

**CMPE 177**  
**Applied Graph Theory and Algorithms**  
**Summer 2009 June 22 – August 13**

**Description:** This is an introductory course in Graph Theory with an emphasis on classical graph algorithms and their applications to problems in connectivity, routing, matching, and graph embeddings. Topics will include: representations of graphs, bipartite graphs, Cayley's formula, minimum spanning trees, shortest path algorithms, vertex and edge connectivity, directed graphs, network flows and cuts, Menger's theorems, Eulerian and Hamiltonian graphs, planar graphs, matchings, and colorings.

**Prerequisite:** CMPS 101

**Time:** MW 5:00 – 7:30 pm (PST)

**Class Webpage:** <http://www.soe.ucsc.edu/classes/cmpe177/Summer09/>

**Class Web Forum:** <http://forums.soe.ucsc.edu/>

**Instructor:** Patrick Tantalo (<http://www.cse.ucsc.edu/~ptantalo/>)

**Email:** [ptantalo@soe.ucsc.edu](mailto:ptantalo@soe.ucsc.edu)

**Office:** E2 257

**Office Hours:** MW 10:00 – 1:00 pm (PST)

**Phone:** 831-459-3898

**Teaching Assistant:** Iryna Gordei <[igordei@ucsc.edu](mailto:igordei@ucsc.edu)>

**Required Text:** *A first look at Graph Theory* by John Clark and Derek Allan Holton, published by World Scientific (1991). We will cover roughly, though not necessarily in this order, sections 1.1-1.8, 2.1-2.6, 3.1-3.4, 4.1-4.3, 5.1-5.4, 5.6, 7.1-7.3, and 8.1-8.3.

**Course Work and Evaluation:**

<b>Homework</b>	<b>5%</b>
<b>Programming Project</b>	<b>35%</b>
<b>Midterm I</b>	<b>20%</b>
<b>Midterm II</b>	<b>20%</b>
<b>Final Exam</b>	<b>20%</b>

**Homework** will be taken from the exercises at the end of each section of the text, but will be graded only as to its completeness, not correctness. Its purpose is to prepare students for the midterm and final exams. There will be one **Programming Project** due **Monday August 3**. **Midterm I** will be held in class on **Wednesday July 15** and **Midterm II** will be **Wednesday July 29**. The **Final Exam** will be held on the last day of class, **Wednesday August 12, 5:00-8:00 pm**. Please make arrangements now to be available on that date.

The grading scale for the class will be approximately: A+:97%-100%, A::93%-96%, A-:90%-92%, B+:87%-89%, B::83%-86%, B-:80%-82%, C+:76%-79%, C::70%-75%, D::60%-69%, F::0%-59%. Letter grade boundaries may be lowered at my discretion in order to eliminate some borderline cases.

**Academic Honesty:**

The Baskin School of Engineering has a zero tolerance policy towards any incident of academic dishonesty. If cheating occurs, consequences within the context of the course may range from getting zero on a particular assignment, to failing the course. In addition to these sanctions, 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 and suspension or dismissal from the university.

What is cheating? In short, it is presenting someone else's work as your own. Examples include (but are not limited to) copying another student's written homework assignment, or program, allowing your own work to be copied, or in any way facilitating the cheating of others. Although you may discuss problems with fellow students, your collaboration must be at the level of *ideas* only. Legitimate collaboration ends when you "lend", "borrow", or "trade" *written solutions* to problems, or in any way share in the act of *writing* your answers. You may freely give and receive help with the computer facilities, editors, the UNIX operating system, and the proper use and syntax of the C and Java programming languages; but you may not copy, paste, email, or in any way share *source code*. If you do collaborate (legitimately) or receive any form of help from anyone, you must credit them by placing their name(s) at the top of your paper, or in the case of programming assignments, in your README file.

Please go to [http://www.ucsc.edu/academics/academic\\_integrity/](http://www.ucsc.edu/academics/academic_integrity/) to see the full text of the University's policy on Academic Integrity.