Java Foundations – Course Description

Overview

This course of study engages students with little programming experience. Students are introduced to object-oriented concepts, terminology, and syntax, and the steps required to create basic Java programs using hands-on, engaging activities. Students will learn the concepts of Java programming, design object-oriented applications with Java and create Java programs using hands-on, engaging activities.

Available Curriculum Languages:

- Arabic, Simplified Chinese, English, French, Indonesian, Japanese, Brazilian Portuguese, Russian, Spanish

Duration

- Recommended total course time: 90 hours*
- Professional education credit hours for educators who complete Oracle Academy training: 30

  *Course time includes instruction, self-study/homework, practices, projects and assessment

Target Audiences

Educators

- Technical, vocational, and 2- and 4-year college and university faculty members who teach computer programming, information communications technology (ICT), or a related subject at a foundational level
- Secondary and vocational school teachers who teach computer programming

Students

- Students who wish learn Java programming and build their Object Oriented Programming experience using Java
- This course is a suitable foundational class for computer science majors, and when taught in sequence with Java Programming may be used to prepare students for the AP Computer Science A exam

Prerequisites

Required

- Oracle Academy Workshop - Getting Started with Java Using Alice
- Oracle Academy Workshop - Creating Java Programs with Greenfoot

Suggested

- Oracle Academy Course - Java Fundamentals

Suggested Next Courses

- Oracle Academy Course - Java Programming
Lesson-by-Lesson Topics

Introduction
• About the Course
• Brief History
• Setting up Java

Java Software Development
• The Software Development Process
• What is my Program Doing?
• Introduction to Object-Oriented Programming Concepts

Java Data Types
• What is a Variable?
• Numeric Data
• Textual Data
• Converting Between Data Types
• Keyboard Input

Java Methods and Library Classes
• What is a Method?
• The import Declaration and Packages
• The String Class
• The Random Class
• The Math Class

Decision Statements
• Boolean Expressions and if/else Constructs
• Understanding Conditional Execution
• switch Statement

Loop Constructs
• for Loops
• while and do-while Loops
• Using break and continue Statements

Creating Classes
• Creating a Class?
• Instantiating Objects
• Constructors
• Overloading Methods
• Object Interaction and Encapsulation
• static Variables and Methods

Arrays and Exceptions
• One-dimensional Arrays
• ArrayLists
• Exception Handling
• Debugging Concepts and Techniques

JavaFX
• Introduction to Java FX
• Colors and Shapes
• Graphics, Audio and MouseEvents