Course Code MCA1003	Object Oriented Programming using JAVA	Course Type	LTP
		Credits	4

Objectives:

- To understand and develop the various approaches to solve problems with Object oriented concepts using JAVA.
- To study the modern frameworks and their applications in real-word problems.

Expected Outcomes:

Students who complete this course will be able to:

- Design, develop and debug Java programs using object-oriented principles. In conjunction with development tools including integrated development environments, debuggers, build scripts.
- Build applications that have an event-driven graphical user interface using the standard Java libraries and JDBC.
- Develop distributed applications using Java.

Student Outcomes (SO):	**a, b, h, m**

Module No.	Module Description	Hours	SO
1	**Introduction:** Classes & Objects – Overloading Methods – Passing and returning objects – Controlling access to members – this, static, and final keywords - String handling	7	a
2	**Inheritance & Packages:** Inheritance – Types of Inheritance - Method Overriding - Dynamic Method Dispatch – Abstract classes - Interfaces; **Packages** – Access Specifies – importing packages	9	b
3	**Exception Handling and Multithreading:** Exception handling Model – Built in exceptions – User defined exceptions **Multithreading:** Thread creation - Thread class - Runnable interface.	6	b, m
4	**GUI in Java:** Applet Programming, AWT Programming -Event handling – Swing Components. **Files & JDBC:** **Files-** FILE class – Its Methods; **I/O Streams:** Byte Stream and Character Stream classes - Random Access file; **JDBC:** Statement - Callable and Prepared object – Processing Result set.	10	b, m
5	**Generics & Collections:** Generic methods, generic classes; **Collection** – Collection Interfaces - Collection Classes - Collection Algorithms.	11	b, m

	RMI & Servlets: RMI – creating stubs, skeleton – Remote Method Invocation; **Servlets** – Life Cycle – Client Request - Accessing Form Data – database access.		
6	**Guest Lecture on Contemporary Topics in JAVA.**	**2**	**h**
	Total Lecture:	**45**	

Mode of Teaching and Learning:
Flipped Class Room, Activity Based Teaching/Learning, Digital/Computer based models, wherever possible to augment lecture for practice/tutorial and minimum 2 hours lectures by industry experts on contemporary topics.

Mode of Evaluation and Assessment:
The assessment and evaluation components may consist of unannounced open book examinations, quizzes, student's portfolio generation and assessment, and any other innovative assessment practices followed by faculty, in addition to the Continuous Assessment Tests and Term End Examination.

Text Book(s):

1.	Deitel & Deitel, Java How To Program (late objects), 10th edition, Prentice Hall, 2015.

Reference Book(s):

1.	Herbert Schildt, Java™: The Complete Reference, Ninth Edition, Oracle Press, 2014.
2.	Eric Jendrock, Ricardo Cervera-Navarro, Ian Evans, Kim Haase, William Markito, Java EE 7 Tutorial, The: Volume 1, 5/E, Prentice Hall, 2014.
3	E. Balaguruswamy programming With Java Primer, 3E, The McGraw Hill, 2012.

Recommendation by the Board of Studies on	
Approval by Academic council on	
Compiled by	

No.	**Indicative List of Experiments**	**SO - m**
1	Programs on Control Flow – Decision Making, Branching and Looping	
2	Program designs on OOP in Java – Classes & Objects, Method Overloading, Inheritance, Dynamic Method Dispatch, Interfaces.	
3	Programs with packages	
4	Programs on String handling (Use classes String and StringBuffer)	
5	Programs on Exception Handling	
6	Programs on Files and I/O Streams	
7	JDBC Programs	
8	Multithreaded programming in JAVA	
9	Applet Programming (Including Event Handling)	
10	GUI Design with AWT and Swing(Including Event Handling)	

11	Program to invoke functions on a remote system.	
12	Auto page refresh using Servlets.	
	Challenging Experiments:	
13	Net Banking Application – Object based concepts, Networking, JDBC, JSF/Swing	
14	Cryptography schemes for encoding of secret image/text – Object based concepts, Networking,	
15	Chat for Multiuser - Object based concepts, Networking, JSF/Swing	
16	Data mining algorithms to analyze medical data – Files, Collection framework, AWT/Swing.	