# CS 4337: Programming Languages

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***Office Hours***: Monday/Wednesday 12:00 – 2:00 pm

***Prerequisites***: CS 2315 or CS 3333 and CS 2305.

***Text***: Programming Languages – Concepts of Programming Languages, sixth edition, Robert Sebesta, (Addison Wesley Publication, 2003).

***Objectives***:
To gain an understanding of the fundamental concepts that underlie programming languages. To obtain a familiarity with various languages (Ada, C++, C #, Java, Smalltalk, Scheme, ML, and Prolog) which reflect these concepts. Discuss design issues of the various language constructs including programming in Functional and Logic languages.

Examinations will cover the material discussed in the class; they may or may not be in the text. It is important for a student to attend the class regularly and take notes as and when necessary. Some of the class notes material will be posted on the WebCT.

***Grading policy***: Grades for the course will be based on the following: (subject to change)

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| Exam 1 | 20% |
| Exam 2 | 20% |
| Final Exam | 25% |
| Programs/Assignments | 35% |

Academic honesty is governed by the policies of UTD (see undergraduate catalog) and Department of Computer Science. Homework and programming assignments are to be individual efforts. Students caught cheating in exams/quizzes will be subjected to penalty. The penalties for cheating are severe; ranging from no credit for the exam/quiz to an F in the course or expulsion from the University.

Written assignments turned in must be neat and readable, and written on one side of the paper only. If the assignments turned in are not legible, they may not be graded and the student will get F for that particular assignment. Students are expected to present the materials in a professional manner.

***Programs and Assignments***:
There will be 5 to 8 assignments/programs assigned during the semester. Assignments/Programs are to be turned in at the beginning of the class on the due date. Assignments or Programs turned in after the due date will be subjected to penalty. Take home assignments will not be accepted, if it is more than one week late.

**Programming Languages CS 4337 - 001**

Class Schedule for Spring 2005

(subject to change)

1. Introduction (chapter 1)
   Language Categories, Language Evaluation Criteria
   Language Trade off, Language Implementation

2. Syntax and Semantics (chapter 3 & 4)
   Formal Methods of Describing Syntax and Semantics
   Grammars, BNF & EBNF
   Recursive-Descent Parsing, Bottom-Up Parsing

3. Bindings, Scope, and Data Types ( chapter 5 & 6)
   Binding concepts, Types System, Type Checking
   Lifetime of Variables and Bindings, Strong typing
   Dangling references, Garbage
   Primitive types and User Defined Types

4. Expressions and Subprograms (chapter 7 & 9)
   Expression evaluation, Type Conversion
   Referencing environments and scope rules
   Design Issues of Subprograms

5. Modular programming and OOP (chapter 11 & 12)
   Data Abstraction, packages, classes
   Design issues of OOP, Encapsulation and Inheritance
   Dynamic Method Binding

6. Functional programming (chapter 15)
   Functional programming in perspective, Expressions, Lists, Recursion, Lambda Expressions, Delayed evaluation, Strings, Vectors, , Binary Search Trees , and Programming in Scheme and SML

7. Logic programming (chapter 16)
   Predicate Calculus and Proving Theorems, An Overview of Logic Programming, Unification, Resolution, Backtracking, Lists and Trees and Programming in Prolog

Important dates (subject to change)

Exam 1 Monday, February 14, 2005
Exam: 2 Monday, March 21, 2005
Final Exam: Monday, April 25, 2005