Mahatma Gandhi University
MEGHALAYA
www.mgu.edu.in

SYLLABUS MANUAL

INFORMATION TECHNOLOGY PROGRAMME
PROGRAMME CODE --- 501  
Post Graduate Diploma in Computer Application (PGDCA)

**SEMESTER I**

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**SEMESTER II**

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<td>Software Quality And Testing</td>
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<td>PGDCA22</td>
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<td>Advanced Java Lab</td>
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Detailed Syllabus

SEMESTER I
PGDCA11 --- Industrial Management
UNIT I: Concepts of Management and Organisation
UNIT II: Evolution of Industrial Management
Evolution - Importance of Industrial Management – Scientific Management – Meaning, definitions, principles - Importance and Criticism.
UNIT III: Factory Location
Factors determining location of factory - Steps in location - selection of region - selection of locality - selection of exact site. Technology parks, SEZ etc., Role of government agencies in providing assistance, Location related decisions.
UNIT IV: Plant Layout
UNIT V: Designing Organisational Structures
Basic concepts related to Organisation - Departmentation and Decentralisation
UNIT VI: Types of mechanistic and organic structures of organization
Line organization, Line and staff organization, functional organization, Committee organization, matrix organization, Virtual Organisation, Cellular Organisation, team structure, boundaryless organization, inverted pyramid structure, lean and flat organization structure and their merits, demerits and suitability.
UNIT VII: Materials Management
Objectives, Inventory – functions, types, associated costs.
UNIT VIII: Production
Concept of conversion, processes and value-chain, Types of production systems and relevant layouts, Concept of production planning, MRP I and MRPII, Overview of materials management purchasing, storage, disposal and inventory control, Plant maintenance: breakdown and preventive maintenance, Industrial safety.
UNIT IX: Inventory Classification Techniques
ABC and VED analysis. Inventory Control Systems-Continuous review system-periodical review system. Stores Management and Stores Records.
UNIT X: Purchase management & Supporting techniques
Purchase management, duties of purchase of manager, associated forms, Concept of work study and development of production standards, Concept of quality, fundamental treatment of SQC, TQM and ISO 9000, Introduction to BIS publications.
UNIT XI: Introduction to PERT / CPM
Project management, network modeling-probabilistic model.
UNIT XII: Evaluation Review Techniques
Types of activity times estimation-programme evaluation review techniques- Critical Path probability of completing the project, deterministic model, critical path method (CPM)-critical path calculation-crashing of simple of networks.
Reference Books:
1. The Principles of Industrial Management by John Christie Duncan
2. Industrial Excellence: Management Quality in Manufacturing by Springer

PGDCA12 --- Analysis and Design of Algorithms

UNIT I: Introduction Algorithm and Algorithmic
Definition of Algorithm, Definition of Algorithmic, Example of an Algorithm Problems and
Instances, Characteristics of an Algorithm Available Tools and Algorithms First Algorithm Second
Algorithm Third Algorithm.

UNIT II: Building Blocks of Algorithms
Basic Actions and Instructions Control Mechanisms and Control Structures Procedure and
Recursion, Outline of Algorithmics, Understanding the Problem Analyzing the Problem Capabilities
of the Computer System.

UNIT III: Approximate vs Exact Solution
Choice of Appropriate Data Structures Choice of Appropriate Design Technology Specification
Methods for Algorithms Proving Correctness of an Algorithm Analyzing an Algorithm Coding the
Algorithm Areas of Study of an Algorithm Performance Analysis Performance Analysis – Space
Complexity Performance Analysis – Time Complexity

UNIT IV: Analyzing And Designing Algorithms
Introduction Analyzing Algorithms Criteria of Analyzing Algorithms Correctness Amount of Work
Done, The Space Usage Simplicity Optimality Asymptotic Complexity Asymptotic Notation
Asymptotic Notations Typical Running Time Functions Performance Analysis Practical Complexities
– Function Values Asymptotic Notations – Limits and Properties Designing Algorithms Designing,
Algorithms Using CAD Technologies, INTERNAL SORTING, Introduction Internal Sorting, Insertion
Sort, Insertion Sort, Algorithm, Insertion Sort Analysis Bubble Sort.

UNIT V: Bubble Sort Algorithm Bubble Sort Analysis Priority Queues
Heaps Heap Sort Heapify Algorithm Heap Sort Algorithm Analysis of Heapify Analysis of Heap Sort
Quick Sort Divide and Conquer, Quick Sort Analysis of Quick Sort Way Merge Sort Sorting on
Several Keys Binary Trees Complete Binary Tree Full Binary Tree

UNIT VI: Searching
Introduction Linear Search Binary Search Divide and Conquer, General Method, Binary Search,
Comparative Study of Linear and Binary Search, Application of Searching. GRAPHS Introduction,
Definition of Graph, Shortest Path Algorithms. SPANNING TREE Introduction Minimum Spanning
Tree The Greedy Method General Method Prim’s Algorithm Kruskal’s Algorithm Solved Problems
Dijkstra’s Algorithm Shortest Path.

UNIT VII: String Matching
Introduction String Matching Naïve Approach The Naïve String-Matching Algorithm String
Matching – Finit
KMP Algorithm String Matching – KMP Flowchart String Matching, KMP Scan Example String Matching – KMP Scan Algorithm String Matching – KMP Algorithm
Analysis String Matching with Finite Automata

UNIT VIII: Polynomials
Introduction, Polynomial, Overview of Polynomial, Polynomial Functions, Polynomial Equations,
Classifications of Polynomial, Polynomials, Representations Evaluation Straightforward Evaluation,
Dense Horner’s Method Horner’s Method, Dense Representation Straight forward Evaluation,
Sparse Horner’s Method, Sparse Representation Lagrange’s Interpolation.

UNIT IX: Matrices
Introduction Matrices Properties Strassen’s Matrix Multiplication Conventional Matrix,
Multiplication Inversion Solving Systems of Linear Equations.
UNIT X: Dynamic Programming

UNIT XI: Knapsack
Introduction, Knapsack, Knapsack Problem using Greedy Method ,Job Sequencing , Job Sequence with Deadlines ,Traveling Salesman, Euclidean, TSP Traveling Salesman Algorithm, Nearest Neighbour Algorithm on TSP ,Convex Hull Algorithm Applications, TSP using the Branch and Bound Backtracking.

UNIT XII: Other Algorithm

Reference Books:
1. Introduction to the Design and Analysis of Algorithms (2nd Edition) by Anany Levitin
2. Design and Analysis of Distributed Algorithms by Nicola Santoro

PGDCA13 --- Advanced Operating System

UNIT I: An Overview Of Operating System

UNIT II: Operating System Services

UNIT III: Operating System Structure

UNIT IV: Process Management

UNIT V: Operations On Process
Introduction Operations on process Processes Creation Process Termination Cooperating process
Information Sharing Computation Speedup Modularity Convenience Inter process communication Race Condition Critical Section Mutual Exclusion Mutual Exclusion Conditions Proposals for Achieving Mutual Exclusion Semaphore Definition Producer-Consumer Problem Using Semaphores Message Passing CPU SCHEDULING Introduction CPU Scheduling CPU Scheduling Criteria Scheduling algorithms Multiple processor Scheduling Real Time scheduling.

UNIT VI: Deadlock
Introduction Deadlock Deadlock characterization Necessary Conditions Resource Allocation Graphs Methods for Handling Deadlocks Deadlock Prevention Deadlock Avoidance Deadlock + Detection and Recovery Ignore Deadlock Let us Sum up Lesson end Activity Keywords Questions for Discussion MEMORY MANAGEMENT Introduction Memory Management Background Binding of Instructions and Data to Memory Dynamic Loading Dynamic Linking Overlays Logical vs Physical Address Space Memory-Management UNIT (MMU) Monoprogramming Multiprogramming

UNIT VII: Memory Allocation

UNIT VII: I/O SYSTEMS

UNIT IX: Storage Structure
Introduction Disk structure Making Tracks Sectors and Clusters Disk scheduling First Come First Served (FCFS) Circular SCAN (C-SCAN) LOOK Circular LOOK (C-LOOK) Disk Management Swap Space Management Pseudo-Swap Space Physical Swap Space.

UNIT X: File-System Interface

UNIT XI: File System Implementation

UNIT XII: Case Studies
Address Resolution Protocol (ARP) IP Routing Security.

Reference Books:
1. Advanced Concepts In Operating Systems by Mukesh Singhal and Niranjan Shivaratri
2. Advanced UNIX Programming by Marc J. Rochkind

PGDCA14 --- Visual Basic Programming

UNIT I: Introduction To VB.NET

UNIT II: Control Customization
Introduction ,Toolbars ,Adding a Toolbar ,Selecting the Images for the Buttons ,Adding the Buttons , Writing the Button Code Other Toolbar Features, Existing Project , Open an Existing Project ,Save an Existing Project Import an Already Existing Form to a Project Add User Control to the Existing Project Inheriting a Form from an Existing Project ,Auto Hide ,Customizing Windows Placing Control on a Form Simplicity ,Positioning of Controls , Consistency , Aesthetics , Shapes and Transparency ,Selecting and Resizing Control , Single Control Selection , Multiple Control Selection , Relocating Control Properties of Windows, Docking ,Anchoring as an Alternative Resizing Technique , AutoScrolling Forms.

UNIT III: Property Setting
Introduction ,Setting Properties of Form and Control ,Properties Categories .

UNIT IV: VB.NET Variables
Introduction, VB.Net Variables, Naming Variables, Data Types ,The Variant Data Type ,Type onversions Data Type Constant ,Building Project ,Creating a Project ,Writing Code ,Opening a Project ,Compiling and Executing a Project ,Displaying Output ,Formatting Currency ,Formatting Numbers ,Formatting percentages ,Formatting Dates and Times ,The Format() Function ,Formatting Numbers ,Formatting Dates and Times’s Values ,User-defined Numeric Formats ,User-defined Date/Time Formats ,Operators, Arithmetic Operators ,Addition , Subtraction ,Multiplication ,Division ,Integer Division ,Modulo Division ,Exponentiation, Operator Precedence ,Arithmetic ,assignment Operators ,String Operators ,String Concatenation, String Assignment Operator ,Matching Strings Relational Operators ,Logical Operators.

UNIT V: Decision Making
Introduction Conditional Statement If-then Select-Case Looping Do While...End While For Next Nested loops.

UNIT VI: Functions
Introduction Import Statement MsgBox The MsgBox Function Input Box Function User Defined Calling Functions Built Functions Controls Text Box Controls Label Controls Frame Controls Command Button Check Box Option Button List Box Combo Controls Picture Controls Image Controls .

UNIT VII: Array
Introduction Array Menus and Dialog Boxes Dialog Boxes .

UNIT VIII: VB.NET - Programming

UNIT IX: File Handling
UNIT X: VISUAL C++ Programming
Introduction MFC and Windows MFC Fundamentals MFC Class Hierarchy MFC Member and
Global Functions MFC Class Member Functions MFC Global Functions Some Important Global
Functions.

UNIT XI: Object Properties
Introduction Various Object Properties Constructing Property Pages Adding a Property Sheet
Object CPropertyPage Member Functions Modeless Property Sheets MFC Library COBJECT
CArchive CWinApp CWnd CFile CGDIObject CException CDialog CString CEdit CList.

UNIT XII: Document/View Architecture
Introduction Resources Menus Accelerators Dialog Icon Bitmaps Versions Message Maps
Document/View Architecture The View The Document The Frame The Document/View Approach
Overview of the Single Document Interface (SDI) Creating a Single Document Interface Overview
of the Multiple Document Interface (MDI) Creating a Multiple Document Interface DATA
HANDLING IN VC++ Introduction Connecting to Data Source DAO ODBC, THREAD-BASED
MULTITASKING Introduction Thread-based Multitasking ,WIZARD Introduction Visual C++
APPWIZARD Class Wizard.

Reference Books:
1. Programming in Visual Basic 2008 by Julia Case Bradley and Anita

PGDCA15-L---Analysis and Design of Algorithms (Lab)
UNIT I: Introduction Algorithm and Algorithmic
Definition of Algorithm, Definition of Algorithmic, Example of an Algorithm Problems and
Instances, Characteristics of an Algorithm Available Tools and Algorithms First Algorithm Second
Algorithm Third Algorithm.

UNIT II: Building Blocks of Algorithms
Basic Actions and Instructions Control Mechanisms and Control Structures Procedure and
Recursion, Outline of Algorithmics, Understanding the Problem Analyzing the Problem Capabilities
of the Computer System.

UNIT III: Approximate vs Exact Solution
Choice of Appropriate Data Structures Choice of Appropriate Design Technology Specification
Methods for Algorithms Proving Correctness of an Algorithm Analyzing an Algorithm Coding the
Algorithm Areas of Study of an Algorithm Performance Analysis Performance Analysis – Space
Complexity Performance Analysis – Time Complexity

UNIT IV: Analyzing And Designing Algorithms
Introduction Analyzing Algorithms Criteria of Analyzing Algorithms Correctness Amount of Work
Done, The Space Usage Simplicity Optimality Asymptotic Complexity Asymptotic Notation
Asymptotic Notations Typical Running Time Functions Performance Analysis Practical Complexities
– Function Values Asymptotic Notations – Limits and Properties Designing Algorithms Designing,
Algorithms Using CAD Technologies, INTERNAL SORTING, Introduction Internal Sorting, Insertion
Sort, Insertion Sort, Algorithm, Insertion Sort Analysis Bubble Sort.

UNIT V: Bubble Sort Algorithm Bubble Sort Analysis Priority Queues
Heaps Heap Sort Heapify Algorithm Heap Sort Algorithm Analysis of Heapify Analysis of Heap Sort
Quick Sort Divide and Conquer, Quick Sort Analysis of Quick Sort Way Merge Sort Sorting on
Several Keys Binary Trees Complete Binary Tree Full Binary Tree
UNIT VI: Searching
Introduction Linear Search Binary Search Divide and Conquer, General Method, Binary Search, Comparative Study of Linear and Binary Search, Application of Searching. GRAPHS Introduction, Definition of Graph, Shortest Path Algorithms. SPANNING TREE Introduction Minimum Spanning Tree The Greedy Method General Method Prim’s Algorithm Kruskal’s Algorithm Solved Problems Dijkstra’s Algorithm Shortest Path.

UNIT VII: String Matching

UNIT VIII: Polynomials

UNIT IX: Matrices

UNIT X: Dynamic Programming

UNIT XI: Knapsack
Introduction, Knapsack, Knapsack Problem using Greedy Method, Job Sequencing, Job Sequence with Deadlines, Traveling Salesman, Euclidean, TSP Traveling Salesman Algorithm, Nearest Neighbour Algorithm on TSP, Convex Hull Algorithm Applications, TSP using the Branch and Bound Backtracking.

UNIT XII: Other Algorithm

Reference Books:
1. Introduction to the Design and Analysis of Algorithms (2nd Edition) by Anany Levitin
2. Design and Analysis of Distributed Algorithms by Nicola Santoro

PGDCA16-L---Visual Basic Programming (Lab)
UNIT I: Introduction To VB.NET

UNIT II: Control Customization
Introduction, Toolbars, Adding a Toolbar, Selecting the Images for the Buttons, Adding the Buttons, Writing the Button Code Other Toolbar Features, Existing Project, Open an Existing Project, Save an Existing Project Import an Already Existing Form to a Project Add User Control to the Existing
Project Inheriting a Form from an Existing Project, Auto Hide, Customizing Windows Placing Control on a Form, Simplicity, Positioning of Controls, Consistency, Aesthetics, Shapes and Transparency, Selecting and Resizing Control, Single Control Selection, Multiple Control Selection, Relocating Control Properties of Windows, Docking, Anchoring as an Alternative Resizing Technique, AutoScrolling Forms.

UNIT III: Property Setting
Introduction, Setting Properties of Form and Control, Properties Categories.

UNIT IV: VB.NET Variables
Introduction, VB.Net Variables, Naming Variables, Data Types, The Variant Data Type, Type conversions, Data Type Constant, Building Project, Creating a Project, Writing Code, Opening a Project, Compiling and Executing a Project, Displaying Output, Formatting Currency, Formatting Numbers, Formatting percentages, Formatting Dates and Times, The Format() Function, Formatting Numbers, Formatting Dates and Times’s Values, User-defined Numeric Formats, User-defined Date/Time Formats, Operators, Arithmetic Operators, Addition, Subtraction, Multiplication, Division, Integer Division, Modulo Division, Exponentiation, Operator Precedence, Arithmetic, assignment Operators, String Operators, String Concatenation, String Assignment Operator, Matching Strings Relational Operators, Logical Operators.

UNIT V: Decision Making
Introduction Conditional Statement If-then Select-Case Looping Do While...End While For Next Nested loops.

UNIT VI: Functions
Introduction Import Statement MsgBox The MsgBox Function Input Box Function User Defined Calling Functions Built Functions Controls Text Box Controls Label Controls Frame Controls Command Button Check Box Option Button List Box Combo Controls Picture Controls Image Controls.

UNIT VII: Array
Introduction Array Menus and Dialog Boxes Dialog Boxes.

UNIT VIII: VB.NET - Programming

UNIT IX: File Handling
Introduction Files Classification Handling Files using Function and Classes Directory Class File Class File Processing.

UNIT X: VISUAL C++ Programming
Introduction MFC and Windows MFC Fundamentals MFC Class Hierarchy MFC Member and Global Functions MFC Class Member Functions MFC Global Functions Some Important Global Functions.

UNIT XI: Object Properties
Introduction Various Object Properties Constructing Property Pages Adding a Property Sheet Object CPropertyPage Member Functions Modeless Property Sheets MFC Library CObject CArchive CWinApp CWnd CFile CGDIObject CExcept CDialog CString CEdit CList.

UNIT XII: Document/View Architecture
Introduction Resources Menus Accelerators Dialog Icon Bitmaps Versions Message Maps

Reference Books:
1. Programming in Visual Basic 2008 by Julia Case Bradley and Anita

SEMESTER II
PGDCA21 --- Software Quality And Testing
UNIT I: Introduction To Software Testing

UNIT II: The Taxonomy Of Bugs
Introduction The Consequences of Bugs The Importance of Bugs How Bugs Affect Us – Consequences Flexible Severity rather than Absolute Taxonomy for Bugs Requirements, Features and Functionality Bugs Structural Bugs Data Bugs Coding Bugs Interface, Integration and System Bugs Test and Test Design Bugs Software Testing Testing and Design Styles Memory related Bugs Concurrent Bugs.

UNIT III: Software Testing Techniques

UNIT IV: Flow graphs And Path Testing

UNIT V: Transaction Flow Testing

UNIT VI: Data Flow Testing
UNIT VII: Syntax Testing

UNIT VIII: Logic Based Testing
Introduction Motivational Overview Hardware Logic Testing Specification Systems and Languages Knowledge based Systems Overview Decision Tables Definitions and Notation Decision Table Processors Decision Tables as a Basis for Test Case Design Expansion of Immaterial Classes Test Case Design Decision Tables and Structure Path Expressions Boolean Algebra Boolean Equations KV Charts The Problem Introduction to Software Testing Simple Forms Three Variables Four Variables and More Specifications Finding and Translating Logic Ambiguities and Contradictions Don’t-Care and Impossible Terms.

UNIT IX: States, State Graphs And Transition Testing

UNIT X: Testing Specialized Environments, Architecture And Applications

UNIT XI: Testing Tactics And Debugging

UNIT XII: Strategic Issues & UNIT Testing

Reference Books:
2. Fuzzing for Software Security Testing and Quality Assurance by Ari Takanen, Jared DeMott

PGDCA22 --- Advanced Networks
UNIT I: Introduction To Computer Networks
Introduction ,Use of Computer Networks , Business Use , Scientific Use - Computer Enhanced ,Collaborative Work (CECW) ,Network Hardware ,Classification Based on Interconnected Computers by Scale, Internetworks ,Network Software , Layering the Communications Process , Interfaces and Services

UNIT II: Reference Models
Reference Model, A Comparison of the OSI and TCP/IP Reference Models, Example Networks, Internet, Connection-Oriented Networks.

UNIT III: The Physical Layer
Introduction, Theoretical Basic for Data Communication, Transmission Media, Guided Transmission Media, Twisted Pair (Copper Conductors), Coaxial Cable, Optical Fiber.

UNIT IV: The Physical Layer-II

UNIT V: The Data Link Layer

UNIT VI: Data Link Protocols
High-level Data Link Control (HDLC), Point-to-Point Protocol (PPP), Multiple Access Protocols, Aloha and Slotted Aloha.

UNIT VII: The Network Layer

UNIT VIII: Internetworking
Introduction, Internetwork, Internet, Routing in the Internetwork, Virtual Circuits, Fragmentation, Network Layer in the Internet, IP Protocol, IP Addresses, Internet Control Protocols.

UNIT IX: Transport Layer

UNIT X: Internet Transmission Protocol

UNIT XI: OSI Upper Layers

UNIT XII: Obtaining An Address
Dynamic Host Configuration Protocol (DHCP), Hierarchical Naming, Domain Name System (DNS), Address Resolution Protocol (ARP), Default Gateway, File Transfer Protocol (FTP), Electronic Mail.

Reference Books:
1. Grid Networks: Enabling Grids with Advanced Communication Technology by Franco Travostino
PGDCA23 --- OOAD and UML

UNIT I: Object Modeling Concepts

UNIT II: Object and Class Concepts

UNIT III: Structured approach vs. object oriented approach
Introduction, Objectives, What is software, High-Quality software, Where does the traditional approach fail, Pitfalls of top down design, How object method succeeds, Merits of object approach, Summary, Objective type questions, Review questions.

UNIT IV: Road Map for OOA and OOD

UNIT V: Unified Modeling Language
Objectives, Introduction, UML and brief background, Architecture of UML, Why is UML powerful, What is a process, Phases and Iterations, Steps in UML, Modeling and UML, Goals of UML, Outside The Scope Of UML.

UNIT VI: UML Modeling elements
Introduction, Objectives, Class, Attribute, Attribute Compartment Attribute Scope, Derived Element, Operation, Object, Interface, Packages.

UNIT VII: Relationships connect modeling elements
Introduction, Objectives, Relationships Notations, Association, Association End, Aggregation, Composition, Generalization, Dependency, Realization, Relationship between Objects.

UNIT VIII: Design Methodology
Introduction, Methodology Preview, OMT as Software Engineering Methodology, OMT Methodology, Problem Statement, ATM Example, System Design, Overview Breaking a System into Sub-systems, Identifying Concurrency, Allocation of Sub-systems

UNIT IX: Management of Data Storage

UNIT X: Unified Modeling Language

UNIT XI: Interface
When to Use: Class Diagrams, How to Draw: Class Diagrams, Relationships between Classes, Component Diagram, Composite Structure Diagram, UML 2.0 Composite Structure Diagram, Deployment Diagram, Package Diagram, Object Diagram, Package, Modeling Groups of Elements: Packages

UNIT XII: Behavioral Modeling In UML
Introduction, Behavioral Modeling, Modeling Object Interaction, Interaction Diagrams, Sequence
Diagrams, What is a Collaboration?, Interaction Based, Contract Based, State Based, Event Based, Modeling Workflow and Operation, Activity Diagrams,

Reference Book
1. Object Oriented Analysis & Design by Atul Kahate
2. Structured System Anal And Design by Isrd, ISRD Group

PGDCA24 --- Advanced Java

UNIT I: Introduction to JAVA Programming
Introduction, Higher level Languages, Java: an Introduction, Life cycle of a Java program, Java virtual machine, Programming in Java.

UNIT II: Declaring Variables
Variables, Arrays, Classes in Java, Inheritance in Java, Constructor, Methods, The keyword, his.,

UNIT III: Packages and Interfaces
Packages and Interfaces in JAVA Packages, Setting of class path, Interfaces, Modifiers, Access specifiers Rules.

UNIT IV: Exception Handling
Introduction, Exceptions in Java, Try block, Catch block, Throws clause, Finally block.

UNIT V: HTML and Applet Programming

UNIT VI: The class applet
Life cycle of an applet, Incorporating an applet in a HTML page, Passing parameter to Applet, Graphics in Java, Color control, Font Control.

UNIT VII: GUI Concept in JAVA
Introduction, The abstract Windowing toolkit, Layout managers, Nested panels

UNIT VIII: The Java GUI components
Containers, Creating an User Interface, A sample, Deciding layout, Event Handling, Event Handling for buttons, Mouse events.

UNIT IX: Multithreading
Introduction, Creating and managing threads, Life cycle of a thread, Daemon threads, Thread scheduling and, setting the priorities, Thread synchronization, Threadgroup, Problems.

UNIT X: Animation in JAVA
Introduction, Flicker and how to avoid it, Reducing flicker using double-buffering

UNIT XI: Animation using Images
Retrieving and using sounds, Creating applets with double-buffering.

UNIT XII: Concept of Streams
Input and Output Introduction, Concept of Streams, Java.io interfaces, java.awt.print package.

Reference Books:
1. Core Java by Cay S. Horstmann and Gary Cornell
2. Advanced Programming In Java by Noel Kalicharan.

PGDCA25-L---OOAD and UML (Lab)

UNIT I: Object Modeling Concepts

UNIT II: Object and Class Concepts
Aggregation, Generalization, Multiple Inheritances, Derived Data and Constraints, Dynamic

UNIT III: Structured approach vs. object oriented approach
Introduction Objectives, What is software, High-Quality software, Where does the traditional approach fail, Pitfalls of top down design, How object method succeeds, Merits of object approach, Summary, Objective type questions, Review questions.

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UNIT IX: Management of Data Storage

UNIT X: Unified Modeling Language

UNIT XI: Interface
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Introduction, Behavioral Modeling, Modeling Object Interaction, Interaction Diagrams, Sequence Diagrams, What is a Collaboration?, Interaction Based, Contract Based, State Based, Event Based, Modeling Workflow and Operation, Activity Diagrams,

Reference Book
1. Object Oriented Analysis & Design by Atul Kahate