Lovely Professional University, Punjab

Course Code	Course Title	Course Planner	Lectures	Tutorials	Practicals	Credits
CSE310	PROGRAMMING IN JAVA	16918::Mohinder Kumar	1	4	0	5
Course Weightage	ATT: 5 CA: 30 MTT: 20 ETT: 45					
Course Orientation	PLACEMENT EXAMINATIONS (MASS RECRUITMENT), SOFTWARE SKILL, KNOWLEDGE ENHANCEMENT					

	TextBooks (T)				
Sr No	**Title**	**Author**	**Edition**	**Year**	**Publisher Name**
T-1	INTRODUCTION TO JAVA PROGRAMMING	Y. DANIEL LIANG	7th	2012	PEARSON

	Reference Books (R)				
Sr No	**Title**	**Author**	**Edition**	**Year**	**Publisher Name**
R-1	JAVA THE COMPLETE REFERENCE	HERBERT SCHILDT	8th	2012	MCGRAW HILL EDUCATION
R-2	HEAD FIRST JAVA	CATHY SIERA AND BERT BATES	2nd	2012	O'REILLY

Relevant Websites (RW)		
Sr No	**(Web address) (only if relevant to the course)**	**Salient Features**
RW-1	http://www.docs.oracle.com	Complete Java tutorial by Oracle
RW-2	www.javatpoint.com	Scope and application of concepts are briefly and clearly explained
RW-3	http://www.javabeginner.com/	Study material and online compiler available
RW-4	http://www.cs.armstrong.edu/liang/intro9e/toc.html	Solutions of Exercises given in Text book is available.

Audio Visual Aids (AV)		
Sr No	**(AV aids) (only if relevant to the course)**	**Salient Features**
AV-1	http://www.nptelvideos.com/java/java_video_lectures_tutorials.php	Video lectures for basics programming constructs of Java programming
AV-2	http://www.pvtuts.com/java/java-introduction	Video lectures for Java programming

Software/Equipments/Databases (SW)		
Sr No	**(VL) (only if relevant to the course)**	**Salient Features**
SW-1	JDK, Command Prompt and Text Editor	Basic tools for compiling and executing the Java Program
SW-2	Eclipse or NetBeans IDE	Integrated Development Environment for Java Programming
SW-3	MySQL	Required to create Backend in Java Applications

Virtual Labs (VL)		
Sr No	**(AV aids) (only if relevant to the course)**	**Salient Features**
VL-1	http://cse02-iiith.vlabs.ac.in/	Basics of Programming can be practised

LTP week distribution: (LTP Weeks)	
Weeks before MTE	7
Weeks After MTE	7
Spill Over (Lecture)	3

Detailed Plan For Lectures

Week Number	Lecture Number	Broad Topic(Sub Topic)	Chapters/Sections of Text/reference Books	Other Readings, Relevant Websites, Audio Visual Aids, software and Virtual Labs	Lecture Description	Learning Outcomes	Pedagogical Tool Demonstration/ Case Study / Images / animation / ppt etc. Planned	Live Examples
Week 1	Lecture 1	Introduction to Course, Syllabus and tools to be used	NA	NA	Delivery of lecture 0	Students will be Aware about Course contents, ATs and Approach to be followed.		
	Lecture 2	Classes, Methods, Objects and Arrays(Overview of Java)	T-1:Ch-1	RW-1 RW-3 AV-1 AV-2 SW-1 VL-1	Origin, Exclusive features and applications of Java, how Java is different from C++, Writing, compiling and executing Java programs	Learning features of Java and why it became so popular	Lecture cum demonstration and Discussion	Simple program e.g. to display welcome message
	Lecture 3	Classes, Methods, Objects and Arrays(Unicode and type casting)	T-1:Ch-2	RW-1 RW-3 AV-1 AV-2 SW-1 VL-1	Unicode and Type Casting(Implicit and Explicit)	Understanding of requirements and applications of Unicode and Type Casting	Lecture cum demonstration and Discussion	Syntax and Semantics of Type casting through Code Snippets
	Lecture 4	Classes, Methods, Objects and Arrays(Defining classes, data members and methods, Constructors, static keyword, Creating objects and using classes)	T-1:Ch-7 R-2:Ch-4, Ch-5	RW-1 RW-3 AV-1 AV-2 SW-1 VL-1	Writing classes with constructors and type of members(Instance and class members)	Understanding of creation of classes and its members	Lecture cum demonstration and Discussion	Programs on classes, objects and constructors
	Lecture 5	Classes, Methods, Objects and Arrays(Defining classes, data members and methods, Constructors, static keyword, Creating objects and using classes)	T-1:Ch-7 R-2:Ch-4, Ch-5	RW-1 RW-3 AV-1 AV-2 SW-1 VL-1	Accessibility rules for instance members and class members and demonstration	Understanding of accessibility of class members	Lecture cum demonstration and discussion	Programs on classes, objects and constructors

Week 2	Lecture 6	Classes, Methods, Objects and Arrays(Defining classes, data members and methods, Constructors, static keyword, Creating objects and using classes)	T-1:Ch-7 R-2:Ch-4, Ch-5	RW-1 RW-3 AV-1 AV-2 SW-1 VL-1	Modelling entities and writing corresponding classes with appropriate level of functionality	Learning mapping of real life entities to classes	Lecture cum demonstration and discussion	Program to modelling and accessing real life entities
	Lecture 7	Classes, Methods, Objects and Arrays(Defining classes, data members and methods, Constructors, static keyword, Creating objects and using classes)	T-1:Ch-7 R-2:Ch-4, Ch-5	RW-1 RW-3 AV-1 AV-2 SW-1 VL-1	Modelling entities and writing corresponding classes with appropriate level of functionality	Learning mapping of real life entities to classes	Lecture cum demonstration and discussion	Program to modelling and accessing real life entities
	Lecture 8	Classes, Methods, Objects and Arrays(Constructor chaining, this keyword)	T-1:Ch-9	RW-1 RW-3 AV-1 AV-2 SW-1 VL-1	Constructor chaining using this	Understanding of constructor chaining and using this	Lecture cum demonstration and discussion	Program on Constructor chaining
	Lecture 9	Classes, Methods, Objects and Arrays(Constructor chaining, this keyword)	T-1:Ch-9	RW-1 RW-3 AV-1 AV-2 SW-1	Using this for avoiding ambiguity	Understanding of concept of ambiguity and resolution by this keyword	Lecture cum demonstration and discussion	Program using this keyword
	Lecture 10	Classes, Methods, Objects and Arrays(Declaring, instantiating and initializing arrays)	T-1:Ch-6	RW-1 RW-3 AV-1 AV-2 SW-1 VL-1	Declaring, instantiating and initializing one-dimensional array	Understanding of creation and using one-dimensional arrays	Lecture cum demonstration and discussion	Program on creation and using one-dimensional array
Week 3	Lecture 11	Classes, Methods, Objects and Arrays(Declaring, instantiating and initializing arrays)	T-1:Ch-6	RW-1 RW-3 AV-1 AV-2 SW-1 VL-1	Declaring, instantiating and initializing multi-dimensional array	Understanding of creation and using multi-dimensional arrays	Lecture cum demonstration and discussion	Program on creation and using multi-dimensional array
	Lecture 12	Inheritance and Polymorphism(Inheritance overview)	T-1:Ch-10	RW-2 RW-3 AV-1 AV-2 SW-1 VL-1	Inheritance overview and applications	Understanding of why and how to use inheritance	Lecture cum demonstration and discussion	Program to describe writing and compiling subclasses
	Lecture 13	Inheritance and Polymorphism(Using super and final keywords in inheritance)	T-1:Ch-10	RW-2 RW-3 AV-1 AV-2 SW-1	Using super in constructor chaining and accessing parent class members	Understanding of accessing parent and child class members	Lecture cum demonstration and discussion	Programs to demonstrate all uses of super and final in inheritance
	Lecture 14	Inheritance and Polymorphism(Using super and final keywords in inheritance)	T-1:Ch-10	RW-1 RW-4 AV-1 AV-2 SW-1	Using super in constructor chaining and accessing parent class members	Understanding of accessing parent and child class members	Lecture cum demonstration and discussion	Programs to demonstrate all uses of super and final in inheritance
	Lecture 15			**PRACTICAL 1**				

Week 4	Lecture 16	Inheritance and Polymorphism(Method overloading and overriding)	T-1:Ch-10	RW-2 RW-3 AV-1 AV-2 SW-1	Creating and calling overloaded and overridden methods	Understanding of various forms of polymorphism	Lecture cum demonstration and discussion	Programs on method overloading and overriding
	Lecture 17	Inheritance and Polymorphism(Defining interfaces, Extending and implementing interfaces)	T-1:Ch-11 R-2:Ch-8	RW-2 RW-3 AV-1 AV-2 SW-1	Creating and implementing interfaces and sub interfaces	Understanding of interface requirement and creation	Lecture cum demonstration and discussion	Program to describe writing and compiling interfaces
	Lecture 18	Inheritance and Polymorphism(Abstract class)	T-1:Ch-11 R-2:Ch-8	RW-1 RW-4 AV-1 SW-1	Creating and using abstract classes and associated concepts and restrictions	Understanding of abstract classes and applications	Lecture cum demonstration and discussion	Creating and extending abstract classes
	Lecture 19	Inheritance and Polymorphism(Nested and inner classes)	T-1:Ch-15	RW-2 RW-3 SW-1	Creating and using nested classes	Understanding why and how to use nested classes and its types	Lecture cum demonstration and discussion	Programs on creation and usage of nested and inner class
	Lecture 20	Inheritance and Polymorphism(Local and anonymous class)	T-1:Ch-11	RW-2 RW-3 SW-1	Creating and using local and anonymous class	Understanding why and how to use local class and its types	Lecture cum demonstration and discussion	Programs on Local and anonymous class
Week 5	Lecture 21	Inheritance and Polymorphism(Local and anonymous class)	T-1:Ch-11	RW-2 RW-3 SW-1	Wrapper class use, advantages and orientation	Understanding requirement of Wrapper classes	Lecture cum demonstration and discussion	Demonstration through hierarchy of Number and its subclasses
	Lecture 22	GUI Designing and Event Handling(Introduction to swing, AWT vs swing)	T-1:Ch-13	RW-1 RW-4 SW-1	Introduction to swings and Comparison how it is different from AWT	Understanding of GUI designing principle through Swings	Lecture cum demonstration and discussion	Program to demonstrate basic difference between using AWT and swing
	Lecture 23	GUI Designing and Event Handling(JFrame and JPanel)	T-1:Ch-7, Ch-10	RW-1 RW-4 SW-1	Containment hierarchy, Creating and using JFrame and JPanel	Understanding and using top level containers	Lecture cum demonstration and discussion	Programs for creating using and changing properties of JFrame and JPanel
	Lecture 24	GUI Designing and Event Handling(Swing components, MVC architecture)	T-1:Ch-16	RW-1 RW-4 SW-1	Swing Components (JButton, JLabel, JTextField, JTextArea)	Understanding of usage and setting properties of JButton, JLabel, JTextField and JTextArea	Lecture cum demonstration and discussion	Programs for creating using JButton, JLabel, JTextField and JTextArea
	Lecture 25	GUI Designing and Event Handling(Swing components, MVC architecture)	T-1:Ch-16	RW-1 RW-4 SW-1	Swing Components (JCheckbox, JList, JRadioButton, JComboBox)	Understanding of usage and setting properties of JCheckbox, JList, JRadioButton and JComboBox	Lecture cum demonstration and discussion	Program for creating, using JCheckbox, JList, JRadioButton and JComboBox
Week 6	Lecture 26	GUI Designing and Event Handling(Swing components, MVC architecture)	T-1:Ch-16	RW-1 RW-4 SW-1	Swing Components (JPassword, JMenu, JScrollPane)	Understanding of usage and setting properties of JPassword, JMenu and JScrollPane	Lecture cum demonstration and discussion	Programs for creating using JPassword, JMenu and JScrollPane

	Lecture 27	GUI Designing and Event Handling(Swing components, MVC architecture)	T-1:Ch-13,Ch-35	RW-1 RW-4 SW-1	Color, Font and Graphics class, MVC Model	Understanding of usage and setting properties of Color, Font and Graphics class	Lecture cum demonstration and discussion	Programs for using Color, Font and Graphics class
	Lecture 28			**PRACTICAL 2**				
	Lecture 29	GUI Designing and Event Handling(Layout managers)	T-1:Ch-13, Ch-33	RW-1 RW-4 SW-1	Layout Managers (Border, Flow and Grid)	Understanding of customizing orientation of components on container	Lecture cum demonstration and discussion	Program for changing properties of Border, Flow and GridLayout
	Lecture 30	GUI Designing and Event Handling(Layout managers)	T-1:Ch-33	RW-1 RW-4 SW-1	CardLayout manager	Understanding of Customization of orientation of components on container	Lecture cum demonstration and discussion	Program for using CardLayout manager
Week 7	Lecture 31	GUI Designing and Event Handling(Introduction to applets, Applet life cycle)	T-1:Ch-1, Ch-17	RW-1 RW-3 SW-1	Introduction and life cycle of applet	Understanding of applet and its execution of various methods in life cycle	Lecture cum demonstration and discussion	Program for applet skeleton to demonstrate its methods
	Lecture 32	GUI Designing and Event Handling(Creating applets by JApplet)	T-1:Ch-17	RW-1 RW-3 SW-1	Creating and executing applet through web browser and appletviewer	Understanding of applet execution and creating web based applications	Lecture cum demonstration and discussion	Program to create simple animation/drawing through applet
	Lecture 33	GUI Designing and Event Handling(Event delegation model, Event listener interfaces and event classes)	T-1:Ch-11, Ch-15	RW-1 RW-4 SW-1	Event delegation model, ActionListener, ActionEvent, ItemListener, ItemEvent	Understanding of Event handling model, action event and item event	Lecture cum demonstration and discussion	Programs to demonstrate action and item event handling
	Lecture 34	GUI Designing and Event Handling(Event delegation model, Event listener interfaces and event classes)	T-1:Ch-15	RW-1 RW-3 SW-1	MouseMotionListener, MouseListener, MouseEvent, KeyListener and KeyEvent	Understanding of event handling through mouse and keyboard	Lecture cum demonstration and discussion	Programs to demonstrate mouse and key event
	Lecture 35			**SPILL OVER**				
			MID TERM EXAMINATION					
Week 8	Lecture 36	Java Database Programming(Introduction to JDBC)	T-1:Ch-37	RW-2 RW-3 SW-1 SW-3	Basic steps of Java Database connectivity	Understanding of basic steps of database connectivity	Lecture cum demonstration and discussion	Programs to demonstrate steps of database connectivity
	Lecture 37	Java Database Programming(Fetching and updating database)	T-1:Ch-37	RW-2 RW-3 SW-1 SW-3	Using Queries from frontend to fetch and update data from database	Understanding of queries for fetching and updating database from frontend query execution	Lecture cum demonstration and discussion	Programs to demonstrate fetching and updating database through queries from frontend

	Lecture 38	Java Database Programming(PreparedStatement)	T-1:Ch-37	RW-2 RW-3 SW-1 SW-3	Using PreparedStatement for insertion of records	Understanding of optimization through prepared statement	Lecture cum demonstration and discussion	Programs to demonstrate performance optimization by Prepared statement
	Lecture 39	Java Database Programming(Batch processing)	T-1:Ch-37	RW-2 RW-3 SW-1 SW-3	Creation and execution of Batch of queries	Understanding of optimization through Batch processing	Lecture cum demonstration and discussion	Programs to demonstrate Batch processing
	Lecture 40	Java Database Programming(Retrieving metadata)	T-1:Ch-37	RW-2 RW-3 SW-1 SW-3	Fetching Database metadata and result set metadata	Understanding of retrieval of properties of database and resultset	Lecture cum demonstration and discussion	Programs to demonstrate retrieving database and resultset metadata
Week 9	Lecture 41	Java Database Programming(Designing GUI based applications using JDBC)	NA	SW-1 SW-3	Modelling and designing small applications using GUI and JDBC concepts	Understanding modelling and design of small projects using databases and GUI	Lecture cum demonstration and discussion	Modelling and designing of small projects using databases
	Lecture 42	Java Database Programming(Designing GUI based applications using JDBC)	NA	SW-1 SW-3	Modelling and designing small applications using GUI and JDBC concepts	Understanding modelling and design of small projects using databases and GUI	Lecture cum demonstration and discussion	Modelling and designing of small projects using databases
	Lecture 43	Java Database Programming(Designing GUI based applications using JDBC)	NA	SW-1 SW-3	Modelling and designing small applications using GUI and JDBC concepts	Understanding modelling and design of small projects using databases and GUI	Lecture cum demonstration and discussion	Modelling and designing of small projects using databases
	Lecture 44			**PRACTICAL 3**				
	Lecture 45	IO streams overview	T-1:Ch-19	RW-2 RW-4 SW-1	IO Stream basics and organization of input and output classes	Understanding of basics of IO and organization of classes	Lecture cum demonstration and discussion	Hierarchy of IO Classes in Java
Week 10	Lecture 46	Reading and Writing: Files, primitive datatypes and objects	T-1:Ch-19	RW-2 RW-4 SW-1	Reading and writing contents to files and primitive data types	Understanding of read/write operations of files and primitive datatypes	Lecture cum demonstration and discussion	Programs to demonstrate read/write operations on files, Primitive data types
	Lecture 47	Reading and Writing: Files, primitive datatypes and objects	T-1:Ch-19 R-2:Ch-14	RW-1 RW-3 SW-1	IO Serialization	Understanding of IO Serialization	Lecture cum demonstration and discussion	Programs to demonstrate IO Serialization

	Lecture 48	Packages and Exception Handling(Java packages overview)	T-1:Ch-7, Ch-10 R-1: Ch-9	RW-2 RW-3 SW-1	Java packages overview	Understanding of packages requirement and advantages	Lecture cum demonstration and discussion	Examples of files and folder system of windows can be given to explain advantages of packages
	Lecture 49	Packages and Exception Handling(Creating and importing packages, Adding classes to a package)	T-1:Ch-7, Ch-10 R-1: Ch-9	RW-2 RW-4 SW-1	Creating and importing packages, Adding classes to a package	Understanding of adding classes to package and using classes from packages	Lecture cum demonstration and discussion	Program to demonstrate package and import keyword
	Lecture 50	Packages and Exception Handling(Access control (public, protected, private and default))	T-1:Ch-7, Ch-10 R-1: Ch-9	RW-2 RW-4 SW-1	Access control (public, protected, private and default)	Understanding of visibility and accessibility scope of public, protected, private and default	Lecture cum demonstration and discussion	Program to explain visibility scope of public, private, default and protected
Week 11	Lecture 51	Packages and Exception Handling(Exception handling overview, Exception hierarchy)	T-1:Ch-18	RW-2 RW-4 SW-1	Exception handling overview, Exception hierarchy	Understanding of hierarchy of exception classes	Lecture cum demonstration and discussion	Hierarchy of Exception classes
	Lecture 52	Packages and Exception Handling(Using try, catch, throw, throws and finally)	T-1:Ch-18	RW-2 RW-3 SW-1	Using try, nested try, catch and multiple catch clauses	Understanding of creating and using try and catch	Lecture cum demonstration and discussion	Program on try and catch clauses
	Lecture 53	Packages and Exception Handling(Using try, catch, throw, throws and finally)	T-1:Ch-18	RW-2 RW-3 SW-1	Using throw and throws keywords	Understanding of throw and throws	Lecture cum demonstration and discussion	Programs on throw and throws
	Lecture 54	Packages and Exception Handling(Using try, catch, throw, throws and finally)	T-1:Ch-18	RW-2 RW-3 SW-1	Using finally keyword	Understanding usage of finally clause	Lecture cum demonstration and discussion	Programs on throw and throws
	Lecture 55	Packages and Exception Handling(Checked and unchecked exceptions)	T-1:Ch-18 R-1: Ch-10	RW-2 RW-3 SW-1	Checked and unchecked exceptions examples and differences	Understanding of exception handling strategy for checked and unchecked exceptions	Lecture cum demonstration and discussion	Program to demonstrate difference between checked and unchecked exception
Week 12	Lecture 56	Packages and Exception Handling(Creating user defined exceptions)	T-1:Ch-18	RW-2 RW-3 SW-1	Creating user defined exceptions	Understanding of creating user defined exceptions	Lecture cum demonstration and discussion	Program on customized exceptions
	Lecture 57			**PRACTICAL 4**				
	Lecture 58	Multi-Threading and Strings(Overview of multithreading)	T-1:Ch-29 R-1: Ch-11	RW-2 RW-4 SW-1	Overview of multithreading	Understanding of requirements and advantages of Multithreading	Lecture cum demonstration and discussion	Program to fetch properties of main thread
	Lecture 59	Multi-Threading and Strings(Thread life cycle)	T-1:Ch-29 R-1: Ch-11	RW-2 RW-4 SW-1	Thread life cycle	Understanding of various states of thread execution and transition between states	Lecture cum demonstration and discussion	Program to fetch and set properties of main thread
	Lecture 60	Multi-Threading and Strings(Thread class and Runnable interface)	T-1:Ch-29 R-1: Ch-11	RW-2 RW-4 SW-1	Creating thread by Runnable and Thread class	Understanding of creation of thread by Thread class and	Lecture cum demonstration and discussion	Program to create threads by Runnable and

						Runnable interface		Thread
Week 13	Lecture 61	Multi-Threading and Strings(Thread class and Runnable interface)	T-1:Ch-29 R-1: Ch-11	RW-2 RW-4 SW-1	Creating thread by Runnable and Thread class	Understanding of creation of thread by Thread class and Runnable interface	Lecture cum demonstration and discussion	Program to create threads by Runnable and Thread
	Lecture 62	Multi-Threading and Strings(Thread class and Runnable interface)	T-1:Ch-29 R-1: Ch-11	RW-2 RW-4 SW-1	Creating multiple threads	Understanding creation of multiple threads	Lecture cum demonstration and discussion	Program to create multiple threads by Runnable and Thread
	Lecture 63	Multi-Threading and Strings(Thread synchronization)	T-1:Ch-29 R-1: Ch-11	RW-2 RW-4 SW-1	Thread synchronization	Understanding of resource sharing in synchronized way	Lecture cum demonstration and discussion	Program to thread synchronization
	Lecture 64	Multi-Threading and Strings(String and StringBuffer class and methods)	R-1: Ch-15	RW-2 RW-4 SW-1	String class constructors and methods	Understanding creation of strings and applications of inbuilt methods of String class	Lecture cum demonstration and discussion	Program to use String constructors and methods
	Lecture 65	Multi-Threading and Strings(String and StringBuffer class and methods)	R-1: Ch-15	RW-2 RW-4 SW-1	String class constructors and methods	Understanding creation of strings and applications of inbuilt methods of String class	Lecture cum demonstration and discussion	Program to use String constructors and methods
Week 14	Lecture 66	Multi-Threading and Strings(String and StringBuffer class and methods)	R-1: Ch-15	RW-2 RW-4 SW-1	StringBuffer class constructors and methods	Creating and using StringBuffer objects	Lecture cum demonstration and discussion	Program to use StringBuffer constructors and methods
	Lecture 67	Current Trends(Exclusive features in latest version of JDK)	NA	RW-1 SW-1 SW-2 SW-3	Exclusive features in latest version of JDK	Understanding new features in latest version of java	Lecture cum demonstration and discussion	Code snippets to explain additions in latest version of java
	Lecture 68	Current Trends(Introduction to application development IDEs and tools)	NA	RW-1 SW-1 SW-2 SW-3	Introduction to application development IDEs and tools	Learning IDEs and other tools for applications designing in Java	Lecture cum demonstration and discussion	Demonstrations of applications designing using NetBeans and other tools
	Lecture 69			**SPILL OVER**				
	Lecture 70			**SPILL OVER**				

Scheme for CA:

Component	Frequency	Out Of	Each Marks	Total Marks
Practical 4	1	1	10	50
Practical 1, 2, 3 and Mini Project	3	4	20	90
		Total :-	**30**	**140**

Details of Academic Task(s)

AT No.	Objective	Topic of the Academic Task	Nature of Academic Task (group/individuals/field work)	Evaluation Mode	Allotment / submission Week
Practical 1	To test understanding of programming constructs of Students	Code based problems on topics covered from lecture 1 to lecture 14.	Individual	Offline	1/3
Practical 2	To test understanding of programming constructs of Students	Code based problems on topics covered from lecture 16 to lecture 27.	Individual	Offline	4/6
Practical 3	To test understanding of programming constructs of Students	Code based problems on contents covered from lecture 29 to lecture 43.	Individual	Offline	7/9
Mini Project	To test students ability to Model and design small projects in Java Programming	All Java programming constructs and features studied.	Group	Offline	4/11
Practical 4	To test programming approach and skill and of Student	Lab. evaluation on contents covered from lecture 1 to lecture 56.	Individual	Online	11/12