Math 475: Introduction to Combinatorics
Lecture 1, MWF 12:05–12:55 p.m., B115 Van Vleck
Syllabus for Semester I, 2012/2013

Prof. Paul Terwilliger — Office: 101A Van Vleck
Email: terwilli@math.wisc.edu — Office phone: 263-2226
Office hours: M 3:30 in 903VV, or W, F after class, or by apt.
WWW: http://www.math.wisc.edu/∼terwilli
Grader: Yuan Wang yuanwang@math.wisc.edu
Text: Introductory Combinatorics, 5th Edition, by Richard A. Brualdi.

Course Content: We will cover roughly chapters 1–8 and 14 in the text. The main topics include permutations and combinations; pigeon-hole principle; partial orders; Dilworth's theorem; the inclusion-exclusion principle; recurrence relations and generating functions; difference sequences; Catalan numbers; Stirling numbers; partition numbers; counting equivalence classes in the presence of symmetries.

Exams and Grades: The course grade is based on two in-class exams and the final exam. Each of the in-class exams is worth 100 points, and the final exam is worth 150 points. In addition the graded homework is worth 50 points. Here is the exam schedule:

- Exam 1: Monday, October 15
- Exam 2: Monday, November 26
- Final exam: Thursday, Dec 20, at 7:45–9:45 a.m.

Homework: At the end of the syllabus there is a list of exercises to be handed in. These will be marked by a graduate student assigned to me. Your work on these exercises should be well presented, in good English. A clear explanation is just as important as the correct answer. It is suggested, but not required, to type your answers using for example Latex. It is fine to form a study group and discuss the exercises with your classmates; however the work you hand in should be your own and not copied from someone else. When you turn in your homework it must be a paper copy; please do not email your homework to me or the grader. Late homework will not be accepted.

Calculator Policy: During an exam no books, notes, calculators, cell phones, pagers, or any electronic devices will be allowed.

How to prepare for the exams: The list of exercises at the end of this syllabus is the minimal homework requirement; it is recommended that you do many more exercises on your own. For each exam including the final, the exam problems will be based on, and in many cases taken verbatim from, the exercises that appear at the end of the relevant chapters in the text. These exercises might not appear in the table at the end of the syllabus. Generally speaking, the more exercises from the text that you work out and understand, the easier the exam problems will seem.

Rough Schedule:

Week	M	W	F
Sept 3	Labor day	Ch 1	Ch 2
Sept 10	Ch 2	Ch 2	Ch 2
Sept 17	Ch 3	Ch 3	Ch 3
Sept 24	Ch 4	Ch 4	Ch 4
Oct 1	Ch 4	Ch 5	Ch 5
Oct 8	Ch 5	Ch 5	Ch 6
Oct 15	Exam I	Ch 6	Ch 6
Oct 22	Ch 6	Ch 6	Ch 7
Oct 29	Ch 7	Ch 7	Ch 7
Nov 5	Ch 7	Ch 8	Ch 8
Nov 12	Ch 8	Ch 8	Ch 8
Nov 19	Ch 8	Rev	Thanksgiving
Nov 26	Exam II	Ch 14	Ch 14
Dec 3	Ch 14	Ch 14	Ch 14
Dec 10	Ch 14	Ch 14	Ch 14

Homework assignments:

Chapter	Exercises	Tent. Due date
1	3, 4, 7, 14, 17, 30, 31, 36, 43	Not to hand in
2	4b, 5b, 6, 7, 9, 11, 13, 14, 15, 19b, 26, 27	Friday, Sept. 14
2	30, 38, 39, 41, 42, 45, 55b, 60, 61, 63	Friday, Sept. 21
3	4, 5, 9, 10, 14, 16, 18, 20, 27, 28	Friday, Sept. 28
4	7b, 8, 15a, 15c, 16a, 16c, 17, 23, 24, 29, 33	Friday, Oct. 5
5	5, 6, 7, 12, 13, 16, 18, 23, 24, 25, 27, 28, 29	Friday, Oct. 12
5	8, 9, 19, 30, 31, 32, 34, 39, 40, 43, 46, 48	Not to hand in
6	2, 9, 12, 13, 16, 17, 21, 23, 24a, 26, 27, 28, 31	Friday, Oct. 26
7	8, 9, 11, 14, 15, 17, 18, 19, 21, 29, 30	Friday Nov. 2
7	26, 27, 28, 32, 34, 35, 36, 40, 43, 47, 48, 50	Friday, Nov. 9
8	1, 2, 3, 6, 7, 8, 12, 13, 14, 15, 19, 20, 26	Friday, Nov. 16
14	1, 11, 12, 13, 14, 18, 20, 22, 23, 24, 25, 29	Friday Dec 7
14	40, 41, 43, 44, 46, 47, 48, 49, 50, 51, 52, 53	Friday Dec 14

For the textbook a list of errata is located at `http://www.math.wisc.edu/~brualdi`