

PRINCIPLES OF PROGRAMMING LANGUAGES

1. Introduction

Objective: The aim of this course is to provide students an understanding of the concepts underlying design and implementation of programming languages. The evolution of these concepts will be presented through the study of languages from FORTRAN to Java. The course will make the student understand the underlying differences and common features of procedural, functional, logic, object-oriented and scripting languages.

Credits: 3-0-0

2. Course Outline

UNIT – I

Basics of programming languages; language design and implementation issues; impact of machine architectures; what makes a good (or successful) language.

UNIT – II

Common features of programming; elementary data types; encapsulation; inheritance; sequence control.

UNIT – III

Subprogram control; storage management and run-time structures; distributed processing and network programming.

UNIT – IV

Summaries of popular procedural and object-oriented languages; FORTRAN, C; Smalltalk, C++, Java;

UNIT – V

Summaries of popular logic and functional languages; LISP, ML; Prolog; specialised languages such as Postscript, PHP.

3. Reading Material

Text Books

1. T.W. Pratt and M.V. Zelkowitz. "Programming Languages: Design and Implementation," 4th Edition, Prentice-Hall India (2001).

Additional Readings

1. Robert W. Sebesta. "Concepts of Programming Languages," 10th Edition, Pearson Publishing (2009).