

Course Title : BASIC JAVA PROGRAMMING (P)	Course Code :
Semester : I	Course Group : DSC-I
Teaching Scheme in Hrs. (L:T:P) : 4:0:0	Credits : 4
Map Code : F (Theory - Programming)	Total Contact Hours : 60
CIA : 25 Marks	SEE : 75 Marks
Programme : B.Sc. CS/CA/IT	# - Semester End Exam

No.	Course Outcome	PSOs	Cl. Ses	CL
CO1	Understand and Apply Java Input and Output Processing.	PSO1 & PSO4	6	Ap
CO2	Demonstrate to use Variables, Operators expressions and Strings.	PSO1 & PSO4	8	Ap
CO3	Use types of Data, Integers, Floating-point numbers and Booleans.	PSO1 & PSO4	10	Ap
CO4	Implement Control Structures, Conditionals and Compound assignment idioms.	PSO1 & PSO4	12	Ap
CO5	Compute the Arrays and manage I/O operations	PSO1 & PSO4	12	Ap
CO6	Apply code reusability with functions	PSO1 & PSO4	12	Ap

UNIT-I

LECTURE HOURS: 14

Your first program: Programming in Java (Creating a program, compiling a program, executing a program, Example: Printing Hello World, Anatomy of a program, Errors, Example: Using a command line argument) - Input and Output (A bird's-eye view of a java program)

Built-in Types of Data: Terminology (Literals, Operators, Identifiers, Variables, Declaration Statements, Variable naming conventions, Constant variables, Expressions, Operator precedence, Assignment statements, Inline initialization, Tracing changes in variable values, Type safety) - Characters and strings (Java's built-in char data type, Java's built in String data type, Typical String expressions, Example: String concatenation, converting numbers to strings for output, Converting strings to numbers for input)

UNIT-II

LECTURE HOURS: 10

Built-in types of Data: Integers (Typical int expressions, Java's built-in int data type, Example: Integer multiplication and division) - Floating-point numbers (Typical double expressions, Java's built-in double data type, Example: Quadratic formula) – Booleans (Java's built-in Boolean data type, Truth-table definitions of Boolean operations) – Comparisons (Example:

Leap year) - Library methods and APIs, Type conversion (Implicit type conversion, Explicit cast, Example: Casting to get a random integer, explicit type conversion)

UNIT-III

LECTURE HOURS: 12

Conditionals and Loops: If statements (Anatomy of an if statement, Flowchart examples (if statements), Example: absolute value, Example: put the smaller value in x and the larger value in y, Example: maximum of x and y, Example: error check for division operation, Example: error check for quadratic formula) - While loops (Anatomy of a while loop, Flowchart example (while statement), Example: your first while loop, Example: computing powers of 2) - For loops (Anatomy of a for loop (that prints powers of 2), for notation, Compound assignment idioms, Scope, Example: Compute the largest power of 2 less than or equal to n, Example: compute a finite sum $(1 + 2 + \dots + n)$, Example: Compute a finite product $(n! = 1 \times 2 \times 3 \times \dots \times n)$, Example: Print a table of function values, Example: compute the ruler function) - Other conditional and loop constructs (Break statements, continue statements, Switch statements) - Do-while loops - Infinite loops.

UNIT-IV

LECTURE HOURS: 12

Arrays: Arrays in Java - (declare the array, create the array, initialize the array, zero-based indexing, Array length, Example: Create an array with random values, Example: print the array values, one per line, Example: find the maximum of the array values, Example: compute the average of the array values, Example: reverse the values within an array, Example: copy a sequence of values to another array)

Input and Output: Bird's-eye view (Command-line arguments, Standard output, Standard input, Standard drawing, Standard audio) - Standard output (Formatted printing basics, Format string, Multiple arguments) - Standard input (Typing input, input format, Interactive user input, Processing an arbitrary, size input stream)

UNIT-V

LECTURE HOURS: 12

Functions: Defining functions – static methods (Control flow, Function-call trace, terminology, static method definition, Function calls, Multiple arguments, multiple methods, overloading, Multiple return statements, single return value, scope, side effects) - Passing arguments and returning values (Pass by value, Arrays as arguments, Side effects with arrays, Arrays as return values) – Recursion (Your first recursive program)

TEXT BOOK:

T1. Introduction to Programming in Java: An Interdisciplinary approach (2nd Edition) by Robert Sedgewick and Kevin Wayne, Princeton University

REFERENCES:

R1. <https://introcs.cs.princeton.edu/java/home/>