



CS 353

PRINCIPLES OF PROGRAMMING LANGUAGES

UNIT-I

Introduction:

The Art of Language Design, Programming Language Spectrum, Why Study Programming Languages? Compilation and Interpretation, Programming Environments, Overview of Compilation.

Programming Language Syntax:

Specifying Syntax: Regular Expressions and Context-Free Grammars, Scanning, Parsing,

UNIT-II

Names, Scopes, and Bindings:

The Notion of Binding Time, Object Lifetime and Storage Management, Scope Rules, Implementing Scope, The Meaning of Names within a Scope, The Binding of Referencing Environments, Macro Expansion, Separate Compilation

Control Flow:

Expression Evaluation, Structured and Unstructured Flow, Sequencing, Selection, Iteration, Recursion, Non determinacy

UNIT-III Data Types:

Type Systems, Type Checking, Records (Structures) and Variants (Unions), Arrays, Strings, Sets, Pointers and Recursive Types, Lists, Files and Input/ Output, Equality Testing and Assignment.

Subroutines and Control Abstraction:

Review of Stack Layout, Calling Sequences, Parameter Passing, Generic Subroutines and Modules, Exception Handling, Events

UNIT-IV

Data Abstraction and Object Orientation:

Object-Oriented Programming, Encapsulation and Inheritance, Initialization and Finalization, Dynamic Method Binding, Multiple Inheritance.

Concurrency:

Concurrent Programming Fundamentals, Implementing Synchronization, Language-Level Mechanisms, Message Passing

UNIT-V

Run-time Program Management:

Late Binding of Machine Code, Inspection/Introspection

Functional Languages:

Functional Programming Concepts, A Review/Overview of Scheme, Evaluation Order Revisited, Higher-Order Functions, Theoretical Foundations, Functional Programming in Perspective

Logic Languages :

Logic Programming Concepts, Prolog, Theoretical Foundations, Logic Programming in Perspective

Suggested Reading:

1. *1.Programming Language Pragmatics*, 3/ e, Michael Scott, Elsevier, Morgan Kaufmann, 2009.
1. *2.Concepts of Programming languages*, Sebesta, 8/ e, Pearson.
1. *3.Programming Languages Design and Implementation* , 4/e Pratt , Zelkowitz, PHI
1. *4.Programming Languages*, Louden, 2 /e, Cengage, 2003