Course Number: APD-0233  OHLAP Credit: No
OCAS Code: 8230
Course Length: 120 Hours
Career Cluster: Information Technology
Career Pathway: Programming and Software Development
Career Major(s): Mobile Development
Pre-requisite(s): Programming Fundamentals

Course Description: This course is designed to provide students with learning experiences to employ the concepts of object-oriented programming to develop applications in the Java programming language. Such concepts as advanced program development tools, console/graphic user interfaces, and event/exception handling are introduced.

Textbooks:

Course Objectives:

A. Demonstrate Knowledge of Inheritance, Polymorphism, and Method Overriding
   1. Create subclasses of a class using the keyword extends to create a class that inherits attributes and behaviors from another class.
   2. Create subclasses that access superclass members with super.
   3. Identify the difference between protected and default access.
   4. Create computer programs that use polymorphism.
   5. Determine an object’s type at execution time.
   6. Create overridden methods.

B. Demonstrate Knowledge of Abstraction, Interfaces, and Refactoring
   1. Create classes that use static imports.
   2. Create abstract methods and classes.
   3. Distinguish between abstract and concrete classes.
   4. Declare and implement interfaces.

C. Demonstrate Knowledge of Exception Handling, Assertions, and JUnit
   1. Create new exception classes.
   2. Create exception-handling code that uses try, catch, and finally statements.
   3. Describe the different exception categories.
   4. Identify common exceptions.
   5. Develop programs to handle custom exceptions.
   6. Develop programs that make use of assertions.
   7. Create unit tests with JUnit.

D. Demonstrate Knowledge of Graphical User Interfaces I
   1. Create Graphical User Interfaces (GUIs).
   2. Develop GUIs that use layout managers to arrange components.
   3. Identify the packages containing GUI components.
   4. Create buttons, labels, lists, text fields, and panels.
   5. Develop programs that use methods of class Graphics to draw different shapes.
E. Demonstrate Knowledge of Graphical User Interfaces II
   1. Define events and event handling.
   2. Develop code to handle events that occur in a GUI.
   3. Describe the concept of adapter classes, including how and when to use them.
   4. Determine the user action that originated the event from the event objects details.
   5. Identify the appropriate listener interface for a variety of event types.
   6. Create inner classes and anonymous classes to support event handling.
   7. Create and manipulate menus.

F. Demonstrate Knowledge of Files and Streams
   1. Develop programs that create, read, and write to files.
   2. Develop programs that use object serialization.

G. Demonstrate Knowledge of Collections, Generics, Autoboxing, and AutoUnboxing
   1. Identify the collections framework classes.
   2. Identify the differences between the collections framework classes.
   3. Compare and contrast generic and non-generic collections.
   4. Develop programs that use generic collections.
   5. Create generic methods.
   6. Develop programs that use autoboxing and auto-unboxing to enable primitive type values to be used where objects are expected in a program.

H. Demonstrate Knowledge of Collections, Searching, and Sorting
   1. Develop programs that use the collections framework classes.
   2. Identify the correct way to override the equals and hashCode methods.
   3. Create classes that implement the Comparable and Comparator interfaces.
   4. Develop programs that sort collections.
   5. Develop programs that search collections.

I. Demonstrate Knowledge of Java Applets
   1. Develop simple applets.
   2. Create a simple HyperText Markup Language (HTML) document to load an applet into an applet container and execute the applet.
   3. Develop programs that use the JOptionPane class to create dialogs.
   4. Develop programs that use sliders.
   5. Develop applets that display graphics.
   6. Develop programs that use the Date, Calendar, and DateFormat classes.

ODCTE Objectives

Teaching Methods: The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

Grading Procedures: 1. Students are graded on theory and shop practice and performance.
   2. Each course must be passed with seventy (70%) percent or better.
   3. Grading scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, F=50-59%.
### Description of Classroom, Laboratories, and Equipment:

Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.

### Available Certifications/College Credit

The student may be eligible to take state, national or industry exam after completion of the program. College credit may be issued from Oklahoma State University-Okmulgee or Tulsa Community College. See program counselor for additional information.

### College Credit Eligibility:

The student must maintain a grade point average of 2.0 or better.