CMPS 201
Analysis of Algorithms
Fall 2016

Description:
Rigorous analysis of the time and space requirements of important algorithms, including worst case, average case, and amortized analysis. Techniques include order-notation, recurrence relations, information-theoretic lower bounds, adversary arguments. Analysis of the key data structures: trees, hash tables, balanced tree schemes, priority queues, Fibonacci and binomial heaps. Algorithmic paradigms such as divide and conquer, dynamic programming, union-find with path compression, augmenting paths. Selected advanced algorithms. Introduction to NP-completeness. Enrollment restricted to graduate students; undergraduate students may enroll in this course if they have completed either course 102 or Computer Engineering 177 and have the consent of the instructor.

Time and Place: MWF 2:40 – 3:45 pm   Stevenson 150
Class Webpage: https://classes.soe.ucsc.edu/cmps201/Fall16/

Instructor: Patrick Tantalo   http://users.soe.ucsc.edu/~ptantalo/
Office: E2 257
Office Hours: MW 4:30-6:30, F 4:30-5:30, or by appointment
Email: ptantalo@soe.ucsc.edu
Phone: 831-459-3898

Teaching Assistants:
Thomas Schmitz (tschmitz@ucsc.edu)
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Required Text:
Introduction to Algorithms (3rd edition) by Cormen, Leiserson, Rivest and Stein (CLRS). MIT Press 2009 (ISBN 9780262033848).

Optional Texts:
Fundamentals of Algorithmics, Brassard and Bratley, Prentice Hall (1996).
Algorithmics: Theory and Practice, Brassard and Bratley, Prentice Hall (1988).
Computer Algorithms, Baase and van Gelder, 3rd ed, Addison-Wesley (2000).
Computer Algorithms: Introduction to Design and Analysis, Sara Baase, 2nd ed, Addison-Wesley (1988).
Algorithm Design Manual, Steven S. Skiena, Telos/Springer-Verlag (1997).

Coursework and Evaluation:
- **Homework:** Will consist of written assignments taken (mostly) from the exercises in CLRS. Due at beginning of class on Wednesdays.
- **Midterm Exam 1:** Friday October 21
- **Midterm Exam 2:** Friday November 18
- **Final Exam:** Thursday December 8, 4:00 – 7:00 pm

Coursework will be weighted as follows:

Written Homework	10%
Midterm Exam 1	20%
Midterm Exam 2	30%
Final Exam	40%

Grading scale:

A+	97%-100%
A	93%-96%
A-	90%-92%
B+	87%-89%
B	83%-86%
B-	80%-82%
C+	76%-79%
C	70%-75%
C-	67%-69%
D+	64%-66%
D	61%-63%
D-	58%-60%
F	0%-57%

Letter grade boundaries may be lowered at my discretion in order to eliminate some borderline cases.

Accommodations for Students with Disabilities
UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you qualify for classroom accommodations because of a disability, please contact the Disability Resource Center (DRC) to get an Accommodation Authorization. Submit the authorization form to me in person during office hours, or by appointment, preferably within the first two weeks of the quarter. All students who may benefit from learning more about DRC services are encouraged to contact DRC by phone at 831-459-2089 or by email at drc@ucsc.edu.

Academic Honesty:
The Baskin School of Engineering has a zero tolerance policy for any incident of academic dishonesty.   If cheating occurs, consequences may range from getting zero on a particular assignment to failing the course. In addition every case of academic dishonesty is referred to the students' college Provost, who sets in motion an official disciplinary process. Cheating in any part of the course may lead to failing the course, suspension or dismissal from the Baskin School of Engineering, or from UCSC.

What is cheating? In short, it is presenting someone else's work as your own. Examples would include copying another students' written homework, or allowing your own work to be copied. You may discuss your work with fellow students, but your collaboration must be at the level of *ideas* only. You may freely give and receive help with any example discussed in class, in the text, or in one of the handouts. However you may not share in the act of *writing* your solutions. See https://www.ue.ucsc.edu/academic_misconduct for the University's official policy on Academic Misconduct.