CSC363 - Computational Complexity and Computability
Summer 2005

Instructor: Matei David, email: `matei@cs.toronto.edu`, office: SF4302-F, phone: 416-946-3924

Lectures: T6-8 in MP202

Tutorials: T8-9

your last name	*room*	*TA name*	*email*
Akhtar - Kam	BA1230	Marc Tedder	`mtedder@cs`
Karlin - McLean	BA3008	Nazanin Mirmohammadi	`nazanin@cs`
Mehta - Rossi	BA3012	Mihaela Gheorghiu	`mg@cs`
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Office Hours: R5-6 in BA3234

Website: `http://www.cs.toronto.edu/~matei/csc363s05`. Refer to this site periodically.

References:
M. Sipser. *Introduction to the Theory of Computation.* PWS Publishing Company, 1997. This is the main book I will be following. We will be interested in chapters 3, 4, 5, 7 and possibly 10. A new edition of this book is due soon, and the main difference between the two is that the second one contains answers to selected exercises. However, the old edition will do.

M. Garey and D. Johnson. *Computers and Intractability: A Guide to the Theory of NP-Completeness.* (1979) This book is an excellent reference, and contains a large compendium of NP-complete problems in the back.

Cormen, Leiserson, Rivest and Stein. *Introduction to algorithms (second edition).* McGraw-Hill, 2001. This book is mainly concerned with algorithms, and some other courses may be based on it. For our purposes, chapters 34 and 35 are relevant.

Course Contents:

- Computability theory (5 weeks). Turning machines, Church's thesis, decidability and semi-decidability, diagonal arguments, the Halting Problem and other undecidable problems, reductions.
- Computational Complexity (8 weeks). The classes P and NP, polynomial time reducibility, NP-completeness, Cook-Levin theorem, various NP-complete problems, approximation algorithms.

Marking Scheme:
4 assignments worth 10% each, due on June 7th, June 28th, July 19th and August 9th.
1 midterm exam worth 20%, July 5th, in lecture.
Final exam worth 40%. To pass the course, you must achieve a grade of at least 40% on the final exam.

Lateness Policy:
Assignments are due at the beginning of lecture, 6pm on Tuesday. No late assignments will be accepted without prior permission.

Plagiarism and other Offences:
Assignments are to be done individually. *The work you submit must be your own.*
`http://www.cs.toronto.edu/~fpitt/plagiarism.html`
`http://www.cs.toronto.edu/~clarke/acoffences/`