MATH 579: Combinatorics
Fall 2017 MWF 10-10:50, EBA 439

Overview:
This course is concerned with counting finite sets. For example, consider the set of all possible necklaces made with m beads, chosen from a tub of n different beads. Students will learn a variety of tools to compute the sizes of such sets exactly, or sometimes to estimate.

Learning Objectives:
There are three distinct phases to solving a combinatorial problem. Generally, the first phase is the most difficult to learn, and the last phase is the easiest. Students will learn all three in this course. First, the problem must be categorized as to which combinatorial tool would be appropriate. Second, a model must be created that translates the abstract formulation of the problem into the symbols required for the combinatorial tools to work. Third, the combinatorial tools must be applied to the symbols.

Textbook:
None required; any introductory combinatorics text would be helpful. Students are expected to take careful notes in class, and to remedy any difficulties immediately.

Course Mechanics:
Homework assignments will be collected on most Mondays, and brief quizzes given on all other class days (except on and right before exam days). Quizzes immediately after exams will typically be "second-chance" quizzes on an exam question. There will also be three exams and a final. Schedule:

Homework:	Sep. 6, 11, 18; Oct. 2, 9, 16, 30; Nov. 6, 13; Dec. 4, 11
Holidays:	Nov. 20-24
Exam Prep:	Sep. 22; Oct. 18; Nov. 15; Dec. 11
Exams:	Sep. 25; Oct. 20; Nov. 17
Quiz:	All other class days
Final:	Fri. Dec. 15, 10:30am-12:30pm

Grading:
The three exams and final are all closed-notes. All grades will be normalized to lie between 50% (blank but present) and 100% (perfect score). Missing grades will still be 0%. The grading policy is as follows:

A	A-	B+	B	B-	C+	C	C-	D+	D	F
92.0	90.0	88.0	82.0	80.0	78.0	72.0	70.0	68.0	62.0	0

Each student will earn seven grades: the three exam grades, the homework grade (best 10 out of 11), the quiz grade (best 21 out of 24), the final exam grade, and the final exam grade a second time. The course grade will be the average of the highest six out of these seven grades. This policy is in place to accommodate students for whom one of the measures does not accurately represent their abilities.

Collaboration:
Students are expected to work homework exercises in groups, with weekly meetings. Groups are normally expected to consist of 4 people (3 or 5, by request only). Initial groups are chosen by the students. After each exam they will be reassigned, by the instructor, to contain people with similar grades. If you have strong preferences for these reassignments, please notify the instructor.

Each group will turn in one homework set, with the grade shared by all group members. Also, quiz scores will be averaged within each group, with each member of the group receiving the average grade. Note that one missing group member will dramatically lower the average for the whole group.

Quizzes:
Some quizzes will be standard quizzes, on paper which students will supply. Other quizzes will be PAR quizzes, on paper provided by the instructor that is specially designed for this purpose. These will consist of three phases: First, we will have a five-minute "first draft" portion. Second, the quizzes will be passed clockwise within the group, and we will have a two-minute "peer comments" portion. Lastly, the quizzes will be returned, and we will have a three-minute "final draft" portion.

Attendance:
Students are expected to attend every class, and to get copies of the notes should a class be missed. Makeup quizzes and exams are not given under any circumstances. Under extraordinary circumstances (e.g. hospitalization), an alternative grading policy may be used. If missing a quiz is unavoidable, you may notify the instructor in advance and earn 5/10 (instead of 0/10).

SDS:
If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that accommodations based upon disability cannot be provided until you have presented your instructor with an accommodation letter from Student Disability Services. Your cooperation is appreciated.

Online Materials:
The professor maintains a comprehensive website (URL below). Here you may find old exams, solutions, syllabi, course evaluations, grade distributions. Note syllabi carefully, as different courses use different textbooks. He is very diligent and prompt about responding to emails. If you wish to know your grade, please email anytime. However, there is *not* a Blackboard presence for this course, because Blackboard is evil.

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