



Lok Jagruti Kendra University
Ahmedabad – 382210

LOK JAGRUTI KENDRA UNIVERSITY

Syllabus for Master of Computer Applications (MCA)

Semester 1st & 2nd

Course Code	40110202			
Category	Core Subject			
Course Title	Object Oriented Programming with JAVA (OOPJ)			
Scheme and Credits	Theory	Tutorial	Lab	Credits
	3	0	3	5
Pre-requisites (if any)	Knowledge of the C programming language			

1.Course Objectives:

1	To understand concepts of Object Oriented Programming Language (OOPL)
2	To differentiate between Object Oriented Programming Language and Procedure Oriented Programming Language (POPL)
3	To understand and implement class, inheritance & polymorphism concepts
4	To implement error handling mechanism
5	To implement multi-threaded applications
6	To develop application using different file operations
7	To develop GUI based application using swing components

2. Course Contents:

Unit	Course Content	Weightage
Unit I	<p>Basics of OOPL & Class:</p> <p>Basics: Object-Oriented Programming concepts (object, class, encapsulation, abstraction, inheritance, polymorphism, message passing, dynamic binding), features of Java, Java's magic: bytecode</p> <p>(First day lab activity: Understanding Java Development Kit (JDK) and its settings, compiling and executing the first simple program, comments, Java class libraries, arrays, difference between C & Java)</p> <p>Class: Class fundamentals, the general form of a class, defining a class, creating objects, working with method, constructors (default, parameterized, copy constructor), garbage collector, this keyword, static block, initializer block</p> <p>A Closer Look at Methods and Classes: Passing object to the method, returning object from the method, method overloading, constructor overloading, static variable, static method, nested and inner classes, local class, anonymous class</p>	25%
Unit II	<p>Inheritance & Polymorphism:</p> <p>Inheritance & Polymorphism: Inheritance, constructors and inheritance, types of inheritance, uses of super keyword for constructor and method, creating a multilevel hierarchy, constructor's execution sequence,</p>	20%

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	superclass references and subclass objects, method overriding, polymorphism, abstract class, final keyword, Object class and its methods	
Unit III	Interfaces, Exception & Collection: Interfaces: Interface, working with interface, multiple inheritance with interface Exception: Exception hierarchy, exception handling fundamentals, the consequences of an uncaught exception, using multiple catch statements, catching subclass exception, nested try blocks, re-throwing an exception, finally & throws keywords, java's built-in exceptions, user define exception Collection Framework : Collection, Collection framework, Collection interface, Iterator interface, list interface, stack interface, vector interface	15%
Unit IV	Multi-Threading, Generic, I/O Multithreaded Programming: Multithreading fundamentals, the thread class and runnable interface, creating a thread, creating multiple threads, determining thread methods, thread priorities, need for synchronization, thread synchronization Using I/O: Working with File class, creating file & folder, Renaming file & folder, Deleting file & folder, byte streams and character streams, the byte stream classes, the character stream classes, the predefined streams, using the byte streams (reading console input, writing console output), reading and writing files using byte streams (inputting from a file, writing to a file), automatically closing a file, reading and writing binary data, random access file	20%
Unit V	GUI Programming with Swing: Introduction: GUI Programming, AWT Components, swing components, comparing AWT and swing, event handling mechanism Swing components with event handling: JFrame, JPanel, JButton, Layout Managers (FlowLayout, BorderLayout, GridLayout, GridBagLayout, CardLayout), JLabel, JTextField, JTextArea, JPasswordField, JCheckBox, JRadioButton, JComboBox, JList, JScrollBar, Adapter classes, dialog boxes, working with menus	20%

3. Text Books:

1. The Complete Reference – Java, 7th Edition, by Herbert Schildt, Tata McGraw Hill Publication
2. Beginning Java 2 JDK, 5th Edition, by Ivor Horton - Wiley Publication
3. Core Java , Volume I – Fundamentals, 10th Edition, by Cay S. Horstmann- Pearson Publication
4. Java™: A Beginner's Guide, 7th Edition, by Herbert Schildt - McGraw Hill Publication
5. Java Programming by Hari Mohan Pandey – 1st Edition, Pearson Publication
6. Programming With Java, 5th Edition, by E. Balagurusamy- McGraw Hill Publisher

4. Webilography:

1. <https://www.java.com/en/>
2. <https://docs.oracle.com/javase/8/docs/api/java/>

3. <https://www.w3schools.com/java>

5. Tools: Notepad / Latest Version of NetBeans IDE**6. Accomplishment of the student after completing the course:**

After completion of the course students should be capable of developing console based and GUI based desktop based application through Java programming language.