JAVA PROGRAMMING

V Semester: ECE

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
ACSB41	Core	3	-	-	3	30	70	100
Contact Classes: 45	Tutorial Classes: Nil	Practical Classes: Nil				Total Classes: 45		

I. COURSE OVERVIEW:

Java is a simple, object-oriented, platform-independent language that can be used to develop applets and other applications. Java continues to grow faster than any other computer language or development environments. The Java programming language lies at the core of many large-scale business applications like embedded devices, enterprise servers, network applications, web servers, and wireless devices to fuel the internet economy.

II. 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 console and GUI based programming.

III. COURSE OUTCOMES:

After successful completion of the course, students will be able to:

CO 1	**Recall** the concepts of programming that helps to organize complex problems solving.	Remember
CO 2	**Describe** the concept of class and objects with access control to represent real world entities.	Understand
CO 3	**Identify** the basic programming constructs like control Structures, arrays, parameter passing to solve the real time problems.	Understand
CO 4	**List** the different types of inheritance and polymorphism to solve complex problems.	Understand
CO 5	**Evaluate** object-oriented principles like data abstraction and encapsulation that are easy to maintain.	Evaluate
CO 6	**Produce** robust applications by applying the concept of exception handling.	Apply
CO 7	**Apply** the multithreading concepts to develop inter process communication.	Apply
CO 8	**Extend** solutions for complex issues by interrupting threads in the real world.	Understand
CO 9	**Develop** the concepts on file streams and operations in java programming for a given application.	Apply
CO 10	**Demonstrates** how to achieve reusability using inheritance, interfaces and packages.	Analyze
CO 11	**Illustrate** different methods for event handling in GUI based programming.	Understand
CO 12	**Develop** GUI based applications using AWT and Applets.	Apply

IV. SYLLABUS:

MODULE -I	FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING:	Classes: 10

Object oriented paradigm - Basic concepts of Object-Oriented Programming - Benefits of OOP - Applications of OOP

Java Evolution: Java Features - How Java differs from C and C++ - Java and Internet - Java and World Wide Web - Web Browsers - Hardware and Software Requirements - Java Environment. Overview of Java Language: Simple Java Program - Java Program Structure - Java Tokens- Java Statements - Implementing a Java Program - Java Virtual Machine - Constants - Variables - Data types - Scope of Variables-Symbolic Constants-Type Casting and type promotions – Operators, Operator Precedence and Associativity - Control Statements – break - continue- Arrays-Multi dimensional arrays, Wrapper Classes - Simple examples.

MODULE -II	CLASSES AND OBJECTS:	Classes: 09

Classes and Objects - Constructors – methods - this keyword – garbage collection- finalize - Overloading methods and constructors - Access Control- Static members – nested and inner classes – command line arguments - variable length arguments.

Inheritance: Forms of inheritance – specialization, specification, construction, extension, limitation, combination, benefits and costs of inheritance. Super uses- final - polymorphism, method overriding - dynamic method dispatch –abstract classes – exploring String class.

MODULE -III	PACKAGES AND INTERFACES:	Classes: 08

Defining and accessing a package – understanding CLASSPATH – access protection importing packages – Interfaces - Defining and implementing an interface, Applying interfaces, Variables in interfaces and extended interfaces. Exploring java. Lang and java. util packages.

Exception Handling-Fundamentals, usage of try, catch, multiple catch clauses, throw, throws and finally. Java Built in Exceptions and creating own exception subclasses.

MODULE -IV	MULTITHREADED PROGRAMMING:	Classes: 08

Java Thread life cycle model – Thread creation - Thread Exceptions - Thread Priority – Synchronization - Messaging - Runnable Interface - Interthread Communication - Deadlock - Suspending, Resuming and stopping threads.

I/O Streams: File – Streams – Advantages - The stream classes – Byte streams – Character streams.

MODULE -V	APPLET PROGRAMMING:	Classes: 10

How Applets differ from Applications - Applet Life Cycle - Creating an Applet - Running the Applet- Designing a Webpage - Applet Tag - Adding Applet to HTML file - More about Applet Tag - Passing parameters to Applets - Aligning the display.

Event handling: basics of event handling, Event classes, Event Listeners, delegation event model, handling mouse and keyboard events, adapter classes, AWT Class hierarchy - AWT Controls - Layout Managers and Menus, limitations of AWT.

V. Text Books:

1. Herbert Scheldt, “The Complete Reference Java J2SE”, TMH Publishing Company Ltd, New Delhi, 5th Edition, 2008.
2. Cay Horstmann, “Big Java”, John Wiley and Sons, 2nd Edition, 2006.

VI. Reference Books:

1. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI
2. Core Java 2, Vol 1, Fundamentals, Cay. Horstman and Gary Cornell, Seventh Edition, Pearson Education.
3. Core Java 2, Vol 2, Advanced Features, Cay. Horstman and Gary Cornell, Seventh Edition, Pearson Education.

VII. Web References:

1. http://www.javatpoint.com/java-tutorial
2. http://www.javatutorialpoint.com/introduction-to-java/

VIII. E-Text Books:

1. http://bookboon.com/en/java-programming-language-ebooks
2. https://en.wikibooks.org/wiki/Java_Programming