K. S. INSTITUTE OF TECHNOLOGY

An Autonomous Institution under VTU, Approved by AICTE

Department of Master of Computer Applications

SECOND SEMESTER SYLLABUS

Course : **Object Oriented Programming using Java**		Semester	II
Course Code	**25MMC202**	CIE Marks	50
Teaching Hours/Week (L:T:P)	4:0:0	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03
Examination type (SEE)	**Theory**		

Course Objectives (Course Skill Set)

- This subject will help to improve the analytical skills of object-oriented programming
- Formal introduction to Java programming language
- Overall development of problem solving and critical analysis

Module-1

The History and Evolution of Java: The Byte code, Features of Java An overview of Java: Object- Oriented Programming, Structure of a Java program, Data Types and Variables, Type conversion and casting, Arrays **Classes:** Fundamentals, Declaring Objects, Assigning Object Reference Variables, Methods, Constructors, this Keyword, Garbage Collection, Stack application

Methods and Classes: Overloading Methods, Using Objects as Parameters, Argument Passing, Returning Objects, Access Control, static, final, Command-Line Arguments

Number of Hours:10

Module-2

Encapsulation- Introduction & examples**, Inheritance:** Basic concepts, Member Access and Inheritance, Practical Example Inheritance types, super, constructors, Method Overriding, Dynamic Method Dispatch, Abstract Classes, final with inheritance.

String Handling: String Constructor, String length, Special string Operations, Character Extraction, String comparison, Modifying a string, String Buffer

Number of Hours:10

Module-3

Generics: About Generics, A simple Generic Example, General class with Two Type Parameters, General form of generic class Java.util: The Collections Framework: Collections Overview

The Collection Interfaces: List, Set, Queue, Deque. The Collection Classes: Array List, Linked List, HashSet, Linked HashSet.

Number of Hours:10

Module-4

Packages and Interfaces: Packages, Packages and member access, Importing packages, Interfaces, Default interface methods, Use static methods in an interface, Private Interface methods.

Exception handling: Fundamentals, Exception types, uncaught exceptions, try and catch, multiple catch clauses, nested try statements, throw, throws, finally, Java's built -in exceptions, User-defined exceptions.

Number of Hours:10

Module-5

Multithreaded Programming: Java thread model, main thread, creating thread, creating multiple threads, isalive( ) and Join( ), thread priorities, synchronization

Input/Output: Exploring java.io - The I/O Classes and Interfaces, The Byte Streams.

Number of Hours:10

Course outcome (Course Skill Set)

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

CO1: Develop Java based solution to the given problem.

CO2: Apply inheritance, string handling and generic classes to build object-oriented programs.

CO3: Make use of collections to solve real world problems.

CO4: Build Java programs using packages, interfaces & exception handling.

CO5: Construct Java programs using the concept of multithreading.

Suggested Learning Resources:

Books (Name of the author/Title of the Book/Name of the publisher/Edition and Year) Text Books:

Prescribed Text Book:: Java the Complete Reference Eleventh Edition by Herbert Schildt ,Tata McGraw-hill Edition , 2019

Reference Text Books:

1) Introduction to JAVA Programming 9th Edition by Y. Daniel Liang , Pearson education, 2012

2) Programming in JAVA 5.0 1st Edition by James P Cohoon, Jack W Davidson, TATA McGraw hill,2006

Web links and Video Lectures (e-Resources):

1) https://ia800303.us. archive.org/ 26/items/ JavaJavaJavaObjectorientedProblemSolving/ jjj-os.pdf
2) http://people.reed.edu/ ~jerry/121/materials/ artsciencejava.pdf
3) https://upload.wikimedia. org/wikipedia/ commons/e/e7/ Java_Programming.pdf
4) https://onlinecourses.swayam2.ac.in/aic20_sp1 3/preview
5) https://onlinecourses.swayam2.ac.in/aic20_sp1
   https://www.classcentral.com/course/coursera-object-oriented-programming-in-java-4212

Teaching-Learning Process (Innovative Delivery Methods)

The following are sample strategies that educators may adopt to enhance the effectiveness of the teaching- learning process and facilitate the achievement of course outcomes.

Lectures with PowerPoint presentations, Hands-on coding exercises using any IDE's Interactive discussions and problem-solving sessions, Assignments and quizzes for assessment.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

1. Three Unit Tests each of 25 Marks (scale down to 25 Marks)
2. Two assignments each of 25 Marks or one Skill Development Activity of 50 marks to attain the COs and POs which will be scale down to 25 marks.

The sum of **three**-unit tests, two assignments/Skill Development Activities (CIE), will be 50 marks.

Semester-End Examination:

1. The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.
2. The question paper consists of Part A and Part B. Part A consists of 10 questions from 5 modules, each carrying 2 marks.
3. Part B consists of 10 questions. Each full question is for 16 marks. There will be two full questions (with a maximum of three sub-questions) from each module.
4. Each full question will have a sub-question covering all the topics under a module.
5. The students will have to answer five full questions, selecting one full question from each module