University of Information Technology & Sciences (UITS)

Department of Computer Science & Engineering

(Course Outline)

Part A:

1. **Course No./Course Code:** CSE 152
2. **Course Title: Object Oriented Programming Language Lab**
3. **Course Type** (GED/Core Course/Electives): Core Course
4. **Year/Level/Semester/Term:** Level-1, Term-2
5. **Academic Session:** Autumn 2024
6. **Course Teacher/Instructor:** Md. Ismail
7. **Prerequisite (If any):** Structured programming Language
8. **Credit Value:** 1.5
9. **Contact Hours:** 3.0 hours per week
10. **Total Marks:** 100
11. **Rationale of the Course:** The course aims are to introduce the concepts of object-oriented programming to students with a background in the procedural programming paradigm. The course begins with a brief review of console input/output with emphasis on structured data types and array processing. It then moves on to introduce the object-oriented programming paradigm, focusing on the definition and use of classes along with the fundamentals of object-oriented design.
12. **Course Objectives:**
    a. To be able to identify problems and apply object-oriented programming concept to build information system
    b. To be able to apply UML notations used in object-oriented applications design.
    c. To learn how to implement object-oriented designs with Java.
13. **Course Learning Outcomes (CLOs) and Mapping of CLOs with Program Learning**

Program Learning Outcomes (PLOs) details in table

PO 1: Engineering Knowledge	Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
PO 2: Problem analysis	Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
PO 3: Design/development of solutions	Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
PO 4: Investigation	Conduct investigations of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO 5: Modern tool usage	Create, select and apply appropriate techniques, resources and modern engineering and IT tools, including prediction and modeling, to complex engineering activities with an understanding of their limitations.
PO 6: The engineer and society	Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems.
PO 7: Environment and sustainability	Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts.
PO 8: Ethics	Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
PO 9: Individual work and teamwork	Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.
PO 10: Communication	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11: Project management and finance	Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12: Life-long learning	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

Course Learning Outcome (CLOs) details in table

CLO1	**Implement** the basic concepts of object-oriented programming principles.
CLO2	**Analyze** programming problems in terms of object oriented programming.
CLO3	**Construct a program** of moderate complexity containing all the major features of Object-Oriented Programming.

Outcomes(PLOs)

Course Learning Outcomes (CLOs)	**Program Learning Outcomes (PLOs)**											
	1	2	3	4	5	6	7	8	9	10	11	12

CLO1	3											
CLO2		3										
CLO3			3									

Part B:

14. Course plan specifying content, CLOs, co-curricular activities (if any), teaching-learning, and assessment strategy mapped with CLOs.

Week	Topic	Teaching-Learning Strategy	Assessment Strategy	CLO
1.	Basic operation, Data types, Variables .	Lecture, Group Discussion		CLO1
2.	Operators , Control Statements , Array.	Lecture, Group Discussion,	Lab Report, Assignment	CLO1
3.	Introducing Classes and methods-this keyword, garbage collection, finalize method	Lecture, Exercise, Group Discussion	Lab Report, Assignment	CLO1
4.	More closer look about Classes and constructor Methods,Argument passing, returning objects, Static, Final	Lecture, Exercise	Lab Report, Assignment,	CLO1
5.	Inheritance- super, multilevel hierarchy, overriding	Lecture, Exercise, Group Discussion	Lab Report, Assignment	CLO1
6.	Abstract method	Lecture, Exercise	Lab Report, Assignment, Lab Test	CLO1
7.	Implementation of interface, nested interface	Exercise	Lab Report	CLO2, CLO3
8.	Implementation of Method Overloading and Overriding	Lecture, Exercise, Group Discussion	Lab Report, Assignment	CLO1
9.	Exception Handling-try-catch ,Throw, throws, finally, chained exceptions	Lecture, Exercise	Lab Report, Assignment	CLO1
10.	Thread in Java	Lecture, Exercise	Lab Report, Assignment	CLO2, CLO3
11.	Graphical User Interface in Java	Lecture, Exercise, Group Discussion	Lab Report, Assignment, Lab Test	CLO2, CLO3

12.	Java Date time function	Lecture, Exercise, Group Discussion	Lab Report, Assignment	CLO2, CLO3
13.	Java String handling function	Lecture, Exercise, Group Discussion	Lab Report, Assignment	CLO2
14.	Topics Covered after Lab test 1 up to previous classes & advanced programs	Exercise	Presentation	CLO3
15.	Final Lab Test.	Exercise	Quiz, Viva, Lab Test, Lab Report	CLO3

Part C

15. Assessment and Evaluation:

1. **Assessment Strategy:** Assignment, Lab test, Lab Report, Presentation, Viva, Quiz
2. **Marks distribution:**

a) Continuous Assessment: Attendance (20), Lab Performance (30),

b) Summative: Quiz (30), Viva (20)

Grading System (Letter Grading)

The UGC-approved common grading system is adopted for assigning a letter grade and grade point. This is given in the following table:

Numerical Grade	Letter Grade	Grade Point
80% and above	A+	4.00
75% to less than 80%	A	3.75
70% to less than 75%	A-	3.50
65% to less than 70%	B+	3.25
60% to less than 65%	B	3.00
55% to less than 60%	B-	2.75
50% to less than 55%	C+	2.50
45% to less than 50%	C	2.25
40% to less than 45%	D	2.00
Less than 40%	F	0.00
	F*	Failure
	I**	Incomplete
	W***	Withdrawal

* “F” means failure. Credits for courses with this grade do not apply towards graduation.

** “I” is given to students who have fulfilled the majority of the course requirements but have been unable to complete the rest. The student is not required to register for the course in the next semester.
*** “W” means withdrawal. A student may decide to withdraw from a course by the deadline with the consent of the instructor and the academic advisor.

3) Make-up Procedures:

Part D:

16. Learning Materials

1) **Recommended Readings:** Java: The Complete Reference, Tenth Edition (Complete Reference Series) 10th Edition
2) **Supplementary Readings:** https://www.javatpoint.com/java-tutorial
3) **Others** (as applicable for the discipline academic program): N/A.