CS 337, Spring 2008 **Theory In Programming Practice**

Class Times, Location MW 2:00-3:30P, Burdine 112

The People

Instructor:	Jayadev Misra
Office:	TAY 3.102
Office Hour:	MW 3:30–4:30
Contact:	471-9550 or `misra@cs.utexas.edu`
TA:	Jacob Schrum; email: `schrum2@cs.utexas.edu`
Office Hours:	Monday 11:30 - 12:30 in ENS 31NQ Desk #1, and Wednesday 12:30 - 1:30 in ENS 31NQ Desk #1
TA:	V.V. Balaji; email: `vvbalaji@gmail.com`
Office Hours:	Monday 10:30 - 11:30 in ENS 31NQ Desk #4, and Wednesday 10:30 - 11:30 in ENS 31NQ Desk #4

Discussion Sessions

55605	T 8-9A	RAS 211B
55610	T 10-11A	RLM 5.112
55615	T 2-3P	RAS 312
55620	T 3-4P	SZB 422

The Subject Matter The major theme is applications of theory in practice; I will demonstrate that theory can help in practical programming. I will draw upon material —both theoretical and practical— which have been taught in the prior courses: functions, relations (equivalence, partial order), data structures (particularly, trees and graphs), recursion and induction, logic, invariants, etc.

Here is a tentative list of topics.

- Data Compression and Encoding: Huffman coding, Ziv-Lempel codes.
- Error Detection and Correction.
- Cryptography
- Finite State Machines and Regular expressions.
- Recursion and Induction
- Relational Databases
- String Matching

The Reading Material

- Class Handouts: see

  `http://www.cs.utexas.edu/users/misra/ClassNotes.dir/337.pdf`

- (for reference) *Haskell: The Craft of Functional Programming*, by Simon Thompson, Publishers: Addison-Wesley-Longman, ISBN 0-201-40357-9.
- (for reference) *Introduction to Algorithms* by Thomas Cormen, Charles Leiserson, Ronald Rivest, Publishers: MIT Press or McGraw Hill.
- (for reference) *Foundations of Computer Science, Chapter 10: Patterns, Automata and Regular Expressions* Alfred V. Aho, Jeffrey D. Ullman, Publishers: W.H. Freeman, ISBN 0-7167-8284-7.

Discussion Sections The main purpose of discussion sections is for students to discuss and analyze the material presented in class. They are expected to take an active role. Home works will provide the framework for the material presented in class. Therefore, students should come to the discussion sections prepared to work on those problems. Discussion sections will also cover background material and questions about the programming assignments.

Homeworks, Programs Home works will be discussed in the class and in the discussion sections. There will be a week's lead time for each home work. There will be 5 medium–sized programming projects. Programs will have to be written in Java and run under Linux; one or two will use Haskell, to be described in the class.

Newsgroup and Web Site The following web site will be used for discussions and all handed-out material: `http://www.cs.utexas.edu/~schrum2/cs337/` and the newsgroup is `utexas.class.cs337`.

The Tests There will be several pop quizzes during the term to make sure you are keeping up with the class. Three tests will be given; the first two will be in-class tests on 2/20/08 (Wednesday) and 4/2/08 (Wednesday) . The final test date is not known now, but it will be around 5/10/08. All quizzes and tests are open-book and open-notes.

Grading Policy The programming projects will count for 25% and pop quizzes for 10% of the final grade. Your best test counts for 30%, the second best for 20% and the worst for 15%. Even though no points are assigned for the home works, it is essential that you do them, because the questions in the tests will be similar to the home work problems.

Student code of conduct The following web site states the departmental policy on student (and instructor) code of conduct.

`http://www.cs.utexas.edu/users/ear/CodeOfConduct.html`