Foundations of Mondern Type Systems

G22.3033.03 Fall 1997

Syllabus

This is an extremely approximate schedule of topics to be covered, subject to change at any time. The reading is from Mitchell, *Foundations for Programming Languages*, unless noted otherwise. Much of the course will be spent following the road map for a type theory course given on page xix of Mitchell.

Class	**Date**	**Topic**	**Reading**
1	9/8	Intro to the simply typed λ-calculus	Chap. 1, 2.1 - 2.2 (skim), 3.1 - 3.3
			4.1 - 4.3.3
2	9/15	Types & Logic, proof systems, reduction	4.3.4, 4,3.5, 4.4.1, 4.4.2
3	9/22	Intro to polymorphism, predicative polymorphism	9.1 - 9.2
4	9/29	Impredicative polymorphism	9.3.1 - 9.3.4,
5	10/6	Data abstraction & existential types, modules	9.4, 9.5
6	10/13	Subtyping	10.1 - 10.4
7	10/20	Subtyping, cont.	
8	10/27	Records as objects, subtyping and polymorphism	10.5, 10.6
9	11/3	Type inference	Chap. 11
10	11/10	Type inference, cont.	
11	11/17	Research Issues	Handout
12	11/24	Research Issues	Handout
13	12/1	Research Issues	Handout
14	12/8	Research Issues	Handout

Research issues to be discussed will be determined by student interest. Possibilities include proposed extensions to the ML module system, the Haskell class system, new OOP type systems, etc.