

# CSC-521 - Design and Organization of Programming Languages

## Spring, 2011

**Instructor:** Michael Black  
**Email:** mblack@american.edu  
(please include "CSC-521" in the subject line of your emails to me)

**Textbook:** Concepts of Programming Languages, Robert Sebesta (7th ed or later)

**Times:** 5:20-6:35, Tuesdays and Thursdays

**Office hours:** Tuesdays and Thursdays: 2:45-5:15, 8:00-8:30. My office is MCK102, and my office phone number is (202) 885-2011.

**Course Description:** This course will cover the components of programming languages and how they are made. Language parsing and compiling will also be covered. Several different programming languages will be discussed, including Fortran, Pascal, and LISP.

**Prerequisite knowledge:** You should have experience programming in a high level language (such as Java). CSC280 and CSC281 are normally prerequisites for this course.

**Homework / Projects:** There will be approximately 5-10 assignments that I will post on the course Blackboard account. These assignments will include programming projects in various languages, and a compiler design project. All assignment solutions should be submitted using Blackboard.

### Grading:

Homeworks/Projects: 50%  
Midterm: 25%  
Final Exam: 25%

100-93 A 92-90 A- 89-87 B+ 86-83 B 82-80 B- 79-77 C+ 76-73 C 72-70 C- 69-60 D 59-0 F

**Late Policy:** All assignments are due at 11:59 pm on the stated deadline. Late homeworks and projects will not be accepted unless arrangements are made with the professor *before the assignment is due*.

Missed exams may not be made up. If a true emergency forces you to miss an exam, permission to be excused must be sought in writing from me. If granted, the final exam score will replace the score of the missed exam.

### Academic Integrity:

Plagiarism and academic misconduct are defined in the University's Academic Integrity Code. You should be familiar with what constitutes academic dishonesty. In particular, you should observe the following rules:

- Collaboration on homework and on projects outside of your project group is forbidden. Any information taken from the internet, books, or anywhere else for use on your assignments must be cited. You are permitted to discuss your work with other students at the conceptual level only.
- Your code must be entirely your own. You are not permitted to share code or use code obtained from the internet in your work.
- Unless otherwise stated, all exams will be closed-book, closed-notes.
- Instances of plagiarism may be reported and could result in disciplinary action.

**Feedback:**

I am eager to receive suggestions on how I can improve this course. If you have any comments, please feel free to tell me, either in person, by email, or anonymously.

## Approximate Course Outline (subject to modifications)

<u>Week</u>	<u>Subject</u>	<u>Readings</u>
1	Evaluating languages	Chapter 1 (2-20)
	Architecture and compiling	Chapter 1 (20-34)
2	The whirlwind language history tour	Chapter 2 (40-115)
	Assembly language	---
3	Assembly language	---
	Fortran	Chapter 2 (45-52)
4	Pascal and C	Chapter 2 (82-87)
	LISP and Scheme	52-57, 628-644
5	Context-free grammar, BNF	Chapter 3 (124-135)
	BNF continued	Chapter 3 (135-141)
6	Attribute grammar and static semantics	Chapter 3 (141-148)
	Dynamic semantics	Chapter 3 (148-168)
7	Lexical analysis and state machines	Chapter 4 (176-181)
	Parsing	Chapter 4 (181-200)
8	Variables	Chapter 5 (206-222)
	Typing	Chapter 5 (222-228)
	<b>Midterm Exam</b>	
9	Scope	Chapter 5 (228-242)
	Primitive types and strings	Chapter 6 (252-261)
10	Arrays	Chapter 6 (266-279)
	Pointers, referencing, and garbage collection	Chapter 6 (292-305)
11	Expressions	Chapter 7 (312-330)
	Assignment	Chapter 7 (330-335)
12	Selection statements	Chapter 8 (342-352)
	Iterative statements	Chapter 8 (352-366)
13	Subroutines	Chapter 8 (378-387)
	Parameter passing	Chapter 9 (387-408)
14	Implementing subroutines	Chapter 10 (428-438)
	Implementing subroutines continued	Chapter 10 (439-452)