

CS-602 – Principles Of Programming Languages

RATIONALE:-

The purpose of this subject is to cover the underlying concepts and techniques used in Programming Languages. It provides general idea related to operating & Programming environment.

PREREQUISITE:-

The students should have general idea about programming language . In addition, a familiarity with Elementary and Structured Data Types is needed for better understanding.

UNIT-I

Language Evaluation Criteria, influences on Language design, Language categories, Programming Paradigms – Imperative, Object Oriented, functional Programming , Logic Programming. Programming Language Implementation – Compilation and Virtual Machines, programming environments. Issues in Language Translation: Syntax, Semantics, Stages, analysis and synthesis, Parse Tree, CFG and BNF grammar.

UNIT-II

Data types: Introduction, primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types. Names , Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization. Sequence control with Expressions, Conditional Statements, Loops, Exception handling.

UNIT-III

Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, design issues for functions overloaded operators, co routines.

UNIT-IV

Abstract Data types: Abstractions and encapsulation, introductions to data abstraction, Static and Stack-Based Storage management. heap based storage management. Garbage Collection. object oriented programming in small talk, C++, Java, C#, PHP, Perl . Concurrency: Subprogram level concurrency, semaphores, monitors, message passing, Java threads, C# threads.

UNIT – V

Exception handling, Exceptions, exception Propagation, Exception handler in C++ and Java. Logic Programming Language : Introduction and overview of logic programming, basic elements of prolog, application of logic programming. Functional Programming Languages: Introduction, fundamentals. Introduction to 4GL.

Suggested Reading:

1. Sebesta, "Concept of programming Language", Pearson Edu.
2. Loudon, "Programming Languages: Principles & Practices" , Cengage Learning
3. Tucker, " Programming Languages: Principles and paradigms ", Tata McGraw –Hill
4. Terrance W Pratt, "Programming Languages: Design and Implementation" Pearson Edu.
5. Caylo Ghezzi & Mehdi Jazayeri " Programming Languages Concepts", Willey India
- 6 E Horowitz, "Programming Languages", 2nd Edition, Addison Wesley