

Syllabus for CS558A: Compiler Concepts

Faculty Member: Alberto Moreira

Semester, Year: Summer 2004.

Course Number: CS558A

Title of Course: Compiler Concepts

Faculty Office Hours: Thursdays, 5:30pm to 8:00pm, Room TBA.

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Brief Course Description: This is an introduction to programming language compiling. We will learn Data and Procedural abstraction, objects, statement semantics, lexers and parsers, building language interpreters, typing theory and inference, and object oriented concepts.

Required Course Textbook: Friedman, Daniel, Wand, Mitchell, and Haynes, Christopher, (2000) Essentials of Programming Languages, Second Edition, Boston: MIT Press.

Course Objectives: To teach compiler and interpreter writing from the functional standpoint. By the end of the course, the student should be able to write a compiler or interpreter for a small language. Teaching Strategies: Lectures, homework, programming projects.

Course requirements: 1 programming homework, one programming project, one take-home final examination.

Examinations: The final examination will be a take-home set of programming tests.

Methods of Assessment and Computation of Grades: Homework, 20 point, Project, 60 points, Final examination, 20 points. Total 100 points.

General Course Calendar and Topical Outline:

May 27: From syntax to programs.</TD></TR>
Jun 3: The Lambda Calculus.</TD></TR>
Jun 10: Bindings. Scope.</TD></TR>
Jun 17: Abstract Data Types.</TD></TR>
Jun 24: Data Representation.</TD></TR>
Jul 1: Lexers. Parsers.</TD></TR>
Jul 8: Table-driven Parsing.</TD></TR>
Jul 15: Interpreters. If. Let.</TD></TR>
Jul 22: Procedures and Closures.</TD></TR>
Jul 29: Parameter Passing.</TD></TR>
Aug 5: Types.</td></tr>
Aug 12: Objects and Inheritance.</TD></TR>

Bibliography:

Abelson, Harold, Sussman, Gerald Jay, and Sussman, Julie, (2000) The Structure and Interpretation of Computer Programs, Second Edition, Boston: MIT Press.

Friedman, Daniel, and Felleisen, Matthias, (1995) The Little Schemer, Boston: MIT Press.

Friedman, Daniel, and Felleisen, Matthias, (1995) The Seasoned Schemer, Boston: MIT Press.

Classroom Policies: None outside the college standard ones.