**COLLIN COLLEGE**

**COURSE SYLLABUS**

Course Information

**Course Number**: COSC 1337

**Course Title**: Programming Fundamentals II (Java)

**Course Description:** This course focuses on the object-oriented programming paradigm, emphasizing the definition and use of classes along with fundamentals of object-oriented design. The course includes basic analysis of algorithms, searching and sorting techniques, and an introduction to software engineering processes. Students will apply techniques for testing and debugging software. (This course is included in the Field of Study Curriculum for Computer Science.)

**Course Credit Hours**: 3

 Lecture Hours: 3

**Prerequisite:** COSC 1315 or COSC1436 or consent of ~~Instructor or~~ Associate Dean

**Student Learning Outcomes:**

* **State-mandated Outcomes:** Upon successful completion of this course, students will:
1. Identify and explain a programming development lifecycle, including planning, analysis, design, development, and maintenance.
2. Demonstrate a basic understanding of object-oriented programming by using classes in software projects.
3. Use object-oriented programming techniques to develop executable programs that include elements such as inheritance and polymorphism.
4. Document and format code in a consistent manner.
5. Apply basic searching and sorting algorithms in software design.
6. Apply single- and multi-dimensional arrays in software.
7. Use a symbolic debugger to find and fix runtime and logical errors in software.
8. Demonstrate a basic understanding of programming methodologies, including object-oriented, structured, and procedural programming.
9. Describe the phases of program translation from source code to executable code.
* **Additional Collin Outcomes:** Upon successful completion of this course, students will ~~should be able to do the following~~:
1. Demonstrate Competency in Object Oriented Programming.
1.1 Break a problem down into class objects.
1.2 Design, code and document a term programming project using object-oriented methodology.
2. Demonstrate Competency in Program Documentation.
2.1 Construct a program heading and use program comments.
2.2 Print out a source listing.
3. Demonstrate Competency in Algorithm Development.
3.1 Complete all programming assignments.
3.2 Complete the design using object-oriented methodology.
3.3 Explain the ideas behind object reusability.
4. Demonstrate Competency in Advanced Programming Techniques.
4.1 Produce examples of reusable data containers (i.e. linked lists, trees, etc.) using Generic

 classes.
4.2 Understand the use of static members in a class.
4.3 Create error-handling mechanisms using the “try”, “throw”, and “catch” capabilities of Java.
4.4 Design and code an inheritance hierarchy.
4.5 Use overloaded methods to explain polymorphism.
4.6 Explain “has a” and “is a” relationships between classes.
4.7 Design, code, and debug a semester programming project.

1. Demonstrate Competency in Code Testing & Maintenance.
5.1 Use a Java language based text editor compiler.
5.2 Locate and explain syntax errors in a Java program.
5.3 Use techniques for debugging JAVA programs.

**Withdrawal Policy:** See the current *Collin Registration Guide* for the last day to withdraw.

**Collin College Academic Policies:** See the current *Collin Student Handbook.*

**Americans with Disabilities Act:** Collin College will adhere to all applicable federal, state and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal opportunity. It is the student’s responsibility to contact the ACCESS office, SCC-D140 or 972.881.5898 (V/TTD: 972.881.5950) to arrange for appropriate accommodations. See the current *Collin Student Handbook* for additional information.

*Fall 2016*