GUJARAT TECHNOLOGICAL UNIVERSITY
<u>MASTERS IN COMPUTER APPLICATION</u>
Year – 2 (Semester – III) (W.E.F. JULY 2018)

Subject Name: Programming in JAVA

Subject Code: 4639302

1. Learning Objectives:

- To interpret the concepts of object oriented programming language and easily use these concepts in Java program.
- To develop proficiency in creating robust applications using the Java Programming Language.
- To understand concepts of Interface, Lambda Expressions, Inner classes, Generic Programming and to implement them.
- To implement application including different file operations.
- To understand database connectivity and work with the JDBC applications.

2. Desirable:

Knowledge of the C, C++ programming language and Database.

3. Course Contents:

Unit	Course Content	Weightage Percentage
Unit I	**Introduction to Java** Programming Platform, Java Buzzwords, overview of applet and internet, History of Java, common misconception about Java, The Java Programming Environment: installing JDK, using the command line tools, using IDE, Programming Structures in Java: data types, operators, working with Strings, working with Scanner class for input and output, control flow, big number and Arrays.	10%
Unit II	**Objects and Classes, Inheritance, Interface** Objects and Classes: classes, objects, objects and object variables, LocalDate Class, Mutator and Accessor methods, defining your own classes, static fields and methods, method parameters, object construction, packages and the class path. Inheritance: classes, superclasses, and subclasses, overriding methods, inheritance hierarchies, polymorphism, final class and methods, casting, abstract classes and, protected access, Object: Cosmic superclass, Object Wrappers and Autobxing and Enumeration classes. Interface.	20%
Unit III	**Lambda Expressions, Inner classes.** Lambda Expressions, Inner classes: Interfaces, examples of interfaces, Why Lambdas? Syntex of lambda expression, functional interfaces, method reference, constructor reference, variable scope, processing lambda expression and inner classes.	20%
Unit IV	**Exception Handling, Generic Programming** Exception Handling: dealing with errors, catching exceptions, tips for using exceptions: Generic Programming: A Simple Generic class, generic methods,	20%

		bounds for type variables, generic code and the VM, restrictions and limitations and inheritance rules for generic types.	
Unit V	**Input and Output** Input/Output Streams: reading writing bytes, combining IO steam filers, Text Input and Output: write text output, read text outpout, saving object in text format, character encoding, Reading and Writing, Working with Files: paths, reading and writing files, creating files and directories, copying, moving and deleting files and getting file info.		20%
Unit VI	**Database Programming** The Design of JDBC, JDBC Driver Types, SQL, JDBC Configuration: URL, driver jar files, starting the database, registering the driver class, connecting to the database, Working with JDBC Statements: executing SQL statement, managing connections, statements, resultsets, SQL exceptions, Query Execution: prepared statement.		10%

4. Text Book(s):

1. Cay S. Horstmann "Core Java , Volume I – Fundamentals", 10th Edition, Pearson Education , 2017
2. Cay S. Horstmann "Core Java , Volume II – Advanced Features", 10th Edition, Pearson Education , 2017

5 Suggested Additional Reading:

1) The complete reference Java, Herbert Schildt, Mc Grow Hill
2) H.M.Deitel, P.J.Deitel, "Java How to Program", Sixth Edition, Pearson Education (2007)
3) Ivor Horton's "Beginning Java 2" JDK 5 Edition, Wiley Computer Publishing, (2007).
4) Pravin Jain, "The class of Java" Pearson Education, (2010).
5) Ken Arnold, James Gosling, David Holmes, "The Java Programming Language", Addison-Wesley Pearson Education (4th Edition – 2005).
6) Raj Kumar Buyya, S. Thamarai Selvi, & Xing Chen Chu, "Object-Oriented Programming with Java: Essentials & Applications", Tata McGraw Hill
7) Sharan Zakhour, Scott Hommel, Jacob Royal, Isaac Rabinovitch, Tom Risser, Mark Hoeber "The Java Tutorial", Addison-Wesley Pearson Education(4th Edition),
8) E.Balagurusamy, "Programming with Java", 3e, TMH (2007)

Web Reference:

1. https://docs.oracle.com/en/java
2. http://www.learnjavaonline.org/
3. http://java.sun.com/docs/books/tutorial/index.html
4. http://www.javaworld.com

6. Chapter wise Coverage from the Text Book:

Unit #	Book#	Chapter
I	1	1.1 to 1.5,2.1 to 2.3, 3.1 to 3.10
II	1	4.1 to 4.8, 5.1, 5.2, 5.4, 5.6, 6.1, 6.2
III	1	6.3 , 6.4

IV	1	7.1-7.3, 8.1-8.7
V	2	2.1 to 2.3, 2.5.1 to 2.5.5
VI	2	5.1 to 5.5.1

7. Accomplishments

- Students will understand object oriented concepts, lambda expressions, generic classes and to implement them using the Java programming language
- Ability to create a robust application using Java programming and to work with Database connectivity.