Overview

This sheet summarizes information related to CSC373H1F *Algorithm Design, Analysis, and Complexity*) during Fall 2023 at St. George. All times listed below are in the **Eastern time zone**.

Course Page

Please consult the course webpage for full and up-to-date details regarding the course. It will be frequently updated with announcements, schedule of lectures, and assignments. *You are responsible for reading all the announcements on the course website*; please check at least once a week.

https://www.cs.toronto.edu/~nisarg/teaching/373f23/

Instructor Contact

Instructor	Nisarg Shah
Webpage	cs.toronto.edu/~nisarg/
Email	csc373-2023-09@cs.toronto.edu (Please use this email for all course related emails)
Office	SF 3312 (Please do not drop by unless you have scheduled an in-person meeting)

Discussion Board

Piazza will be the preferred forum for asking questions about class material or other topics that are likely to be of general interest to the class. While it may be quicker than scheduling an office hour with an instructor, please do not expect ultra-quick responses.

https://piazza.com/utoronto.ca/fall2023/csc373

Course Delivery

Lectures & tutorials will be in-person. Please check the course web page for room information.

Assignments submissions will be via MarkUs.

https://markus.teach.cs.toronto.edu/csc373-2021-09

Midterms will be in-person.

Office hours will be held on Mondays 1:30pm-2:30pm and Fridays 1pm-2pm.

Tutorials

Each section is divided into two tutorials. Feel free to attend the tutorial of your choice, except when the tutorial slot is being used for a midterm (see below).

A problem set will be released prior to each tutorial. Students are encouraged to attempt the problems before coming to the tutorials. During the tutorials, the TAs will explain the problems and go over key steps of the solutions.

Assignments

A total of **four assignments** worth 10% each will be posted, of which only the **best three assignment grades** will count towards a student's final grade.

MarkUs will be used for assignment submissions. Each assignment can be completed in groups of **up to three** students. Students can form their own groups via MarkUs. Only one group member should create a group and invite others to the group, and only one member should submit the assignment. If you are invited to a group, please do not forget to accept the invitation before the submission deadline.

Only submissions with a SINGLE PDF will be graded. You are encouraged to use LaTeX. Scanned PDF of handwritten solutions will be acceptable, but it is your responsibility to ensure that the handwriting is legible! MarkUs may have a size limit, so you may need to use an online tool to compress your PDF before uploading.

Late Days

- Each student will receive a total of four (4) late days on MarkUs; **no more than two (2) late days** can be used towards a single assignment.
- If a group wants to use X late days towards an assignment, **every** member must have at least X late days available, and X late days will be deducted from every group member upon submission.
- You **do not** earn extra late days for illness, University activities, or other legitimate reasons; this is precisely what the late days are for. You are responsible for managing your late days.
- If, for some legitimate reason, you absolutely need more late days, you will need to personally request them from the instructor in advance and with proper documentation.

Midterms

Midterms will be conducted on two Fridays (Nov 3 and Nov 24) during two time slots: 11am-1pm and 2pm-4pm. LEC 0101 students must use the 11am-1pm slot and LEC 0201 students must use the 2pm-4pm slot. If you have a conflict with your own slot (or with both slots), you must reach out to the instructor at least 1 week in advance.

Embedded EthiCS

The course will include an Embedded EthiCS module, conducted in each section during a 2-hour lecture slot. There will be a graded survey and assignment both pre and post module. The pre and post surveys will be worth 0.5% each, and the pre and post assignments will be worth 2% each. Live participation in the module is encouraged, but will not be graded. During the module, the students will work in groups on exercises related to identifying and resolving ethical issues related to the design, implementation, and deployment of algorithms.

Grading Scheme

- Assignments: 30% (10% each, best 3 out of 4)
- Midterms: 40% (20% each, two midterms)
- Embedded EthiCS: 5% (pre and post surveys 0.5% each, pre and post short assignments 2% each)
- Final exam: 25%
- If you earn less than 40% on the final exam, your overall grade may be reduced below 50.

No Garbage Policy

- You will receive 20% of the marks for any question or subquestion on any assignment or test (**except** for any bonus questions or subquestions) if you do not provide a solution (or clearly scratch off any solution you have written) **and write "I do not know how to approach this question."** (or a similar statement).
- If leave the solution empty (or scratch off what you have written) but do not write the above (or a similar) statement, you will receive 10%.
- If you write a solution that shows a reasonable understanding of the problem and a viable approach, you will generally receive at least 20% marks (up to the instructor's discretion), so you are always encouraged to write a solution if you believe you understood the question well and have a viable approach (even if you do not have the full answer).
- On the other hand, writing a lot of nonsense will get you 0% (or close to that), so if you do not understand the question or have no idea how to approach it, you are better off using the no garbage policy.

Due Dates

Assignment 1	Oct 8
Assignment 2	Oct 29
Assignment 3	Nov 19
Assignment 4	Dec 7
Midterm 1	Nov 3
Midterm 2	Nov 24

References

- The primary reference for this course will be the lecture slides, which will be posted before/slightly after each lecture. In addition, you may refer to the following books.
- *Required:* [CLRS] Cormen, Leiserson, Rivest, Stein: *Introduction to Algorithms*.
- *Supplementary:* [DPV] Dasgupta, Papadimitriou, Vazirani: *Algorithms*.
- *Supplementary:* [KT] Kleinberg; Tardos: *Algorithm Design*.
- *Supplementary:* [RG] Roughgarden: *Algorithms Illuminated*.

Learning Goals

By the end of this course, you will be familiar with standard algorithm design techniques (divide & conquer, greedy algorithms, dynamic programming, network flow, linear programming, approximation and randomization), and understand the importance of computational complexity. More specifically, you will be able to:

- recognize algorithms that employ each technique,
- write new algorithms that employ each technique,
- prove the correctness of such algorithms,
- analyze their efficiency,
- 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 your control, please **contact your instructor immediately**.
- Special consideration will be evaluated on a case-by-case basis and will *not* be given automatically. In other words, you risk getting a grade of zero for missed work unless you contact your instructor *promptly*.
- In the case of illness, students will need to fill out an absence declaration form on ACORN and notify the instructor for special consideration.
- If you have any concern or question regarding your situation, please contact your College Registrar—they are best equipped to help you with anything you may be going through.

Remark Requests

- Assignment remark requests will be handled through MarkUs. Remark requests for midterm tests will be handled in office hours. For each work, the deadline for remark requests will be announced (either on MarkUs, in class, or on course webpage). It is your responsibility to submit remark request by the deadline.
- Be specific when you write up your request: either clearly demonstrate that the grading scheme was not followed correctly, or ask questions about specific elements in the grading scheme. Note that grades are awarded based on *merit*, not on need—that is the only fair way to award grades —so statements like "I worked really hard" or "I really need those grades" are not good reasons.

Collaboration

Everything that you submit for grades (assignments, tests and exam) must not contain anyone else's work or ideas *without proper attribution.* In particular, for assignments, you are free to discuss with other groups. However, you should not take notes or pictures from this discussion. You must write your own solutions in isolation from other groups, without copying from notes or other sources. This ensures that your solution is truly your own. If you derived a critical insight relevant to the exact problem you're solving from discussion with a classmate or from an online source, you *must* cite the source of your insight. *To be safe, do not let others look at your solutions, even in draft form and even after the due date.*