INSTITUTE	**FACULTY OF ENGINEERING AND TECHNOLOGY**
PROGRAM	**BACHELOR OF TECHNOLOGY (COMPUTER SCIENCE AND ENGINEERING -CYBER SECURITY)**
SEMESTER	**2**
COURSE TITLE	**OBJECT ORIENTED PROGRAMMING**
COURSE CODE	**01CE0104**
COURSE CREDITS	**4**

Objective:

1 Java is a computer programming language having feature like object- oriented, polymorphism, inheritance and multithreading. It comprises of large third-party library using which we can develop software.

2 Java is a computer programming language having feature like object- oriented, polymorphism, inheritance and multithreading. It comprises of large third-party library using which we can develop software

Course Outcomes: After completion of this course, student will be able to:

1 Use the syntax and semantics of java programming language and basic concepts of OOP.

2 Analyse the concepts of Inheritance, Interface and Packages in java.

3 Apply the concepts of Multithreading and Exception handling to develop efficient and error free codes.

4 Understanding the concept of streams and collections to implement java applications.

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	0	4	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Introduction to Java** History & Features of Java, Java Virtual Machine, Java Runtime Environment, Bytecode, Objected Oriented principles., Datatypes, Variables, final keyword, Operators & precedence, Scanner class for input, Type conversion	4
2	**Selection, Iteration and Array** if statements, switch statement, while statement, for statement, do-while statement, break and continue keywords, one dimensional and multidimensional arrays	4

MR. HARDIK AJAYBHAI DOSHI
Digitally signed by (Name of HOD)

DR. RAJENDRASINH BAHADURSINH JADEJA
Digitally signed by (Name of Dean/ Principal)

Contents : Unit	Topics	Contact Hours
3	**Objects and Classes** Defining classes for objects, declaring objects, new keyword, Defining and calling methods in class,, array of objects, constructors, this keyword, garbage collection, finalize() method, passing object as parameters, returning object, static members	8
4	**Inheritance, Interface and Packages** Inheritance basics, super keyword, multilevel hierarchy, overriding methods, dynamic method dispatch, abstract class, using final with inheritance, Object class, interfaces, packages: defining and importing, access protection	8
5	**Exception Handling** Exception handling overview, types of exception, using try, catch and finally clauses, multiple catch clauses, throw and throws keyword, custom exception class	4
6	**Multithreading** Thread model, creating threads, thread priorities, synchronization, interthread communication	4
7	**Input / Output** File, Stream classes, Byte stream classes, Character stream classes	4
8	**Language and Utility Framework** String class, Character class, StringBuffer class, StringBuilder class, Primitive type Wrapper classes, Collections overview, Collection interfaces, Collection classes, Maps, Comparators, Lists, Vector class, Stack class, Scanner, Formatter	6
Total Hours		**42**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Introduction to Java** Practical-1, Practical-2	4
2	**Selection, Iteration and Array** Practical-3, Practical-4, Practical-5, Practical-6	2
3	**Objects and Classes** Practical-7, Practical-8, Practical-9, Practical-10, Practical-11, Practical-12, Practical-13, Practical-14	4
4	**Inheritance, Interface and Packages** Practical-15, Practical-16, Practical -17, Practical -18	4
5	**Exception Handling** Prcatical-19, Practical-20	4
6	**Multithreading** Practical-21, Practical-22	2
7	**Input / Output** Practical-23, Practical-24	2

MR. HARDIK AJAYBHAI DOSHI
Digitally signed by (Name of HOD)

DR. RAJENDRASINH BAHADURSINH JADEJA
Digitally signed by (Name of Dean/ Principal)

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
8	**Language and Utility Framework** Practical-25, Practical-26, Practical -27, Practical -28	2
Total Hours		**24**

Textbook :

1 Introduction to Java Programming: Comprehensive Version., Liang, Y. D., Prentice Hall, 2011

References:

1 Java: The Complete Reference, Java: The Complete Reference, Schildt, H., Italy: McGraw-Hill Education.Italy: McGraw-Hill Education., 2018

2 Programming with Java, Programming with Java, Balagurusamy, E., United States: McGraw-Hill Education, 2019

3 Core Java: Fundamentals, Core Java: Fundamentals, Horstmann, C. S, Pearson, 2019

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
10.00	20.00	40.00	10.00	10.00	10.00

Instructional Method:

1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room

3 Practical examination will be conducted atthe end of semester for evaluation of performance of students in laboratory.

4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, virtual laboratory.

Supplementary Resources:

1 http://www.oracle.com/technetwork/java/javase/downloads/index.html

2 http://docs.oracle.com/javase/specs/jls/se7/html/index.html

3 http://docs.oracle.com/javase/tutorial/java/index.html

4 http://www.javatpoint.com/

Supplementary Resources:

5 http://www.tutorialspoint.com/java/

6 http://www.learnjavaonline.org/

7 http://www.c4learn.com/javaprogramming/

8 http://www.learn-java-tutorial.com/