

COMP 524 – Programming Languages

Spring 2009

Meeting Location: Fred Brooks Building 007
Meeting Times: Tu Th 3:30-4:45pm
Course Webpage: <http://www.cs.unc.edu/~olivier/comp524>
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Office Hours: Tu W Th 2:00-3:00 or by appointment.

Course Objective: This is an upper-division undergraduate course on programming language concepts and their realization in specific languages. The objective is the study of *how programming languages work*. General programming language concepts covered in this course will include data types, scope, control structures, procedural abstraction, classes, concurrency, and run-time implementation. In particular, we emphasize practical experience with these concepts and the different programming languages paradigms through several programming assignments. By the end of this course, you will be able to

1. Evaluate new and unfamiliar programming languages.
2. Describe characteristics of the major paradigms of programming languages--functional, logic, imperative, object-oriented.
3. For each of the major programming language paradigms, demonstrate the use of one representative language to solve an appropriate problem.
4. Explain the significance of key programming language design issues, such as binding time and type checking.
5. Compare and contrast compilers, interpreters, and virtual machines.

Prerequisites: “COMP 410: Data structures” is the official course prerequisite. I will also assume that you are proficient in Java (at the level of “COMP 401: Foundations of Programming”). *If you do not have these prerequisites and wish to take the course, please contact me immediately.*

*** For Computer Science majors, this course fulfills the distribution requirement of one course in the programming languages group.

Textbook: *Programming Language Pragmatics* by Michael L. Scott (2nd Edition).

Grading: The tentative grading breakdown follows

- Written Assignments 30%
- Programming Assignments 25%

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| • Midterm Exams | 20% | (10% each) |
| • Final Exam | 25% | |
| • Class Participation | 5% | (Extra credit) |

The final exam will be cumulative.

Classroom Etiquette: Please help to maintain a respectful classroom environment conducive to learning and discussions by refraining from

- Making a habit of *leaving early* or *arriving late*.
- Talking, eating, sleeping, reading newspaper, etc....
- Leaving cell phones or pagers on.
- Using a laptop to browse the web.

Class Participation: A course in which students actively participate in the discussion of ideas is always much more enjoyable and stimulating. I plan to reward students who regularly participate in class by as much as 5%. Similarly, I reserve to the right to “negatively” reward individuals who do not respect classroom etiquette *by reducing their letter grade*.

Homework Policy: No late assignments will be accepted without proper prior approval from the instructor. Assignments must represent individual efforts unless the assignment explicitly states that groups are allowed. Collaboration on exams is *strictly prohibited* and will be considered an honor code violation.

Topics: Topics may be adjusted based on time and interest.

- Historical development of programming languages
- Theoretical foundations of programming languages
- Syntax and parsing
- Compilation, interpretation, and virtual machines
- Basic and complex data types
- Bindings, environments and scope
- Control structures
- Scripting languages
- Functional programming languages
- Object oriented programming languages
- Logic programming languages
- Concurrent and parallel programming

Subject to change.