

Devi Ahilya University, Indore, India Institute of Engineering & Technology			II Year B.E. (Computer Engg.) (Full Time)				
Subject Code & Name	Instructions Hours per Week			Credits			
CER4C3 Abstraction and Paradigms for Programming	L	T	P	L	T	P	Total
Duration of Theory Paper: 3 Hours	3	1	1	3	1	1	4+1(P)

Learning Objectives:

To develop an understanding of different paradigms of programming languages. Students will gain both a conceptual understanding of specification and design issues in different paradigms of programming languages and their implementation

Prerequisites: Discrete Structures, Programming Fundamentals.

COURSE CONTENTS

UNIT I

Study of Programming Languages- History of Programming Languages, Features of good Language; Language Design Issues, Static and Dynamic type Checking, Type Checking : Dynamic Type Checking ,Static Type Checking, Strong Typing, Type of Bindings, Language Paradigms:-Imperative, Object Oriented, Functional Programming, Logic Programming, Parallel Programming, Concurrent Programming .Introduction to Open Source Software.

UNIT II

Programming with Python:-Basic Syntax, Variable Types, Basic Operators, Decision Making, Loops, Numbers, Strings, Lists, Tuples, Dictionary, Functions, Modules, Class/Object, Regular Expression, Database Access, Multithreading, Web programming with Python, Web Scraping, File I/O, Package Management Tools, Python Exercises

Unit III

Imperative Programming with Advanced C++: - Types and Declarations, Pointers, Arrays, Structures, Unions, Enumerations, Statements, Expressions, Functions.

Abstraction Mechanisms: Classes, Special Operators, Hierarchies, Templates, Generic Programming

Standard Template Library in C++: -

Containers: Abilities, Operations, Types. Examples: Vector, Lists, Maps and Multimaps, Unordered containers .

Algorithms: Non-Modifying, Modifying

Iterators: Input, Output, Forward, Bidirectional, Random Access. Programming Exercises.

UNIT IV

JavaScript : Overview, Syntax, Placement, Variables, Operators, Data Types Control Structures, String ,Number, Regular Expressions ,Math ,Arrays, Array Methods, Array Sort, Events, Cookies, Page Redirect, Dialog Box, Void Keyword , Page Printing, Objects, Forms, Functions, Error handling, Validation, Animation, Basics of MVC Architecture

JavaScript Frameworks : JQuery, Introduction to Node.js and Angular.js

Unit V:-

XML : Basics, Namespaces , Schema, XSLT, XPATH, Document Object Model, Simple API for XML

Learning Outcomes:

Students will able to apply different paradigms of programming languages in real world problems.

BOOKS RECOMMENDED:

- [1]T. W. Pratt, M. V. Zelkowitz, Programming Languages: Design and Implementation, 4/e, Pearson Education, 2000.
- [2]D. P. Friedman, M Wand, Essentials of Programming Languages, 3/e, MIT Press, 2008.
- [3]R. W. Sebesta, Concepts of Programming Languages, 8/e, Addison Wesley, 2008
- [4] David Hunter “Beginning XML”, Wiley Dreamtech, Fourth Edition,2007.
- [5] Kal Ahmed, Sudhir Ancha “Professional Java XML”,SPD 2004.