

Principles of Programming Languages

CS 357 Syllabus

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Dr. Lou D'Alotto
Office: 2C07b
Phone: 262-2541
e-mail: dalotto@york.cuny.edu
web site: kolmogorov.york.cuny.edu

Textbook: Scott, M., L., Programming Language Pragmatics, Morgan Kaufmann, 2000.

Syllabus:

1. Language Design
2. History of Programming Languages
3. Programming Language Qualities
4. Considerations of machine architectures
5. How computer languages are translated
 - (a) Programming language syntax
 - (b) Levels of Translation
 - (c) Formal Models
 - i. BNF Grammars
 - ii. Lexical Analysis
 - iii. Regular expressions
 - iv. The compiling process
 - v. Finite State Automata
 - vi. Pushdown Automata
 - vii. Turing Machines
 - viii. Expressions and Parse Trees
 - ix. Ambiguous Grammars

x. Parsing Algorithms

6. Modelling Language Properties
7. Imperative Programming
 - (a) Elementary types, values, and expressions
 - (b) Semantics
 - (c) Expressions in Real Languages
 - (a) Basic Concepts of OOP
 - (b) Initialization of objects
 - (c) Inheritance
 - (d) Abstract classes
8. Object-Oriented Programming
9. Functional Programming
 - (a) Expressions and evaluations
 - (b) Lists
 - (c) Control Flows
10. Elementary data Types
 - (a) Data Objects
 - (b) Variables and Constants
 - (c) Declarations
 - (d) Type Conversions

This is a Writing Intensive course. Hence we will have regular assignments (approx. one per week) that will include a significant writing component as well as problems. These assignments will be submitted, graded and revised. No late assignments will be accepted.

Grading Policy:

Two exams (Midterm and a Final (entire semester)) and weekly written assignments.

1. Midterm: 30 percent
2. Final: 40 percent
3. Assignments: 30 percent

Check my web site frequently as course materials and information will be posted regularly. In addition to the regular coursework and assignments, you are responsible for all CS 357 course material posted on the web site. Any student

having any special needs is invited to self identify himself or herself to the professor, in confidence, so that proper arrangements can be made.

References:

1. Tucker, A, Noonan, R., Programming Languages Principles and Paradigms, McGraw Hill, 2002.
2. Sethi, R., Programming Languages Concepts & Constructs, 2nd ed. Addison Wesley, 1997.
3. Pratt and Zelkowitz, Programming Languages Design and Implementation, 4th ed. Prentice Hall, 2001.