

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY

Object Oriented Programming

(Common to CSE, CSD & CSM)

II B. Tech - I Semester						SRIT R20		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
R204GA05302	PCC	L	T	P	C	CIA	SEE	Total
		3	0	0	3	40	60	100

Objectives:

At the end of this course, the student can be able to

- Study the syntax, semantics and features of Java Programming Language.
- Learn the method of creating Multi - threaded programs and handle exceptions.
- The model of object-oriented programming: abstract data types, encapsulation, inheritance and polymorphism
- Fundamental features of an object-oriented language like Java: object classes and interfaces, exceptions and libraries of object collections
- Learn Java features to create GUI applications & perform event handling.

Unit I – Introduction to Java, Data types, Arrays and Variables, Operators, Control Statements, Introducing Classes

Introduction to Java: Object Oriented Programming, History and Evolution of java, Java’s magic: The byte code, Java Buzzwords, Java Keywords, The Java class Libraries.

Data Types, Operators and Control Statements: Java Data Types, Variables and Constants, Naming Conventions, Type conversion and casting, Arrays, Operators & Expressions, Java Control Statements.

Introducing Classes and Methods: Classes and Objects, Introducing Methods, Constructors, this Keyword, Garbage Collection. Overloading Methods and Constructors, Argument passing, Recursion, Introducing Access Control, understanding static, Command Line Arguments, Exploring the String class.

Learning Outcomes:

At the end of this unit, the student will be able to

1. Classify suitable data type for the given problem scenario.
2. Use control statements to affect the program execution flow.
3. Use language constructs for efficient problem solving.

Unit II – Inheritance, Exception Handling

Inheritance: Basics, super keyword, method overriding, dynamic method dispatch, Abstract classes, using final with inheritance, Introducing Nested and Inner classes.

Exception Handling: Fundamentals, Exception Types, Using try and catch, Multiple catch clauses, Nested try statements, throw, throws, finally, Java Built-in Exceptions, Creating user-defined exceptions.

Learning Outcomes:

At the end of this unit, the student will be able to

1. Implement concepts of inheritance to find solution to the given problem.
2. Use exception handling mechanism to handle runtime errors.

Unit III – Packages, Interfaces and Multithreading

Packages: Basics, Access protection, Importing Packages, Creating and Importing User-defined Packages.

Interfaces: Declaring, Implementing and Extending Interfaces, using static methods in an Interface, using final keyword in interfaces.

Multithreaded Programming: Multithreading in Java, The Java Thread Model, Life Cycle of a Thread, the main thread, Creating Thread, Creating Multiple Threads, Thread Priorities, Synchronization, Inter Thread Communication, Suspending, resuming and stopping threads, obtaining a thread state, The finalize () method.

Learning Outcomes:

At the end of this unit, the student will be able to

1. Understand interface and its methods.
2. Analyze the suitable packages for the given problem scenario.
3. Explain thread and its methods.

Unit IV – Collections Framework & Introduction to AWT

Collections Framework: Overview, Collection Interfaces, Collection Classes. Working with Maps, Comparators.

Introduction to AWT: Windows, Graphics and Text

AWT classes, window fundamentals, frame windows, creating and displaying information within a window, Graphics, Color, Fonts, managing text output using Font Metrics.

Learning Outcomes:

At the end of this unit, the student will be able to

1. Use the prepackaged data structure to design collection framework programs.
2. Understand AWT fundamentals.
3. Use AWT framework to sketch a window.

Unit V – Introduction to AWT, Event Handling, Swings

Event Handling in Java: The Delegation Event Model, Event Classes and Event Listener Interfaces.

AWT Controls, Layout Managers, and Menus: AWT Control Fundamentals, Labels, Buttons, Check Boxes, Checkbox Group, Choice Controls, Lists, Scroll Bars, TextField and TextArea, Layout Managers, Menu Bars and Menus, Dialog Boxes, File Dialog.

Swings: Swing Features, MVC Connection, Components and Containers, JLabel, ImageIcon, JTextField, Swing Buttons, Check Boxes, Radio Buttons, JTabbedPane, JScrollPane, JList, JComboBox, JTree, and JTable.

Learning Outcomes:

At the end of this unit, the student will be able to

1. Analyze AWT controls for the given problem.
2. Use Swing framework to sketch a window.

Text Books:

1. "The Complete Reference Java", Herbert Schildt, Mc GRAW HILL Edition, 9th Edition, 2016.
2. "Java – How to Program", Paul Deitel, Harvey Deitel, PHI, 8th Edition, 2009.

Reference Books:

1. "A Programmers Guide to Java SCJP", Third Edition, Mughal, Rasmussen, Pearson, 2009.
2. "Programming with Java" T. V. Suresh Kumar, B. Eswara Reddy, P. Raghavan Pearson Edition, 2011.
3. "Java Fundamentals - A Comprehensive Introduction", Herbert Schildt and Dale Skrien, Special Indian Edition, McGrawHill, 2013.

Course Outcomes:**At the end of the course, student will be able to**

1. Describe object-oriented principles of java.
2. Develop programs using type casting, type promotion and control statements for efficient problem solving.
3. Implement inheritance and exception handling for problem solving.
4. Implement threaded programming and usage of interfaces & packages.
5. Develop programs using collection framework and AWT frame work.
6. Develop programs using layout manager, Swing frame work and AWT controls suitable for the given problem scenario.