CSC 263 -Data Structures and Analysis
Summer 2013

Course Description

Algorithm analysis: worst-case, average-case, and amortized complexity. Standard abstract data types, such as graphs, dictionaries, priority queues, and disjoint sets. A variety of data structures for implementing these abstract data types, such as balanced search trees, hashing, heaps, and disjoint forests. Design, implementation, and comparison of data structures. Introduction to lower bounds. **Prerequisites**: CSC207/270, CSC236/238/240, STA247/255/257.

Staff

Instructor: Dr. Mario Ventresca   **Office:** TBD
E-mail: mario.ventresca@utoronto.ca   **Hours:** By apt

TAs: Kaveh Aasaraai, Amir Hejazi, Tom Sie Ho Lee and Ladislav Rampasek

Lecture and Tutorial Schedule

- Lectures: Tuesdays 6:00-8:00pm in <u>BA1170</u>.

- Tutorials: Tuesdays 8:00-9:00pm (by last name):

  P-Z: in <u>BA1170</u> with Kaveh Aasaraai
  H-O: in <u>BA2145</u> with Tom Sie Ho Lee
  ** May 21st and 28th tutorials cancelled, please attend one of the other sessions.
  A-G: in <u>BA2155</u> with Ladislav Rampasek
  ** June 18th tutorial cancelled, please attend one of the other sessions.

- All students **must** be registered and able to attend one of the tutorials.

- Tutorials will answer questions about the lecture material, address homework material, solve sample problems from the textbook and generally get more exposure to course topics. It is highly recommended that you attend tutorials.

Textbook

The required textbook for this course is

- T. Cormen, C. Leiserson, R. Rivest, C. Stein, *Introduction to Algorithms: 3rd Ed*, MIT Press.

CLRS is a generally well-written comprehensive textbook used by most major universities. No other text is required and no lecture notes will be distributed. However, if you would like supplementary textbook suggestions, consider (not available in book store):

- T. Cormen, *Algorithms Unlocked*, MIT Press, 2013.

- R. Sedgewick, *Algorithms in Java, Parts 1-4: 3rd Ed*, Addison-Wesley Professional 2002.

- S. Skiena, *The Algorithm Design Manual: 2nd Ed*, McGraw Hill 2011.

Course Requirements and Grading Scheme

The final grade for this class has three components:

40% **Assignments:** There will be four assignments, which you may do in groups of 2-3 students. You can switch groups between assignments but you will receive the group grade each time. Deadlines for assignments are final! *Absolutely no late assignments will be accepted.* Assignments will be handed in at the START of your respective tutorial.

Assignments must be legible and well organized. Illegible and unorganized work will NOT be graded. **You must also include a stapled and signed cover sheet with your assignment or it will not be graded**. All members of the group must sign the sheet, without exception.

20% **Midterm:** There will be one midterm of 90 minutes, open CLRS book. Absolutely NO electronic aids or other notes of any kind. A LARGE PORTION OF THIS WILL BE DURING TUTORIAL TIME. In the case of a missed test, a mark of zero will be recorded: no make-up test will be provided.

40% **Final:** 3.0 hours open CLRS book, absolutely NO electronic aids or other notes of any kind. Exam dates and rooms will be announced at a later time.

IMPORTANT: You must attain a mark of at least 40% on the final exam to pass the course, i.e, if you receive less than 40% on the final exam, you automatically fail the course, regardless of how well you have done on homeworks or the midterm exam.

Due Dates:

* subject to change

Item	Due	% Final Mark	Marker
Assignment # 1	June 4	10%	Ladislav Rampasek
Assignment # 2	June 18	10%	Amir Hejazi
Midterm	July 2	20%	ALL
Assignment # 3	July 16	10%	Tom Sie Ho Lee
Assignment # 4	August 6	10%	Amir Hejazi
Exam	TBD	40%	ALL

Remarking: You have exactly *seven* working days to submit your work (homework or midterm) for remarking from the time we release it to you (in tutorial). *There are NO exceptions to this rule and no late homework will be remarked.* For remarking the midterm, you will need to clearly indicate on a separate piece of paper the reason you believe you were marked unfairly. *Staple* (do not glue, etc!) this paper to your work and submit it to the instructor or the TA.

If there is a legitimate reason for a late assignment or exam absence (illness, etc), discuss the matter with the instructor. Keep in mind that official documentation must always be provided (i.e. doctor letter, etc).

When you don't know: It may happen that you are unable to solve a problem from the homework, midterm or final no matter how hard you try. This is OK...you still have the opportunity to gain up to 80% of the marks for that question - depending on your effort and how close you were to solving the problem. How is this possible? You must **clearly and exactly** indicate:

- What issues did you encounter with understanding the question? What parts were confusing, and what questions did you ask the instructor or teaching assistants to overcome these issues (be specific in your question and the answer!)? If you consulted other textbooks, indicate which ones and why they were not helpful.

- If you understood the question but were still unable to arrive at a solution then indicate what difficulties you encountered when attempting to solve the problem? What ideas did you try, and why did they fail? Did you consult the instructor/TAs, other textbooks, etc? SHOW ALL YOUR ATTEMPTS!

How to Get the Most out of this Course

- **Attend** all lectures and tutorials.

- Carefully **read** all relevant textbook chapters.

- If you do not understand something 100%, then **ASK QUESTIONS**!

- **Practice, practice and more practice**. The textbook has a number of great questions, and more are available in other books and the web.

- Do not procrastinate or be lazy! **Keep up with readings and start assignments early**.

- **Think, don't memorize**! Simple memorization doesn't get you very far in this course, you must learn to be clever in how you approach solving problems.

If you do the above, hand in all homework and understand their solutions, then you will probably do well on the exams and thus achieve a good course mark. Your life will beautiful and fulfilled, you'll be forever happy and there will be peace on Earth :)

Webpage and Bulletin Board

All official announcements will be posted on the course Portal. *It is your own responsibility to check it at regular intervals, i.e. once per day.* Questions on the material (i.e. lectures, exams, assignments, etc.) will be welcomed on the board. **No solutions to problems should be posted by students on the board.** Only the instructor and TAs may post solutions. Please do not use the board for any posts other than those relating to the course.

Cheating Policy

Cheating is against "fair–play" and will not be tolerated under any circumstances. While the pressures of many classes, homeworks, work and/or extracurricular activities can be great, this is *never* an excuse for copying solutions from others. **The University holds among its highest principles the notion of academic freedom and integrity. Cheaters will face the University's disciplinary committee as well as receive a failing grade in this course.** If you think that there is an issue that influences your performance in the class then talk to the instructor.