Concordia University
COMP 6651 --- Winter 2017
Algorithm Design and Analysis
Course Schedule

1. *Teaching Team*

Instructor: Tiberiu Popa (EV 3.127) tiberiu.popa@concordia.ca
Office hours: Wed 11:30-12:30 (EV 3.127),
TA: TBA Hours: Thu 17:45-20:15 in H544.

2. *Description*

Mathematical preliminaries; Empirical and theoretical measures of algorithm efficiency; Optimization techniques and algorithms including greedy algorithms, dynamic programming, and graph algorithms; Amortized analysis; String matching algorithms; NP-complete problems and approximate solutions; Probabilistic algorithms. Term project.

3. *Textbook*

Textbook is:

Introduction to Algorithms, Third Edition
By Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein

https://mitpress.mit.edu/books/introduction-algorithms

4. *Course Format*

The course has a lecture on Fridays and four mandatory labs schedule throughout the week.

5. *Evaluation*

Exercises (4)	*12%*
Midterm (1)	*20%*
Problems (2)	*28%*
Class Participation (bonus)	*5%*
Lab Attendance (bonus)	*5%*
Final Exam	*40%*

You have to pass all individual exam portions (midterm exam AND final exam) and the combined programming portion (exercises and problems).

6. Plagiarism.

Plagiarism is the most serious offence in the academic community. We take it extremely seriously. See below a link to the University resources and definitions. Please familiarize yourself with them.

In this course, all submitted items that are used to evaluate your performance in this course such as exams, problems or exercises are individual and should not include any code not written by someone else. While discussions between students is encouraged, one should never send or show the solution to a problem to another student and one should not use any material that he or she did not write himself/herself. If plagiarism is detected where one student copies totally or partially the solution of another student, both students will be equally punished regardless of circumstance.

Please note that plagiarism detection software will be used on all submitted material. The penalty for plagiarism may include removal from the academic program.

When in doubt please consult the instructor.

http://www.concordia.ca/students/academic-integrity/plagiarism.html
http://www.concordia.ca/content/dam/concordia/offices/provost/docs/Academic-Code-Conduct-2015.pdf

Please note that we will be using automated plagiarism detection software tailored at code

***Tentative* Course Schedule:** The list below provides a summary of the material that will be covered during the course as well as a *tentative* schedule. The Events column pertains to the week leading up to the course, which is schedule on Fridays. The labs for a specific lecture will occur the following week. Homework is due at 17:00 on the due dat. Late submissions will not be considered. The labs are denoted by the letter L#. The exercises are denoted by the letter E and the problems are denoted by the letter P.

Week	Topics and Applications	Events
#1: Jan 12	Introduction. Mathematical Preliminaries. Algorithmic problem solving. (Ch 1-3)	
#2: Jan 19	Reductions. Recurrences. Divide and Conquer. Master Theorem. (Ch 4)	L1: Learn the programming environment (simple problems) E1 released (Divide and Conquer)
#3: Jan 26	Greedy Algorithms. (Ch 16)	L2: Divide and conquer
#4: Feb 2	Dynamic Programming (1). (Ch 15)	L3: Greedy algorithms. P1 show codebase in the lab E1 due

		E2 released (Dynamic programming) P1 released
#5: Feb 9	Dynamic Programming (2) (Ch 15)	L4: Dynamic programming 1
#6 Feb 16	Intro to Graph Theory. (Ch 22)	L5: Dynamic programming 2
#7: March 2	**Midterm Exam 1**	E2: due E3 released (Graph algorithms) P2 released (show codebase in the lab) L6: Explain P2 codebase
#8: March 9	Graphs: shortest path, max flow (Ch 24-26)	P1: due
#9: March 16	Graphs: DFS, BFS (Ch 23)	L7: shortest path, max flow
#10: March 23	Backtracking, Branch and Bound.	L8: DFS, BFS E3 due E4 released (backtracking, branch and bound)
#11: April 6	Intro to P and NP.	L9: Backtracking, branch and bound
#12: April 13	NP and NP complete. Satisfiability. (Ch 34)	L10: TBA
#13: April 17 (Monday)	Spill class.	P2: due (graph related, min cut max flow) L11: TBA E4 due

7. Labs

The labs are design to support the practical aspects of the course material. The schedule is listed below. They are mandatory. There is no specific lab assignment, you can go to any of them, but it is mandatory to attend one of them. Note that the labs will be held on a first come first serve basis so please try to go to labs that are not very busy and if you can only attend a specific lab please be there early.

Lab schedule:

Lab code	Day/time/location
A	***Mon – 5:45 – 7:15 -*** H811
B	***Mon – 7:30 -9:00 -*** H811
C	***Tue – 5:45 – 7:15-*** H847
D	***Wed – 8:30-10:00- H811***
E	***Thu – 5:45 – 7:15*** H847