DEPARTMENT OF INFORMATION TECHNOLOGY				*CLASS: II B.Sc.* Information Technology				
Sem	**Course Type**	**Course Code**	**Course Title**	**Credits**	**Contact Hours/week**	**CIA**	**Ext**	**Total**
IV	Major Core - 6	20U4FMC6	Java Programming	5	5	25	75	100

Nature of Course				
Knowledge and skill	✓		Employability oriented	
Skill oriented			Entrepreneurship oriented	

Course Objectives

1. To acquire knowledge on the basics of Java programming.
2. To impart the knowledge of OOPs approach in computer programming.
3. To understand and apply the concepts of Array declaration and uses.
4. Be familiar with programming environment with File handling and Multithreading.
5. To learn the concept of Applet Programming.

UNIT	CONTENT	Hrs	K-Level	CLO
I	**Introduction:** Java history – Java Features – Simple Java Programs – Class declaration – Tokens – Comments – Statements – JVM – Implementing Java programs – Command line arguments – Constants, Variables and Data types – Operators and Expressions – Decision making statements – Simple if statements – If-else statements – Nesting if-else statements – else-if ladder – switch statement – ternary operator – Looping – While, do-while, for loop statements	**15**	**Up to K3**	**1**
II	**Class & objects:** Creation of class – Objects and methods – Accessing class members – Constructors – Method Overloading – Overriding – Static members – Inheritance – Interface.	**15**	**Up to K3**	**2**
III	**Arrays :** Arrays – Types – Length – Strings – Strings Manipulations – Enumerated types – Java API Packages – System package – Creating and accessing user defined and system packages – Managing errors and exceptions.	**15**	**Up to K4**	**3**
IV	**Input / Output** Managing I/O files in Java – Stream I/O – Byte stream class – Character stream class – creation of files – File handling in Java – Multi threaded programming – Multithreads in Java – Thread class – Life cycle of thread – Thread exceptions – Priority.	**15**	**Up to K2**	**4**

V	Applets & Graphics Programming: Applet programming – Introduction – Preparing to write Applets – Building applet code – Applet life cycle – Creating an executable applet – Applet tag – Running the applet – Passing parameters – Displaying numerical values - Getting input from the user – Working with JDBC APIs – Introducing JDBC API – Communicating with database using JDBC API – Understanding various JDBC Drivers.	**15**	**Up to K4**	**5**

Book for Study

1. Programming with Java by E. Balagurusamy, V Edition., - MGH.
2. Jdbc 4.2, Servlet 3.1, AndJsp 2.3 Includes Jsf 2.2 And Design Patterns, Black Book, by Santosh Kumar K, 2nd Edition, Dream Tech Publications

Chapters:

Unit I: 2.1, 2.2, 3.2, 3.4, 3.6, 3.7, 3.10,3, 9,3. 11, 4, 5, 6, 7.2, 7.3,7.4
Unit II: 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.12, 8.9, 8.11, 10
Unit III: 9.1, 9.2, 9.3, 9.4, 9.5, 9.8, 11.2, 11.3, 11.5, 11.6, 13
Unit IV:16.3, 16.4, 16.5, 16.10, 16.8, 12.2, 12.3, 12.5, 12.7, 12.8
Unit V: 14.1, 14.3, 14.4, 14.5, 14.6, 14.8, 14.10, 14.12, 14.15, 14.16
Text Book 2: Chapter 3.

Books for Reference

1. Java How to Program by Deital & Deital, Pearson education-2003.
2. Java A Beginner's Guide by Herbert Schildt, IV Ed., TMH.
3. Java Complete Reference 2 by Patrick Naughton, Herbert Schildt, V Ed., - TMH.

Web Resources

1. https://www.w3schools.com/java/
2. https://www.javatpoint.com/java-tutorial
3. https://www.programiz.com/java-programming

Rationale for Nature of the course

- Helps to construct real time applications without necessarily knowing their inside implementation.

Activity on Knowledge and Skill Development

- Assignment
- Quiz
- Group Discussion

Pedagogy

Chalk and talk, Materials, PPT, Assignment, Seminar, Problem solving, Group discussion, Interaction and Demonstration.

Course Designer(s) Name

1. Mrs. K. Imaya
2. Mrs. R. Lakshapriya

Lesson Plan

Unit	Topics	Hours	Mode
I	Java history – Java Features – Simple Java Programs – Class declaration – Tokens – Comments – Statements.	5	Lecture
	JVM – Implementing Java programs – Command line arguments – Constants, Variables and Data types – Operators and Expressions.	5	Lecture & GD
	Decision making statements – Simple if statements – If-else statements – Nesting if-else statements – else-if ladder – switch statement – ternary operator – Looping – While, do-while, for loop statements	5	Lecture & GD
II	Creation of class – Objects and methods – Accessing class members.	3	Lecture
	Constructors – Method Overloading – Overriding.	6	Lecture
	Static members – Inheritance – Interface.	6	Lecture
III	Arrays – Types – Length – Strings – Strings Manipulations – Enumerated types.	5	Lecture
	Java API Packages – System package – Creating and accessing user defined and system package.Managing errors and exceptions.	6	Quiz
		4	Lecture
IV	Managing I/O files in Java – Stream I/O – Byte stream class – Character stream class	5	Lecture
	Creation of files – File handling in Java	5	Lecture
	Multithreaded programming – Multithreads in Java – Thread class – Lifecycle of thread – Thread exceptions – Priority.	5	Lecture
V	Applet programming – Introduction – Preparing to write Applets – Building applet code – Applet life cycle – Creating an executable applet – Applet tag – Running the applet – Passing parameters – Displaying numerical values. Getting input from the user	8	Lecture, PPT
	Working with JDBC APIs - Introducing JDBC API – Communicating with database using JDBC API – Understanding various JDBC Drivers.	7	Assignment

Course Learning Outcomes

On the successful completion of the course, students will be able to

CLOs	Course Learning Outcomes	K - Levels
CLO 1	Categorize the types of variables, Constants, data types, operators, Expressions, Decision Making and Looping.	Up to K3
CLO 2	Determine the concept of Classes and Objects, Constructors, Method Overloading, Inheritance and Interface.	Up to K3
CLO 3	Classify the various types of Arrays and operations related with strings	Up to K4
CLO 4	Write the code for managing I/O files, file handling and multi threaded	Up to K2
CLO 5	Devise the code for Applet programming and JDBC Connectivity.	Up to K4

Mapping of CLOs with PSOs

CLOs / PSOs	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO 1	2	2	3	-	1	2
CLO 2	2	1	2	-	2	3
CLO 3	2	3	2	-	1	2
CLO 4	2	3	2	-	2	1
CLO 5	3	1	3	1	3	3

(3 – Advanced Application, 2 – Intermediate Level, 1- Basic Level)

Mapping of CLOs with POs

CLOs/POs	PO1	PO2	PO3	PO4	PO5
CLO 1	3	3	2	1	1
CLO 2	3	1	-	3	2
CLO 3	3	3	-	2	1
CLO 4	3	2	-	2	2
CLO 5	3	2	-	3	3

(3 – Advanced Application, 2 – Intermediate Level, 1- Basic Level)

Learning Outcome Based Education & Assessment (LOBE)
Formative Exam – Blue Print – Java Programming (CIA I & II)
Articulation Mapping - K Levels with Courses Learning Outcomes (CLOs)

Internal	CLOs	K- Level	Section A		Section B		Section C (Either/or Choice)	Section D (Open Choice)
			MCQs		Short Answers			
			No. of Questions	K- Level	No. of Questions	K- Level		
CIA I	CLO 1	Up to K3	2	K1& K2	1	K2	2(K3&K3)	1(K3)
	CLO 2	Up to K3	2	K1& K2	2	K1	2(K3&K3)	2(K3)
CIA II	CLO 3	Up to K4	2	K1 & K2	1	K2	2(K1&K1)	1(K4)
	CLO 4	Up to K2	2	K1 & K2	2	K1	2(K2&K2)	2(K2)
Question Pattern (CIA I & II)	No. of Questions to be asked		4		3		4	3
	No. of Questions to be answered		4		3		2	2
	Marks for each question		1		2		5	10
	Total Marks for each section		**4**		**6**		**10**	**20**

- *CLO5 will be allotted for individual Assignment which carries five marks as part of CIA component.*

Distribution of Section-wise Marks with K Levels *

K Levels	Section A (No Choice)	Section B (No Choice)	Section C (Either/or)	Section D (Open Choice)	**Total Marks**	% of Marks without choice	Consolidated %
K1	2	4	-	-	**6**	10.00	**17**
K2	2	2	-	-	**4**	6.66	
K3	-	-	20	30	**50**	83.33	**83**
K4	-	-	-	-	**-**	-	**-**
Total Marks	**4**	**6**	**20**	**30**	**60**	**100.00**	**100%**
K Levels	Section A (No Choice)	Section B (No Choice)	Section C (Either/or)	Section D (Open Choice)	**Total Marks**	% of Marks without choice	Consolidated
K1	2	4	10	-	**16**	26.67	**83**
K2	2	2	10	20	**34**	56.67	
K3	-	-	-	-	**-**	-	**-**
K4	-	-	-	10	**10**	16.67	**17**
Total Marks	**4**	**6**	**20**	**30**	**60**	**100.00**	**100%**

Learning Outcome Based Education & Assessment (LOBE)
Blue Print for summative Examination – Java Programming
Articulation Mapping – K Levels with Courses Learning Outcomes (CLOs)

SI.NO	CLOs	K- Level	Section A		Section B		Section C (Either/or Choice)	Section D (Open Choice)
			MCQs		Short Answers			
			No Of Questions	K - Level	No Of Questions	K - Level		
1	CLO 1	Up to K3	2	K1 & K2	1	K2	2(K3&K3)	1(K3)
2	CLO 2	Up to K3	2	K1 & K2	1	K1	2(K3&K3)	1(K3)
3	CLO 3	Up to K4	2	K1 & K2	1	K2	2(K1&K1)	1(K4)
4	CLO 4	Up to K2	2	K1 & K2	1	K1	2(K2&K2)	1(K2)
5	CLO 5	Up to K4	2	K1 & K2	1	K2	2(K4&K4)	1(K3)
No. of Questions to be asked			10		5		10	5
No. of Questions to be answered			10		5		5	3
Marks for each question			1		2		5	10
Total Marks for each section			10		10		25	30

- K1 – Remembering and recalling facts with specific answers
- K2 – Basic understanding of facts and stating main ideas with general answers
- K3 – Application oriented – Solving Problems
- K4 – Examining, analysing, presentation and make inferences with evidences

Distribution of Section – wise Marks with K Levels

K Levels	Section A (No Choice)	Section B (No choice)	Section C (Either/or)	Section D (Open choice)	Total Marks	% of Marks without choice	Consolidated
K1	5	4	10	-	**19**	15.83	**42%**
K2	5	6	10	10	**31**	25.83	
K3	-	-	20	30	**50**	41.67	**42%**
K4	-	-	10	10	**20**	16.67	**16%**
Total Marks	10	10	50	50	**120**	100	**100%**