

COURSE TITLE	JAVA PROGRAMMING
COURSE CODE	01AI0401
COURSE CREDITS	4

Objective:

- 1 Java is a computer programming language having features like object- oriented, polymorphism, inheritance, multithreading, secure, robust, platform independent and dynamic. It comprises of large third-party library using which we can develop software.
- 2 Java is a computer programming language having features like object- oriented, polymorphism, inheritance and multithreading. It comprises of large third-party library using which we can develop software

Course Outcomes: After completion of this course, student will be able to:

- 1 To understand object-oriented programming concepts and implement them in java.
- 2 To comprehend building blocks of OOPs language, inheritance, package and interfaces.
- 3 To identify exception handling methods.
- 4 To implement multithreading in object-oriented programs.
- 5 To develop GUI based desktop applications in project-based learning.

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	Java Overview Java Introduction, Platform Independence, JVM & JDK, Data types, Operators, If, else statement, Switch condition, while, do-while, for loop, break and continue statement.	3
2	Array, String and Collection Classes Single Array & Multidimensional Array, Library Classes-String, String Buffer & Wrapper Class, Command line arguments and Various String Operations, List Class (Abstract List), Array List class, LinkedList class, Enumeration Iterative Statement, Vector class	6
3	Classes, Objects and Methods Class and Object, Object reference, Constructor: Constructor Overloading, Method: Method Overloading, Recursion, Passing and Returning object form Method, new operator, this and static keyword, finalize() method, Import statement, Static import, Access control, Nested class, , Inner class, Anonymous inner class	8

Contents : Unit	Topics	Contact Hours
4	Inheritance and Interfaces in Java Overview of Inheritance, inheritance in constructor, Inheriting Data members and Methods, s, Multilevel Inheritance – method overriding Handle multilevel constructors Explain super keyword, Stop Inheritance ,Explain Final keywords, Creation and Implementation of an interface, Interface reference, instance of operator, Interface inheritance, Dynamic method dispatch, Abstract class, Comparison between Abstract Class and interface, inside of System.out.println – statements	8
5	Multithreading, Exception and File Handling in Java Introduction of Multithread programming, Thread classes and Runnable interface,, Thread priority and synchronization, Thread communication and Deadlock, Exception and Error, Use of try, catch, throw, throws and finally, Built in Exception, Custom exception, Throwable Class. Overview of Different Stream (Byte Stream, Character stream), Readers and Writers class, File Class, File Input Stream, File Output Stream, Input Stream Reader and Output Stream Writer class, File reader and writer class, File Writer, Buffered Reader class	12
6	Swing Introduction To Swing, Applications and Pluggable look and feel, Basic swing components : Text Fields, Buttons, Toggle Buttons, Checkboxes, and Radio Buttons., Event Handling: various event handling mechanisms, Delegation Event Model, Events, Event Sources, Event Listeners, various classes related to event sources and event listeners	6
Total Hours		43

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	Practical 1 Basic Programming: General	2
2	Practical 2 control and Iterative statement	2
3	Practical 3 String, String Buffer	2
4	Practical 4 Array, Enum	2
5	Practical 5 , Linked List and Vector	2
6	Practical 6 Class, Object, Constructor	2
7	Practical 7 Constructor overloading	2

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
8	Practical 8 Method Overloading	2
9	Practical 9 Inheritance, Method Overriding	2
10	Practical 10 Dynamic method Dispatch and Interface	2
11	Practical 11 Multithreading, Exception	2
12	Practical 12 File Handling in Java	2
13	Practical 13 Swing	2
Total Hours		26

Textbook :

- 1 Programming with Java A Primer, E. Balagurusamy, McGraw Hill, 2010

References:

- 1 Intro to Java Programming, Intro to Java Programming, Y.Daniel Liang, Pearson, -
- 2 Programming with Java A Primer, Programming with Java A Primer, E. Balagurusamy, McGraw Hill, -
- 3 Core Java Volume-I Fundamentals, Core Java Volume-I Fundamentals, Horstmann & Cornell,, Pearson, Eighth edition, -

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
10.00	25.00	50.00	15.00	0.00	0.00

Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and the needs of students. The teacher, in addition to conventional teaching methods, may also use any tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.
- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- 3 Practical examination will be conducted at the end of semester for evaluation of performance of students in the laboratory.

Instructional Method:

- 4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

Supplementary Resources:

- 1 <http://docs.oracle.com/javase/tutorial/java/index.htm>
- 2 <http://www.javatpoint.com/>
- 3 <http://www.tutorialspoint.com/java/>
- 4 <http://www.learnjavaonline.org/>
- 5 <http://www.c4learn.com/javaprogramming/>
- 6 <https://nptel.ac.in/courses/106105191>
- 7 <https://www.tutorialspoint.com/java/index.htm>
- 8 <https://www.w3schools.com/java/default.asp>
- 9 <https://www.geeksforgeeks.org/java/>