

Overview

This sheet summarizes information for the course CSC 373 H1 S (*Algorithm Design, Analysis, and Complexity*) during the Winter term of 2015 (January–April) on the St. George campus. **Please consult the course website for full details.**

Website

<https://piazza.com/utoronto.ca/winter2015/csc373h1/home>

You are responsible for reading all announcements on the course website; please make a habit of checking it at least weekly.

Textbook

- Cormen, Lieserson, Rivest & Stein: *Introduction to Algorithms* 3rd ed., © 2009 MIT Press, ISBN: 978-0-262-03384-8.
- See the course website for additional references, lecture outlines and a free online edition of the textbook (provided by the U of T Libraries).

Contact

Instructor	Email	Office	Office Hours*
François Pitt	fpitt@cs.utoronto.ca	BA 4264	MTWRF 1:30–2:30

*outside these hours, please make an appointment

Section	Lectures / Room	Tutorials / Rooms
L0101	MWF 11 / BA 1200	M 4 / (to be announced on course website)
L0201	MWF 3 / BA 1200	M 4 / (to be announced on course website)

Schedule

Week	Dates	Due	Worth	Lecture Topics [Text Chapters]	Notes
1	Jan 05 – Jan 09			Greedy Algorithms [16, 23–25]	
2	Jan 12 – Jan 16	Problem Set 1	2%	Greedy Algorithms [16, 23–25]	add date (Jan 18)
3	Jan 19 – Jan 23	Problem Set 2	2%	Dynamic Programming [15, 25]	
4	Jan 26 – Jan 30	Problem Set 3	2%	Dynamic Programming [15, 25]	
5	Feb 02 – Feb 06	Problem Set 4	2%	Network Flow [26]	
6	Feb 09 – Feb 13	Midterm 1	12%	Network Flow [26]	
		Problem Set 5	2%	Linear Programming [29]	
7	Feb 23 – Feb 27	Assignment 1	12%	Linear Programming [29]	
8	Mar 02 – Mar 06	Problem Set 6	2%	<i>P/NP</i> , <i>NP</i> -completeness [34]	drop date (Mar 08)
9	Mar 09 – Mar 13	Problem Set 7	2%	<i>NP</i> -completeness [34]	
10	Mar 16 – Mar 20	Problem Set 8	2%	Self-Reducibility [34]	
11	Mar 23 – Mar 27	Midterm 2	12%	Approximations [35]	
		Problem Set 9	2%		
12	Mar 30 – Apr 02	Assignment 2	12%	Approximations [35]	
	Apr 08 – Apr 30	Final Exam	36%		

Learning Goals

By the end of this course, students will be familiar with standard algorithm design techniques (greedy strategies, dynamic programming, network flow and linear programming, approximations), and understand the importance of computational complexity. More specifically, students will be able to:

- recognize algorithms that employ each technique,
- write algorithms that employ each technique,
- prove the correctness of algorithms that employ each technique,
- analyze the efficiency of algorithms that employ each technique,
- demonstrate membership in *P* and *NP*,
- use polynomial-time reductions to show *NP*-hardness,
- compute and prove bounds on the approximation ratio of algorithms.

Grading
Scheme

- *Each problem set must be completed individually* (to help you cement your own understanding) and is due **by 8:59pm on Tuesday**. Only the *best 8 of 9* problem set grades will count.
- *Each assignment should be completed in groups of up to **four** students* (to help you learn better) and is due **by 8:59pm on Tuesday**—see details on the course website.
- Late homework submissions are penalized by 2% for every *hour* of lateness (rounded up, to a maximum of 24 hours), except for documented unusual circumstances—see the policy on special consideration (“petitions”) below.
- Midterm tests will take place during regularly scheduled tutorials. Rooms and other details will be posted on the course website.
- For the midterm tests, you will be allowed *one 8.5" × 11" aid sheet, handwritten on one side*.
- For the final exam, you will be allowed *one 8.5" × 11" aid sheet, handwritten on both sides*.
- If you earn less than 40% on the final exam, your final course grade will be reduced below 50.

20% Rule

If you cannot answer a question (or part of a question) on a test or on the final exam, you will receive 20% of the marks for that question (or part) if you leave your answer **completely blank**.

This does NOT apply on homework, where you have the time (and the responsibility) to ask questions and learn how to solve each problem.

Petitions

If you are unable to complete homework or if you miss a test due to major illness or other circumstances completely outside of your control, please **contact your instructor immediately**. Special consideration will be considered on an individual basis and will *not* be given automatically. In other words, you risk getting a mark of zero for missed work unless you contact your instructor *promptly*.

In the case of illness, medical documentation must be supplied on the official University of Toronto *Verification of Illness or Injury Form* (see the course website for a link to this document). If you have any concerns or questions regarding your situation, please contact your instructor or your College Registrar—they are well-equipped to help you with anything you may be going through.

Remarking

All remarking requests must be received within **two weeks** of the date when the work was *returned*. It is your responsibility to check course announcements regularly (for work returned electronically) and to pick up your work in lecture, tutorial, or during office hours (for work returned on paper).

It is to your advantage to be specific when you write up your request: either clearly demonstrate that the marking scheme was not followed correctly, or ask questions about specific elements in the marking scheme. Note that marks are awarded based on *merit*, not on need—that is the only fair way to award marks—so statements like “I worked really hard” or “I really need those marks” are not valid reasons to request remarking.

Collaboration

Everything that you submit for marks (problem sets, assignments, tests and exam) must not contain anyone else’s work or ideas without proper attribution. In particular, the writeup of your homework must be done in isolation from other students (or other groups) and without copying from notes or other sources. This ensures that your solution is truly your own, and that your grade reflects your own understanding of the course material. *To be safe, do not let others look at your solutions, even in draft form and even after the due date.* Please read the [Guidelines for Avoiding Plagiarism](#) on the course website.

Netiquette

Please use email for personal matters only; post all other questions/comments on the course forum. *Please use a descriptive subject line* for all your electronic correspondence—for email, *always include the course number*. To help prevent your messages being incorrectly tagged as spam, please email only from your CDF or UTOReil account (see www.utorid.utoronto.ca). We will generally answer queries within two business days (not counting weekends), although we may take longer during particularly busy times (e.g., around assignment due dates). For your own sake, please do not rely on getting same-day answers (which we cannot guarantee, unfortunately).