CSE 340: Principles of Programming Languages  
Spring 2012

Time and Place:
- T Th 4:30 PM - 5:45 PM, BYAC 110

Instructor: Yi Chen
- Office Hours: T 5:45 —6:30PM (after class), Th 3-4:15 (before class), or by appointment, BY 562
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Textbook

Prerequisite
CSE 120, CSE 310,

Course Objective
We will study several issues in programming languages: what is a programming language, how do they work, and why is one language better than another? In answering these questions, it is hoped that the student will:
- Gain insight into the underlying principles and concepts of programming languages.
- Gain an understanding of how some well known programming languages implement these principles and concepts.
- Gain an overview of programming language translation process.
- Gain exposure to some important programming paradigms (imperative, object oriented, functional, and logic).
- Improve analytical skills

Topics covered:
Introduction: abstractions; language paradigms; Turing completeness; language definition - syntax and semantics; compilation versus interpretation (Chapter 1)

Syntax: tokenizing versus parsing; BNF grammars; EBNF grammars and recursive-descent parsers; parse trees and abstract syntax trees; one-token lookahead parsing (Chapter 6)

Basic Semantics: attributes and binding; scope; symbol tables; allocation and storage classes; variables; pointers (Chapter 7)
Data Types: type systems; type equivalence; type compatibility; type inference; type coercion (Chapter 8)

Control: expressions, selection, loops, go-to, parameters, activation records for function calls (Chapter 9, 10)

Object-oriented Programming (Chapter 5)

Functional Programming: functional algorithms; tail-recursion; lambda calculus - conversions, Church-Rosser theorem, fixed-points (Chapter 3)

Logic Programming: Horn clause logic, resolution and unification (Chapter 4)

**Grading**

**Attendance**
You are required to attend all classes. You are responsible for everything covered in class.

**Homework**
Homeworks will mainly be used for you to better learn the content in the course, but will not be graded due to limited TA/grader hours we managed to have. We only randomly check some to make sure that you have worked on the homework seriously and submit them on time. Note that homeworks are important for you to achieve good performance on exams.

**Programming Projects**
There will be individual programming projects.

**Exams and Final**
There will be four exams and a cumulative final. All exams will be closed-book, closed-note, closed-cell phone, closed-radio, etc, unless otherwise announced later. Barring truly exceptional circumstances, no one will be allowed to take make-up exams. Exam dates will be posted well ahead.

**Grading Questions**
Questions on grading need to be brought to the TA’s attention within one week of the assignment being returned.
Academic Dishonesty
Cheating will result in failure (getting the grade XE) in the course. The following is a quote from http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm.