MATH 4663 INFORMATION
Section 001, TTh 9:00 AM, MSCS 514

Instructor: David Wright, MS 527, 744-5775, FAX: 744-8275,
Email: `wrightd@math.okstate.edu`
Online Classroom (D2L): `oc.okstate.edu` (Main location of class resources and grades)
External website: `http://klein.math.okstate.edu/~wrightd/4663`

Office hours and help: TWTh 2:00–3:00 PM at MSCS 527. Please feel free to drop by or contact me to see if I am available at any time.

Text: *Applied Combinatorics*, 6th ed., by Alan Tucker.

Course objectives: To learn the basics of combinatorics: graph theory, enumeration, recurrence, generating functions, as well as some applications. In addition, we will practice applying and writing general techniques of mathematical problem-solving and reasoning.

Methodology: Combinatorics is a subject that is pursued both for extremely important applications in the 'real world' as well as for purely recreational and aesthetic purposes. It is very closely linked to probability theory, optimization, and operations research. The problems are simple to state, and yet their solution requires a mature approach to problem-solving. It is commonly one of the favorite subjects of math students. **It will be essential to write in clear and complete language the reasoning used in solving a problem.** Answers alone will not receive complete credit.

Prerequisites: Linear Algebra (MATH 3013), Calculus 2 (MATH 2153).

Syllabus:

Sections A.1–A.4	Basic set theory, logic, induction, pigeonhole principle
Sections 1.1–1.4	Basic graph theory (Also some of 10.1)
Sections 2.1–2.4	Circuits and coloring
Sections 5.1–5.5	Basic counting methods
Sections 6.1–6.2	Generating functions
Sections 7.1–7.3	Recurrence relations
Sections 8.1–8.2	Inclusion-exclusion
Sections 10.1–10.2	Game Theory

Extra topics may be included as time permits.

EXAMINATIONS: Two in-class exams will be given, on **Thurs. Feb. 14** and **Thurs. March 28**. Students with very serious conflicts must warn me well in advance (more than one week) of the exams, and we will work out some alternative arrangement. A final exam is also scheduled on *Thursday, May 2, at 8:00 AM–9:50 AM*. You are allowed to use a calculator no more powerful than a TI-89 graphing calculator. No palmtop or laptop PC's are allowed. In addition, you may not use any memory or programming features or any calculations beyond basic arithmetic. If in doubt, you should confirm the legality of any operations you wish to use.

Homework: All students will be expected to complete and turn in written solutions to all the regularly assigned homework. Problems may also be raised in class for discussion. Solutions will be posted on D2L.
Rules: Write neatly; staple pages together; HW must be turned in at the beginning of the class at which it is due. Some problems may not be graded; it's better to turn in whatever homework you have done than nothing at all.
Occasionally, homework will be assigned to be completed by small groups of students. More detailed instructions will be given later in the term.

Bonus Projects: Periodically, bonus problems or projects will be offered. Work on these projects may be turned in for extra credit.

Grading: Examinations and homework are weighted according to the following system. The maximum homework score that may be earned is 100 points. Each in-class hour exam will be worth 100 points. The final will be worth 200 points. The maximum course total is therefore 500 points. Any bonus points you earn will be added to your course total. Students who achieve at least 450, 400, 350, or 300, respectively, total points will be guaranteed of receiving at least an A, B, C, or D, respectively. Depending on the median scores, these cutoffs may be lowered. Some discretion of the instructor may be used in deciding borderline cases.

Graduate Credit: If you are a graduate student and have enrolled in section 01G, you must complete an extra project approved by the instructor for which you will receive a grade out of 50 points. The guaranteed final grade boundaries will then be 500, 450, 400, and 350 for grades of A, B, C, D, resp.

STANDARD OPERATING PROCEDURE: All students must complete a minimum of six hours of work each week outside attending lectures. This work is to consist of reading in detail all sections of the book covered in class and performing all assigned homework problems and enough additional problems to make sure that you understand the material. It is very important that you contribute this six or more hours of work every week.

Academic Dishonesty: It is a cornerstone of academic integrity that written work submitted under your own name should be prepared entirely by yourself. Informal discussion between students is permitted. You are also encouraged to seek help on the homework from myself during office hours. However, academic misconduct includes organized collaboration between students on homework assignments that involve, say, jointly writing solutions on the blackboard and then copying down the alleged solutions on each individual's paper. Also, examination of another student's individual written work before an assignment has been collected and graded is strictly forbidden.

Attendance Policy: Attendance of lectures is mandatory, but roll will not be taken every class. You are responsible for all material covered in class and all announcements. Check the course D2L site regularly for course news.

Disability: If you feel that you have a disability and need special accommodations to pursue the course, the instructor and the Office of Student Disability Services (315 Student Union) will work with you to ensure that you have a fair opportunity to complete this class. Please advise the instructor of such disability before the second class period of the second week of the term.