

The Islamia University of Bahawalpur

Department of Computer Science & IT

BSCS 3rd Semester

Course: CSIT-10301–Object Oriented Programming (using Java)

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Objectives of the Course:

This subject introduces students to programming techniques using Java. The syntax of Java will be investigated along with the concepts of packages, interfaces, exceptions, and threads. The students will be introduced to Java's Class Hierarchy and encouraged to explore it. Exercises will be drawn primarily from business or government and rigorous testing techniques will be taught and used.

Teaching Methodology:

The lectures will be conducted in a discussion environment. The students will be encouraged to participate and ask questions during each class session. Topics from the course outline will be taught in a session and a research paper related to each topic will be given to the students to read it.

Problems and examples related to each topic will also be done in the class and some exercises will be given to the students as homework.

Specific Outcomes:

Upon successful completion of this subject students should be able to:

- Write structured and object oriented code
- Explain extending classes (inheritance) and error handling
- Design, code, test, and implement, simple to intermediate level standalone Java applications

Grading:

- 20% Mid Term Exam
- 50% Final Term Exam
- 30% Sessional Marks (20% Project +5% Attendance + 5% Class Behaviour & Participation)

Text and References:

- Java Complete Reference, Herbert Schildt , 8th Edition or above
- The Java Tutorial 3rd Edition: A Short Course on the Basicst
- Java How To Program - 8th Edition; By H.M. Deitel and P.J. Deiteil, Prentice Hall

Java is A Simple Solution to Complex Problems

- Introduction
- Java provides a simple solution to complex problems
- Why Java is a comprehensive solution
- Why it is important to be object-oriented
- Java as an object-oriented language
- Java as a portable environment
- Java as a high performance language
- Java in the world of distributed computing
- Java as a secure environment *Java Development Kit*
- The Javac compiler
- The Java interpreter
- The appletviewer

Essential Basics to Build Java Programs

- Running Java programs

- The Java phenomenon

The "Hello World" Application

- Create a Java source file
- Compile the source file
- Run the application
- The main method
- Using classes and objects

Object-Oriented Programming Concepts

- Objects & Classes
- Inheritance
- Polymorphism
- Encapsulation
- Abstraction

The Basic Constructs

- Variables and data types
- Operators and Expressions
- Control flow statements
- Arrays and strings

Objects and Classes in Java

- A brief introduction to classes
- The life cycle of an object
- Creating classes
- The spot applet

Advanced Features of the Java Language

- Managing inheritance
- Review abstract classes and interfaces
- Threads: Implement Runnable vs Extends Thread
- Exceptions
- Overloading and Overriding
- Implementing nested classes
- Creating interfaces
- Creating and using packages

Advanced Features of the Java Language

- Overview of applets
- The life cycle of an applet
- Methods for milestones
- Methods for drawing and event handling
- Methods for adding UI components
- What applets can and can't do
- Testing an applet
- Defining and using applet parameters *Java Graphics*
- Drawing lines, strings, etc
- Fonts, font metrics
- Graphics context, clipping