ST. ALOYSIUS COLLEGE(AUTONOMOUS), JABALPUR

Reaccredited 'A+ 'Grade by NAAC(CGPA:3.68/4.00)
College with Potential for Excellence by UGC
DST-FIST Supported & STAR College Scheme by DBT

Faculty of Science

Bachelor of Science (B.Sc.), IV Semester
SUBJECT: COMPUTER SCIENCE
Paper-Major/Minor
Object Oriented Programming with Java

Course Outcomes

CO. No.	Course Outcomes	Cognitive Level
CO 1	Implement Object Oriented programming concept using· basic syntaxes of control Structures, strings and functions for developing skills of logic building activity.	U, R
CO 2	Identify classes, objects, members of a class and the relationships among them needed for finding the solution to a specific problem.	R, An, U
CO 3	Demonstrates how to achieve re-usability using inheritance, interfaces and packages and describes how faster application development can be achieved	U, Ap, R
CO 4	Demonstrate, understanding and use of different exception-handling mechanisms and concepts of multi-threading for robust faster and efficient application development.	U, An, R
CO 5	Identify and describe a common abstract user interface. components to design GUI in Java using Applet & Graphics.	U, An
CO 6	Identify, Design & Develop complex Graphical user interfaces using AWT	U, Ap

Credit and Marking Scheme

	Credits	Marks		Total Marks
		Internal	External	
Theory	4	40	60	**100**
Practical	2	40	60	**100**
Total	**6**	**200**		

Evaluation Scheme

	Marks	
	Internal	External
Theory	3 Internal Exams of 20 Marks (During the Semester) (Best 2 will be taken)	1 External Exams (At the End of the Semester)
Practical	3 Internal Exams (During the Semester) (Best 2 will be taken)	1 External Exams (At the End of the Semester)

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Bachelor of Science (B.Sc.) **Subject: Computer Science**
IV Semester **Paper: Major/Minor, Object-Oriented Programming with Java**

Content of the Course

No. of Lectures (in hours per week): 2 Hrs. per week

Total No. of Lectures: 60 Hrs. **Maximum Marks:** 60

Units	Topics	No. of Lectures
I	History, Java Features. How Java Differs from C and C++, Java and Internet, Java and World Wide Web, Java Supports Systems, Java Environment, lava Program Structure, Java Tokens. Constants, Variables, Scope of Variable, Data Types, Type Casting, Java Virtual Machine, Command Line, Arguments, Implementing a Java Program	10
II	Operators - Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bitwise Operators, Special Operators, Arithmetic Expressions - Evaluation of Expressions, Precedence of Arithmetic Operators, Type Conversions in Expressions. Operator Precedence and Associativity, Mathematical functions. Decision making with if Statement, Simple if Statement, if. Else Statement. Nesting of if..else Statement, if-else Ladder, the Switch statement, The ?: Operator. Loops - While Statement, Do-while Statement, For Statement, Jump in Loops, Labeled Loops	15
III	Class - Defining a Class, Adding Variables, Adding Methods, Creating Objects, Accessing Class Members, Static Members, Methods- Defining Methods, Nesting of Methods. Method Overloading. Constructors: definition and types, Constructor Overloading. Inheritance - Extending a Class. Overloading Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract Methods and Classes, Visibility Control. Arrays: One and two Dimensional Array, Strings. Vectors. Wrapper Class.	10
IV	Interface- Defining Interfaces, Extending Interfaces, Implementing Interfaces. Accessing Interface Variables. Packages - Using System Packages, Naming Conventions, Creating Packages, accessing a Package, Using a Package. Adding a Class to a Package. and hiding Classes. Multithreading Creating Threads. Extending the Thread Class, Life Cycle of a Thread. Implement the Runnable interface. Exceptions Handling: try, catch, finally.	15
V	Applets - building Applet Code, Applet Life Cycle, Applet Tag, Passing Parameters to Applets, Getting Input from the user. Applet Graphics Methods: drawstring, drawRect, fillRect, drawOval, fillOval, drawLine, drawImage, drawArc, fillArc, setColor, setFont. Concept of Stream - Stream C lasses, Byte Stream Classes, Character Stream Classes.	10

References

Text Books
- E Balguruswami, Programming with Java, Tata McGrnw-Hill Publication.

Reference Books
- Bruce Eckel, Thinking in Java.
- Herbert Schildt Java: The Complete Reference.
- Y. Daniel Liang, Introduction to Java Programming.
- Paul Deitel, Harvey Deitel, Java: How to Program.

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Web Links:

- https://www.cs.cmu.edu/afs/cs.cniu.edu/usei/gclien/www/down1oad/java/LeainJava.pdf
- https://www. tutorialspoint.confjava/java tutorial.pdf
- httns://www.youtube.com/watch=7soxDfdgtDw
- http:ljwww.mphindigranthaca_gemy.org/
- Suggested equivalent on line courses : httns://nptel.ac.in/courses/106/105/106105191/

List of Practical

1. Find a greater number between two numbers -using a conditional operator.
2. Find the factorial of the number, the number is given by the user using the command line argument.
3. Write a program to check if a number is prime or not.
4. Write a program to display tables from 2 to 10.
5. Write a program to print the Fibonacci series.
6. Enter a no. and check whether it is even or odd.
7. Write a Program to find the sum & average of 10 no. using arrays.
8. Write a program to display the reverse of a digit no. using an array.
9. Write a program to demonstrate function overloading.
10. Write a program to display grades according to the marks obtained by the student.
11. Write a program to calculate the salary of an employee if the salary is greater than or equal to 20000 and the year of service is greater than or equal to 5 years then the bonus will be 2000 otherwise 1000 and print the grass salary of the employee.
12. Write a program to convert the given no. of days into months, and days using classes, objects and Methods.
13. Write a program to convert a given string into Uppercase and lowercase and get the length of the string using an array.
14. Create a package called "Arithmetic" that contains methods to deal all arithmetic operations. Also, write a program to use the package.
15. Write a program to demonstrate the use of a constructor and destructor.
16. Define an exception called the "Marks out of Bound" exception that is thrown if the entered marks are greater than 100.
17. Write a program using the application of single inheritance. Find the area of the rectangle & volume of a cube.
18. Develop a simple real-life application to illustrate the use of multithreading.
19. Write a program using multiple inheritances to calculate the area and perimeter of a circle using the interface.
20. Write an applet program to draw a Rectangle (color = orange) and a right-aligned oval.
21. Develop an applet that receives 3 numeric values as inputs from the user and then displays the largest no. on the screen.

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Faculty of Science

Bachelor of Science (B.Sc.), IV Semester
SUBJECT: COMPUTER SCIENCE
Paper-Elective
Object Oriented Programming with Java

Course Outcomes

CO. No.	Course Outcomes	Cognitive Level
CO 1	Implement Object Oriented programming concept using· basic syntaxes of control Structures, strings and functions for developing skills of logic building activity.	U, R
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CO 6	Identify, Design & Develop complex Graphical user interfaces using AWT	U, Ap

Credit and Marking Scheme

	Credits	Marks		Total Marks
		Internal	External	
Theory	3	40	60	**100**
Practical	1	40	60	**100**
Total	**4**	**200**		

Evaluation Scheme

	Marks	
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Theory	3 Internal Exams of 20 Marks (During the Semester) (Best 2 will be taken)	1 External Exams (At the End of the Semester)
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Bachelor of Science (B.Sc.)   **Subject: Computer Science**
IV Semester   **Paper: Elective, Object-Oriented Programming with Java**

Content of the Course

No. of Lectures (in hours per week): 2 Hrs. per week

Total No. of Lectures: 60 Hrs.   **Maximum Marks:** 60

Units	Topics	No. of Lectures
I	History, Java Features. How Java Differs from C and C++, Java and Internet, Java and World Wide Web, Java Supports Systems, Java Environment, lava Program Structure, Java Tokens. Constants, Variables, Scope of Variable, Data Types, Type Casting, Java Virtual Machine, Command Line, Arguments, Implementing a Java Program.	10
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- Paul Deitel, Harvey Deitel, Java: How to Program.
- Cay S. Horsttnann, Core Java Volume I - Fundamentals.
- Java Projects, BPB Publication.
- Dr. S.S. Kandare, Programming in Java, S Chand Publication.
- Books published by M.P. Hindi Granth Academy, Bhopal.

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Web Links:
- https://www.cs.cmu.edu/afs/cs.cniu.edu/usei/gclien/www/down1oad/java/LeainJava.pdf
- https://www. tutorialspoint.confjava/java tutorial.pdf
- httns://www.youtube.com/watch=7soxDfdgtDw
- http:ljwww.mphindigranthaca_gemy.org/
- Suggested equivalent on line courses : httns://nptel.ac.in/courses/106/105/106105191/

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