

COURSE PLAN & COURSE DATA SHEET

PROGRAM: BCA - II Sem	DEGREE: BCA
COURSE: Object Oriented Programming using Java	SEMESTER: 2nd CREDITS: 3
COURSE CODE: BCA-108 REGULATION:	COURSE TYPE: CORE
COURSE AREA/DOMAIN: Computer Applications	CONTACT HOURS: 42
CORRESPONDING LAB COURSE CODE (IF ANY): BCA-158	LAB COURSE NAME (IF ANY): Object Oriented Programming using Java Lab

PROGRAM EDUCATIONAL OBJECTIVES:

SYLLABUS:

UNIT	DETAILS	HOURS
I	INTRODUCTION TO JAVA, DATA TYPE, VARIABLES, ARRAY : Basic Concepts of OOP and its Benefits; Application of OOP; Features of Java; Different types of data types, Literals, Variables, Type conversion and casting , Arrays: One-Dimensional Arrays, Multidimensional Arrays, Alternative Array Declaration Syntax	8
II	STRINGS, OPERATORS, EXPRESSION, CONTROL STATEMENTS: String handling: String class, Different string operations, String comparison ,Searching and modifying a string, Using string buffer class, Different types of operators: arithmetic, bitwise, logical, relational, Boolean, assignment, conditional, special; Operator precedence and associativity; Using parentheses; Expression; Solving an expression; Control statements: if-else, nested if-else switch; Iteration statements: while, dowhile, for, nested loops Jump Statements: using break, using continue, return	9
III	INHERITANCE, INTERFACES, PACKAGE : Inheritance: Different types of Inheritance, super keyword, Method overriding, Different types of access specifiers Defining Interface, Extending & Implementing interfaces, implementing multiple inheritance, Package: Java API Packages, Using System Package, Naming Conventions, Creating package, Accessing a package, using your own package	8
IV	MULTITHREADING, EXCEPTION HANDLING & APPLLET PROGRAMMING: Multithreading: The Java Thread Model, Creating a Thread: extending Thread class and implementing Runnable interface, life cycle of a thread, using Thread methods, Thread exception Thread priority, Synchronization Exception: Exception Handling mechanism , Multiple catch statements , Using finally statements , throwing our own exception; Applet: Local & Remote Applets ,Steps to write & running Applets, Applet life cycle, Passing parameters, Displaying numerical values, getting input from the user	8
V	GRAPHICS PROGRAMMING & FILE HANDLING: Graphics class: Lines & Rectangle, Circles & Ellipses, Arcs, Polygons, Line Graphs, Bar Charts; File Handling: Stream Classes: Character & Byte Stream Class, I/O Exceptions, Reading /Writing character, Reading /Writing bytes, Concatenating & buffering files, Random Access Files	9

TOTAL HOURS	42

Teacher Centric Approach			
TC1: Chalk and Talk, Blended learning	TC2: PPT,	TC3: Video Lectures	TC4:
Learner Centric Approach:			
LC1: Assignment.	LC2: Mini project.	LC3: Quiz/Class test.	LC 4: Seminar on recent trends.
LC5: Group Task.	LC6: Others		

DETAILED SESSION PLAN

Lecture session/ Number	Topics to be covered	CO addressed	Teacher Centric Approach	Learner Centric Approach	References	Relevance with POs and PSOs
1	Basic Concepts of OOP and its Benefits	CO1	TC1, TC2	,LC3	T1/R1/W1	
2	Application of OOP	CO1	TC1, TC2	LC1,LC3	T1/R1/W1	
3	Features of Java	CO1	TC1, TC2	LC1,LC3	T1/R1/W1	
4	Different types of data types, Literals,	CO1	TC1, TC2	LC3	T1/R1/W1	
5	Type conversion and casting	CO1	TC1, TC2	LC1,LC3	T1/R1/W1	
6	Arrays: One-Dimensional	CO1	TC1, TC2	LC1,LC3	T1/R1/W1	
7	Multidimensional Arrays	CO1	TC1, TC2	LC3	T1/R1/W1	
8	Alternative Array Declaration Syntax	CO1	TC1, TC2	LC1,LC3	T1/R1/W1	
9	String handling: String class	CO2	TC1, TC2	LC1,LC3	T1/R1/W1	
10	Different string operations	CO2	TC1, TC2	LC1,LC3	T1/R1/W1	

11	String comparison	CO2	TC1, TC2	LC1,LC3	T1/R1/W1
12	Searching and modifying a string	CO2	TC1, TC2	LC1,LC3	T1/R1/W1
13	Using string buffer class	CO2	TC1, TC2	LC1,LC3	T1/R1/W1
14	Different types of operators:	CO2	TC1, TC2	LC3	T1/R1/W1
15	Control statements: if-else,	CO2	TC1, TC2	LC1,LC3	T1/R1/W1
16	Iteration statements: while	CO2	TC1, TC2	LC1,LC3	T1/R1/W1
17	Do-while	CO2	TC1, TC2	LC1,LC3	T1/R1/W1
18	for, nested loops	CO2	TC1, TC2	LC1,LC3	T1/R1/W1
19	Jump Statements: using break, using	CO2	TC1, TC2	LC1,LC3	T1/R1/W1
20	Inheritance: Different types of	CO3	TC1, TC2	LC1,LC3	T1/R1/W1
21	super keyword, Method overriding	CO3	TC1, TC2	LC1,LC3	T1/R1/W1
22	Different types of access specifiers	CO3	TC1, TC2	LC1,LC3	T1/R1/W1
23	Defining Interface, Extending &	CO3	TC1, TC2	LC1,LC3	T1/R1/W1
24	implementing multiple	CO3	TC1, TC2	LC1,LC3	T1/R1/W1
25	Package: Java API Packages	CO3	TC1, TC2	LC1,LC3	T1/R1/W1
26	Using System Package	CO3	TC1, TC2	LC1,LC3	T1/R1/W1
27	Accessing a package, using your	CO3	TC1, TC2	LC1,LC3	T1/R1/W1
28	Multithreading: The Java Thread	CO4	TC1, TC2	LC1,LC3	T1/R1/W1
29	Creating a Thread: extending Thread	CO4	TC1, TC2	LC1,LC3	T1/R1/W1
30	implementing Runnable interface	CO4	TC1, TC2	LC1,LC3	T1/R1/W1
31	life cycle of a thread, using	CO4	TC1, TC2	LC1,LC3	T1/R1/W1
32	Thread exception Thread priority	CO4	TC1, TC2	LC1,LC3	T1/R1/W1

33	Synchronization Exception:	CO4	TC1, TC2	LC1,LC3	T1/R1/W1
34	throwing our own exception	CO4	TC1, TC2	LC1,LC3	T1/R1/W1
35	Applet: Local & Remote Applets	CO4	TC1, TC2	LC1,LC3	T1/R1/W1
36	Steps to write & running Applets	CO4	TC1, TC2	LC1,LC3	T1/R1/W1
37	Applet life cycle, Passing parameters	CO4	TC1, TC2	LC1,LC3	T1/R1/W1
38	Displaying numerical values,	CO4	TC1, TC2	LC1,LC3	T1/R1/W1
39	Graphics class: Lines & Rectangle,	CO5	TC1, TC2	LC1,LC3	T1/R1/W1
40	File Handling: Stream Classes:	CO5	TC1, TC2	LC1,LC3	T1/R1/W1
41	I/O Exceptions	CO5	TC1, TC2	LC1,LC3	T1/R1/W1
42	Reading /Writing character,	CO5	TC1, TC2	LC1,LC3	T1/R1/W1
43	Concatenating & buffering files,	CO5	TC1, TC2	LC1,LC3	T1/R1/W1

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
1	Herbert Schildt , "The Complete Reference Java 2 fifth edition, McGraw Hill.
2	Balaguruswamy , E., ""Programming with Java", Tata Mcgraw Hill.
3	Horetmann Cay and Cornell Gary, "Core Java Volume - I", Pearson Education.
4	Kathy Sierra and Bert Bates, "Head First Java" by O'REILLY publications.

WEB SOURCE REFERENCES (W):

1	https://www.w3schools.com
2	https://www.javatpoint.com

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
BCA 108	Object Oriented Programming using Java	3-0-0	2nd

COURSE OBJECTIVES:

1	To understand OOP is faster and easier to execute.
2	OOPs provides a clear structure for the programs.
3	OOP helps to keep the Java code DRY "Don't Repeat Yourself", and makes the code easier to maintain, modify and debug.

4	OOP makes it possible to create full reusable applications with less code and shorter development time.
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COURSE OUTCOMES:

S.NO	DESCRIPTION	PO(1..12) MAPPING	PSO(1..3) MAPPING
Cxxx.1	To understand the various features of object-oriented programming and features of OOP specific to Java programming.	PO1,PO2,PO3	PSO1,PSO2,PSO3
Cxxx.2	To understand the components involved in designing web pages through Java programming.	PO1,PO2,PO3	PSO1,PSO2,PSO3
Cxxx.3	To understand the various components of event mechanism.	PO1,PO2,PO3	PSO1,PSO2,PSO3
Cxxx.4	To understand the major components of network programming through java swings.	PO1,PO2,PO3	PSO1,PSO2,PSO3
Cxxx.5	To understand the major key contributing components to enable web-based applications through Java programming.	PO1,PO2,PO3	PSO1,PSO2,PSO3
COURSE OVERALL PO/PSO MAPPING:			

COURSE OUTCOMES VS POs MAPPING (DETAILED; HIGH:3; MEDIUM:2; LOW:1):

S.NO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Cxxx.1	1	1	2	-	-	-	-	-	-	-	-	-	1	2	2
Cxxx.2	2	1	2	-	-	-	-	-	-	-	-	-	2	2	2
Cxxx.3	1	2	2	-	-	-	-	-	-	-	-	-	2	2	2
Cxxx.4	2	1	1	-	-	-	-	-	-	-	-	-	1	1	1
Cxxx.5	1	1	2	-	-	-	-	-	-	-	-	-	2	1	1

* For Entire Course, PO & PSO Mapping

POs & PSO REFERENCE:

PO 1	Engineering Knowledge	PO7	Environment & Sustainability	PSO1	features of object-oriented programming and features of OOP specific to Java programming
PO 2	Problem Analysis	PO8	Ethics	PSO2	Concepts involved in designing web pages through Java programming and various components of event mechanism
PO 3	Design & Development	PO9	Individual & Team Work	PSO3	understand the major components of network programming through java swings/AWT and major key contributing components to enable web-based applications through Java programming.
PO 4	Investigations	PO10	Communication Skills		
PO 5	Modern Tools	PO11	Project Mgt. & Finance		
PO 6	Engineer & Society	PO12	Life Long Learning		

COs VS POs MAPPING JUSTIFICATION:

S.NO	PO/PSO MAPPED	LEVEL OF MAPPING	JUSTIFICATION
Cxxx.1			
Cxxx.2			
Cxxx.3			
Cxxx.4			
Cxxx.5			
Cxxx*			

GAPS IN THE SYLLABUS - TO MEET INDUSTRY/PROFESSION REQUIREMENTS, POs & PSOs:

SNO	DESCRIPTION	PROPOSED ACTIONS
1		
2		
3		
4		
5		

PROPOSED ACTIONS: TOPICS BEYOND SYLLABUS/ASSIGNMENT/INDUSTRY VISIT/GUEST LECTURER/NPTEL ETC

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

1	
2	
3	
4	
5	
6	
7	

DELIVERY/INSTRUCTIONAL METHODOLOGIES:

<input type="checkbox"/> CHALK & TALK	<input type="checkbox"/> STUD. ASSIGNMENT	<input type="checkbox"/> WEB RESOURCES	<input type="checkbox"/> NPTEL/OTHERS
<input type="checkbox"/> LCD/SMART BOARDS	<input type="checkbox"/> STUD. SEMINARS	<input type="checkbox"/> ADD-ON COURSES	<input type="checkbox"/> WEBNIARS

ASSESSMENT METHODOLOGIES-DIRECT

<input type="checkbox"/> ASSIGNMENTS	<input type="checkbox"/> STUD. SEMINARS	<input type="checkbox"/> TESTS/MODEL EXAMS	<input type="checkbox"/> UNIV. EXAMINATION
<input type="checkbox"/> STUD. LAB PRACTICES	<input type="checkbox"/> STUD. VIVA	<input type="checkbox"/> MINI/MAJOR PROJECTS	<input type="checkbox"/> CERTIFICATIONS
<input type="checkbox"/> ADD-ON COURSES	<input type="checkbox"/> OTHERS		

ASSESSMENT METHODOLOGIES-INDIRECT

<input type="checkbox"/> ASSESSMENT OF COURSE OUTCOMES (BY FEEDBACK, ONCE)	<input type="checkbox"/> STUDENT FEEDBACK ON FACULTY (TWICE)
<input type="checkbox"/> ASSESSMENT OF MINI/MAJOR PROJECTS BY EXT. EXPERTS	<input type="checkbox"/> OTHERS

INNOVATIONS IN TEACHING/LEARNING/EVALUATION PROCESSES:

- Technology Integration:** Embrace and integrate technology tools in the classroom to enhance the learning experience. This can include interactive whiteboards, educational apps, virtual reality, and online collaboration platforms. Utilizing technology allows for more dynamic and interactive lessons, catering to diverse learning styles.



Lingaya's Vidyapeeth

Deemed-to-be-University u/s 3 of UGC Act 1956, Government of India

NAAC ACCREDITED

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- 2. Personalized Learning Paths:** Implement personalized learning approaches that cater to individual student needs and pace of learning. Adaptive learning platforms and data analytics can help tailor educational content, assignments, and assessments based on the strengths and weaknesses of each student, promoting a more customized learning experience.
- 3. Active Learning Strategies:** Move away from traditional lecture-based approaches and incorporate active learning strategies. This involves engaging students in hands-on activities, group discussions, problem-solving exercises, and real-world projects. Active learning fosters critical thinking, collaboration, and practical application of knowledge.
- 4. Blended Learning Models:** Adopt blended learning models that combine face-to-face instruction with online resources. This allows for flexibility in learning, enabling students to access materials at their own pace outside the classroom. Flipped classrooms, where students learn new concepts online and engage in discussions and activities during class, are an example of a blended learning approach.
- 5. Assessment Innovation:** Rethink assessment methods to go beyond traditional exams and quizzes. Explore alternative forms of assessment, such as project-based assessments, portfolios, presentations, and peer assessments. Additionally, incorporate formative assessments and feedback throughout the learning process to help students track their progress and make improvements.

Prepared by
(Mr. Monu)

Approved by
(HOD)

Additionally, the details to be compiled separately by the Departmental Coordinator for the entire Department.