

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
- A 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

Final Project

- Developing a Java-based animation, application or game