SEMESTER III

Course Code	USA20301J	Course Name	PROGRAMMING IN JAVA	Course Category	C	Professional Core Course	L	T	P	C
							4	0	4	6

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Computer Applications	Data Book / Codes/Standards	Nil		

Course Learning Rationale (CLR):	The purpose of learning this course is to:	Learning
CLR-1 :	To understand the principles and concepts of Object Oriented Programming	
CLR-2 :	To learn how to extend Java classes with inheritance and dynamic binding.	
CLR-3 :	To learn how to produce robust programs in Java using Exception Handling	
CLR-4 :	To achieve parallelism using threading concepts	
CLR-5 :	To understand the basics of Graphical User Interface Programming	
CLR-6 :	To design and program stand-alone Java applications.	

Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:	Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)
CLO-1 :	Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.	3	80	70
CLO-2 :	Read and make elementary modifications to Java programs that solve real-world problems.	3	85	75
CLO-3 :	Validate input in a Java program	3	75	70
CLO-4 :	Identify and fix defects and common security issues in code.	3	85	80
CLO-5 :	To design reading and writing files in Java.	3	85	75
CLO-6 :	To develop various applications like banking, Inventory, etc	3	80	70

Program Learning Outcomes (PLO)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Fundamental Knowledge	Application of Concepts	Link with Related Disciplines	Procedural Knowledge	Skills in Specialization	Ability to Utilize Knowledge	Skills in Modeling	Analyze, Interpret Data	Investigative Skills	Problem Solving Skills	Communication Skills	Analytical Skills	ICT Skills	Professional Behavior	Life Long Learning
CLO-1 :	L	H	-	H	L	-	-	-	L	L	-	H	-	-	-
CLO-2 :	M	H	L	M	L	-	-	-	M	L	-	H	-	-	-
CLO-3 :	M	H	M	H	L	-	-	-	M	L	-	H	-	-	-
CLO-4 :	M	H	M	H	L	-	-	-	M	L	-	H	-	-	-
CLO-5 :	H	H	M	H	L	-	-	-	M	L	-	H	-	-	-
CLO-6 :	L	H	M	H	L	-	-	-	L	L	-	H	-	-	-

Duration (hour)		24	24	24	24	24
S-1	SLO-1	The Genesis of Java	Introducing classes	Inheritance Basics	Introduction to Java Thread model	Introduction to Event Handling
	SLO-2	How java changed the internet	Class fundamentals	Understanding Types of Inheritance: Single, Multilevel, Hierarchical Inheritance	Creating a Thread by Extending Thread Class	Understanding ActionEvent & ItemEvent
S-2	SLO-1	Java's magic: Byte Code	Declaring Objects	How does java support multiple inheritance?	Creating a Thread by implementing Runnable Interface.	Understanding KeyEvent &MouseEvent
	SLO-2	Introduction to Java Buzzword	Assigning object Reference variables	using Super keyword	Thread Class	TextEvent,WindowEvent,Component Event
S-3	SLO-1	Understanding Java Buzzwords - Simple, Object Oriented, Robust, Multithreaded, Architecture-Neutral, Interpreted and high performance, Distributed, Dynamic	Introducing method	What is Method Overriding?	Creating multiple threads	Introduction to Event Listener Interfaces
	SLO-2	Evolution of Java	What are Constructors? What are the Characteristics of constructors?	Understanding Dynamic method dispatch	Assigning Thread priorities	Working with ActionListener &, AdjustmentListener

S-4	SLO-1	*Introduction to Object Oriented Concepts of Java*	*Understanding Types of Constructors*	*Introduction to Abstract keyword*	*Applying Synchronization*	*Working with ContainerListener, ItemListener, ComponentListener*
	SLO-2	*Understanding Encapsulation, Polymorphism, Inheritance*	*Using this Keyword*	*Working with Abstract class and Method & Using final with inheritance*	*Inter-thread communication*	*Working with KeyListener & MouseListener*
S 5-8	SLO-1 SLO-2	*Lab1: Learning to work with Java IDE and Writing Simple Conversion Programs*	*Lab 4: Classes and Objects*	*Lab 7: Inheritance, Method Overriding, Abstract classes and methods*	*Lab 10: Multithreading*	*Lab 13: Event Handling*
S-9	SLO-1	*Introduction to Lexical Issues of Java*	*Introduction to Garbage Collection*	*Introduction to Package*	*Introduction to Legacy Classes*	*Introduction AWT Controls*
	SLO-2	*Understanding Whitespaces, Identifiers, Literals Comments, Separators, Keywords*	*Using Finalize() method*	*Creating a Package*	*Working with Vector class*	*Working with Label controls*
S-10	SLO-1	*Introduction to Data types of Java*	*Overloading methods*	*Understanding Access Protection*	*Examples using Vector class*	*Working with Buttons controls*
	SLO-2	*Understanding byte,short,int,long, float,double,chars,boolean*	*Overloading constructors*	*Importing packages*	*Understanding Stack class*	*Working with CheckBoxes*
S-11	SLO-1	*What is variable?, Declaring a variable, dynamic initialization of variables*	*Using objects as parameters*	*Introduction to Interfaces*	*Examples using Stack class*	*Working with CheckBoxGroup controls*
	SLO-2	*Scope and lifetime of variables*	*Argument Passing*	*Defining an interface*	*Introduction to Legacy Interfaces*	*Working with Choice controls*
S-12	SLO-1	*Introduction to Operators*	*Returning Objects*	*Implementing Interfaces*	*Understanding Enumeration Interface*	*Working with Lists controls*
	SLO-2	*Working with Arithmetic, Relational, Logical, Bitwise, Conditional, Assignment operators*	*Recursion*	*How Interfaces are extended?*	*Examples using Enumeration interface*	*Working with TextField controls*
S 13-16	SLO-1 SLO-2 SLO-3 SLO-4	*Lab2: Operators*	*Lab 4: Overloading Methods and Constructors, finalize() method*	*Lab 8: Packages and Interfaces*	*Lab 11: Legacy Classes and Interfaces*	*Lab 14: AWT Controls*
S-17	SLO-1	*What is Array?, Initialization of Arrays*	*Introducing Access Control*	*What is Exception?*	*Introduction to Utility classes*	*Introduction to Layout Manager*
	SLO-2	*Understanding Types of Arrays*	*Understanding Static variables and methods*	*Understanding Exception Types*	*Working with StringTokenizer*	*Understanding Flow Layout*
S-18	SLO-1	*Introduction to Control Statements*	*Understanding Final variables and methods*	*Introduction to Exception handling*	*Working with Date class*	*Understanding Border Layout*
	SLO-2	*Working with Selection Statements- All forms of if & Switch*	*Working with Nested Class*	*Working with try and catch*	*Working with Calendar*	*Understanding Grid Layout*
S-19	SLO-1	*Introduction to Iterative Statements*	*Understanding Inner Class*	*Using multiple catch clauses*	*Working with GregorianCalendar*	*Introduction to I/O Streams*
	SLO-2	*Working with while, do-while, for, for each statements*	*Introduction to String Class*	*Working with Finally, Throw and throws*	*Working with Random Class*	*Byte Streams classes*
S-20	SLO-1	*Introduction to Jump Statements*	*Working with String Handling Methods*	*Understanding Built-in Exceptions*	*Working with Scanner Class*	*Character Streams classes*
	SLO-2	*Working with break, continue and*	*Command Line arguments*	*Creating user defined Exceptions*	*Examples using utility classes*	*Examples using Byte and Character*

		return statements				Streams
S 21-24	SLO-1 SLO-2 SLO-3 SLO-4	Lab 3: Arrays, Control Statements	Lab 6: String Class, Command Line Arguments	Lab 9: Exception Handling	Lab 12: Utility Classes	Lab 15: Layout Managers, Byte and Character Streams

Learning Resources	1. Herbert Schildt (2007), "Java: The Complete Reference", Seventh Edition, Tata McGraw publication. 2. Arnold and J.Gosling (2000), "The Java Programming Language", Second edition, Addision Wesley	3. Art Gittleman (2002), " Ultimate Java Programming", Wiley Publications

Learning Assessment

Level	Bloom's Level of Thinking	Continuous Learning Assessment (50% weightage)								Final Examination (50% weightage)	
		CLA – 1 (10%)		CLA – 2 (10%)		CLA – 3 (20%)		CLA – 4 (10%)#			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember Understand	20%	20%	15%	15%	15%	15%	15%	15%	15%	15%
Level 2	Apply Analyze	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Level 3	Evaluate Create	10%	10%	15%	15%	15%	15%	15%	15%	15%	15%
	Total	100 %		100 %		100 %		100 %		100 %	

CLA – 4 can be from any combination of these: Assignments, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc.,

Course Designers		
Experts from Industry	**Experts from Higher Technical Institutions**	**Internal Experts**
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