Course Information.

Instructor: Shahin Kamali (LAS-3052A)
https://www.eecs.yorku.ca/~kamalis/

Lectures: 16:00 - 17:20, Tuesdays (LSB 106), Thursdays (LSB 103)
Lectures will be broadcasted live on Zoom and also recorded via Zoom (https://yorku.zoom.us/j/96539986100?pwd=QUMvRmQweEVuYU82Vm9OOGc1TUxldz09)
Given the classroom limited support of recording, Zoom lives sessions and recordings come with no guarantee on the video quality.

Tutorials: 16:00 - 17:30 on Tuesdays in LSB 106
Tutorials will be broadcasted live on Zoom and also recorded via Zoom (https://yorku.zoom.us/j/91082541032?pwd=RlFtdW9vcCtOaWIxK2VuLzdNbHdMQT09)
Given the classroom limited support of recording, Zoom lives sessions and recordings come with no guarantee on the video quality.

Office hours:
Thursdays 14:00 - 15:00 in person at LAS-3052A
Friday 14:00 - 15:00 on Zoom:
(https://yorku.zoom.us/j/95142265810?pwd=Um1WclZsTkZyRi8wL0w1akhqTU03Zz09)
(or by appointment)

Email:
kamalis@yorku.ca (add "[EECS 3101]" in the subject line, and allow 24 hours for response)

Piazza: You can use Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates and the instructor. Rather than emailing questions, I encourage you to post your questions on Piazza (this can be done anonymously).
Find our class page at: https://piazza.com/yorku.ca/fall2023/eecs3101/home

Course Goals and Intended Learning Outcomes.

This course exposes students to fundamentals of algorithm design and analysis. By the end of this course, students are expected to be able to:

- understand and quantify why one algorithm is better than another
- Choose an appropriate algorithm to solve a given computational problem, and justify that choice
- Apply standard graph algorithms to a variety of problems
- Design new algorithms using a variety of techniques (recursion, greedy algorithm, dynamic programming, backtracking)

- Prove correctness of an algorithm using pre- and post-conditions and loop invariants
- Prove bounds on the running time of an algorithm
- apply classic algorithms to specific problems which can benefit from them
- recognize NP-complete and undecidable problems.

Course Overview. EECS 3101 is a course on analysis of data structures and algorithms. Students will learn new techniques for solving fundamental algorithmic problems efficiently. Possible topics to be covered include:

asymptotic notations (review)
Recursive algorithms, and their runtime analysis
Divide and Conquer algorithms
Sorting
Dynamic Programming
Greedy Algorithms
Graph algorithms
Intractibility

Textbook. The following book is our main resource:

- Introduction to Algorithms, third edition, by Cormen, Leiserson, Rivest, and Stein, MIT Press, 2009.

The following books are useful references available on reserve at the Sciences and Technology Library:

- Algorithms and Data Structures, by Mehlhorn and Sanders, Springer, 2008.
- The Algorithm Design Manual, second edition, by Skiena, Springer, 2008.
- Advanced Data Structures, by Brass, Cambridge, 2008.

Most Springer publications are available online at SpringerLink through the University of Manitoba Library.

Grading. All students will be required to complete five assignments, two quizzes, a midterm exam, and a final exam. discretion of the instructor.
The final grades will be calculated as the highest of the following options.

Option 1:
assignments 25%
quiz 5%
quiz 5%
midterm exam 20%
final exam 45%

Option 2:
assignments 25%
quiz 1 5%
quiz 2 5%
midterm exam 32%
final exam 33%

Assignments. Assignments will be distributed in class during the term. Solutions must be submitted on Crowdmark (https://www.crowdmark.com/). To permit the prompt distribution of solutions and return of marked assignments, **late assignments will not be accepted**. Please include your name and student number on all submitted material.

Examinations. Two quizzes will be online. There will be a midterm exam held in class and a final exam held during the December exam period. Exams and quizzes will be closed book.

Tentative allocation of final mark

letter grade	percent grade
A+	90-100
A	80-89
B+	75-79
B	70-74
C+	65-59
C	60-64
D+	55-59
D	50-54
E	(marginally below 50%)
F	(below 50%)

Important Dates

These dates are tentative and may slightly change.

September 7: first class
September 23: assignment 1 due
September 29: quiz 1
October 6: assignment 2 due
October 7-13: reading week (no class)
October 19: midterm
October 25: assignment 3 due
November 8: last date to drop the course without receiving a grade
November 13: assignment 4 due
November 17: quiz 2
November 30: assignment 5 due
December 5: last class
December 6: fall classes end
December 7-20: exam period

Academic Integrity & Course Policies

Please refer to the posted material on eClass.
Updated August 23, 2023.