	SEMESTER - 4												
SUBJECT CODES	**SUBJECT NAME**	**PRE-REQUISITE**	**OVERLAPPING/ EQUIVALENT COURSES**	****OFFERING DEPARTMENT**	***COURSE NATURE (Hard/ Soft/ Workshop/ NTCC/ Audit)**		**COURSE TYPE (Core/Elective)**	**L**	**T**	**P**	**C**	**NO. OF CONTACT HOURS PER WEEK**	**NO. OF CREDITS**
CSH201B-T	OOPS USING JAVA	NIL	NA	CS	HARD		CORE	3	1	0	0	4	5
CSH201B-P	OOPS USING JAVA LAB							0	0	2	0	2	
CSH202B-T	DATABASE MANAGEMENT SYSTEM	NIL	NA	CS	HARD		CORE	3	1	0	0	4	5
CSH202B-P	DATABASE MANAGEMENT SYSTEM LAB							0	0	2	0	2	
CSH209B-T	COMPUTER ARCHITECTURE &ORGANIZATION	NIL	NA	CS	HARD		CORE	3	0	0	0	3	4
CSH209B-P	COMPUTER ARCHITECTURE & ORGANIZATION LAB							0	0	2	0	2	
CSH213B-T	UnSUPERVISED LEARNING & NEURAL NETWORK	NIL	NA	CS	HARD		CORE	3	1	0	0	4	5
CSH213B-P	UnSUPERVISED LEARNING & NEURAL NETWORK LAB							0	0	2	0	2	
CSW203B	USER INTERFACE-II (MONGODB,TYPESCRIPT,ANGULARJS)	USER INTERFACE-I (HTML5,CSS,JAVASCRIPT,JQUERY)	NA	CS	WORKSHOP		CORE	0	0	3	0	3	1.5
LWS324	INDIAN CONSTITUTION	NIL	NA	LW	AUDIT		CORE	1	0	0	0	1	0
EDS240	ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE	NIL	NA	ED	AUDIT		CORE	1	0	0	0	1	0
FLS105/FLS106/FLS107	FOREIGN LANGUAGE	NIL	NA	FL	AUDIT		ELECTIVE	1	1	0	0	2	0
MCS368B	ENTREPRENEURSHIP	NIL	NA	MC	SOFT		ELECTIVE	2	0	0	0	2	2
MOOC	NPTEL COURSES FROM MOOC												

CDO202	PROFESSIONAL COMPETANCY ENHANCEMENT-II	NIL	NA	CDC	OUTCOME		CORE	0	0	1	0	1	0.5
RDO502	RESEARCH & INNOVATION-1	NIL	NA	RESEARCH	OUTCOME		CORE	0	0	0	1	1	0.5
	TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)							**17**	**4**	**12**	**1**	**34**	**23.5**
CSO215B	SUMMER TRAINING POST 4TH SEMESTER												2

Detailed Syllabus

CSU02- Semester-4

Course Title/ Code	Object Oriented Programming Using Java(CSH201B) T & P
Course Type	Core (Departmental)
Course Nature	Hard
L-T-P-O Structure	(3-1-2-0)
Objectives	Student will be able to apply the object-oriented programming principles and techniques for solving the real life problems.

Syllabus	**Sections**	**Weightage**
	A	25%
	B	25%
	C	25%
	D	25%
	TOTAL	**100%**

Section-A

Introduction to OOPS: Paradigms of Programming Languages - Basic concepts of Object Oriented Programming, Differences between Procedure Oriented Programming and Object Oriented Programming, Objects and Classes, Data abstraction and Encapsulation, Inheritance, Polymorphism, Dynamic binding, Message communication, Benefits of OOP, Application of OOPs.

Introduction to Java: History of Java, Java features, Java Environment: JDK API. Types of java program, Creating and Executing a Java program, Java Tokens: Keywords, Character set, Identifiers, Literals, Separator, Java Virtual Machine (JVM), Comments in Java program, Command line input and Arguments, Data Types, Variables, Operators, Control Statements, Arrays, String handling, Scanner Class.

Class and objects: Defining a class, Methods, Creating objects, Accessing class members. Constructors, Method overloading, constructor overloading, this keyword.

Section-B

Inheritance: Defining a subclass, Deriving a subclass, Single Inheritance, Multilevel Inheritance, Hierarchical Inheritance, Overriding methods, super keyword, Final variables and methods, Final classes, Final methods, Abstract methods and classes, Visibility Control, Public access, Private access, protected. **Interfaces:** Defining interface, Extending interface, Implementing Interface, Accessing interface variables, Static members, Nesting of Methods

Packages: Java API Packages: System Packages, Naming Conventions, Creating & Accessing a Package, Adding Class to a Package, Hiding Classes

Section-C

Code Design: Basic concepts of design patterns and preliminaries of its categories. SOLID Design Principles.

Exception Handling: Exception Handling Mechanism, using try and catch blocks, nesting try Statements, Multiple catch Block, Throwing Exceptions, using finally clause, creating a Custom Exception.

Section-D

Multithreading: Getting the main thread, naming a Thread, Pausing a thread, Creating a Thread with the Runnable Interface, Creating a Thread with Thread Class, Creating Multiple Threads, Waiting for (joining) Threads, Checking whether thread is alive, Setting Thread Priority and Stopping Threads, Thread Synchronization, Suspending and Resuming Threads.

I/O Streams: I/O Basics Reading Console Input Writing Console Output, Using the File Class, InputStream, OutputStream, FileInputStream, FileOutputStream, Buffered Input Stream, Buffered Output Stream, Random Access File, File Reader, File Writer, Buffered Reader, Buffered Writer, Serialization.

List of Experiments

1. Basic programs in java, use of if else construct and switch construct.
2. Programs on Loops and Arrays.
3. Programs on Strings and classes creation in java.
4. Programs on constructors and use of keyword this keyword, static keyword, final keyword, finalize method.
5. Programs on single inheritance,

6. Programs on multilevel inheritance, Hierarchical inheritance.
7. Programs on method overriding, super keyword and final method.
8. Programs on interfaces
9. Programs on SOLID design principles.
10. Programs on Packages
11. Programs Exception Handling
12. Programs on threads
13. Programs on File Handling
14. Mini-Project

Text Books:

1. Programming with Java Primer by E BalagurusamyTmh Publication
2. Java; the complete reference, 7th editon, Herbert schildt, TMH.
3. H. M. Deitel and P. J. Deitel, Java How to Program, Prentice Hall, 7th Edition, 2007
4. Head First Design Patterns: A Brain-Friendly Guide 1st Edition, by Eric Freeman, Bert Bates, Kathy Sierra, Elisabeth Robson

Reference Books:

1. Java2 Programming Black Book, Steven Holzner (no. of copies: 23)
2. C. S. Horstmann and G. Cornell, Core Java 2 (Volume I-Fundamentals), Prentice Hall, 7th Edition, 2004. (no. of copies: 10)
3. Head First Java By Kathy Sierra

Course Title/ Code	**Database Management System (CSH202B) T & P**
Course Type	**Core (Departmental)**
Course Nature	Hard
L-T-P-O Structure	(3-1-2-0)
Objectives	To do logical and physical design of databases and manipulate them.

	Sections	**Weightage**
Syllabus	A	25%
	B	25%
	C	25%
	D	25%
	TOTAL	**100%**

Section-A

File system & Introduction to DBMS: File, operations on files, file header, Different file organizations - serial, sequential, indexed sequential, direct/hash, Indexing – primary, secondary, single level, multi-level, clustered,