

# ITM(SLS) Baroda University - Faculty of Engineering

Department of Computer Science & Engineering

SYLLABUS FOR 3 Semester BTech PROGRAMME

Object Oriented Programming Using Java (C2310C1)

Type of Course: BTech

Prerequisite:

Rationale: -

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lecture Hrs/ Week	Tutorial Hrs/ Week	Practical Hrs/ Week		External		Internal			
				T	P	T	CE	P	
3	-	4	5	100	-	60	-	50	210

SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	<b>Basics of Java::</b> Features of Java, Byte Code and Java Virtual Machine, JDK, Data types, Operator, Control Statements –If , else, nested if, if-else ladders, Switch, while, do-while, for, for-each, break, continue. Array and String: Single and Multidimensional Array, String class, StringBuffer class, Operations on string, Command line argument, Use of Wrapper Class.	%	8
2	<b>Classes, Objects and Methods:</b> Class, Object, Object reference, Constructor, Constructor Overloading, Method Overloading, Recursion, Passing and Returning object form Method, new operator, this and static keyword, finalize() method, Access control, modifiers, Nested class, Inner class, Anonymous inner class.	%	8
3	<b>Inheritance and Interfaces:</b> Use of Inheritance, Inheriting Data members and Methods, constructor in inheritance, Multilevel Inheritance –method overriding Handle multilevel constructors –super keyword, Stop Inheritance -Final keywords, Creation and Implementation of an interface, Interface reference, instanceof operator, Interface inheritance, Dynamic method dispatch , Comparison between Abstract Class and interface.	%	6
4	<b>JAVAFX UI controls and multimedia:</b> Labeled and Label, button, Checkbox, Radio Button, Text field, Text Area, Combo Box, List View, Scrollbar, Slider, Video and Audio. Exception Handling: Exception and Error, Use of try, catch, throw, throws and finally, Built in Exception, Custom exception, Throwable Class.	%	6

5	<b>Multithreaded Programming:</b> Use of Multithread programming, Thread class and Runnable interface, Thread priority, Thread synchronization and Locks, Thread communication, Deadlock, Daemon Thread, Methods of thread . <b>IO Programming:</b> Introduction to Stream, Byte Stream, Character stream, Readers and Writers, File Class, File Input Stream, File Output Stream, Input Stream Reader, OutputStreamWriter, FileReader, FileWriter, Buffered Reader <b>Class Modeling:</b> Object, class concepts, link and association, Generalization and Inheritance.	%	8
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**\*Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

**Reference Books:**

1. Core Java, Vol I Fundamentals (TextBook)  
By Cay S. Horstmann, Gray Cornell | Java Series, Sun Microsystems
2. Programming with Java  
By E Balagurusamy | Tata McGraw Hill

**List of Practical:**

1. Write a Program that displays Welcome to Java, Learning Java Now and Programming is fun.
2. Write a program that solves the following equation and displays the value x and y: 1)  $3.4x + 50.2y = 44.5$  2)  $2.1x + .55y = 5.9$  (Assume Cramer's rule to solve equation  $ax + by = e$   $x = \frac{ed - bf}{ad - bc}$   $cx + dy = f$   $y = \frac{af - ec}{ad - bc}$  )
3. Write a program that reads a number in meters, converts it to feet, and displays the result.
4. Body Mass Index (BMI) is a measure of health on weight. It can be calculated by taking your weight in kilograms and dividing by the square of your height in meters. Write a program that prompts the user to enter a weight in pounds and height in inches and displays the BMI. Note:- 1 pound = .45359237 Kg and 1 inch = .0254 meters.
5. Write a program that prompts the user to enter three integers and display the integers in decreasing order.
6. Write a program that prompts the user to enter a letter and check whether a letter is a vowel or constant.
7. Assume a vehicle plate number consists of three uppercase letters followed by four digits. Write a program to generate a plate number.
8. Write a program that reads an integer and displays all its smallest factors in increasing order. For example if input number is 120, the output should be as follows: 2, 2, 2, 3, 5.
9. Write a method with following method header. `public static int gcd(int num1, int num2)` Write a program that prompts the user to enter two integers and compute the gcd of two integers.
10. Write a test program that prompts the user to enter ten numbers, invoke a method to reverse the numbers, display the numbers.
11. Write a program that generate 6\*6 two-dimensional matrix, filled with 0's and 1's , display the matrix, check every row and column have an odd number's of 1's.
12. Write a program that creates a Random object with seed 1000 and displays the first 100 random integers between 1 and 49 using the NextInt (49) method.
13. Write a program to implement Inheritance & its types
14. Write a program to implement Exception handling
15. Write a Program to implement multithreaded program
16. Write a GUI program that use button to move the message to the left and right and use the radio button to change the colour for the message displayed
17. Write a Program to implement Class Modeling

