Marwadi University

Syllabus for Bachelor of Technology

Computer Engineering

Subject Code: 01CE0307
Subject Name: Object Oriented Programming
B.Tech. Year - II

Objective: 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.

Credits Earned: 4 Credits

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

- Use the syntax and semantics of java programming language and basic concepts of OOP.
- Analyse the concepts of Inheritance, Interface and Packages in java.
- Apply the concepts of Multithreading and Exception handling to develop efficient and error free codes.
- Understanding the concept of streams and collections to implement java applications.

Pre-requisite: NA

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	Mid Sem (M)	Internal (I)	Viva (V)	Term work (TW)	
2	0	4	4	50	30	20	25	25	150

Contents:

Unit	Topics	Contact Hours
1	**Introduction to Java** History & Features of Java, Java Virtaul 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

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

References:

1. Liang, Y. D. (2011). Introduction to Java Programming: Comprehensive Version. United Kingdom: Prentice Hall.
2. Schildt, H. (2018). Java: The Complete Reference, Eleventh Edition. Italy: McGraw-Hill Education.),
3. Balagurusamy, E. Programming with Java. (2019). United States: McGraw-Hill Education.
4. Horstmann, C. S. (2019). Core Java: Fundamentals. United Kingdom: Pearson.

Suggested Theory distribution:

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyse	Evaluate	Create
10%	20%	40%	10%	10%	10%

Laboratory work:

Laboratory work based on object oriented principles, exception handling, multithreading, input/output with minimum 14 experiments will be incorporated which will be considered for evaluation.

Instructional Method:

a) 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.
b) The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
c) Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
d) Students will use supplementary resources such as online videos, NPTEL videos, e-courses, virtual laboratory.

Supplementary Resources:

a) http://www.oracle.com/technetwork/java/javase/downloads/index.html
b) http://docs.oracle.com/javase/specs/jls/se7/ html/index.html
c) http://docs.oracle.com/javase/tutorial/java/index.html
d) http://www.javatpoint.com/
e) http://www.tutorialspoint.com/java/
f) http://www.learnjavaonline.org/
g) http://www.c4learn.com/javaprogramming/
h) http://www.learn-java-tutorial.com/