

CSCI 4501 Fall 2008

Catalogue Description:

A study of the concepts of programming languages as realized in a variety of commonly used languages, with emphasis on language definition and structure.

Prerequisite:

CSCI 2125, Data structures, with a grade of C or better.

Proficiency in Java 5.0 including Java generics.

It will be also very helpful to have reading knowledge of C/C++, and at least one more programming language distinct from Java.

Text:

Programming Languages Pragmatics. M.L. Scott. Morgan Kaufmann, 2nd edition.

Programming in Haskell. Graham Hutton. Cambridge Univ. Press.

Haskell: The Craft of Functional Programming. Simon Thompson. 2nd. Ed. Addison Wesley.

Book disclaimer:

The books listed above are your number 1 choice of books for this semester; nonetheless, you do not have to get exactly those books. You could get a book on programming languages which contains the topics (see below) that I will be assigning for reading and exercises. The same for the book to learn Haskell. I put on reserve in the library a copy of each of these books.

Organization:

We will cover of the material in the book, though not necessarily in the same order or manner as in the text.

topics: Introduction. History, Computability, Lisp, Haskell. Compiler structure, Syntax and Semantics, Lambda Calculus, Operational Semantics, Denotational Semantics. Functional and Imperative Languages. Type systems and type inference. Scope, function and storage management. Control in sequential languages. Data Abstraction and Modularity. Logic Programming. Objects and Run-time efficiency. Portability, Safety and Security. Concurrency and distributed programming.

Programming Languages

In this course we will take a very close look at Java 5.0; you will also be introduced to Haskell and will learn on your own a new language I will select exclusively for you. There will be assigned readings, written assignments and programming on each of these languages.

Objectives

History of Programming language evolution
Syntax, Semantics and Pragmatics of a Programming Language
Language translation methods and translator structure
Expressions in Programming Languages
Types in Programming Languages, uses and roles
Name management
Data abstraction, representation and manipulation
Flow of control
Program reusability mechanisms
Programming Language paradigms
Run-time Programming Language structure support
Concurrency and beyond.

Outcomes

At the end of this course student should know about:

Programming language history, evolution and paradigms used. Methods for translation
Understand notion and role of syntax, semantics and pragmatics of a Programming Language. Use of types in Programming Languages. Control flow, and abstraction mechanisms. Methods for code reuse. Run-time support for Programming Languages, Role of concurrency in Programming Languages

Office Hours:

Office hours are from 300-4:00. T, Th. Please try to adhere to office hours, or make an appointment if you cannot. My office number is 280-7362. My e-mail address: jaime@cs.uno.edu,

Exams:

Exam schedule is tentative. We will probably have two 1-hour in-class tests. They are tentatively scheduled for October 2nd, and November 18th. The final exam is Monday Dec 11 5:30 - 7:30 pm. in the same classroom. During the semester there will be several 5-min. pop tests at the very beginning of the class. Be on time so that you do not miss them.

Email/Home Page:

You can contact me at jaime@cs.uno.edu. The course page is <http://www.uno.blackboard.com>. From time to time I will communicate through email with you via blackboard which uses your UNO email account; you are responsible to read your email in a timely manner. Also, when you send me email put in the subject: *CSCI-4501 Student* and you will get prompt response. Be advised that I will not open any email without that subject line.

Homework:

We will have several programming homeworks. There will also be a few reading and written exercises. Assignments must be submitted on due time and on due date. You will get submission instructions when homework is assigned. I will generally grade late homework **more rigorously** and worth 75% of the grade; I will grade it at my convenience and that means that you may not get it back until the end of the semester. **Homework will not be accepted more than one week late UNLESS you met with me to pre-arrange a different submission time.** As you should know by now, unless explicitly stated otherwise, homework assignments are **individual projects**. Use of material other than class textbooks must be referenced; also you must secure my approval ahead of time for use of any code not produced by you, and not part of the language libraries. The documentation for that code must include a reference to its source.

Attendance

Attendance is mandatory. Failure to attend will affect your final grade, including failing the course. Every absence must be justified in writing. You will automatically fail the course if you accumulate 3 consecutive unjustified absences, or 6 absences (justified or unjustified) in total. Unjustified absences will take up to 10% from your **final grade**.

Grading

In-class tests 30%,

final exam 30%,

Project: and homework (programming and other) 40%.

Letter grades will be assigned as [90 – 100] = A, [80 – 89]= B, etc.

Graduate Students grading:

Grad students will receive specific instructions for programs, papers and test. Grading of tests, programs and papers will be **much** more strict that for undergrads. Extra reading of technical papers will be assigned as part of your grade.

Academic Dishonesty

Finally, I must call your attention to the University's policies regarding academic dishonesty. (See pages 44-47 of the Student handbook.) Academic dishonesty includes cheating, plagiarism, and collusion. In particular, it includes "the unauthorized collaboration with another person in preparing an academic exercise" and "submitting as one's own any academic exercise prepared totally or in part for/by another." In the event of academic dishonesty, in its first

occurrence **the students involved will be assigned a grade of 0** on the work involved, and students will be informed in writing of the action taken, and a copy of this letter will be sent to the Assistant Dean for Special Student Services. For any other occurrence, students will automatically fail the course and will be reported to the Student's judicial office.

Last day to drop : Monday Nov 10, 2008