Department of Liberal Education
Era University, Lucknow
Course Outline
Effective From: 2023-24

Name of the Program	B.A. / B.Sc. (LIBERAL EDUCATION)			Year/ Semester:	2nd / 4th
Course Name	Java Programming	Course Code:	CS202	Type:	Theory
Credits	04			Total Sessions Hours:	60 Hours
Evaluation Spread	Internal Continuous Assessment:	40 Marks		End Term Exam:	35 Marks
Type of Course	○ Compulsory	◉ Core		○ Creative	○ Life Skill
Course Objectives	1. Understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc. 2. Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc. 3. Be aware of the important topics and principles of software development. 4. To use the Java SDK environment to create, debug and run simple Java programs.				

Course Outcomes (CO): *After the successful course completion, learners will develop following attributes:*

Course Outcome (CO)	Attributes
CO1	Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
CO2	Able to understand that how to implement the Object oriented features by writing Java programs.
CO3	Be aware of the important topics and principles of software development.
CO4	Able to understand the different concepts to create and use Threads and Packages in Java.
Pedagogy	Interactive, discussion-bases, student-centered, presentation.
Internal Evaluation Mode	Mid-term Examination: 20 Marks Class test: 05 Marks Online Test/Objective Test: 05 Marks Assignments/Presentation: 05 Marks Attendance: 05 Marks

Session Details	Topic	Hours	Mapped CO
Unit 1	**Java Basic:** Overview of Language, Object-oriented Concepts, JAVA environment, JAVA program structure, Tokens, Statements, JVM, Constants and Variables, Data Types, Declaration of variables, Scope of variables, Symbolic constants, Type Casting. **Operators:** Arithmetic, Relational, Logical assignments, Increment and Decrement, Conditional, Bitwise, Special, Expressions and its evaluation.	15	CO1

	Control Statements and Loops: Decision making and Branching Statements, Looping Statements, Labelled loops, Jumping Statements.		
Unit 2	Defining a Class, adding variables and Methods to classes, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods. **Arrays:** One Dimensional and Two Dimensional, Strings **Inheritance:** Definition and types of inheritance, extending a Class, Overriding Methods, Abstract Methods, and Classes, Visibility Control.	15	CO2
Unit 3	**Interface:** Defining Interface, Extending Interface, Implementing Interface, Accessing Interface Variable. **Exception Handling:** Concepts of Exceptions, Types of Exception, Try and Catch keyword, Nested Try and Catch.	15	CO3
Unit 4	**Threads:** Creating Threads, Extending Threads Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, and Synchronization. **Package:** System Packages, Using System Package, adding a Class to a Package, Hiding Classes. **Applets:** Local and Remote Applets, Writing Applets, Applet's life cycle, Creating an executable Applet.	15	CO4

CO-PO and PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	2	1	1	1	2	1	2	3	1	3	2	2	2
CO2	2	1	2			1	2	2	3	3	1	2	2	2
CO3	2	1	2	1	1	2	1	3	2	2	1	1	2	2
CO4	2	2	1		1	2	2	1	1	1	2	2	1	3

Strong contribution-3, Average contribution-2 , Low contribution-1,

Suggested Readings:

Text- Books	1. Programming with Java, E-Balagurusami, Tata McGraw Hill, 5th edition,2014 2. Peter Norton, "Peter Norton Guide to Java Programming", Techmedia Publications.
Reference Books	1. Java The Complete Reference, Herbert Schildt, TMH,9th Edition,2014 2. Java: How to program, Deitel, PHI,9th edition,2011 3. Dustin R. Callway, "Inside Servlets", Addison Wesley.
Para Text	**Unit 1:** • https://archive.nptel.ac.in/noc/courses/noc19/SEM1/noc19-cs07/ **Unit 2:** • https://archive.nptel.ac.in/noc/courses/noc20/SEM2/noc20-cs58/ **Unit 3:** • https://nptel.ac.in/courses/106105191 **Unit4:** • https://onlinecourses.nptel.ac.in/noc22_cs47

Recapitulation & Examination Pattern		
Internal Continuous Assessment:		
Component	**Marks**	**Pattern**
Mid Semester	20	**Section A:** Contains **10** MCQs/Fill in the blanks/One Word Answer/ True-False type of questions. Each question carries **0.5 Marks.** **Section B:** Contains **07** descriptive questions out of which **05** questions are to be attempted. Each question carries **03 Marks**.
Class Test	05	Contains **05 descriptive questions.** Each question carries **01** Mark.
Online Test/ Objective Test	05	Contains **10 multiple choice questions.** Each question carries **0.5** Marks.
Assignment/ Presentation	05	Assignment to be made on topics and instruction given by subject teacher
Attendance	05	As per policy
Total Marks	**40**	

Course created by: Dr. Mohd Haleem **Signature:**	**Approved by: Prof. Mansaf Alam** **Signature:**