CSI-3105 A/B Fall 2016
Design and Analysis of Algorithms
(3,0,0) 3 cr.

Course Description: Analysis of algorithms: worst-case analysis, complexity analysis, asymptotic notations and basic complexity classes. Algorithm design techniques: brute force, divide and conquer, dynamic programming, greedy, backtracking. Computational complexity of problems: lower bound arguments, the classes P, NP, NP-complete, dealing with NP-complete problems.

Prerequisites: CSI2110, CSI2101 or for honors mathematics students: CSI2110, (MAT2141 or MAT2143).

Course Web Page: `http://cglab.ca/~jdecaruf/CSI3105.html`

Time & Location:

Section A	Monday 13:00 to 14:30	(CBY - B012)
	Wednesday 11:30 to 13:00	(CBY - B012)
Section B	Monday 10:00 to 11:30	(CBY - B012)
	Wednesday 8:30 to 10:00	(CBY - B012)

Professor:

Name:	Jean-Lou De Carufel
Office:	STE 5108
Email address:	jdecaruf @ uottawa . ca
Office Hours:	Wednesday 13:00 to 15:00

Textbook: The following textbook is required.

- Richard Neapolitan. Foundations of Algorithms, (fifth edition). Jones & Bartlett Learning, 2014.

The book should be available at the Agora Bookstore (`www.agorabookstore.ca`). Note that the previous editions of this text cover most of the material of the course. However, be aware that the section numbers may not match and exercises do not necessarily have matching numbers. The following textbooks are excellent references.

- Thomas Cormen, Charles Leiserson, Ronald Rivest and Clifford Stein, Introduction to Algorithms, (third edition). The MIT Press, 2009.
- Sanjoy Dasgupta, Christos Papadimitriou and Umesh Vazirani. Algorithms. McGraw-Hill, 2008.
- Gilles Brassard and Paul Bratley. Fundamentals of Algorithmics. Pearson, 1995.

Course Evaluation:
Assignments: There will be 4 assignments. The assignments are to be handed in directly to the professor by the due date and time. Assignments which are late by at most one day will lose 10%. Assignments received 24 hours or more after the due date and time will receive a grade of 0. Cheating on assignments will not be tolerated (students must do their own work). For a full description of the current academic fraud regulations, please follow: `http://www.engineering.uottawa.ca/downloads/pdf/FacultyRegulationsEnglish2008.pdf`

Closed book exams: There will be a closed book class test on Sunday Oct. 30, 2016, from 19:00 to 20:30 (MNT - 202). There will be a closed book 3 hour final exam scheduled in December.

Marking Scheme:

Assignment 1:	6.25%
Assignment 2:	6.25%
Assignment 3:	6.25%
Assignment 4:	6.25%
Class test:	25.00%
Final exam:	50.00%
Total:	100.00%

Course Outline:

1. Introduction
2. The Divide and Conquer Approach
3. The Greedy Approach
4. The Dynamic Programming Approach
5. Lower bound arguments, the classes P , NP , NP-complete, dealing with NP-complete problems