

## CMPE 16

### Applied Discrete Mathematics

### Summer 2016 (June 20 – August 12)

**Description:** Introduction to applications of discrete mathematical systems. Topics include: logic, propositions, proofs using propositional equivalences; sets and set operations; predicates and quantifiers; rules of inference and mathematical proof methods; functions and relations, sequences and summations; divisibility, modular arithmetic, prime numbers and Euclid's algorithm; mathematical induction; recursive definitions and recurrence relations, solving recurrence relations; counting arguments, pigeonhole principle, permutations and combinations; discrete probability; Boolean algebra and circuits; modular arithmetic.

**Time and Place:** MWF 10:00-11:45am Thimann Lecture 003

**Class Webpage:** <https://classes.soe.ucsc.edu/cmpe016/Summer16/>

**Instructor:** Patrick Tantalo <http://users.soe.ucsc.edu/~ptantalo/>

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

**Office:** E2 257

**Office Hours:** TTh 3:00-5:00, W 4:00-6:00, or by appointment

**Phone:** 831-459-3898

#### Teaching Assistant:

Sam Mansfield ([smansfie@ucsc.edu](mailto:smansfie@ucsc.edu))

#### Required Text:

*Discrete Mathematics and its Applications* by Kenneth H. Rosen, 7<sup>th</sup> edition, McGraw-Hill 2012 (ISBN 9780073383095). The Bay Tree Bookstore has a custom edition that includes only the sections we will be using in this course (ISBN 9781308025254). We will cover sections 1.1-1.7, 2.1-2.5, 4.1-4.3, 5.1-5.3, 6.1-6.6, 7.1-7.4, 8.1-8.3, 8.5, 8.6, 12.1-12.3. It is possible to use an earlier edition, when doing so however, it is entirely the students' responsibility to compensate for changes in section, page and problem numbers. Follow this link to see a mapping of the 7<sup>th</sup> edition section numbers to those of the 6<sup>th</sup> edition: <https://classes.soe.ucsc.edu/cmpe016/Summer15/RosenSections.pdf>.

#### Optional Online Texts:

*Book of Proof* by Richard Hammack (<http://www.people.vcu.edu/~rhammack/BookOfProof/>)

*Topics in Discrete Mathematics* by A. Pixley (<http://www.e-booksdirectory.com/details.php?ebook=8149>)

*Discrete Structures* by Vladlen Koltun (<http://web.stanford.edu/class/cs103x/cs103x-notes.pdf>)

#### Coursework and Evaluation:

- **Weekly Homework:** taken from the exercises at the end of each section of the Rosen text.
- **Weekly Quizzes:** to be held during last 20 minutes of class. The first will be on Friday July 1, and every Friday thereafter through Friday August 6.
- **Final Exam:** Friday August 12, 10:00 am - 12:30 pm

Coursework will be weighted as follows:

Homework	10%
Quizzes	50%
Final Exam	40%

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%
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:**

If you qualify for classroom accommodations because of a disability, please get an Accommodation Authorization from the Disability Resource Center (DRC) and submit it to me in person outside of class (i.e. during office hours) within the first week of the quarter. Contact DRC at 459-2089 (voice), 459-4806 (TTY), or <http://drc.ucsc.edu> for more information.

**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 student's written homework assignment, or allowing your own work to be copied. You may discuss homework problems with fellow students, but 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. If you do collaborate (legitimately) or receive help from anyone, you must credit them by placing their name(s) at the top of your paper. Please go to [https://www.ue.ucsc.edu/academic\\_misconduct](https://www.ue.ucsc.edu/academic_misconduct) to see the full text of the University's policy on Academic Misconduct.

**Some Important Summer Session Deadlines:**

Last day to drop: Monday June 27 (week 2)

Last day to withdraw: Friday July 22 (week 5)