

This sheet summarizes information for CSC 373 H1F (*Algorithm Design, Analysis, and Complexity*) during Summer 2017 on the St. George campus. **Please consult the course website for full details.**

<https://piazza.com/utoronto.ca/summer2017/csc373h1/home>

You are responsible for reading all announcements on the course website; please check at least weekly.

| Section | Lectures (Room)   | Tutorials (Rooms)                 |
|---------|-------------------|-----------------------------------|
| L5101   | W 6-9 pm (RW 117) | R 6-7 pm (SF2202, BA3012, BA3116) |

| Section | Instructor  | Email                   | Office  | Office Hours* |
|---------|-------------|-------------------------|---------|---------------|
| L5101   | Koushik Pal | koushik.pal@utoronto.ca | BA 3201 | W 5-6 pm      |

\*outside these hours, please make an appointment

**TA Office Hours:** Extra TA office hours will be held before each assignment, term test and the final exam—details will be posted on the course website.

| Week | Dates           | Due                   | Worth | Lecture Topics [Text Chapters]    | Notes                    |
|------|-----------------|-----------------------|-------|-----------------------------------|--------------------------|
| 1    | May 17 – May 18 |                       |       | Divide and Conquer Algorithms [4] | Add Deadline (May 22)    |
| 2    | May 24 – May 25 |                       |       | Greedy Algorithms [16]            |                          |
| 3    | May 31 – Jun 01 |                       |       | Dynamic Programming [15]          |                          |
| 4    | Jun 07 – Jun 08 | Assignment 1 (Jun 08) | 5%    | Dynamic Programming [15]          |                          |
| 5    | Jun 14 – Jun 15 | Term Test 1 (Jun 15)  | 15%   | Graph Algorithms [22-25]          |                          |
| 6    | Jun 21 – Jun 22 |                       |       | Network Flow [26]                 | Reading Week (Jun 26–30) |
| 7    | Jul 05 – Jul 06 |                       |       | Linear Programming [29]           |                          |
| 8    | Jul 12 – Jul 13 | Assignment 2 (Jul 13) | 5%    | Linear Programming [29]           | Drop Deadline (Jul 16)   |
| 9    | Jul 19 – Jul 20 | Term Test 2 (Jul 20)  | 15%   | NP-completeness [34]              |                          |
| 10   | Jul 26 – Jul 27 |                       |       | NP-completeness [34]              |                          |
| 11   | Aug 02 – Aug 03 |                       |       | Approximation Algorithms [35]     |                          |
| 12   | Aug 09 – Aug 10 | Assignment 3 (Aug 10) | 5%    | Approximation Algorithms [35]     |                          |
| 13   | Aug 15 – Aug 18 | Final Exam            | 55%   |                                   |                          |

- Each assignment should be completed in groups of three students (to help you learn better) and is due **by 11:59 pm** on the dates mentioned above.
- Assignments should be submitted electronically **on MarkUs**.
- No late homework submission will be accepted, except for documented unusual circumstances—see the policy on special consideration (“petitions”) below.
- The term tests will be held during the usual tutorial hours on the dates mentioned above.
- For the term 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 35%** on the final exam, your final course grade will be reduced below 50%.
- **The 20% rule:** You will receive 20% of the points for any (sub)problem for which you write “I do not know how to answer this question”. You will receive 10% if you leave a question blank. If instead you submit irrelevant or erroneous answers you will receive 0 points. You may receive partial credit for the work that is clearly “on the right track”. The 20% rule applies to all term work: assignments, term tests, and even the final.

## Textbooks

- Cormen, Lieserson, Rivest & Stein: *Introduction to Algorithms* 3<sup>rd</sup> ed., © 2009 MIT Press, ISBN: 978-0-262-03384-8.
- Kleinberg & Tardos: *Algorithm Design* 1<sup>st</sup> ed., © 2006 Pearson Education, Inc., ISBN: 978-0-321-29535-8 (Supplementary Textbook).

## Learning Goals

By the end of this course, students will be familiar with standard algorithm design techniques (greedy strategies, dynamic programming, graph algorithms, network flow and linear programming, approximation algorithms), 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  $NP$ ,
- show  $NP$ -completeness.

## 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 concern or question 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.

## Re-marking

All re-marking 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 good reasons, unfortunately.

If you are unsure whether or not your work was marked correctly but you have not necessarily found an actual error in the marking, please speak with your instructor.

## Collaboration

**Everything that you submit for marks (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 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.

## Accessibility

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or Accessibility Services at 416-978-8060. Also, refer to <http://accessibility.utoronto.ca>.

## 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 UTMail account (see [www.utorid.utoronto.ca](http://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).