Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
MCA31	Core and Advanced Java	4	--	--	4	--	--	4
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60% Weightage)		

Prerequisite Course codes	MCA11	
Course Outcomes	CO1	To understand various Java programming basic constructs such as abstract data types, encapsulation, inheritance Polymorphism with Exception handling
	CO2	Analyze real time problem for Generic classes with database connection and file handling using JAVA concepts
	CO3	Develop Web Applications using Event handling and GUI programming based on advanced JAVA programming
	CO4	Apply the concepts of EJB and Spring framework to develop an application

Module No.	Unit No.	Topics	Ref	Hrs
1		**Fundamentals of Java Programming**	**1,2**	**3**
	1.1	Features of Object-oriented Programming, History of Java, Features of Java,		
	1.2	Java environment and tools,Data types, variable, expressions, operators, control structures, arrays.		
2		**Object and Classes**	**1,2**	**4**
	2.1	Classes, Instance variables, Methods, Constructors, Access Specifiers, Abstract Classes and Wrapper Classes,		
	2.2	Autoboxing and Unboxing, Inheritance, Polymorphism		
	2.3	Method Overriding, Use of Static, final, super and this keyword		
	2.4	Garbage collection and finalize method, string and mutable string, Inner Classes		
3		**Packages and Interfaces**	**1,2**	**2**
	3.1	Package concept, Creating user defined package, Access control protection		
	3.2	Defining interface, Implementing interface.		
4		**Generics and Collections**	**1,2**	**5**
	4.1	Generics - Generic Class, Creating Generic Classes		
	4.2	Generic Methods, Bounded Type, Collections-Collections and Generics		
	4.3	Collection Classes-Links, Vector, Linked Lists, Maps, HashMap, WildCards		
	4.4	LambdaExpressions - Lambda Type Inference,Lambda		

		Parameters		
	4.5	Lambda Function Body, Returning a Value From a Lambda Expression, Lambdas as Objects		
5		**Exception Handling**	**1,2**	**4**
	5.1	Exception handling fundamentals, Exception types		
	5.2	Exception as objects, Exception hierarch		
	5.3	Exception Keywords - Try, catch,finally, throw, throws		
	5.4	Creating User defined Exceptions, Assertion, Annotations		
6		**Multithreading**	**1,2**	**4**
	6.1	Java thread model, Life Cycle of Thread		
	6.2	Working with Thread class and the Runnable interface, Thread priorities		
	6.3	ThreadGroup class, Inter thread communication, Synchronization.		
7		**File handling**	**1,2**	**4**
	7.1	Input streams and Output streams		
	7.2	FileInputStream and FileOutputStream, Binary and Character streams		
	7.3	Buffered Reader/ Writer, Object serialization and Deserialization		
8		**Event handling and GUI programming**	**1**	**5**
	8.1	Comparison of AWT and SWING		
	8.2	Applet class, Applet API hierarchy , Life cycle of Applet		
	8.3	Delegation EventModel, Event handling mechanisms, Swing components		
	8.4	Swing Component Hierarchy- Basic and Advanced Components, JApplet		
	8.5	Layout managers, Adapter class, Inner class.		
9		**Database Programming**	**2**	**4**
	9.1	JDBC architecture, Types of drivers, Java.sql package		
	9.2	Establishing connectivity and working with connection interface		
	9.3	Working with statement interface, Working with PreparedStatement interface		
	9.4	Working with ResultSet interface,Working with ResultSetMetaData interface.		
10		**Web development using Servlets**	**7**	**4**
	10.1	Introduction to servlets, Servlet vs CGI, Servlet API overview		
	10.2	Servlet Life cycle, Generic servlet, HTTPServlet, ServletConfig, ServletContext		
	10.3	Handling HTTP Request and response –GET /POST method, request dispatching, Using cookies, Session tracking.		
11		**Web development using JSP**	**7**	**5**

	11.1	Introduction to JSP, JSP Architecture, JSP Directives, JSP scripting elements		
	11.2	Default objects in JSP,JSP Actions, JSP with beans and JSP with Database		
	11.3	Error handling in JSP, Session tracking techniques in JSP		
	11.4	Introduction to custom tags, JSTL tags in detail		
12		**Enterprise Java Beans**	**7**	**4**
	12.1	Introduction to Enterprise java beans, Types of EJB		
	12.2	Session bean , entity beans, Message driven beans		
13		**Introduction to Spring Frameworks**	**10**	**4**
	13.1	Introduction to Spring Framework, Spring Architecture,		
	13.2	Spring Aspect of Object Oriented Concepts – Join Point and Point Cuts.		
			Total	**52**

References:

[1] Herbert schildt, " The complete reference JAVA2", Tata McGraw Hill , Seventh Edition.
[2] Sharanam Shah and vaishali shah, "Core Java for beginners",SPD, First Edition.
[3] Savalia , "Advance Java Technology" , Dreamtech Press/Wiley India, First Edition.
[4] Kogent Learning Solutions Inc, " Java Server Programming java EE6" , Dreamtech press First Edition.
[5] Wigglesworth, " Java Programming Advanced Topics w/2CDs" ,Third Edition, Cengage Learning.
[6] Ivan Byaross, "Commercial web development using java 2.0" , BPB, Revised Edition.
[7] Marty Hall and Larry Brown , " Core Servlets and Java Server Pages :Vol I: Core Technologies", Pearson, Second Edition.
[8] Sharnam Shah and vaishali shah, "Java EE 6 for Server Programming for professionals", SPD ,Second Edition .
[9] E.Balaguruswamy, "Programming with Java A Primer", Tata McGraw Hill, Fourth Edition.
[10] Craig Walls, "Spring in Action", 3rd Edition, Manning.