Syllabus
Information and Computer Sciences/Mathematics 6D
Winter 2011

Discrete Mathematics for Computer Science (4). Covers essential tools from discrete mathematics used in computer science with an emphasis on the process of abstracting computational problems and analyzing them mathematically. Topics include: mathematical induction, combinatorics, and recurrence relations. Prerequisite: high school mathematics through trigonometry. Same as Mathematics 6D. Formerly ICS 6A.

Class : MWF 15:00–15:50 SSPA 1100
Discussion: WF 1-16:00–16:50 SSL 270 & 290

Instructor office hours Wednesday 5-6pm, or by appointment.

Staff:

Role	Name	Email	Office	Office hours *(… or by appointment)*
Instructor	**Prof. Wayne Hayes**	wayne@ics.uci.edu	**4092 Bren Hall**	**W 5-6pm**
TA	**Kenny Daily**	kdaily@ics.uci.edu	**ICS2-241**	**WF 1-2pm**
Reader	**Kuang-Chih**	kuangchl@uci.edu	**4209 Bren Hall**	**Mo 4-5pm**
Reader	**Kazuyuki Tanimura**	ktanimur@uci.edu	**3069 Bren Hall**	**Tu 4-6pm**

Textbook: Kenneth H. Rosen, *Discrete Mathematics and Its Applications*, 6th edition, McGraw Hill, 2003. (ISBN-10: 0-07-288008-2; ISBN-13: 978-0-07-288008-3). Required, and should be available in the UCI bookstore.

Schedule

Week 1: Logic. Sections 1.1 – 1.4 .
Week 2: Sets, Sequences, Functions. Sections 2.1-2.4 .
Week 3: Algorithms. Sections 3.1, 3.2, A-2, 3.3 .
Week 4: Integers, counting, and matrices. Sections 3.4-3.6, 5.1, 3.8 .
Week 5: Induction and recursion. Sections 4.1 - 4.4 .
Week 6: Permutations and Combinations. Sections 5.2-5.3; 5.4 – 5.6 .
Week 7: Probability. Sections 6.1 – 6.4 .
Week 8: Combinatorics 1: Recurrence relations. Sections 7.1 – 7.3 .
Week 9: Combinatorics 2: Generating functions and inclusion/exclusion. Sections 7.4 – 7.6 .
Week 10: Finish previous topics; Review. 1.1 – 7.6

Grading

Grades will be weighted as follows: homework 20%, quizzes 20%, midterm 25%, final 35%.
Bring student ID to all quizzes, midterms, and exams.
Quizzes: quizzes will be given at the beginning of Lecture on Fridays. You are required to attend all classes and Discussion sections. If you miss something, get it from a classmate; the instructor and TA are not responsible for filling you in on stuff you missed.

Homework assigned in class on Monday will be due physically at the beginning of class the following Monday at the start of the Lecture. Late penalty is 10% per 24 hour period or fraction thereof.

Email communication

On class content-related email , include "ICS 6D" in the subject line along with the rest of your subject. There is no guarantee class email addressed in other ways will be read – it may be filtered out, or we may not recognize you, or it may go to the wrong person and get dropped. In email, please be polite and respectful. For example, please don't make requests that you wouldn't feel comfortable making in person.

Add/drop policy

For the first two weeks we will use the electronic add/drop system exclusively (not signed cards). The midterm exam will not be graded in time for any particular add/drop date. After the first two weeks, add/drop permissions are regulated according to ICS and UCI policy.

Academic honesty

UCI has an academic honesty and integrity policy which applies to this and all other UCI classes. It is available in the online course catalog: http://www.editor.uci.edu/catalogue/appx/appx.2.htm#gen0 . Students are responsible for knowing it and abiding by it. All work in this course must be solely your own work.

Homework (*=extra credit; do questions in order & write all numbers even if you leave it blank)

Homework 1: p. 16: 1, 2, 5, 6, 10, 16, 23, 27, 28, 33, 42, 49, 61; p. 28: 11, 28, 34, 41; p. 46: 2, 7, 23, 39, 50, 54, 62; p. 58: 10, 15, 22, 35, 39, *49

Homework 2: p. 119: 2, 8, 19, 31, *38; p. 130. 4, 18, 27, 50, 59, *44; p. 146: 6, 15, 38, 55, 63, 67, *73 (read text preceding problem); p. 160: 3, 6 (a-d only), 10 (a-e only); also 13, 16, 17; (Hint: use formulae eg. Table 2, not brute force calculation, to do these sums.); also 31, 37, *48

Homework 3: Section 3.1, p. 177: 2, 3, 14, 23, 30, 47, 58, *59; Section 3.2, p. 191: 1, 6, 7, 17, 19, 27, 35, 44; Section 3.3, p. 199: 7, 8, 9, 18, 25, 27; Section 3.4, p. 208 : 4, 12, 17, 25, 28.

Homework 4: Section 3.5, p. 217 : 3(b,d,e), 8, 12, 21a-c, 23a-c, 32; Section 3.6, p. 229: 2, 5, 17, 24, *28, 32, 38, 50; Section 3.8, p. 254: 2, 3, 5, *13, 15, 19, 30; Section 4.1, p. 279: 3, 6, 10, 16, 19, 32, 38, 43, 47, 52, 70.

Homework 5: Section 4.2, p. 291: 4, 11, 23, 33, *34; Section 4.3, p. 308: 3, 5, 8, 13, 25, 29, 43, 61, *18, *47; Section 4.4, p. 321: 8, 11, 23, 35.

Homework 6: Section 5.1, p. 344: 3, 5, 14, 21, 30, 32, 47, 52, *58; Section 5.2, p. 353: 3, 6, 14, 21, 31, 34, *41; Section 5.3, p. 360: 2, 5 (a,b,e), 6(a,b,e), 9, 13, 24, 25(a-d), 31(a,b), 40, *44.

Homework 7: Section 5.4, p. 369: 1, 8, 21, 14, 33, 36; Section 5.5, p. 379: 2, 9, 15, 22, 30, 35, 44, 57, *63; Section 6.1 p. 398: 2, 5, 12 21, 39; Section 6.2 p. 414: 1, 5, 10, 20, 35.

Homework 8: Section 7.1, p. 456: 2, 3, 7, 8, 10, 17, 25, 47, *65; Section 7.2, p. 471: 2, 3, 14, 21, 24, 29, 37; Section 7.3, p. 482: 2, 6, 10, 18, 21, *29, *30; Section 7.4, p. 496: 2, 5, 8, 9(a-c), 13, 16, 23, *39, *51.