

LESSON PLAN

Subject: Principles of Programming

Subject code: MCA-20-24(I)

Sr. No	Topic Covered	No. of Lectures	CO Covered	Teaching Methodology
1	Introduction to Programming Languages	1	CO1	Board
2	History, evolution, and impact of programming paradigms	1		PPT
3	Role of Programming Languages, Importance and application areas of programming languages	1		Board
4	Characteristics of Good Programming Languages Features that make a language suitable for various tasks	1		Video
5	Effects of Programming Environment Programming environments and how they affect language design	1		PPT
6	Translators and Virtual Architectures Compilers, interpreters, and virtual machines overview	2		Video
7	Binding and Binding Time Static vs. dynamic binding and their significance	1		Video
8	Language Syntax Structure of programming languages: Syntax and semantics	1		Board
9	Program Analysis and Object Program Synthesis Program analysis and the process of generating object programs	2		PPT
10	Formal Translation Models Introduction to BNF Grammars and their role in syntax specification	2		Board
11	General Parsing Techniques	1		Board

	Parsing techniques and algorithms for language translation			Video
12	Recursive Descent Parsing Detailed discussion on recursive descent parsing technique	2		Video
13	Revision & Doubt Session 1 Review of Unit I topics, doubt clearing, and discussion			
14	Chomsky Hierarchy of Formal Languages Overview of the Chomsky hierarchy and its importance	2	CO2	Board
15	Regular Expressions and Finite State Automata Regular languages and finite state automata concepts	2		Board
16	Context-Free Grammars and Pushdown Automata Deep dive into context-free grammars and pushdown automata	2		BOARD
17	Ambiguous Grammars and Language Semantics Dealing with ambiguous grammars and introduction to language semantics	3		PPT
18	Attribute Grammars and Denotational Semantics Defining attributes in grammars and their use in semantics	1		Board
19	Program Verification and Validation Techniques for ensuring program correctness and reliability	2		PPT

20	Data Types and Type Checking Types, type declarations, and type checking mechanisms	2		PPT
21	Type Promotion and Type Casting Mechanisms of type promotion and type casting in programming languages	2		PPT
22	Composite Data Types and Enumerators Exploring complex data types and enumerators	1		PPT
23	Structured Data Types and Abstract Data Types Differences and significance of structured and abstract data types	1	CO3	Board
24	Information Hiding and Subprograms Concepts of encapsulation, modularity, and subprogram design	1		Board
25	Good Program Design Practices Best practices for designing effective programs	1		PPT
26	Type Definitions, Type Equivalence, and Compatibility Detailed discussion on type definitions and compatibility	1		Video
27	Inheritance and Derived Classes Basic principles of inheritance and the role of derived classes	1		PPT and Video
28	Polymorphism and Software Reuse Implementing polymorphism and promoting software reuse	1		Video

29	Sequence Control Implicit and explicit sequence control within programming languages	1		PPT
30	Subprogram Sequence Control Sequence control between statements and subprograms	2		PPT
31	Revision & Doubt Session 3 Review of Unit III topics, doubt clearing, and discussion			
32	Parameter Passing Techniques Call by value, reference, and other parameter passing mechanisms	1	CO4	PPT
33	Static & Dynamic Scoping, Memory Management Static vs. dynamic scoping, heap storage management	1		Board
34	Exceptions, Co-Routines, and Parallel Programming Exception handling, co-routines, and introduction to parallel programming	1		Board
35	Processor Design, Network Programming, Applets, XML Hardware/software architecture, applets, scripting languages, and XML	1		Board