

COURSE PLAN : CSC201-3C JAVA PROGRAMMING (FULL CIA – LCA)

SECTION I (Course Details)			
Semester	THIRD SEMESTER	Class	BSc 3CM / BSc 3CS
Course Code	CSC201-3C	Course title	JAVA PROGRAMMING (FULL SUBMISSION – LCA)
Hours	(45 Hrs Theory + 30 Hrs Lab) = 75 Hours	Hours per week	03 Theory + 02 Practical / week
Faculty name	Dr SREEJA CS Dr MANJUNATHA H Dr RESMI K R Dr SARAVANAN KN	Contact details	sreeja.cs@christuniversity.in manjunatha.hiremath@christuniversity.in resmi.kr@christuniversity.in saravanan.kn@christuniversity.in
Class policies and guidelines	<ol style="list-style-type: none"> 1. All communication will be done through CHRIST University Official Mail / WhatsApp group. 2. Read the course content / resources shared in MOODLE / GOOGLE CLASS ROOM before attending the class session. 3. Usage of the Laptop / Mobile is only with the prior permission (as per the requirements of the class / Lab / demo) 4. Help / Discussion / Mentoring will happen after the class hours. 		
Course Description	<p>The objective of this Java programming course is to equip students with a comprehensive understanding of Java language fundamentals, object-oriented programming principles, and practical application development skills. Through hands-on projects and exercises, students will learn to design, implement, and debug Java programs, covering topics such as data types, control structures, classes, inheritance, polymorphism, exception handling, and file I/O.</p> <p>Additionally, the course aims to cultivate problem-solving abilities, software design proficiency, and collaboration skills essential for success in the dynamic field of software development. By the end of the course, students will be proficient in Java programming and capable of creating robust, efficient, and maintainable Java applications.</p>		
Course Objectives	The objective of this Java programming course is to equip learners with a comprehensive understanding of Java. Participants will gain proficiency in writing, debugging, and executing Java programs.		
Course Outcomes	<p>CO1: Demonstrate an understanding of fundamental Java language syntax, data types, and control structures, looping, decision making.</p> <p>CO2: Classify the comprehension of object-oriented programming principles by explaining concepts such as encapsulation, inheritance, and polymorphism in Java, and by analyzing how these concepts are implemented.</p> <p>CO3: Apply knowledge of Java programming to solve various problems, design and implement algorithms, and develop functional Java applications</p> <p>CO4: Analyze and evaluate Java code to identify and debug errors, optimize performance, and improve code readability and maintainability- which covers Database connectivity and Event Handling using Swing.</p>		

SECTION II (Course Schedule)					
Unit number and title	Unit details	Week (starting and end dates)	Hours per Chapter	Pedagogy (teaching learning methods used)	Resource/ Reference details
Unit-1 INTRODUCTION TO OOPS & JAVA	The History and Evolution of Java, Concepts of Object-oriented programming – Benefits of OOP –	Week 01 (19 June 2024)	5	LCA: Diagnostic Learning Chalk and Board/ PPT Presentation	Text Books Ref. Books
	History and Evolution of Java – Features of java – Java environment – Java tokens– Constant #Lab Demonstration : Examples	Week 02 (24 June 2024)	5	LCA: Class Discussion Presentation,	Text Books Ref. Books
	Variables – Data types– Operators– Control Structures and Arrays.	Week 03 (01 July 2024)	5	LCA : Problem based approach	Online MOOC Content
Unit-2 CLASSES AND INHERITANCE	CLASSES AND INHERITANCE Class fundamentals–objects – methods –constructors. #Lab Demonstration : Examples	Week 04 (8 July 2024)	5	Presentation, LCA: Class Discussion	Online Forum / Blogs
	overloading methods and constructors. Access modifiers – Command line arguments. #Lab Demonstration : Examples	Week 05 (15 July 2024)	5	LCA: Participative Learning Approach Class Discussion	Text Books Ref. Books
	Inheritance & its types– super– this–static and final keywords– Abstract class–String class. #Lab Demonstration : Examples	Week 06 (29 July 2024)	5	LCA: Case Study approach, Class Discussion	Text Books Ref. Books
Unit-3 PACKAGES, INTERFACES AND I/O	PACKAGES, INTERFACES AND I/O Defining packages–access protection–importing packages–defining–implementing interfaces– Nested interfaces– Inheritance and interfaces. –use static methods in an interface. #Lab Demonstration : Examples	Week 07 (05 Aug 2024)	5	Presentation, LCA: Class Discussion	Text Books Ref. Books

	<p>Java's I/O is built upon streams - byte streams and character streams - the byte stream classes - the character stream classes - the predefined streams-using the byte streams</p> <p>#Lab Demonstration : Examples</p>	Week 08 (12 Aug 2024)	5	Tutorial based learning, Class Discussion	Text Books Ref. Books
	<p>reading and writing files using byte streams - reading and writing binary data– using java's character based streams - file I/O using character streams.</p> <p>#Lab Demonstration : Examples</p>	Week 09 (19 Aug 2024)	5	LCA: Experiential Learning by Demo	Online Forum / Blogs
<p>Unit-4</p> <p>EXCEPTIONAL HANDLING AND INTRODUCTION TO MULTITHREADING</p>	<p>EXCEPTIONAL HANDLING AND INTRODUCTION TO MULTITHREADING. Fundamentals of exceptional handling – types of exceptions– uncaught exceptions</p>	Week 10 (02 Sept 2024)	5	LCA: Diagnostic Learning Lecture-demonstration	Text Books Ref. Books
	<p>using try–catch–throw–throws– finally–creating user defined exceptions</p> <p>#Lab Demonstration : Examples</p>	Week 11 (9 Sept 2024)	5	LCA: Participatory learning Lecture-demonstration	Online Forum / Blogs
	<p>Introduction to multithreading– The Java Thread model–Thread priorities and Synchronization.</p> <p>#Lab Demonstration : Examples</p>	Week 12 (16 Sept 2024)	5	LCA: Problem based learning / Case Study	
<p>Unit-5</p> <p>SWING and JDBC</p>	<p>SWING and JDBC Introducing swing – the origins and design philosophy of swing – components and containers – layout managers</p> <p>#Lab Demonstration : Examples</p>	Week 13 (23 Sept 2024)	5	LCA: Participatory learning Chalk and Board/ PPT Presentation	Text Books Ref. Books
	<p>swing event handling – use of JButton– work with JTextField – create a JCheckBox – work with JList</p> <p>#Lab Demonstration : Examples</p>	Week 14 (30 Sept 2024)	5	Learning by Demo	Text Books Ref. Books
	<p>Database Programming – Connecting to and querying a database –Connecting to the database – Creating a Statement for executing query - Executing a query - Processing a Query's ResultSet – Prepared Statements.</p> <p>#Lab Demonstration : Examples</p>	Week 15 (07 Oct 2024)	5	LCA: Participatory learning / Case Study Lecture-demonstration Learning by Demo Participative	Online Forum / Blogs

SECTION III
(Evaluation Pattern / Rubrics)

Weightage	Component	Marks	Description of the CIA component	Schedule
CIA 50 marks	Component – I (TEST 01)	40	A Lab Test will be conducted during end of the week 03 based on the course content covered (Lab / Practical programmes completed). Duration : 02 hours Total Marks : 40 marks No of questions : 1 / 2 Scenario based questions	Week 5
	Component – II	50	Regular Lab exercises evaluations : Every week a lab exercise / problem statement is posted to class based on the course content or topic discussed – students have to complete the lab program within that week and get it evaluated by the respective faculty / reviewer.	Every week (Week 01-15)
	Attendance	10	Regularity and Punctuality	End of the semester
	Total	100	The total mark will be converted to 50	
ESE 50 marks	Component – III (TEST 02)	20	Subject based Multiple Choice Question (MCQ) test will be conducted based on the course content covered till that week.	Week 7
	Component –IV (TEST 03)	30	A Lab Test will be conducted during end of the week 03 based on the course content covered (Lab / Practical programmes completed). Lab Test / Presentation / Case Study Duration : 02 hours Total Marks : 30 marks	Week 9
	Component – V (TEST 04) Comprehensive Examination	50	Coding Challenge / Mini Hackathon / Code Refactoring & Documentation / Case Study Duration : 03 Hours Total Marks : 50 marks	Week 14
	Total	100	The total mark will be converted to 50	

#Note : In the next section the details of the evaluation rubrics are discussed.

SECTION IV
ANDRAGOGY – Learner Centered Approach details

FORMATIVE ASSESSMENT (Continuous Internal Assessment – CIA)

DIAGNOSTIC LEARNING APPROACH:

The diagnostic learning approach is a method of education that emphasizes identifying and addressing students' individual learning needs and difficulties. Instead of following a one-size-fits-all approach, educators using this method assess students' current knowledge, skills, and understanding to determine their strengths and weaknesses. Based on this assessment, personalized learning plans are created to target areas where students need additional support or challenge.

Key components of the diagnostic learning approach include: Assessment, Student academic Data Analysis, Personalized Instruction, Feedback and Reflection, Flexible Grouping

CASE STUDY LEARNING APPROACH:

The case study learning approach is an educational method that involves analyzing real-world scenarios or cases to facilitate learning and problem-solving skills. In this approach, students are presented with detailed descriptions of specific situations, problems, or challenges that individuals, organizations, or communities have faced. They are then asked to analyze the case, identify key issues, consider various perspectives, and propose solutions or courses of action.

Key components of the diagnostic Case study approach include: Real-World Relevance, Critical Thinking, Problem-Solving Skills, Interdisciplinary Learning, Active Learning, Reflection.

EXPERIENTIAL LEARNING APPROACH:

The experiential learning approach is a method of education that emphasizes learning through direct experience and reflection. It's based on the idea that individuals learn best when they are actively engaged in meaningful experiences and have the opportunity to reflect on those experiences to derive meaning and understanding.

Key features of the experiential learning approach include: Concrete Experience, Reflective Observation, Abstract Conceptualization, Active Experimentation, Hands-On Learning.

PARTICIPATORY LEARNING APPROACH:

The participatory learning approach is a method of education that emphasizes active involvement, collaboration, and shared decision-making among learners. In this approach, students are not passive recipients of knowledge but are actively engaged in the learning process, contributing their ideas, experiences, and perspectives to co-create knowledge with their peers and educators.

Key features of the participatory learning approach include: Collaborative Learning, Student-Centered, Active Participation, Inclusive Learning Environment, Critical Reflection, and Community Engagement.

RESEARCH BASED LEARNING APPROACH:

Research-based learning, also known as inquiry-based learning or problem-based learning, is an educational approach that emphasizes the active engagement of students in the research process to construct knowledge, develop critical thinking skills, and foster independent learning.

Key features of the research-based learning approach include: Inquiry and Exploration, Active Participation, Authentic Tasks, Critical Thinking and Problem-Solving, Collaborative Learning, Reflection, Self-Directed Learning, Interdisciplinary Approach.

PROBLEM BASED LEARNING APPROACH:

Problem-Based Learning (PBL) is an educational approach that emphasizes active learning through the exploration and resolution of real-world problems. In PBL, students engage in collaborative, inquiry-based learning experiences where they work together to identify, analyze, and solve complex problems or scenarios.

Key features of the Problem-Based Learning approach include: Introduction to a Problem, Inquiry and Investigation, Collaborative Learning, Application of Knowledge, Reflection and Iteration, Presentation and Evaluation

Peer assessment learning approach:

Peer assessment is an educational approach that involves students providing feedback and evaluating the work of their peers. It's a valuable tool for promoting active learning, fostering collaboration, and enhancing students' critical thinking and self-assessment skills.

Key features of the peer assessment learning approach include: Clear Criteria, Submission of Work, Peer Feedback, Reflection, Revision, Discussion and Collaboration.

ANDRAGOGY – Learner Centered Approach details

FORMATIVE ASSESSMENT (Continuous Internal Assessment – CIA)

The purpose of formative assessment is to monitor student learning and provide ongoing feedback to staff and students. It is an assessment for learning. If designed appropriately, it helps students identify their strengths and weaknesses, can enable students to improve their self-regulatory skills so that they manage their education in a less haphazard fashion than is commonly found. It also provides information to the faculty about the areas students are struggling with so that sufficient support can be put in place. Here's a list of formative assessment techniques used in the current course:

- **Classroom Discussions:** Engage students in discussions related to the course material. Pose open-ended questions, encourage debates, and guide conversations to assess comprehension and critical thinking skills.
- **In-Class Activities:** Incorporate interactive activities such as group work, case studies, problem-solving exercises, or role-playing scenarios to assess understanding and promote active learning.
- **Concept Maps or Mind Maps:** Ask students to create visual representations of key concepts or relationships between topics. Analyzing their maps can reveal misconceptions or gaps in understanding.
- **Quizzes and Mini-Tests:** Administer brief quizzes or mini-tests throughout the course to assess comprehension of recent topics. These assessments can be informal and low-stakes, providing valuable feedback without significant pressure.
- **Peer Review:** Implement peer review activities for assignments, projects, or presentations. Peer feedback allows students to evaluate each other's work, identify strengths and weaknesses, and offer constructive criticism.
- **Exit Tickets or Minute Papers:** Distribute exit tickets at the end of a class session, asking students to summarize key points learned or pose questions about topics that remain unclear. Minute papers encourage reflection and provide immediate feedback.
- **Self-Assessment Tools:** Provide self-assessment tools or checklists that allow students to evaluate their own understanding and progress. Encourage students to reflect on their strengths, weaknesses, and areas for improvement.
- **Peer Teaching:** Assign students to teach a concept or lead a discussion on a particular topic. Peer teaching promotes deeper understanding and allows students to assess their peers' comprehension through questions and feedback.
- **Interactive Online Platforms:** Utilize interactive online platforms or learning management systems (LMS) that offer quizzes, polls, surveys, and discussion boards. These tools facilitate ongoing assessment and engagement outside of traditional classroom settings.

- **Case Study Approach:** The case study approach involves an in-depth, contextual analysis of a specific instance or example to explore and understand complex issues, processes, or phenomena in real-world settings.

SUMMATIVE ASSESSMENT (End Semester Examination – ESE)

The goal of summative assessment is to evaluate student learning at the end of an instructional unit by comparing it against some standard or benchmark. Summative assessments often have high stakes and are treated by the students as the priority over formative assessments. However, feedback from summative assessments can be used formatively by both students and faculty to guide their efforts and activities in subsequent courses.

- **Final Exams:** Administer comprehensive exams covering the entire course curriculum. These exams may include multiple-choice questions, short-answer questions, essays, or problem-solving tasks.
- **Presentations:** Require students to deliver presentations on specific topics or projects related to the course. Presentations can be individual or group-based and assess students' communication skills, critical thinking, and knowledge of course content.
- **Practical Assessments:** Evaluate students' practical skills through hands-on assessments, simulations, performances, or demonstrations. Practical assessments are particularly relevant for courses that involve technical skills or application-based learning.

CIA

Component – I: DIAGNOSTIC / PROBLEM ORIENTED LEARNING ASSESSMENT

Assessment Description: Component 01 (CIA)

Actual Submission Date : **Week – 05 (As per schedule)**

Grade : **40 marks**

Type : **LAB Test 01**

Submission : **MOODLE / GC - Submission**

Mapping the Learning Outcomes with components of the evaluation rubrics:

Learning Outcomes of the assignment	Method of assessment	Component of the evaluation rubrics
LO 1	LAB Test	

Evaluation Rubrics

- | | |
|---|-------------|
| (1) Writing of the program with the required input-output parameters along with the logic | - 10 Marks. |
| (2) Logic of the proposed program / problem statement (syntax / semantic) | - 15 Marks |
| (3) Complexity of the program | - 10 Marks |
| Modification based on the teacher's information/instruction. | |
| (4) Viva Voce on the content implemented | - 05 Marks |

Component – II: Diagnostic / Participative / Problem Oriented / Case study - approach

Regular Lab exercises evaluations – 50 Marks

ESE

Component – III: Participatory Learning

Assessment Description: Component 03 (ESE)

Actual Submission Date : **Week – 07 (As per schedule)**
Assignment Description : **Class Test (MCQ)**
Grade : **20 Marks**
Type : **Online (MCQ Test)**
Topic Covered : **UNIT – I and II**

Marks	Number of Question	Duration
20	40	40 Minutes

#No Negative marks

Component – IV: Problem Oriented / Case Study Approach

Assessment Description: Component 04 (ESE)

Actual Submission Date : **Week – 09 (As per schedule)**
Grade : **30 marks**
Type : **LAB Test 02**
Submission : **MOODLE / GC - Submission**

Mapping the Learning Outcomes with components of the evaluation rubrics:

Learning Outcomes of the assignment	Method of assessment	Component of the evaluation rubrics
LO 1	LAB Test	

Evaluation Rubrics

- (1) Writing of the program with the required input-output parameters along with the logic - 10 Marks.
- (2) Logic of the proposed program / problem statement (syntax / semantic) - 10 Marks
- (3) Complexity of the program - 05 Marks
- Modification based on the teacher's information/instruction.
- (4) Viva Voce on the content / concepts implemented. - 05 Marks

Component – V: Problem Oriented / Case Study Approach

Assessment Description: Component 05 (ESE)

Actual Submission Date : **Week – 14 (As per schedule)**
Grade : **50 marks**
Type : **LAB Test 03**
Submission : **MOODLE / GC - Submission**

Mapping the Learning Outcomes with components of the evaluation rubrics:

Learning Outcomes of the assignment	Method of assessment	Component of the evaluation rubrics

LO 1	LAB Test	
------	----------	--

Evaluation Rubrics

- (1) Writing of the program with the required input-output parameters along with the logic - 15 Marks.
- (2) Logic of the proposed program / problem statement (syntax / semantic) - 15 Marks
- (3) Validation of the Input and Output formatting - 07 Marks
- (4) Complexity of the program - 08 Marks
- Modification based on the teacher's information/instruction.
- (5) Viva Voce on the content / concepts implemented. - 05 Marks

* * * * *