java & Programming Fundamentals Learning Objectives/Goals: Understand the basic differences between procedural and object-oriented programming Distinguish the differences between Interpretation vs. Compilation-based languages Properly use the terms Syntax & Semantics Compare & contrast Java to other programming languages Utilize Fundamental Java Programming Concepts Detail code with Javadoc style comments Run a Java program from the command line 	
3	1 Week	 Object Orientation Introduction to Classes & Objects Learning Objectives/Goals: Describe the difference between a class & an object Use classes to model objects Demonstrate how to define classes & create objects Utilize constructors, scope, & access modifiers Define methods, properties, & fields Discuss the concepts of abstraction & encapsulation Declare a namespace & know why it is needed 	
4	1 Week	Inheritance & Polymorphism Learning Objectives/Goals: • Describe the concepts of inheritance & polymorphism • Discover how polymorphism is related to dynamic binding	

		Distinguish between overriding & overloading	
		Define a subclass from a superclass	
		Understand & utilize constructor chaining	
		Abstract Classes & Interfaces	
		Learning Objectives/Goals:	
5	1 Week	Design an abstract class	
		Specify common behavior via interfaces	
		 Address pseudo multiple inheritance via interfaces 	
		 Build and use both an abstract and an interface simultaneously 	
	Think Object Oriented By Design		
	2 Weeks	Think Object Offented by Design	
		Learning Objectives/Goals:	
		 Understand when to use aggregation, composition, inheritance & other OO 	
		techniques	
6		Compare & contrast various OO Design Patterns	
		Utilize OO Design Techniques	
		Create & explore UML Diagrams	
		 Activity 	
		o Class	
		o Sequence	
	2 Weeks	Introduction to Java GUI via Swing	
		Learning Objectives/Goals:	
7		 Design & build graphical user interfaces (GUIs) 	
,		Compare & contrast the differing aspects of standard GUI	
		widgets/components	
		Utilize event-driven-programming constructs	
		Use the Swing API to generate a Java-based GUI	
	1 Week	Exception Handling	
		Learning Objectives/Goals:	
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0		 Compare and contrast various ways of handling bad data 	
		Utilize exception handling logic	
		 Develop programs that are designed to handle exceptions 	
		File I/O	
9	1 Week Loorning Objectives/Coolst		
		Learning Objectives/Goals:	
		Design applications that can read & write data	

		 Compare and contrast various file formats 	
		 Apply I/O & file parsing techniques 	
		 Develop programs that utilize file I/O 	
Threads & Multiprocessing		Threads & Multiprocessing	
10	1 Week	Learning Objectives/Goals:	
		 Understand how threads are used with GUIs 	
		 Utilize threads to support multitasking 	
		Design & develop algorithms that benefit from multiprocessing	
		Java GUI via JavaFX	
	2 Weeks	Learning Objectives/Goals:	
11		 Compare & contrast JavaFX with Swing 	
		Explore JavaFX GUI controls	
		 Use the JavaFX API to generate a Java-based GUI 	

Note: The foregoing course outline is subject to change as conditions warrant.

Course Requisites

- 1. Attendance: Students are expected to be punctual and responsible for all assigned reading materials and any additional course content and discussions posted on the course **Blackboard Learn** site.
- 2. **Participation:** Active and positive online discussion participation is expected.
 - a. All readings are to be completed before class.
 - b. A large part of the learning experience will come from discussion of problems (via the Blackboard Learn discussion forums minimum 1 per unit) and techniques presented in the reading, notes, and from the lab, worksheet, videos, and homework assignments.

3. Assignments:

- a. Assignments are assigned weekly by unit and include labs, worksheets, exercises, assessments, and additional homework problems.
- b. All assignments are designed for the student to explore, analyze, and utilize various knowledge, skills, and abilities acquired and reinforced by each unit's readings and the posted content and related research items.
- c. All assignments are to be your own work and due by the **date and time** posted within the **Blackboard Learn** site for worksheet, exercise, discussions, homework, *etc.* via the unit assignment links.
- d. Assignments are graded on *both* the quality of the required written documentation and on the quality of the actual Java code, comments, data files, *etc*.
- e. To receive full credit, assignments must meet all requirements and specifications, *and* must do so within the quality guidelines described in the assignment text and class discussions.

- f. It is recommended that individuals start working on assignments as soon as it is released, and ask questions several days before due if additional explanations are needed on a specific assignment.
- 4. Electronic submission of assignments: Written documentation and answers to questions pertaining to an assignment *must* be submitted using Microsoft Word 2010+ (.doc or .docx) formats unless otherwise specified.
 - a. All documentation, code, scripts, etc. shall be submitted electronically using the appropriate course Blackboard Learn site assignment link.
 - b. Remember, because clocks do not always match, you should be submitting your assignment at least 15 minutes before it is due. Extenuating circumstances should be discussed with the instructor **prior to the due date**.
 - c. It is the student's responsibility to check before the deadline that the files they have uploaded have been effectively submitted and are not unreadable or corrupted.
 - d. Students should check that their files have been correctly submitted by downloading them and testing that they can be opened and/or compiled and tested.
- 5. **Quizzes/Tests:** Quizzes covering the material in the reading, assignments, and/or our discussions may be unannounced, while tests will be announced and scheduled at least a week in advance.
- 6. **Exam/Project:** There will be a final programming project that will encompass multiple facets of the material covered. To receive full credit, multiple submission milestones must be met. Additional project and submission details will be provided via the course **Blackboard Learn** site.
- 7. The instructor reserves the right to change topics and dates accordingly as the semester progresses. All changes will be communicated in an appropriate manner (using announcements and updates within **Blackboard Learn** site).

Course Grading

- Submission of assignments after the deadline will result in 0 points for that assignment (includes labs, discussions, worksheets, quizzes, tests, *etc.*).
- Final Exam/Projects will not be accepted late.
- Extenuating circumstances should be discussed with the instructor at least one week prior to any due date or as soon as feasible depending on the situation. Additionally, other college accepted correspondence or paperwork may be required for justification.

Summary of Course Grading:

Course Component	Points
Participation/Discussions	140
Unit Quizzes	110
Worksheets/Exercises/Labs	280
Tests	110
Problem Analysis & Design w/ Digication	60
Project	300

Grading Scale:

Total Points	Letter Grade
930-1000	А
900-929	A-
870-899	B+
830-869	В
800-829	B-
770-799	C+
730-769	С
700-729	C-
670-699	D+
630-669	D
600-629	D-
<600	F

Student Responsibilities

Online Learning/Digication Portfolio

All students are required to maintain an online learning portfolio in Digication that uses the college template, in as much as it is pertinent and supported by outcome products of this course. Through this electronic tool students will have the opportunity to monitor their own growth in college-wide learning. The student will keep his/her learning portfolio and may continue to use the Digication account after graduation. A Three Rivers General Education Assessment Team will select and review random works to improve the college experience for all. Student work reviewed for assessment purposes will not include names and all student work will remain private and anonymous for college improvement purposes. Students will have the ability to integrate learning from the classroom, college, and life in general, which will provide additional learning opportunities. If desired, students will have the option to create multiple portfolios.

Withdrawing from the Course

A student who simply stops submitting work will receive the grade earned on that work, usually a failing grade. To receive a "W" grade instead, apply for a withdrawal (*check with registrar for last date to withdraw*). A "W" will be entered on the student transcript. An "N" (implicit withdrawal) may be entered for a student that stops submitting work before 60% of the class is completed but it will still show up as an "F" on your transcript.

Academic Resources

Log In & Net ID

https://www.trcc.commet.edu/learning-resources/educational-technology/student-resources/5steps-for-getting-started/

General Resources Web Page for eLearning, Blackboard, Online, Hybrid, Help Desk

https://www.trcc.commnet.edu/learning-resources/educational-technology/student-resources/

Academic Calendar

https://catalog.threerivers.edu/content.php?catoid=5&navoid=294

Student Resources

Advising & Counseling

https://www.trcc.commnet.edu/student-services/advising-and-counseling-center/

Sexual Misconduct

https://www.trcc.commnet.edu/student-services/sexual-misconduct-resources-and-education/

Student Handbook

https://www.trcc.commnet.edu/wp-content/uploads/2017/06/trccstudenthandbook.pdf

Policies

General Policies

https://catalog.threerivers.edu/content.php?catoid=5&navoid=240

Academic Integrity

https://catalog.threerivers.edu/content.php?catoid=5&navoid=240#Academic_Integrity_Policy

Faculty and Staff

https://www.threerivers.edu/directory/

Weather & Cancellations

1-860-215-9000 Press 1 for College Closing Announcement -or- <u>https://www.threerivers.edu/</u> for posted announcement