JAVA PROGRAMMING

VI Semester: ECE / EEE

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
ACS552	Elective	3	1	-	4	30	70	100
Contact Classes: 45	Tutorial Classes: 15	Practical Classes: Nil				Total Classes: 60		

OBJECTIVES:

The course should enable the students to:

I. Understand the basic object oriented programming concepts and apply them in problem solving.
II. Illustrate inheritance concepts for reusing the program.
III. Demonstrate on the multi-tasking by using multiple threads.
IV. Develop data-centric applications using JDBC.
V. Understand the basics of java file management.

COURSE LEARNING OUTCOMES (CLOs):

1. Use object oriented programming concepts to solve real world problems.
2. Explain the concept of class and objects with access control to represent real world entities.
3. Demonstrate the behavior of programs involving the basic programming constructs like control structures, constructors, string handling and garbage collection.
4. Use overloading methodology on methods and constructors to develop application programs.
5. Demonstrate the implementation of inheritance (multilevel, hierarchical and multiple) by using extend and implement keywords.
6. Describe the concept of interface and abstract classes to define generic classes.
7. Use dynamic and static polymorphism to process objects depending on their class.
8. Illustrate different techniques on creating and accessing packages (fully qualified name and import statements).
9. Understand the impact of exception handling to avoid abnormal termination of program using checked and unchecked exceptions.
10. Demonstrate the user defined exceptions by exception handling keywords (try, catch, throw, throws and finally).
11. Use multithreading concepts to develop inter process communication.
12. Understand and implement concepts on file streams and operations in java programming for a given application programs.
13. Describe the backend connectivity process in java program by using JDBC drivers.
14. Develop java application to interact with database by using relevant software component (JDBC Driver).
15. Understand text, byte, and character input/output streams.
16. Demonstrate the import statement usage.
17. Understand the use of interrupting threads in the real world.
18. Demonstrate the use of overriding in the real world.
19. Knowledge on usage of graphical IDE for design and implementation of real time applications in java.
20. Posses the knowledge and skills for employability and to succeed in national and international level competitive exams.

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, 2011.2. B. S. Grewal, "Higher Engineering Mathematics", Khanna Publishers, 43rd Edition, 2012.
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 Krishna , "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.

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