

PROGRAMMING LANGUAGES & TRANSLATORS

Baishakhi Ray

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Instructor

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CEPSR 604

Office Hour: Tuesday 11am-12pm/by Appointment



Goals

- Theory
 - Principle of modern programming languages
 - Fundamentals of compilers: parsing, type checking, code generation
 - Traditional Usage: register allocation, optimization, etc.
 - Modern Usage: static analysis for bug detection, OO compilation, etc.
 - Deliverables: Homework, midterm, final
 - Individual grading

- Practice: Semester-long programming assignments
 - Design and implement your own compiler pass under Clang/LLVM infrastructure
 - 6 Programming assignments
 - Work with partner (Form a 2-member group)/individual
 - Deadline is hard---**there will be no extension!!**

Assignments and Grading

Team Programming Assignments	40%
Midterm Exam	20%
Final Exam	30%
Individual homework assignments (Problem Solving)	10%
Effort*	0%

*Do or do not; there is no try —Yoda

Programming assignments are most important, but most students do well on it.
Grades for tests often vary more.

Schedule

- Lectures:
 - Mondays and Wednesdays, 4:10 PM-5:25 PM @ 451 CSB
 - September 4 – December 9
- Exams:
 - Midterm : October 14
 - Final: December 9

Collaboration

- Collaborate with your partner on programming assignments.
- Do your homework by yourself.
- Tests: Open book, no-internet!!

Don't be a cheater (e.g., copy from each other).
If I catch you cheating I will send you to the dean.

Prerequisites

- COMS W3157 Advanced Programming
 - How to work on a large software system in a team
 - Makefiles, version control, test suites
 - Testing will be as important as coding
- COMS W3261 Computer Science Theory
 - Regular languages and expressions
 - Context-free grammars
 - Finite automata (NFAs and DFAs)

Recommended Text

- **Compilers: Principles, Techniques, and Tools**
 - By Alfred V. Aho, Monica S. Lam, Ravi Sethi, and Jeffrey D. Ullman.
 - 2nd Edition
 - Addison-Wesley, 2006
- **Research Papers**
 - Distributed by the instructor

