COURSE NUMBER/TITLE: CS-342 [354-342] SURVEY OF PROGRAMMING LANGUAGES

CREDITS: 3

COURSE DESCRIPTION: Programming languages and language design. Comparative study of three modern high level languages: Systems Programming, Embedded Computer Systems and Artificial Intelligence. Language similarities, differences, strengths and weaknesses. Development of applications in the representative languages. Prerequisites: CS-244 Data Structures and CS-245 Introduction to Computer Organization

Programming Languages Design & Implementation, 3rd Ed., by Pratt (adopted S97)
Previous:
Applications in Programming in ANSI C, 2nd Ed., by Johnsonbaugh (adopted F93)
Prolog Programming in Depth, 1st Ed., by Covington (adopted S91)
Understanding ADA with Abstract Data, 2nd Ed., by Shumate
Comparative Programming Languages, 1st Ed., by Wilson

COURSE OBJECTIVES:
As a result of taking this course, the students will be able to:
1. Learn a new programming language on an independent basis.
2. Understand the major concepts of programming language design.
3. Develop and maintain application programs in the three languages presented.
4. Understand the syntax and semantics of the language elements and constructs in the languages covered.
5. Identify the strengths and weaknesses of programming languages.
6. Select a programming language for a given application.
7. Select a language construct for a given situation.

COURSE OUTLINE:
1. Introduction of the Fundamental Concepts of Programming Language
   - Diversity of Languages, Problem Solving Process, and Language Design
   - Lexical Elements, Syntax, and Semantics
2. Historical Survey, Early Machines, Examples of different languages to illustrate application differences and similarities
3. Modern Systems Programming Language
   - Introduction
   - Syntax
   - Semantics
   - Special Features
   - Applications Development
4. Modern Embedded Computer Systems Language
   - Introduction
   - Syntax
   - Semantics
   - Special Features
   - Applications Development
5. Modern Artificial Intelligence Language
   - Introduction
   - Syntax
   - Semantics
   - Special Features
   - Applications Development
6. Comparative Practical Applications