Course: Analysis of Algorithms

Time & Place: Monday, Wednesday and Friday 2:00pm-3:10pm, E2 194.

Discussion Sections:
- Wednesdays, 3:30pm-4:40pm, BE 196.

Instructor: Dean Bailey; office: E2 249B; phone: 831-459-1339, e-mail: dbailey@soe.ucsc.edu

Teaching Assistant: Greg Levin, glevin@soe.ucsc.edu

Office Hours:
- Bailey: Tuesdays and Thursdays, 2:00pm-4:00pm, E2 249B.
- Levin: Mondays and Fridays, 3:30pm-4:40pm, place tbd.

Prerequisites: To take this course you must have successfully completed an undergraduate course in data structures (e.g. CMPS101), algorithms (e.g. CMPS102) or graph theory (e.g. CMPE177).


Syllabus: The following is a tentative syllabus for the course:

Introduction/Overview
Growth of Functions, asymptotic notation
Recurrences, basic methods, master method and theorem
Probabilistic Analysis and Randomized Algorithms
Heapsort
Quicksort
Randomized Quicksort
Sorting lower bounds
Adversary Arguments
Counting sort
Radix sort
Medians and Order Statistics, selection
Binary Trees
Red-Black Trees
Binomial Heaps
Fibonacci Heaps
Disjoint Sets
Elementary Graph Algorithms
Minimum Spanning Trees
All-Pairs Shortest Paths
NP-Completeness
Practical Approaches to Intractable Problems

Evaluation: The course work will be weighted as follows:

Final Examination 40%
Two Midterm Examination 30%
Homework Assignments 30%

N.B. Passing grades in all three parts are required to pass the course.
• **Examination and Quiz Schedule:**

   1. Final Examination, Tuesday, March 18, 8:00am-11:00am
   2. Midterm Examination I on Friday, February 1
   3. Midterm Examination II on Monday, February 25

   The examination schedule is fixed. In particular, requests for changes in the schedule will not be accommodated; if you have conflicts with this schedule, please do not enroll in the class. Also, *no* time extension will be given for late arrivals on an examination day.

• **Academic Integrity:** No form of academic dishonesty will be tolerated. Incidents of academic dishonesty will be reported according to UCSC’s policy on academic integrity, the full text of which can be found at [http://www.ucsc.edu/academics/academic_integrity](http://www.ucsc.edu/academics/academic_integrity). Specifically for this class, if you are caught turning in work as your own, that is not solely your own, or assisting others in doing so, a formal written report will be sent to your Department and the School of Engineering. Furthermore you will get a failing grade for the course and the incident will be noted in your evaluation.