Mathematics 3770 — Combinatorial Computing — Spring 2014

Instructor : Dr. Nancy Van Cleave
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Office Hours : 2–2:50 MWF, 4–4:50M & by appt
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Course website : www.eiu.edu/~mathcs

Prerequisite : Successful completion of MAT 2345 or permission of instructor

Texts :
- **Applied Combinatorics**, by Alan Tucker, Wiley Publishers, 1995
- **Discrete Mathematics and Its Applications**, Sixth Edition, by Kenneth H. Rosen, McGraw-Hill Publishers, 2007

Objectives :
- Introduce the nature of combinatorial problems and areas in which they arise.
- Provide methods and techniques in the solution of combinatorial problems, particularly from graph theory.

Chapters 1–4 in Tucker provide an introduction to graph theory. As time permits, we will cover additional material from outside the text, Chapters 8 & 11 in Rosen, Chapters 7 & 10 in Tucker, and the Appendix.

Academic Integrity

The Office of Student Standards provides guidelines for expectations of all EIU students.[1] You are required to observe and meet these expectations for this class. Violations of this conduct can have serious consequences, including a failing grade for the course. Violations include cheating on examinations, collusion, and conduct which disrupts the academic environment. **All work turned in, including homework submissions, is to be your own work.** Never copy from another student, nor allow other students to copy your solutions.

Evaluation : There will be three written exams, homework, quizzes, and a comprehensive final exam for this course. The relative weights of these components are as follows:

Exam I	15 %
Exams II & III	20 % each
Homework & Quizzes	10 %
Final (Comprehensive)	35 %

Course Grade : The following scale will be used as a first approximation to your grade:

90–100: A   80–89: B   70–79: C   60–69: D   0–59: F

In borderline cases, factors such as consistent attendance, overall trends and the final exam score may be taken into consideration. It is possible that the cut-off scores given above will be lowered. As a result, an overall score of 80 is *guaranteed* to receive at least a B, whereas a score of 78 *might* result in a B.

If you have a documented disability and wish to receive academic accommodations, please contact the Coordinator of the Office of Disability Services (581–6583) as soon as possible.

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[1]See http://www.eiu.edu/~judicial/studentconductcode.php.

Miscellaneous :

- Attendance is required at all class and exam sessions. You are responsible for any announce-ments, assignments given, and lecture material covered in class whether or not you are there. Please make arrangements with work, other classes, etc., to ensure that nothing will hinder your attendance.

- **Make-up exams are available only if agreed upon <u>before</u> the regular exam is given.** If you are unable to contact me by phone or email, you can leave a message with the depart-mental office (581–2028). Further, it is <u>your</u> responsibility to provide adequate documentation of the reason for the delay.

- Homework is due the class meeting following the last lecture for a particular section. Every homework is to be turned in on a separate sheet(s) of paper and labeled by book (Tucker or Rosen) and section number before you turn it in. Trim any uneven edges and staple multiple pages together.

- Homework will be credited for completion and thoroughness. This is a 3000-level class, so you will be expected to put effort into writing up your solutions, including proofs and explanations.

- Your **cell phone and all other electronic devices are to be turned off**, **put away**, and **kept out of sight** during lectures. Failure to adhere to this rule will result in expulsion from class, perhaps permanently.

- Please ask questions when you experience problems. Ask in class or see me outside of the regularly scheduled meeting times.

MATHEMATICS 3770 — *Tentative Schedule — Spring 2014*					
WEEK	DATES	READING **Tucker**	READING **Rosen**	TOPICS	NOTES
1	1/13-1/17	Chap 1.1	9.1–2	Intro, Graph Models	1/17 deadline to add a course
2	1/20-1/24	Chap 1.2	9.3	Isomorphism	1/20 King's b-day –no classes
3	1/27-1/31	Chap 1.3–4	9.7	# Edges; Planarity	1/27 Drop deadline / no grade
4	2/3-2/7	Chap 1.4, Sup I		Planarity; Comp Rep	
5	2/10-2/14	Chap 2.1–2	9.5	Euler; Hamilton	2/14 Lincoln's bday/no classes **Exam 1, 2/12 F**
6	2/17-2/21	Chap 2.2–3	9.8	Hamilton, Coloring	
7	2/24-2/28	Chap 2.4, 3.1	10.1	Theorems; Trees	
8	3/3-3/7	Chap 3.1–2	10.2–3	Trees–Searching	3/6 - Midterm
9	3/10-3/14				Spring Recess – no classes
–	3/17-3/21	Chap 3.3	10.4–5	Trees–Spanning	**Exam 2, 3/14 F**
10	3/24-3/28	Chap 3.3, Sup II		Trees–Spanning; Steiner[1]	
11	3/31-4/4	Chap 3.4–5	9.6	Steiner[1], TSP, analysis	3/29 Deadline withdraw W
12	4/7-4/11	Chap 4.1–2		Paths; Flows	
13	4/14-4/18	Chap 4.2		Flows	**Exam 3, 4/12 F**
14	4/21-4/25	Chap 4.3, 7.1–2	8.1, 8.3, 8.4	Matching, Relations	
15	4/28-5/2	Chap 7.3, 10.1	8.5	Equiv. Rel., Insanity	5/2 - Last class day
FINAL				Thursday, 5/8	12:30 - 2:30PM

[1] Topic not in text