Course : 601 : Java

Course Code	601
Course Title	Java
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2018
Purpose of Course	To be learn the concept of OOPs Threads, Graphics, Database operation in java.
Course Objective	To introduce the comprehensive concepts of java programming language that includes OOP concepts using core java, desktop based visual designs using swing and applets. At the end of this course, a student will be able to comprehend the fundamental concepts required for the development and design of software systems.
Pre-requisite	Object Oriented Concepts of C++
Course Out come	Students will be able to use various java concepts and develop a java based system

Course Content	**Unit : 1 : Java Concepts**
	1.1 Introduction to Java and its tool-chain
	    1.1.1 History of Java
	    1.1.2 Java Architecture and its Components
	        1.1.2.1 JDK,JVM,JRE
	    1.1.3 Java Platforms
	    1.1.4 Java SE,ME,EE
	    1.1.5 Java ClassFile
	    1.1.6 C++ and Java comparison
	    1.1.7 Features of java
	    1.1.8 Installing java development kit
	    1.1.9 Java compiler and Interpreter
	    1.1.10 Using CLASSPATH
	    1.1.11 Use of text editor, IDE
	1.2 Basics of Java programming
	    1.2.1 Understanding main() method
	1.3 Fundamentals
	    1.3.1 Statements
	    1.3.2 Variables and Datatypes
	    1.3.3 Primitive datatypes
	    1.3.4 Object Reference Types
	        1.3.4.1 Strings
	    1.3.5. Arrays- single and multi dimension
	    1.3.6. Primitive Wrapper Classes
	    1.3.7. Classes
	    1.3.8. Objects
	    1.3.9. Array of objects
	    1.3.10. AutoBoxing and Unboxing
	1.4 General Utility Classes
	    1.4.1 ArrayList
	        1.4.1.1 Accessing with foreach Loop
	        1.4.1.2 Accessing with iterator
	    1.4.2 Vectors
	    1.4.3 String
	    1.4.4 Math
	    1.4.5 Date
	
	Unit : 2: OOPs in JAVA
	2.1 Object Oriented Programming in Java
	    2.1.1 Inheritance and Polymorphism
	    2.1.2 Overloading and Overriding
	    2.1.3 Abstract classes
	    2.1.4 Static classes
	    2.1.5 Final Classes

2.1.6 Chaining constructor using this() and Super()
2.1.7 Interfaces
2.1.8 Garbage Collection
2.1.9 Interfaces
2.1.10 Lambda Expressions
2.1.11 Generics

2.2 Packages and Imports
    2.2.1 Package levels
    2.2.2 Creating package
    2.2.3 Importing and Using Packages
    2.2.4 Package and inheritance
    2.2.5 Package and access specifiers

2.3 Exception Handling
    2.3.1 Exception and error classes
    2.3.2 Exception Handling
    2.3.3 Throw statement and throws clause
    2.3.4 Custom exception

2.4 Thread Programming
    2.4.1 Overview of Threads
    2.4.2 Thread Life Cycle
    2.4.3 Creating Thread –Runnable interface
    2.4.4 Multithreaded programs
    2.4.5 Synchronization
    2.4.6 Deadlock
    2.4.7 Inter-Thread communication (wait & notify)
    2.4.8 Fork and Join
    2.4.9 Asynchronous processing

Unit: 3: I/O in JAVA
3.1 Java I/O
    3.1.1 Files and directories
    3.1.2 Byte and Character Streams
    3.1.3 PrintWriter Class
    3.1.4 Input and Output Streams
    3.1.5 Random access Files
    3.1.6 Serialization and Deserialization
3.2 Collections API
    3.2.1 Collection
    3.2.2 Java Streams
    3.2.3 Set-HashSet,TreeSet
    3.2.4 List-LinkedList
    3.2.5 Map-HashMap,TreeMap
3.3 Annotations

Unit : 4: JAVA SWING and APPLETS
4.1 Java Swing
    4.1.1 Java Foundation Classes
    4.1.2 Features
    4.1.3 Swing Components –
        4.1.3.1 Jcomponent
        4.1.3.2 JFrame
        4.1.3.3 JPanel
        4.1.3.4 Basic Containers
            4.1.3.4.1 Buttons, lables, text fields etc
      4.1.3.5 Event Handling
4.2 Applets
    4.3.1 Creating Applets
    4.3.2 Passing parameter to applet
    4.3.3 Drawing images on Applet
4.3 Sandbox Security Model
4.4 Policy tool

	Unit : 5 : JDBC Connections
	5.1 Working with JDBC APIs
	    5.1.2 Connection
	    2.1.2 Statement
	    5.1.3 Transaction methods
	    5.1.4 Optimized Statements with prepare Statement and Callable
	        Statement
	    5.1.5 Metadata
	    5.1.6 Rowset, Dettached Rowset

Reference Books	1. Java Complete Reference, Schildt, Herbert,9th edition,TMH 2. Java Platform, Jaworski, Jamie,Techmedia 3. Head First Java, Sierra, Bates,second edition,,SPD O'Relly 4. Core Java for Beginners, S. Shah, V. Shah
Teaching Methodology	Black Board Teaching, power point presentation for theory, practical shown in projector for showing programs
Evaluation Method	30% Internal Exam 70% External Exam