JAVA PROGRAMMING

VI Semester: Common for all Branches

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
ACS552	Elective	3	-	-	3	30	70	100
Contact Classes: 45	Tutorial Classes: Nil	Practical Classes: Nil				Total Classes: 45		

OBJECTIVES:

The course should enable the students to:

I. Understand fundamentals of object-oriented terminology and programming concepts in java.
II. Acquire basics of how to translate solution problem into object oriented form.
III. Develop programs in java for solving simple applications.
IV. Design and implement simple program that use exceptions and multithreads.

COURSE OUTCOMES (COs):

CO 1 Able to learn the concept of object oriented programming that helps to organize complex programs
CO 2 Understand the appropriate roles of subtyping and inheritance, and use them effectively.
CO 3 Demonstrate an ability to design high speed, fault tolerant applications using multi-threading and exception handling concepts.
CO 4 Design and develop the java applications by using concepts of interfaces and packages.
CO 5 Experiment with the usage of files and database connectivity, to familiarize the advanced java programming skills and develop java based web applications.

COURSE LEARNING OUTCOMES (CLOs):

01 Use object oriented programming concepts to solve real world problems.
02 Explain the concept of class and objects with access control to represent real world entities.
03 Demonstrate the behavior of programs involving the basic programming constructs like control structures, constructors.
04 Describe the concept of operators and variables, arrays, parameter passing.
05 Demonstrate the implementation of inheritance (multilevel, hierarchical and multiple) by using extend and implement keywords.
06 Use dynamic and static polymorphism to process objects depending on their class.
07 Analyze and understand the concept of abstract classes to define generic classes.
08 Understand the impact of exception handling to avoid abnormal termination of program using checked and unchecked exceptions.
09 Demonstrate the user defined exceptions by exception handling keywords (try, catch, throw, throws and finally).
10 Use multithreading concepts to develop inter process communication.
11 Understand the use of interrupting threads in the real world.
12 Understand the importance of interfaces to develop real world java applications.
13 Illustrate different techniques on creating and accessing packages (fully qualified name and import statements).
14 Demonstrate the import statement usage and built-in packages.
15 Understand and implement the concepts on file streams and operations in java programming for a given application programs.
16 Understand text, byte, and character input/output streams.
17 Describe the backend connectivity process in java program by using JDBC drivers.
18 Develop java application to interact with database by using relevant software component (JDBC Driver).

UNIT-I	OOPS CONCEPTS AND JAVA PROGRAMMING	Classes: 09
OOP concepts: Classes and objects, data abstraction, encapsulation, inheritance, benefits of inheritance, polymorphism, constructors, methods, data types, variables, constants, scope and life time of variables, operators, operator hierarchy, expressions, type conversion and casting, enumerated types, control flow statements, arrays, parameter passing.		
UNIT -II	**INHERITANCE**	**Classes: 09**
Inheritance: Inheritance hierarchies, super and subclasses, member access rules, Polymorphism: Dynamic binding, method overriding, abstract classes and methods.		
UNIT -III	**EXCEPTION HANDLING AND MULTITHREADING**	**Classes: 09**
Exception Handling: Benefits of exception handling, the classification of exceptions, usage of try, catch, throw, throws and finally. Multithreading: Differences between multiple processes and multiple threads, thread states, creating threads, interrupting threads.		
UNIT -IV	**INTERFACES AND PACKAGES**	**Classes: 09**
Interface: Interfaces vs Abstract classes, defining an interface, implement interfaces, Packages: Defining, creating and accessing a package, importing packages.		
UNIT -V	**FILES AND CONNECTING TO DATABASE**	**Classes: 09**
Files: streams – byte streams, character stream, text input/output, binary input/output, file management; Connecting to Database: Connecting to a database, querying a database and processing the results, updating data with JDBC.		

Text Books:

1. Herbert Schildt and Dale Skrien, "Java Fundamentals – A comprehensive Introduction", McGraw Hill, 1st Edition, 2013.
2. Herbert Schildt, "Java the Complete Reference", McGraw Hill, Osborne, 7th Edition, 2011.
3. T.Budd, "Understanding Object- Oriented Programming with Java", Pearson Education, Updated Edition (New Java 2 Coverage), 1999.

Reference Books:

1. P.J.Dietel and H.M.Dietel , "Java How to Program", Prentice Hall, 6th Edition, 2005.
2. P.Radha Krishn , "Object Oriented Programming through Java", CRC Press, 1st Edition, 2007.
3. S.Malhotra and S. Choudhary, "Programming in Java", Oxford University Press, 2nd Edition, 2014.
4. Sachin Malhotra, Saurabh Chaudhary, "Programming in Java", Oxford University Press, 2nd Edition, 2014

Web References:

1. https://www.programiz.com/java-programming
2. https://www.tutorialspoint.com/java/
3. https://www.geeksforgeeks.org/java/

E-Text Books:

1. http://iiti.ac.in/people/~tanimad/JavaTheCompleteReference.pdf
2. https://www.codejava.net/books/4-best-free-java-e-books-for-beginners