Course Title: Core Java Programming Syllabus

Course Description: This course provides a comprehensive introduction to Java programming language focusing on core concepts and techniques. Students will learn how to develop Java applications, understand object-oriented programming principles, and utilize Java libraries for various programming tasks.

Prerequisites: No prior programming experience required. Basic understanding of computer science concepts is recommended.

Course Objectives:

1. Understand the fundamental concepts of Java programming language.
2. Learn object-oriented programming principles and apply them to Java programming.
3. Develop proficiency in using Java syntax, data types, and control structures.
4. Explore advanced topics such as exception handling, multithreading, and file I/O.
5. Gain hands-on experience in developing Java applications through projects and exercises.

Course Outline:

1. **Introduction to Java**
   - History and evolution of Java
   - Setting up Java development environment
   - Writing and running Java programs
2. **Java Basics**
   - Variables, data types, and operators
   - Control flow statements (if-else, switch)
   - Loops (for, while, do-while)
3. **Object-Oriented Programming in Java**
   - Classes and objects
   - Inheritance and polymorphism
   - Encapsulation and access modifiers
   - Constructors and destructors
4. **Java Packages and Interfaces**
   - Using pre-defined packages
   - Creating and using interfaces
   - Implementing multiple interfaces
5. **Exception Handling**
   - Handling exceptions using try-catch blocks
   - Throwing exceptions

- Custom exceptions

6. **Collections Framework**
   - Introduction to collections
   - ArrayList, LinkedList, HashMap, etc.
   - Iterating through collections
7. **Multithreading**
   - Introduction to threads
   - Creating and running threads
   - Synchronization and thread safety
8. **File I/O**
   - Reading from and writing to files
   - File handling using FileReader, FileWriter, etc.
   - Working with directories
9. **Introduction to Java Database Connectivity (JDBC)**
   - Connecting to databases
   - Executing SQL queries
   - Retrieving and updating data
10. **Introduction to GUI Programming with Swing**
    - Basics of GUI components
    - Event handling
    - Creating simple Swing applications

Assessment:

- Weekly assignments to reinforce learning concepts.
- Midterm exam covering topics covered in the first half of the course.
- Final project requiring students to develop a Java application that demonstrates understanding of concepts covered throughout the course.

Textbook: "Head First Java" by Kathy Sierra and Bert Bates

Additional Resources:

- Online tutorials and documentation (Oracle Java documentation, tutorials on websites like CSDTCentre, Tutorialspoint, Java Tutorials by Baeldung, etc.).
- Supplemental readings and materials provided by the instructor.

Grading:

- Assignments: 30%
- Midterm Exam: 20%
- Final Project: 40%
- Participation and Attendance: 10%

Attendance Policy: Regular attendance is expected. Students are allowed a maximum of three unexcused absences. Excessive absences may result in a reduction of the final grade.

Office Hours: Instructor office hours will be held twice a week for additional help and clarification.