**Coding Mind**

# Java 2 Course Syllabus

## Objectives

This course provides a more thorough look at programming fundamentals including iteration, control flow, and methods. Furthermore, students will learn and understand how to use objects and object orientated programming. By the end of this course, students will have an understanding of basic OOP principles and be able to write more complex programs in Java. We break down the major topics into "Modules" that focus on each topic one at a time.

## Module Topics

1. Crash Course - Review of fundamental Java skills
2. OOP Intro - Understand how to use objects and what OOP is
3. Encapsulation - Be familiar with encapsulation and how to design classes
4. Abstraction and Polymorphism - Understand how and why programmers abstract and use inheritance
5. Advanced Practice - Master OOP Related Concepts
6. JSwing Intro - Learn how to use Java Swing
7. JSwing Project - Make a game using Java Swing

## Topics and Schedule

| Module 0 | Topic - Java Crash Course |
| --- | --- |
| 0-1 | Basics |
| 0-2 | Variables and Data Types |
| 0-3 | Use Input |
| 0-4 | Booleans and Conditionals |
| 0-5 | Loops |
| 0-6 | Methods |
| 0-7 | Arrays |

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| Module 0 | Topic - Java Crash Course |
| --- | --- |
| 0-7 Project | Calculator |

| Module 1 | Topic - OOP Intro |
| --- | --- |
| 1-1 | Objects |
| 1-2 | Turtle |
| 1-2 Project | Shape Putter |
| 1-3 | A Look Into the Turtle |
| 1-3 Project | Drawer |
| 1-4 | Turtle Quadrants Planning |
| 1-5 | Turtle Quadrants Implementation |
| 1-5 Project | Quadrant Extended |

| Module 2 | Topic - Encapsulation |
| --- | --- |
| 2-1 | Encapsulation |
| 2-2 | More on Objects |
| 2-3 | Constructors |
| 2-3 Project | Riddler |
| 2-4 | Some Extras |
| 2-4 Project | POS System |

| Module 3 | Topic - Abstraction and Polymorphism |
| --- | --- |
| 3-1 | Inheritance |
| 3-2 | Abstraction |

| Module 3 | Topic - Abstraction and Polymorphism |
| --- | --- |
| 3-2 | E Commerce |
| 3-3 | Overloading |
| 3-4 | Overriding |
| 3-5 | More on Overriding |
| 3-5 Project | Plant Evolution |

| Module 4 | Topic - Advanced Practice |
| --- | --- |
| 4-1 | Recursion |
| 4-1 Project 1 | Trivia Game |
| 4-1 Project 2 | Animal Shelter |

| Module 5 | Topic - JSwing Intro |
| --- | --- |
| 5-1 | Intro to Java Swing |
| 5-2 | Buttons |
| 5-2 Project | Bulk Buy |
| 5-3 | JPanels |
| 5-3 Project | Red or not Red |
| 5-4 | Color Picker |
| 5-5 | Color Picker Implementation |
| 5-5 Project | Color Picker V2 |

| Module 6 | Topic - JSwing Project |
| --- | --- |
| 6-1 | Clicker Game |

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| Module 6 | Topic - JSwing Project |
|----------|------------------------|
| 6-2 | Finishing Up |
| 6-2 Project | Clicker High Score |