

# GUJARAT TECHNOLOGICAL UNIVERSITY

**Subject Name: Object Oriented Programming**

**Subject Code: 3735103**

**Semester: III**

**Type of course:** M.E. Computer Engineering (IT systems and Network Security)

**Prerequisite:** Basic Knowledge of Programming

**Rationale:** NA

**Teaching and Examination Scheme:**

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE (E)	PA (M)	PA (V) ESE	PA (I)		
3	2#	0	4	70	30	30	20	150

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment;

**Content:**

Sr. No.	Content	Total Hrs	% Weightage
1	Language features	2	4
2	How Java is different from C++?, Object oriented concepts	2	4
3	Data types, Variables, Constants, operators, Control Statements (if, for, while, switch etc.),Classes	2	4
4	Constructors, finalize, instance data and methods	2	4
5	the new operator, Methods, overloading	2	4
6	parameter passing, objects as parameters	2	4
7	Memory management, garbage collection	2	4
8	The this facility, static data and methods, block, scope, lifetime, Access Control Rules	2	4
9	Exception Handling, Exceptions as objects, Exception hierarchy, Try, catch and finally, Different exception classes	2	4
10	Data structure	2	4
11	Multithreaded programming	2	4
12	Introduction to Java Network Programming	2	4
13	URL, Inet Address, Socket, and ServerSocket	2	4
14	Datagram Pocket , DatagramSocket	2	6
15	Remote Method Invocation	2	6
16	The Remote interface, The UnicastRemoteObject and Naming classes.	3	6

**Reference Books:** - Programming with Java E Balagurusamy, TMH  
- Java 6 Programming Black Book, Kogent Solution Inc.

## Course Outcome:

After learning the course the students should be able to:

- Program for Network Topologies.
- Client-Server Communication programming.
- Developing Customized Structure and Packages.
- Developing Web Based tools.

## List of Experiments: (with Open Ended Problems)

- Study the differences between compiled & interpreted languages, cons & pros of each. How languages like java balance these factors.
- Study of object - oriented features and support from known languages (C++, Java etc)
- What are the challenges in memory management - How garbage collection features of java overcome these.
- What is inheritance, different types of inheritance, support from known languages (C++, Java etc)
- Study about UML diagrams, try to generate few (class diagrams, sequence diagrams etc) using umbrello software.
- List out data types, operators available in java, try some simple programs to make use of them.
- Write some java programs to be comfortable with control structures (list of prime no.s, pascal triangle generation, g.c.d of two numbers, series evaluation etc.)
- Write some java programs which can handle arrays
  - Linear search
  - Binary search
  - Bubble sort
  - Matrix addition, multiplication
- Explore String, Math classes available in java.lang package
- Create some web pages using simple HTML by incorporating following features General Tags, Formatting, Hyperlinking & Image handling, Tables, Forms

## Major Equipment:

- VMWare-Workstation
- Linux (Kali/Fedora)

## List of Open Source Software/learning website:

- NetBeans
- Eclipse
- JDK

**Review Presentation (RP):** The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website